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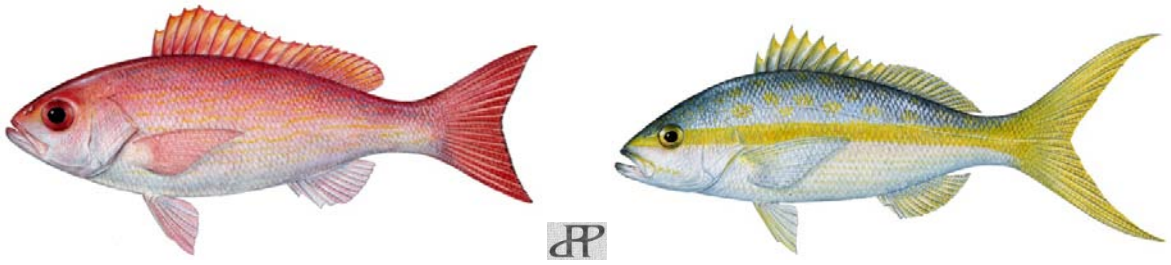
Framework Action to Set the Annual Catch Limit and Bag Limit for Vermilion Snapper, Set Annual Catch Limit for Yellowtail Snapper, and Modify the Venting Tool Requirement

(including environmental assessment, regulatory impact review, and regulatory flexibility act analysis)



Framework Action to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico

Final

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COVER SHEET

Name of Action

Framework action to set the annual catch limit and bag limit for vermilion snapper, set annual catch limit for yellowtail snapper, and modify the venting tool requirement.

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ABBREVIATIONS USED IN THIS DOCUMENT

ABC	Acceptable biological catch
ACL	Annual catch limit
ACT	Annual catch target
ALS	NMFS accumulated landings system (commercial landings)
AP	Advisory Panel
EA	Environmental assessment
EEZ	Exclusive economic zone (federal waters)
F	Fishing mortality
FWC	Florida Fish and Wildlife Commission
FWRI	Florida Fish and Wildlife Research Institute
GMFMC	Gulf of Mexico Fishery Management Council
Gulf	Gulf of Mexico
IFQ	Individual fishing quota
IRFA	Initial regulatory flexibility analysis
M	Natural mortality
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	Maximum fishing mortality threshold
MSST	Minimum stock size threshold
MSY	Maximum sustainable yield
NAICS	North American Industry Classification System
NMFS	NOAA's National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OFL	Overfishing limit
OY	Optimum yield
P*	Probability of overfishing level
PDF	Probability distribution function
RFSAP	Reef Fish Stock Assessment Panel
RIR	Regulatory impact review
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SFA	Sustainable Fisheries Act of 1996
SPR	Spawning potential ratio
SSC	Scientific and Statistical Committee
TL	Total length
VPA	Virtual population analysis
WW	Whole weight

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CHAPTER 1. INTRODUCTION

1.1 Background

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires that most stocks managed by the Gulf of Mexico Fishery Management Council (Council) have annual catch limits (ACLs) that cannot exceed the acceptable biological catch (ABC) recommended by the Council's Scientific and Statistical Committee (SSC). These mandates are intended to ensure that fishery resources are managed for the greatest overall benefit to the nation, particularly with respect to providing food production, recreational opportunities, and protecting marine ecosystems.

Annual Catch Limit

The amount of fish that are allowed to be harvested from the stock each year.

Annual Catch Target

A harvest level set lower than the annual catch limit to create a buffer so that overharvest does not occur.

Accountability Measures

Measures taken to prevent harvest from exceeding the annual catch limit and if exceeded can mitigate or correct the overage.

Vermilion Snapper

Vermilion snapper are managed with a stock ACL. There are no allocations specified for the commercial and recreational sectors. When the combined recreational and commercial harvests reach or are projected to reach the stock ACL, then the vermilion snapper fishing season is closed for both sectors per the accountability measures. Currently, the stock ACL is 3.42 million pounds whole weight (lbs ww).[1]

In 2011, a Southeast Data, Assessment, and Review (SEDAR) update assessment was conducted for vermilion snapper (SEDAR Update 2011a, b, and c). The SSC reviewed the assessment in October 2011, and after some modifications, accepted the assessment. The assessment showed the stock was neither overfished nor experiencing overfishing. However, a problem was subsequently discovered with how the assessment calculated the fishing mortality rate associated with the proxy used for maximum sustainable yield. As a result, the problem was corrected, the update assessment was re-run, and the revised results presented to the SSC in June 2012 (GMFMC 2012a). Under the revised results, the stock was still neither overfished nor experiencing overfishing. A more complete description of the update assessment and subsequent re-run is contained in Chapter 3.

[1] Unless specified otherwise, all weights are in whole weight.

Because vermilion snapper had undergone a quantitative assessment that produced an estimate of maximum sustainable yield (MSY) and a probability distribution around the estimate, the SSC was able to set the ABC using Tier 1 of the ABC control rule that was adopted in the Generic Annual Catch Limits/Accountability Measures Amendment (Generic ACL/AM Amendment) (GMFMC 2011a). With this method, the annual estimate of MSY becomes the overfishing limit (OFL), and ABC is set at some level below OFL to account for scientific uncertainty in the estimate of OFL. Under Tier 1, specific factors related to uncertainty in the assessment are evaluated through the use of a risk determination table and converted into an appropriate level of risk (P*). The P* value is then used to determine how far below OFL the ABC should be set.

The P* for the vermilion snapper update assessment was 39.8%. This value is considered an acceptable probability that overfishing will occur if the stock is fished at the ABC level. The application of these methods resulted in annual OFL and ABC levels for the years 2012 - 2016 as shown in Table 1.1.1. Historical landings from 1986 are in Table 1.1.2.

Table 1.1.1. Vermilion OFLs and ABCs for the years 2012 through 2016+ recommended by the SSC. Units are in millions of lbs ww.

Year	OFL	ABC
2012	**4.81**	**4.68**
2013	**4.59**	**4.41**
2014	**4.56**	**4.34**
2015	**4.57**	**4.33**
2016+	**4.61**	**4.33**

Table 1.1.2. Vermilion snapper landings from the Gulf of Mexico in lbs ww.

Year	Commercial	Recreational	Total
1986	1,749,447	959,610	2,709,057
1987	1,605,405	671,393	2,276,798
1988	1,552,982	795,533	2,348,515
1989	1,658,822	587,136	2,245,958
1990	2,454,872	899,173	3,354,044
1991	1,795,025	946,136	2,741,161
1992	2,361,319	1,052,843	3,414,162
1993	2,719,510	1,014,149	3,733,659
1994	2,639,238	850,604	3,489,842
1995	2,178,040	919,278	3,097,318
1996	1,827,282	468,624	2,295,906
1997	2,125,815	598,911	2,724,725
1998	1,732,678	333,787	2,066,466
1999	2,036,151	427,363	2,463,514
2000	1,458,829	306,882	1,765,711
2001	1,715,083	573,957	2,289,040
2002	2,005,115	506,478	2,511,593
2003	2,415,666	587,075	3,002,741
2004	2,162,262	810,762	2,973,024
2005	1,868,879	601,282	2,470,160
2006	1,760,249	663,869	2,424,118
2007	2,382,817	563,680	2,946,497
2008	2,800,210	515,322	3,315,533
2009	3,765,186	627,492	4,392,679
2010	2,093,844	457,499	2,551,343
2011	3,142,066	1,149,616	4,291,682

Source: 1986-2010: Michael Larkin, National Marine Fisheries Service (NMFS) Southeast Regional Office, pers. comm. dated 12/15/2011. 2011: Michael Larkin pers. comm. dated 9/11/2012. Landings highlighted in red exceed the current ACL of 3.42 mp.

Yellowtail Snapper

Yellowtail snapper are not allocated between the commercial and recreational sectors in the Gulf of Mexico. Consequently, they are managed with a single stock ACL rather than separate commercial and recreational sector ACLs. In the U.S., yellowtail snapper comprise a single stock. The South Atlantic and Gulf of Mexico regions are combined for the assessment, and the resulting ABC is split with 75% of the ABC assigned to the South Atlantic jurisdiction and 25% to the Gulf of Mexico jurisdiction. Currently, the stock ABC is 2.9 million pounds, with 0.725 million pounds (25% of ABC) going to the Gulf of Mexico. This value is currently being used for the Gulf of Mexico yellowtail snapper stock ACL.

In 2012, the Florida Fish and Wildlife Research Institute (FWRI) conducted a yellowtail snapper benchmark stock assessment (O'Hop et al. 2012). The assessment was conducted with a statistical catch-at-age model (ASAP2). Fishery-dependent data included commercial logbooks, Marine Recreational Fishery Statistics Survey (MRFSS), and the headboat survey. The MRFSS data was used rather than the new Marine Recreational Information Program (MRIP) data in order to maintain consistency with older data that has not yet been converted from MRFSS to MRIP. Fishery-independent data came from the NMFS/University of Miami Reef Visual Census. Results from the assessment indicate that, as of 2010, the yellowtail snapper stock is neither overfished nor experiencing overfishing. A more complete description of the benchmark assessment is contained in Chapter 3.

The yellowtail snapper stock straddles the jurisdictions of the Gulf and South Atlantic Councils. Therefore, the assessment was reviewed in October 2012 by a joint meeting of the South Atlantic Council's SSC and the Gulf Council's Standing and Special Reef Fish SSC. Given that the stock biomass is well above its equilibrium MSY level, the SSC discussed whether to set OFL equal to the annual yield at MSY, which changes annually, or equilibrium MSY, which is a long-term average value that does not change. Fishing at the annual MSY level would initially set OFL at a high level (5.58 mp in 2013), but would drive the stock biomass and annual yield down to equilibrium. The SSC felt that this was a risk prone approach to setting OFL, and that setting OFL at the equilibrium level would be a more sustainable and risk neutral approach. Consequently, the SSC established OFL at the equilibrium MSY yield is 4.61 mp total removals (landings plus dead discards), or 4.51 mp in landings.

To set ABC, the Gulf and South Atlantic Councils have separate ABC control rules for establishing the appropriate P* (acceptable risk of overfishing). Using the South Atlantic ABC control rule resulted P* =0.40. Using tier 1 of the Gulf ABC control rule resulted in P* = 0.416. Since the results were very close, the joint SSC agreed to use P* = 0.40 to set the ABC. When this P* was applied to a probability distribution function prepared by FWRI, the resulting ABC was 4.13 million pounds total removals, or 4.05 million pounds in landings. When split between the South Atlantic and Gulf of Mexico jurisdictions, the resulting regional ABCs recommended by the joint SSC in terms of landed catch were:

South Atlantic: 3.0375 mp ww
Gulf of Mexico: 1.0125 mp ww

Because these regional ABCs are based on equilibrium yields, they do not fluctuate from year to year, but remain constant until adjusted by a future assessment. Table 1.1.3 shows the annual landings of yellowtail snapper since 1986.

Table 1.1.3. Yellowtail snapper landings from the Gulf of Mexico and South Atlantic in lbs ww. Landings for 2012 are partial year results.

	Gulf of Mexico				South Atlantic				
Year	Commercial	Recreational	Gulf Total		Commercial	Recreational	SA Total		Total
1986	506,144	7,622	513,766		612,676	776,238	1,388,914		1,902,679
1987	1,275,194	9,743	1,284,937		88,876	723,364	812,240		2,097,178
1988	638,412	9,460	647,872		774,164	1,103,823	1,877,987		2,525,860
1989	1,020,640	10,581	1,031,221		830,896	1,692,498	2,523,394		3,554,615
1990	906,233	11,532	917,765		849,380	1,342,553	2,191,933		3,109,699
1991	787,663	13,180	*800,843		1,073,979	2,299,879	3,373,858		4,174,701
1992	831,013	36,986	*867,999		1,024,653	1,067,445	2,092,098		2,960,097
1993	1,067,452	51,015	1,118,467		1,311,367	1,189,637	2,501,004		3,619,471
1994	1,344,942	11,762	1,356,704		860,543	880,763	1,741,306		3,098,010
1995	591,074	3,434	594,508		1,265,856	660,857	1,926,713		2,521,221
1996	485,120	2,854	487,974		973,815	554,130	1,527,945		2,015,919
1997	218,384	2,008	220,392		1,455,496	703,597	2,159,093		2,379,485
1998	341,479	4,965	346,444		1,183,074	487,063	1,670,137		2,016,580
1999	601,027	39,260	640,287		1,245,345	288,951	1,534,296		2,174,583
2000	388,984	4,781	393,765		1,203,154	395,845	1,598,999		1,992,764
2001	246,849	7,045	253,894		1,174,008	328,458	1,502,466		1,756,360
2002	341,823	7,782	349,605		1,069,057	407,848	1,476,905		1,826,510
2003	463,743	11,472	475,215		948,886	510,314	1,459,200		1,934,414
2004	478,027	17,937	495,964		1,002,503	698,058	1,700,561		2,196,525
2005	510,437	31,176	541,613		814,899	576,247	1,391,146		1,932,760
2006	542,237	21,477	563,714		694,958	560,320	1,255,278		1,818,992
2007	350,079	19,726	369,805		628,608	786,399	1,415,007		1,784,813
2008	460,569	6,056	466,625		910,323	746,313	1,656,636		2,123,261
2009	891,946	19,250	911,196		1,085,260	348,536	1,433,796		2,344,993
2010	571,611	8,783	580,394		1,123,895	434,259	1,558,154		2,138,547
2011	895,652	25,560	921,212		998,199	390,998	1,389,197		2,310,408
2012	*434,793*	*0*	*434,793*		*1,224,985*	*274,301*	*1,499,286*		*1,934,079*

Data Sources: SEFSC Recreational (through Oct 2012) and Commercial (through July 2012) ACL Datasets. Note that recreational landings from private and charter sectors are MRFSS-based (not MRIP). Note: Landings with an asterisk exceed the ACL for Alternative 1. Landings highlighted in yellow exceed the ACL for Alternative 1 and Preferred Alternative 2. Landings highlighted in red exceed the ACL for all 3 alternatives.

Venting Tools

In 1996, the Sustainable Fisheries Act added National Standard 9 to the list of national standards for fishery conservation and management. This standard stated, "Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch."

In response to National Standard 9, Reef Fish Amendment 27, implemented in June 2008, required the use of non-stainless steel circle hooks when using natural baits to fish for Gulf of Mexico reef fish, and required the use of venting tools and dehooking devices when participating in the reef fish (commercial and recreational) fishery. At that time, available information suggested that venting increases survival in red snapper caught in deep water (K. Burns and C. Porch, affiliations, pers. comm). However, since then, additional reports have been published questioning the effectiveness of venting (Wilde 2009). In addition, new methods and devices have been developed that help a fish return to depth to recompress, rather than vent, the fish. Also, some fish caught in shallower waters may not need to be vented. In such cases, attempts at venting the fish may cause more harm than good, particularly if done improperly.

The current venting tool requirement was implemented in 2008 under Amendment 27 (GMFMC 2007b) along with regulations requiring the use of non-stainless steel circle hooks when using natural baits and dehooking tools when fishing for reef fish. The intent was to reduce bycatch mortality. At the time, the available scientific information generally supported the use of venting as a way to improve survival of released fish. Preliminary data from a 15-year study conducted at Mote Marine Lab (K. Burns and C. Porch, affiliations, pers. comm) suggested that venting increases survival in red snapper caught in deep water. This study was in contrast to earlier studies by Render and Wilson (1993) and Gitschlag and Renaud (1994), who found no increase in survival from venting. Collins et al. (1999) compared survival of vented and unvented black sea bass and vermilion snapper. Deflation of the swim bladder provided very significant reductions in mortality of black sea bass, and benefits of deflation increased with capture depth. Deflation for vermilion snapper was also beneficial, but to a lesser extent.

Soon after the venting tool requirement was implemented, studies appeared that questioned the usefulness of venting. Rummer (2007) noted that excessive handling and use of landing nets when fish are retrieved and released can cause physical injury and physiological stress, yet venting requires handling a fish long enough to vent. Rummer noted that ongoing studies by other researchers showed that, while venting prevents immediate (within 24 hours) mortality in juvenile red snapper, vented fish display loss of equilibrium and righting response and are therefore susceptible to predation. Wilde (2009) reviewed the results of 17 studies that evaluated venting in 21 fish species and 1 composite group. Overall, he found that, while venting was slightly beneficial to fish captured from shallow waters, it appeared to be increasingly harmful for fish captured from progressively deeper waters. Based on his findings, Wilde suggested that venting fish should not only be discouraged by fishery management agencies, but should be prohibited, rather than required, by regulation.

Since the review by Wilde (2009), additional research has been conducted on the effects of venting and of barotrauma on fish, and new methods and devices have been developed that help a fish return to depth to recompress, rather than vent, the fish. In April 2012, FishSmart held a workshop[2] in St. Petersburg, Florida to review the current state of knowledge of barotrauma effects, venting and devices for returning fish to depth (rapid descent devices), and other factors affecting released fish survival, and to develop information that could help anglers improve the survival of fish that they catch and release (Loftus and Radonski 2012). A complete summary of the FishSmart workshop is available at http://www.FishSmart.org. Relevant information from the workshop is summarized below.

At the FishSmart workshop, several presentations were made reviewing the effects of barotrauma, the effectiveness of venting and rapid descent devices, and other methods for improving survival of fish. Theberge (2012) compared the usefulness of venting tools to rapid descent devices. He noted that venting tools are inexpensive and can be used quickly to vent a large number of fish. However, they subject the fish to possible infection, and could be harmful if used incorrectly or if they punctured internal organs. Rapid descent devices have no risk of causing infection or internal organ damage, but require a dedicated rod and reel, take longer to use, and can be more difficult to use in rough weather. Theberge (2012) noted that different species had different swim bladder structures and different responses to handling stress, which affected the choice of release methods. Burns (2012) also noted that different species have different physiologies, which, along with depth and other factors, impacts their response to barotrauma. For example, red grouper are very susceptible to barotrauma but have a low hook mortality, whereas red snapper are the opposite. Rudershausen et al. (2012) evaluated factors affecting survival of black sea bass caught in 95 to 110 feet. They found that swim down behavior appeared to be a reliable proxy for survival of black seas bass. Using tagging as a form of venting, swim-down survival was not significantly different for vented versus unvented fish, but a higher percentage of tagged fish than untagged fish swam down. Fluech et al. (2012) evaluated several different types of fish descender devices. They concluded that, at a minimum, improved catch and release practices (including venting and recompression) do some fish some good. However, no one device or method was the best for all situations, and they recommended that fishermen have a variety of release tools on board. Stunz (2012) used both field and laboratory studies to evaluate venting vs. non-venting. He found that, in addition to depth, there was a clear seasonal effect on mortality with higher temperature leading to higher discard mortality. As a result, he recommended venting, especially in the summer, but cautioned that additional research was needed.

The FishSmart workshop participants concluded that, in some circumstances venting may be an appropriate action, while in other circumstances the use of descent devices may provide a greater likelihood for survival. In yet other circumstances, the best approach may be to use neither venting tools nor descent devices, but to simply release the fish with as little handling and surface time as possible. One workshop recommendation directed specifically at the Gulf

[2] FishSmart regional workshop on improving survival of angler caught and released fish with a focus on Gulf of Mexico and South Atlantic recreational fisheries. April 11-13 2012, St. Petersburg, Florida. http://www.fishsmart.org/GulfSA%20Workshop.htm

Council was that the regulation requiring reef fish vessels to possess and use venting tools be changed to require the use of venting tools when needed (rather than at all times).

In June 2012, the SSC reviewed a summary of the FishSmart workshop, as well as presentations on research into release mortality and barotrauma effects (GMFMC 2012a). The SSC also reviewed the paper by Wilde (2009) that questioned the effectiveness of venting. The SSC concluded that, in the time since the Wilde paper was published, new information had been published, including the studies presented to the SSC and at the FishSmart workshop, that supported the use of venting and descent devices. The use of descent devices may be preferable to venting in some situations, but is time consuming and requires additional gear. On the other hand, the SSC felt that there is evidence that not only fishermen but also some researchers are using improper methods to vent fish. In addition, there are situations when neither venting nor decent devices are needed. The SSC felt that fishermen should have the option of deciding the most appropriate way to release fish. As a result, the SSC made three recommendations to the Council.

1) The SSC recommended that the Council give fishermen the option of venting "as necessary" and/or be allowed to use descent devices to minimize barotrauma mortality.

2) The SSC also felt that there is a clear need for outreach and education, and recommended that the Council cooperate, as appropriate, with the Gulf states, interstate commissions, and Sea Grant to increase outreach and education efforts dedicated to reducing release mortality, and eliminate inconsistencies in current public relations materials.

3) The SSC recommended that the Council encourage continued research on means of reducing mortality of released fish, given the importance of reducing discard mortality, and given the rapid development of new technology in this area.

1.2 Purpose and Need

Purpose for Action

The purpose of this amendment is to: 1) adjust the annual catch limit (ACL) and optionally the annual catch target (ACT) for the vermilion and yellowtail snapper stocks consistent with the acceptable biological catch (ABC) recommendations of the Scientific and Statistical Committee (SSC); 2) set the vermilion snapper bag limit at a level that minimizes the risk of overfishing by the recreational sector; and 3) modify the regulations requiring possession and use of venting tools by the reef fish fishery to minimize bycatch and bycatch mortality.

Need for Action

The need for the proposed actions is to prevent overfishing while achieving the optimum yield of vermilion and yellowtail snapper on a continuing basis, and to the extent practicable, minimize bycatch and the mortality of released fish in the reef fish fishery.

1.3 History of Management

The following summary describes management actions that affect the vermilion snapper and yellowtail snapper components of the reef fish fishery in the Gulf of Mexico. The summary also provides information on requirement for the use of venting tools. More information on the fishery management plan (FMP) for the Reef Fish Resources of the Gulf of Mexico, reef fish fishing, and other Council FMPs can be obtained from the Council at http://www.gulfcouncil.org/fishery_management_plans/index.php.

Vermilion and yellowtail snapper: Vermilion and yellowtail snapper were included in the 33 species (15 snappers, 15 groupers, and 3 sea basses) that comprised the original fishery management unit (FMU) of the Reef Fish FMP (with its associated environmental impact statement (EIS)) (GMFMC 1981). **Amendment 1** (GMFMC 1989) set minimum size limits of 8" total length (TL) for vermilion snapper and 12" TL for yellowtail snapper. A recreational aggregate bag limit of 10 snapper was established for all snappers in aggregate except for vermilion, lane and red snapper.

Amendment 12 (GMFMC 1995) created an aggregate bag limit of 20 reef fish for all reef fish species that were not otherwise subject to a bag limit. Vermilion snapper, which did not have its own bag limit, became part of this aggregate bag limit. Yellowtail snapper remained part of the 10 snapper aggregate limit for all snappers except vermilion, lane, and red snapper.

In 1996, a vermilion snapper stock assessment concluded that the vermilion snapper stock in the Gulf of Mexico, while not currently overfished, was showing typical signs of overfishing. In response, the Council in March 1997 requested that NMFS increase the minimum size limit from 8" TL to 10" TL under the new interim measures provision of the Magnuson-Stevens Act, while a permanent increase to 10" TL was developed through **Amendment 15** (GMFMC 1997).

Amendment 23 (GMFMC 2004a), was implemented in July 2005 in response to a determination based in a 2001 assessment (Porch and Cass-Calay 2001) that the vermilion snapper stock was overfished and experiencing overfishing. It established a 10-year rebuilding plan for vermilion snapper with 2013 as the end year. The plan used a stepped approach for increasing the total allowable catch over that time period. It increased the vermilion snapper minimum size limit from 10 inches to 11inches TL, established a recreational bag limit of 10 vermilion snapper within the 20 reef fish aggregate bag limit, and established a commercial closed season of April 22 through May 31.

The rebuilding plan was no longer needed after a 2006 stock assessment (SEDAR 9 2006c) with improved age and growth data determined that the 2001 finding was incorrect, and that the stock had been neither overfished nor experiencing overfishing. A February 2007 regulatory amendment (GMFMC 2007a) revised management measures for vermilion snapper to those prior to implementation of Reef Fish Amendment 23 by reducing the minimum size limit for from 11 inches to 10 inches TL, eliminating the 10-fish bag limit for vermilion snapper and retaining the current 20-fish aggregate bag limit for those reef fish species without a species-specific bag

limit, and eliminating the April 22 through May 31 commercial closed season for vermilion snapper.

The **Generic ACL/AM Amendment** (GMFMC 2011a), established a vermilion snapper ACL of 3.42 mp, annual catch target (ACT) of 2.94 mp, and accountability measures. The same amendment established a jurisdictional apportionment for yellowtail snapper based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils. For yellowtail snapper, the acceptable biological catch (ABC) is divided with 75% of the ABC portioned to the South Atlantic and 25% of the ABC portioned to the Gulf of Mexico. This resulted in a Gulf stock ACL of 0.725 mp and an ACT of 0.625 mp. The amendment also established yellowtail snapper accountability measures.

For both vermilion snapper and yellowtail snapper, the accountability measure requires that the Regional Administrator close vermilion snapper (or yellowtail snapper) fishing if and when the ACL is projected to be reached. The accountability measure for vermilion snapper is in effect every year. The yellowtail snapper accountability measure is triggered only in a year following a year when the ACL is exceeded.

Venting tools: **Amendment 27** (with its associated EIS, RIR, and RFA) (GMFMC 2007b), addressed methods to reduce discard mortality by the commercial and recreational sectors of the reef fish fishery with a requirement for the use of non-stainless steel circle hooks when using natural baits, and requirements for the possession and use of venting tools and dehooking devices. Although the amendment was implemented in January 2008, the effective date for the use of circle hooks, venting tools, and dehookers was not until June 1, 2008.

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1 - Establish Vermilion Snapper Stock Annual Catch Limits from 2013 through 2016+

In the alternatives below, the values for acceptable biological catch (ABC), annual catch limit (ACL), and annual catch target (ACT) are in millions of pounds (mp) whole weight (ww).

Preferred Alternative 1: No action. The stock ACL and stock ACT specified in the Generic ACL/AM Amendment will remain in effect:

Year	ABC	Stock ACL	Stock ACT
2013	4.41 mp	3.42 mp	2.94 mp
2014	4.34 mp	3.42 mp	2.94 mp
2015	4.33 mp	3.42 mp	2.94 mp
2016+	4.33 mp	3.42 mp	2.94 mp

Alternative 2: Set stock ACL equal to the Scientific and Statistical Committee (SSC) recommendation for ABC yield stream using Tier 1 of the ABC control rule. The stock ACT would not be used:

Stock ACL = ABC		
Year	**ABC**	**Stock ACL**
2013	4.41 mp	4.41 mp
2014	4.34 mp	4.34 mp
2015	4.33 mp	4.33 mp
2016+	4.33 mp	4.33 mp

Alternative 3: (Reef Fish Advisory Panel (AP) recommendation) Set stock ACL at 5% below the SSC recommendation for ABC yield stream based on the buffer recommended by the ACL/ACT control rule. The stock ACT would not be used:

Stock ACL = 95% of ABC		
Year	**ABC**	**Stock ACL**
2013	4.41 mp	4.19 mp
2014	4.34 mp	4.12 mp
2015	4.33 mp	4.11 mp
2016+	4.33 mp	4.11 mp

Alternative 4: Set a constant stock ACL at 4.32 mp until a new benchmark assessment is completed for vermilion snapper. This is based on the yield at 75% of F_{MAX} in 2016. This stock ACL is below the Council's SSC recommended yield stream for ABCs from 2013 through 2016. The stock ACT would not be used.

Constant Stock ACL		
Year	**ABC**	**Stock ACL**
2013	4.41 mp	4.32 mp
2014	4.34 mp	4.32 mp
2015	4.33 mp	4.32 mp
2016+	4.33 mp	4.32 mp

Alternative 5: Set stock ACL at 75% of the overfishing limit (OFL) yield stream recommended by the SSC. The stock ACT would not be used:

Stock ACL = 75% of OFL			
Year	**OFL**	**ABC**	**Stock ACL**
2013	4.59	4.41 mp	3.44 mp
2014	4.56	4.34 mp	3.42 mp
2015	4.57	4.33 mp	3.43 mp
2016+	4.61	4.33 mp	3.46 mp

Discussion:

The Generic ACL/AM Amendment (GMFMC 2011a) set both a stock ACL and a stock ACT for vermilion snapper. The use of an ACT is optional under the National Standard 1 Guidelines. When an ACT is used, management measures are implemented that are designed to achieve the ACT. The ACT is set below the ACL to account for management uncertainty so that, if the ACT is exceeded, there is less likelihood of the ACL also being exceeded and triggering accountability measures. For vermilion snapper, there are no management measures in place, or proposed, that are designed to achieve the ACT. Therefore, the ACT serves no function in the management of vermilion snapper. If the Council chooses to establish a function for the vermilion snapper stock ACTs, they can be re-specified in a future framework provided they have been previously approved. For purposes of this amendment there is no need to establish a stock ACT, except for **Preferred Alternative 1** (no action).

Preferred Alternative 1 (no action) leaves the ACL and ACT at the levels assigned under the Generic ACL/AM Amendment, i.e., a stock ACL = 3.42 mp and stock ACT = 2.94 mp. This ACL is equal to the ABC that was in effect at the time that the ACL was implemented. In June 2012, the SSC increased the ABC to 4.41 mp for 2013 based on an update assessment, with a gradual reduction to 4.33 mp for 2015 and beyond (Table 1.1.1) (GMFMC 2012a). There are currently no sector allocations for vermilion snapper. Although there was a 2006 benchmark assessment under the Southeast Data, Assessment, and Review (SEDAR) process for vermilion snapper (SEDAR 9 2006c), Tier 1 of the ABC control rule could not be used because a probability distribution function (PDF), which is used with Tier 1 to determine the yield at a

given level of risk, could not be created with the methodologies available at that time. No annual projections of the yield when fishing at the maximum sustainable yield rate (F_{MSY}) or optimum yield rate (F_{OY}) were produced in that assessment from which an OFL and ABC could be specified. Therefore, the SSC decided to apply the Tier 2 method in which the OFL is set equal to the mean landings during the baseline period, and ABC is set equal to the yield at the selected P* value applied to the adjusted standard error. The SSC decided to use P* = 0.25 as the default risk level, resulting in an OFL of 4.08 mp and an ABC of 3.42 mp (GMFMC 2010). Under the default policy in the Generic ACL/AM Amendment, the ACL was set equal to the ABC, and the stock ACT was set at 14% below the ABC based on the results of the ACL/ACT control rule. This is a data poor method for setting catch levels, and was applied prior to the completion of the 2011 vermilion snapper update assessment. When the 2011 update assessment was conducted, the parameters necessary to construct a PDF were calculated, allowing the application of a Tier 1 ABC analysis.

Although the SSC concluded that the vermilion snapper stock was neither overfished nor experiencing overfishing, Reef Fish AP members who target vermilion snapper expressed concern that, based on their observations, the stock appeared to be declining in the most recent years, and recommended setting the ACL below the ABC levels recommended by the SSC. Council members were also concerned that the buffer between OFL and ABC, which ranged from 4% to 6.5% depending upon year, was too narrow and created too much risk of catches exceeding the OFL. The Council initially chose to set the ACL at a level 75% below the OFL (**Alternative 5**), thinking that this was the method used to set the red snapper quotas (red snapper quotas are actually based on the yield corresponding to 75% of the F_{MSY} proxy, which is a different and less conservative approach than 75% of OFL). **Alternative 5** resulted in an ACL that was very close to the **Preferred Alternative 1** ACL of 3.42 mp, but one which fluctuated within a narrow range of 3.42 mp to 3.46 mp. Given the similar ACLs in Preferred Alternative 1 and Alternative 5, the Council felt that the constant ACL under Preferred Alternative 1 produced a simpler, and therefore preferable, regulation. In addition, in light of the scientific information, and the anecdotal concerns expressed by fishermen, it provides for sufficient harvest, while taking a fairly conservative approach toward preventing overfishing.

As shown in Table 1.1.2, the **Preferred Alternative 1** ACL of 3.42 mp has been exceeded four times since 1986, in 1993, 1994, 2009 and 2011. However, vermilion snapper landings have shown an increasing trend since 2006 (except for the oil spill year of 2010). Possible reasons for this increase could be an improvement in the stock's condition, or effort shifting due to the implementation of the red snapper and grouper/tilefish individual fishing quota (IFQ) programs.

Alternative 2 is based on the SSC recommendations for OFL and ABC using the Tier 1 ABC control rule made at their June 2012 meeting (Table 2.1). The OFL was set equal to the yield when fishing at the mortality rate that produces maximum yield per recruit (F_{MAX}) as a proxy for F_{MSY}. The numerical result was $F_{MAX} = 0.41$. The vermilion snapper stock is currently very close to its equilibrium biomass when fishing at F_{MAX}. Consequently, the OFL yield stream is fluctuating around the equilibrium yield (4.61 mp) due to year-to-year variability in recruitment. The Tier 1 ABC control rule resulted in a P* value of 39.8%, i.e., there is a 39.8% probability that the ABC exceeds the true value of OFL. The SSC provided an annual yield stream of OFL and ABC through 2015, and then fixed the values at equilibrium OFL and ABC for 2016 and beyond, or until revised in a subsequent assessment.

Table 2.1. Vermilion snapper revised OFL and ABC yield streams.

Year	OFL	ABC
2013	4.59 mp	4.41 mp
2014	4.56 mp	4.34 mp
2015	4.57 mp	4.33 mp
2016+	4.61 mp	4.33 mp

Source: SEDAR 9 Update (2012) and Standing and Special Reef Fish SSC Meeting Summary, June 7-8, 2012 (http://gulfcouncil.org/resources/SSC_Reports.php).

In **Alternative 2**, the ACL is set equal to the ABC, which leaves a buffer between ACL and OFL of 4% initially, rising to 6.5% at equilibrium. Setting the ACL equal to the ABC infers that there is a high degree of confidence that management measures will prevent the ABC from being exceeded. Since 1986, the ACLs for 2014, 2015 and 2016+, which range from 4.33 mp to 4.34 mp, have been exceeded once, in 2009, when 4.39 mp were landed (Table 1.1.2).

Alternative 3 calculates OFL and ABC as in **Alternative 2**, but sets the ACL at 95% of the ABC. This creates a constant 5% buffer between ACL and ABC, allowing for a small overharvest before the ABC is exceeded. Setting the ACL close to the ABC infers that there is a high degree of confidence, although less than under **Alternative 2**, that management measures will prevent the ABC from being exceeded. Since 1986, the ACLs for 2014, 2015 and 2016+, which range from 4.11 mp to 4.12 mp, have been exceeded twice, in 2009 when 4.39 mp were landed, and in 2011 when 4.29 mp were landed (Table 1.1.2). This alternative was recommended by the Reef Fish AP at their August 2012 meeting. It was based on concern by AP members who fish frequently for vermilion snapper that the vermilion snapper stock was not in as good shape as the stock assessment determined. The AP members did not feel that the ACL should be set at the full ABC. However, with small allocations of grouper and some other species, they felt that the other alternatives were too conservative and would limit their ability to fish.

Alternative 4 would set a constant ACL at 4.32 mp. This is based on setting the ACL at the optimum yield (OY) level in 2016, computed using the formula that the Council has typically used for calculating, OY = yield at 75% * F_{MAX}. The OY in 2016 is used rather than the equilibrium OY (4.59 mp) because the equilibrium OY exceeds the ABCs recommended by the SSC. The buffer between the fixed OY yield and ABC ranges between 0.2% to 2.0%, and between OY and OFL it ranges between 5.3% to 6.3%. These percentages are consistent with the advice given in Restrepo et al. (1998), which stated that, at OY, equilibrium yield is 94% of maximum sustainable yield (MSY) or higher, while the stock biomass levels are between 125% and 131% of the MSY levels. Thus, a stock that is at its equilibrium OY level has a substantial biomass buffer even though the yields at equilibrium OY and equilibrium MSY are fairly close. This stock ACL has been exceeded once, in 2009, when 4.39 mp were landed.

Alternative 5 sets the stock ACL at a fixed 75% buffer to OFL. This alternative was requested by the Council at their June 2012 meeting. It results in small year-to-year fluctuations of ACLs since, as discussed previously, the stock is near its equilibrium F_{MAX} biomass level. Therefore,

there are small year-to-year fluctuations of OFL around the equilibrium level. With respect to ABC, the stock ACL buffer ranges from 20% to 22%. During the period of 1986 through 2011, the stock ACLs for 2013 to 2016+, which range from 3.42 mp to 3.46 mp, have been exceeded four times, in 1993 (3.73 mp), 1994 (3.49 mp), 2009 (4.39 mp), and 2011 (4.29 mp). **Alternative 5** provides yield levels similar to **Preferred Alternative 1** (no action). However, **Preferred Alternative 1** sets a fixed stock ACL, while **Alternative 5** allows the ACL to change with changes in the OFL. These fluctuations would allow an additional yield of up to 40,000 lbs. ww in some years.

A vermilion snapper benchmark assessment is currently scheduled for 2015. The Council requested at their June 2012 meeting that the assessment be moved up to 2014. The SSC recommended yield streams through 2016, which should be long enough for revised stock ACLs to be implemented based on the 2014/2015 assessment. However, in the event that revised stock ACLs are not available as expected, the 2016 stock ACL will remain in place until changed by the Council.

2.2 Action 2 - Vermilion Snapper Bag Limit

Alternative 1: No action. The recreational bag limit for vermilion snapper remains at 20 fish per angler within the 20-reef fish aggregate bag limit.

Alternative 2: Set the recreational bag limit for vermilion snapper at 15 fish per angler within the 20-reef fish aggregate bag limit.

Preferred Alternative 3: Set the recreational bag limit for vermilion snapper at 10 fish per angler within the 20-reef fish aggregate bag limit.

Discussion:

Vermilion snapper are included in the 20-reef fish aggregate bag limit for reef fish that do not otherwise have a bag limit. Other species included in this aggregate bag limit are lane snapper, gray triggerfish, almaco jack, and all species of tilefish. In all of the alternatives, vermilion snapper would remain in the aggregate bag limit, even if given their own bag limit. The purpose for this is to prevent an increase in the catch rates of the other species in the aggregate as a result of removing vermilion snapper.

The purpose of this action is not to reduce recreational harvest of vermilion snapper, but to prevent an increase in the recreational harvest from occurring at a faster rate than the increase in the ACL.

The Reef Fish AP was concerned that action was needed to constrain recreational harvest because of increasing harvests. As shown in Table 1.1.2, recreational landings spiked from 457 thousand pounds in 2010 to 1.15 million pounds in 2011. If this increase persists, it could lead to the ACL being exceeded. Therefore, they recommended a 10-fish bag limit for vermilion snapper (**Preferred Alternative 3**) based on a bag limit analysis prepared in 2004 for Amendment 23 that indicated a 10-fish bag limit would result in a 1.4% reduction in the number of fish harvested recreationally. That analysis was based on angler catch rates in 2003-2004, and it did not examine bag limits higher than 10 fish. Therefore, a more recent bag limit analysis was conducted by the National Marine Fisheries Service Southeast Regional Office using catch rates in 2009-2011, and examining a broader range of bag limits. The results of that analysis are shown in Table 2.2.1. The more recent analysis indicates that a 4.4% reduction would occur with a 10-fish bag limit (**Preferred Alternative 3**) vs. a 1.2% reduction under a 15-fish bag limit (**Alternative 2**). Given the intent to prevent an expansion of the recreational vermilion snapper harvest, and the increased potential for effort shifting due to additional restrictions proposed for red snapper fishing, **Preferred Alternative 3** is a precautionary action that is more likely to achieve this objective.

Table 2.2.1. Percent reduction in numbers of vermilion snapper for bag limits from 20 to 1 fish, based on catches per angler during 2009 through 2011.

Bag Limit	Percent Reduction
20	0.0
19	0.2
18	0.4
17	0.6
16	0.9
15	1.2
14	1.6
13	2.1
12	2.7
11	3.5
10	4.4
9	6.2
8	8.5
7	11.7
6	15.7
5	20.8
4	27.7
3	37.2
2	50.3
1	69.4

Source: National Marine Fisheries Service, Southeast Regional Office[3]

Alternative 1 (no action) leaves the vermilion snapper bag limit unchanged. There is no bag limit currently specified for vermilion snapper alone, but as a result of being included in the 20-reef fish aggregate bag limit for reef fish that do not otherwise have a bag limit, a maximum of 20 vermilion snapper per angler is currently allowed (or fewer fish if the other species in the aggregate bag limit are caught).

Alternative 2 sets the recreational bag limit for vermilion snapper at 15 fish per angler within the 20-reef fish aggregate bag limit. Based on the bag limit analysis in Table 2.2.1, this would result in a reduction in recreational harvest of 1.2% relative to **Alternative 1**. This is close to the 1.4% reduction projected in the older bag limit analysis for a 10-fish bag limit.

Preferred Alternative 3 sets the recreational bag limit for vermilion snapper at 10 fish per angler within the 20-reef fish aggregate bag limit. This bag limit is consistent with the state vermilion snapper bag limit established by Florida Fish and Wildlife Conservation Commission (FWC), which allows for more effective enforcement. The remaining states either have no vermilion snapper bag limit or vermilion snapper is included in a 20-snapper aggregate limit.

[3] Email from NMFS Southeast Regional Office to Steven Atran dated 9/4/12.

Based on the bag limit analysis in Table 2.2.1, this would result in a reduction in recreational harvest of 4.4% relative to **Alternative 1**. This is the bag limit recommended by the Reef Fish AP at their August 2012 meeting. Their recommendation was based on an older bag limit analysis from 2004 which indicted that a 10-fish bag limit would result in a 1.4% reduction. Under the more current analysis, this reduction is closer to that projected for **Alternative** 2 with a 15-fish bag limit, which is projected to produce a 1.2% reduction. However, given the intent to prevent an expansion of the recreational vermilion snapper harvest, and the increased potential for effort shifting due to additional restrictions proposed for red snapper fishing, **Preferred Alternative 3** is a precautionary action that is more likely to achieve this objective.

2.3 Action 3 - Establish Yellowtail Snapper Stock Annual Catch Limit

In the alternatives below, the values for acceptable biological catch (ABC), annual catch limit (ACL), and annual catch target (ACT) are in pounds (lbs) whole weight (ww).

Alternative 1: No action. Retain the yellowtail snapper stock ACL and ACT as specified in the Generic ACL/AM Amendment. The stock ACL remains at 725,000 lbs ww, and the stock ACT remains at 645,000 lbs ww.

Preferred Alternative 2: Set the yellowtail snapper stock ACL 11% below the Gulf apportionment of ABC as recommended by the ACL/ACT control rule. The stock ACL would equal 901,125 lbs ww. The stock ACT would not be used.

Alternative 3: Set the yellowtail snapper stock ACL equal to the Gulf apportionment of ABC. The stock ACL would equal 1,012,500 lbs ww. The stock ACT would not be used.

Discussion:

During 2012, the Florida Fish and Wildlife Research Institute (FWRI) conducted a benchmark stock assessment of yellowtail snapper, treating the stock as a single unit throughout its U.S. range (O'Hop et al. 2012). After reviewing the assessment, the South Atlantic SSC and the Gulf Standing and Special Reef Fish SSC jointly agreed to set the ABC at 4.05 mp landed whole weight. Since the stock was considered to be healthy and well above its MSY biomass level, this ABC was based on equilibrium harvest levels that remain constant and do not fluctuate from year to year. The ABC is apportioned 75% to the South Atlantic jurisdiction and 25% to the Gulf of Mexico jurisdiction in accordance with the Generic ACL/AM Amendment (GMFMC 2011a). The resulting regional ABCs are as follows:

South Atlantic: **3.0375 mp ww**
Gulf of Mexico: **1.0125 mp ww**

Alternative 1, no action, retains the current ACL and ACT set in the Generic ACL/AM Amendment (GMFMC 2011a). These catch levels were set using tier 3a of the ABC control rule, and are based on average catches during 1999 through 2008.[4] Tier 3a uses a data poor method intended to be used for stocks where no assessment is available, landings data exist, and where the stock is considered to be neither overfished nor experiencing overfishing. Prior to 2012, there was no ACL or total allowable catch for yellowtail snapper. However, as shown in

[4] The procedure for calculating ACL and ACT under tier 3a of the ABC control rule was as follows. An average annual catch was calculated for 1999-2008. The standard deviation was also calculated for the annual catches during this time. The ABC was set at one standard deviation above the 10-year average, resulting in a Gulf ABC of 725,000 pounds. The ACL was set equal to the ABC, and the ACL was set 11% below the ACL as recommended by the ACL/ACT control rule, resulting in an ACT of 645,000 pounds.

Table 1.1.3, had this ACL been in place, it would have been exceeded in every year but one during 1987 through 1994. Since 1995, this ACL would have been exceeded in only two years. However, those were two of the three most recent years for which complete landings are available (2009 and 2011). Consequently, there is a strong likelihood that this ACL would be exceeded in future years, triggering accountability measures.

Preferred Alternative 2 sets the Gulf ACL 11% below the 2012 Gulf apportionment of ABC as recommended by the ACL/ACT control rule, or 901,125 pounds landed whole weight. This provides a buffer between ACL and ABC to reduce the likelihood of OFL being exceeded, resulting in overfishing, and triggering of accountability measures. The ACL/ACT control rule calculations used for yellowtail snapper are shown in Figure 2.3.1. An explanation of how the ACL/ACT control rule works is provided in the footnote below[5]. Given an evaluation in the control rule of several potential sources of management uncertainty, an 11% buffer allows for an appropriate balance between maximizing harvest while preventing overfishing.

As shown in Table 1.1.3, catch levels exceeded 901,125 pounds in five years prior to 1995, but in only two years since 1995. However, those were two of the three most recent years for which complete landings are available (2009 and 2011). Consequently, there is a strong likelihood that this ACL would be exceeded in future years, triggering accountability measures, but it should be noted the excess was only by approximately 10,000-20,000 lbs.

[5] The ACL/ACT control rule takes into account several potential sources of management uncertainty when calculating the recommended buffer, including whether the ACL is to be applied to a single stock or a stock assemblage, past success or failure in constraining harvest, precision of the landings data, whether in-season accountability measures are used which provide a speedier response to harvest levels, and the overfished status of the stock (which acts as a multiplier to the other components). In the ACL/ACT control rule spreadsheet, penalty points are assigned for increasing levels of uncertainty in each of these components, which are then converted into a buffer level between 0% and 25%. Figure 2.3.1 shows the control rule calculations for yellowtail snapper. Penalty points, representing management uncertainty, were assigned to the recreational landings data for having a low level of precision, and to the commercial landings data for being based on the less precise Accumulated Landings System of dealer reporting rather than an IFQ reporting system. An additional penalty point was assigned because in-season accountability measures are not used for yellowtail snapper, resulting in less precise control over harvest. On the positive side, management uncertainty is reduced because this ACL applies to a single stock rather than an assemblage of stocks, there is no history of prior catch limits being exceeded, at the stock status is at the highest level sought by management, at or above its optimum yield biomass level. No penalty points were assigned for these components. The result is 4 penalty points out of a possible 7 points, or 57% of the maximum possible. Since the maximum possible buffer is 25%, reducing it by 57% results in a buffer of 11%.

ACL/ACT Buffer Spreadsheet version 4.1 - April 2011 **Yellowtail Snapper - October 2012**

sum of points	4				
max points	7.0			Buffer between ACLand ACT (or ABC and ACL)	Unweighted 11
Min. Buffer	**0**	**min. buffer**	User adjustable		Weighted **11**
Max Unw.Buff	19	max unwt. Buff			
Max Wtd Buff	**25**	**max wtd. buffer**	User adjustable		

Component	Element score	Element	Selection	Element result
Stock assemblage	0	This ACL/ACT is for a single stock.	x	0
	1	This ACL/ACT is for a stock assemblage, or an indicator species for a stock assemblage		
Ability to Constrain Catch	0	Catch limit has been exceeded 0 or 1 times in last 4 years	x	0
	1	Catch limit has been exceeded 2 or more times in last 4 years		
		For the year with max. overage, add 0.5 pts. For every 10 percentage points (rounded up) above ACL	0.0	
		Not applicable (there is no catch limit)		
		Apply this component to recreational fisheries, not commercial or IFQ fisheries		
Precision of Landings Data Recreational	0	Method of absolute counting		2
	1	MRIP proportional standard error (PSE) <= 20		
	2	MRIP proportional standard error (PSE) > 20	x	
		Not applicable (will not be included in buffer calculation)		
		Apply this component to commercial fisheries or any fishery under an IFQ program		
Precision of Landings Data Commercial	0	Landings from IFQ program		1
	1	Landings based on dealer reporting	x	
	2	Landings based on other		
		Not applicable (will not be included in buffer calculation)		
Timeliness	0	In-season accountability measures used or fishery is under an IFQ		1
	1	In-season accountability measures not used	x	

Sum 4

Weighting factor

	Element weight	Element	Selection	Weighting
Overfished status	0	1. Stock biomass is at or above B_{OY} (or proxy).	x	0
	0.1	2. Stock biomass is below B_{OY} (or proxy) but at or above B_{MSY} (or proxy).		
	0.2	3. Stock biomass is below B_{MSY} (or proxy) but at or above minimum stock size threshold (MSST).		
	0.3	4. Stock is overfished, below MSST.		
	0.3	5. Status criterion is unknown.		

Figure 2.3.1. ACL/ACT control rule used to determine buffer between ABC and ACL in **Preferred Alternative 2**.

Alternative 3 sets the yellowtail snapper stock ACL equal to the 2012 Gulf apportionment of ABC, or 1,012,500 lbs landed whole weight. This allows the maximum harvest possible under the Gulf apportionment of the ABC established by the SSC. As shown in Table 1.1.3, this level was exceeded in 4 years prior to 1995, but has not been exceeded since. However, if this ACL is exceeded, there is a greater likelihood that OFL would also be exceeded, resulting in overfishing.

Alternative 1 includes an ACT for yellowtail snapper since that is the status quo. However, there are no management measures in place, or proposed, that are designed to achieve the ACT. Therefore, the ACT serves no function in the management of yellowtail snapper. Consequently, **Preferred Alternative 2** and **Alternative 3** do not include an ACT.

2.4 Action 4 – Reef Fish Venting Tool Requirement

Alternative 1: No action. At least one venting tool is required and must be used to deflate the abdominal cavities of Gulf reef fish to release the fish with minimum damage.

Alternative 2: Modify the venting tool requirement as follows. At least one venting tool is required to be onboard.

Preferred Alternative 3: Eliminate the requirement to have a venting tool on board and to use it.

Discussion:

Alternative 1 retains the existing requirement that venting tools must be possessed and used when releasing reef fish. As discussed above, recent research has indicated that the use of venting tools can increase the likelihood of survival in some, but not all release situations. Depending upon the species, depth of capture, and other factors, the use of descent devices to return the fish to the depth of capture, or simply releasing the fish without the use of any special tools, may result in better chances for survival.

Alternative 2 retains the requirement that a venting tool be onboard vessels fishing for reef fish, but removes the requirement that it be used. It is up to the fisherman's discretion whether to use the venting tool, use some other release method such as a descent device, or simply release the fish. While there may be times when a fish is released without venting that should have been vented, this alternative avoids the requirement to vent a fish even when it is not necessary or when an alternative method such as a descent device would result in a greater likelihood of the fish's survival. In addition, the requirement to use the venting tool is difficult to enforce. An enforcement officer would need to be on the water and to observe a fish being released without being vented in order to make a case. However, the requirement to possess a venting tool can be enforced at any time either on the water or at the dock.

Preferred Alternative 3 rescinds the venting tool regulation in its entirety, eliminating both the requirement to possess and the requirement to use a venting tool. In the absence of a requirement to possess a tool, there would be less incentive for fishermen to purchase a venting tool or other release device and have it onboard. As a result, the likelihood of a venting tool being used is reduced relative to **Alternative 1** or **Alternative 2**. However, fishermen are free to possess and use (or not use) any release device that they feel is appropriate. The primary benefit of this alternative is that it simplifies the fishing regulations while providing fishermen with the freedom to determine how to release reef fish, including whether to use other release devices that may be more effective under the particular circumstances.

Recent research has concluded that venting can be an appropriate action under the right circumstances, but it is not always necessary. Depending upon the species and the circumstances, alternative methods of returning the fish to depth (rapid descent devices), or simply releasing the fish with no special treatment, may be preferable. A review of recent developments of studies on the effects of barotrauma, and the effectiveness of venting and rapid descent devices, is contained in the Introduction in Section 1.1.

CHAPTER 3. AFFECTED ENVIRONMENT

The actions considered in this framework action and associated environmental assessment (EA) would affect fishing in the Gulf of Mexico (Gulf) region, both in state and federal waters (Figure 3.1). Descriptions of the physical, biological, economic, social, and administrative environments are available in the Reef Fish Amendments 23 (GMFMC 2004a), 32 (GMFMC 2011b), and Generic Annual Catch Limit/Accountability Measure Amendment (GMFMC 2011a) and associated environmental impact statements (EIS). Information from these EISs is incorporated herein by reference and the reader is directed to the documents located at http://www.gulfcouncil.org/fishery_management_plans/index.php to obtain the information. Additional impacts to the affected environment from the Deepwater Horizon MC252 oil spill were described in the September 2010 (NMFS 2010) EA and the January 2011 Regulatory Amendment (GMFMC 2011c), and are incorporated here by reference. This section includes new information as well as summaries of information from Amendments 23 and 32.

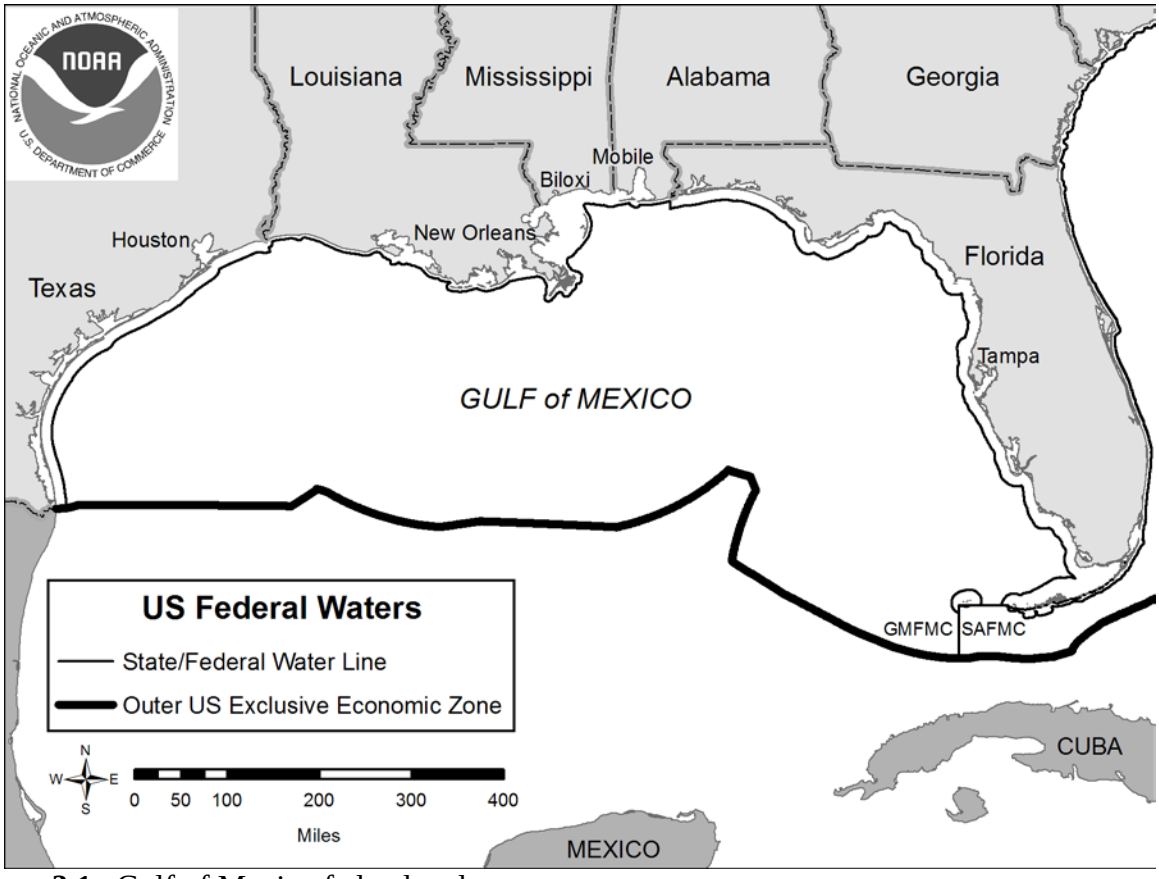


Figure 3.1. Gulf of Mexico federal and state waters.

3.1 Description of the Fishery

The Gulf reef fish fishery is composed of 31 species: 11 snappers, 11 groupers, four jacks, three tilefishes, one triggerfish, and one wrasse. Commercial and recreational fishing for these species occur within the area of the fishery's essential fish habitat, which extends westward from state and federal waters off the Florida Keys to those off Texas (Figure 3.1.1).

Figure 3.1.1. Area of essential fish habitat of Gulf reef fish. Source: NOAA Coastal Ecosystem Management Maps.

Gulf Reef Fish Permits Holders (Commercial Fishing Entities)

A commercial vessel permit for Gulf reef fish must have been issued to a vessel and be on-board for a person to be eligible for an exemption from the bag limits, to fish under a quota, or to sell reef fish in or from the Gulf Exclusive Economic Zone (EEZ). As of July 9, 2012, there were 812 valid Gulf reef fish permits, and as of November 12, 2012, there were 814. The following analysis is based on the 812 valid permits in July 2012.

Approximately 99% of the permit holders have addresses in one of the Gulf states (Table 3.1.1). Almost 80% of the permits are issued to individuals residing in Florida. Each permit corresponds to a specific fishing vessel.

Net tonnage is a measure of a vessel's volume, and vessels of five net tons or more used in fishing activities in the Gulf EEZ must be documented. Most vessels larger than 25 feet in length will measure five net tons or more. Of the 812 valid permits, 478 of them apply to

documented vessels and the remaining 334 do not. Approximately 81% of the documented vessels and 78% of non-documented vessels are owned by Florida entities (Table 3.1.2).

Table 3.1.1. Valid Gulf of Mexico reef fish permits as of July 9, 2012, by permit holder's state of residence. Source: SERO list of current permit holders.

State	Permits	% Total
AL	42	5.17%
FL	647	79.68%
LA	41	5.05%
MS	10	1.23%
TX	61	7.51%
All Gulf	801	98.65%
GA	5	0.62%
IL	2	0.25%
MD	1	0.12%
NY	1	0.12%
SC	1	0.12%
WY	1	0.12%
All Non-Gulf	11	1.35%
Total	812	100.00%

Table 3.1.2. Gulf reef fish permitted vessels by permit holder's state of residence and documentation status. Source: SERO list of current permit holders and NMFS/United States Coast Guard (USCG) vessel data base.

State of Permit Holder	Permitted Gulf Reef Fish Vessels				
	Documented	Non-Documented	Total	% Documented	% Non-Documented
AL	25	17	42	5.23%	5.09%
FL	387	260	647	80.96%	77.84%
LA	19	22	41	3.97%	6.59%
MS	4	6	10	0.84%	1.80%
TX	35	26	61	7.32%	7.78%
All Gulf	470	331	801	98.33%	99.10%
All Non-Gulf	8	3	11	1.67%	0.90%
Total	478	334	812	100.00%	100.00%

Six of the eight documented vessels owned by permit holders who reside outside the Gulf state area have hailing ports in a Gulf state. Five have a hailing port in Florida and the other in Louisiana. The remaining two of the eight vessels have hailing ports in New York and South Carolina, respectively. However, a vessel does not necessarily land its catch at its hailing port. Commercial landings of one of the vessels have occurred on Florida's east coast and those of the other have occurred on Florida's east and west coasts. These landings, especially those of the

vessel with reported east coast landings, do not necessarily include reef fish, including vermilion and yellowtail snapper.

The 478 documented vessels range in size from 5 to 82 net tons.[6] Florida's documented vessels combine for approximately 76% of total net tonnage of all documented vessels with a valid Gulf reef fish permit (Table 3.1.3). As stated above, the documented vessels in New York and South Carolina land their catches in Florida. If their net tonnage is added to Florida's total net tonnage, Florida's share of total net tonnage increases to approximately 77%.

Table 3.1.3. Total net tonnage of 478 documented vessels with valid Gulf reef fish permit by state of hailing port. Source: SERO list of current permit holders and NMFS/USCG vessel data base.

Documented Vessels		
State of Hailing Port	**Total Net Tonnage**	**Percent**
AL	747	7.00%
FL	8,143	76.33%
LA	664	6.22%
MS	118	1.11%
NY	36	0.34%
SC	57	0.53%
TX	903	8.46%
Total	10,668	100.00%

From 2001 to 2011, commercial landings of reef fish represented from approximately 1-2% of all Gulf coast commercial landings by weight and from approximately 5-7% of landings by dollar value. Annual commercial landings of reef fish varied from approximately 13.5 to 23.3 million pounds (mp) whole weight and from approximately $35.6 million to $47.8 million (2011 dollars) during this time (NMFS, Accumulated Landings System). Landings exhibit generally declining trends by weight and value, although there was a 26.6% increase by weight and 32.1% increase by dollar value in 2011 from the previous year (Figures 3.1.2 and 3.1. 3).

[6] Note the reported tonnage for one vessel was listed as 0 net tons. For the purpose of this analysis, a net tonnage of 65 was used based on the length of the vessel.

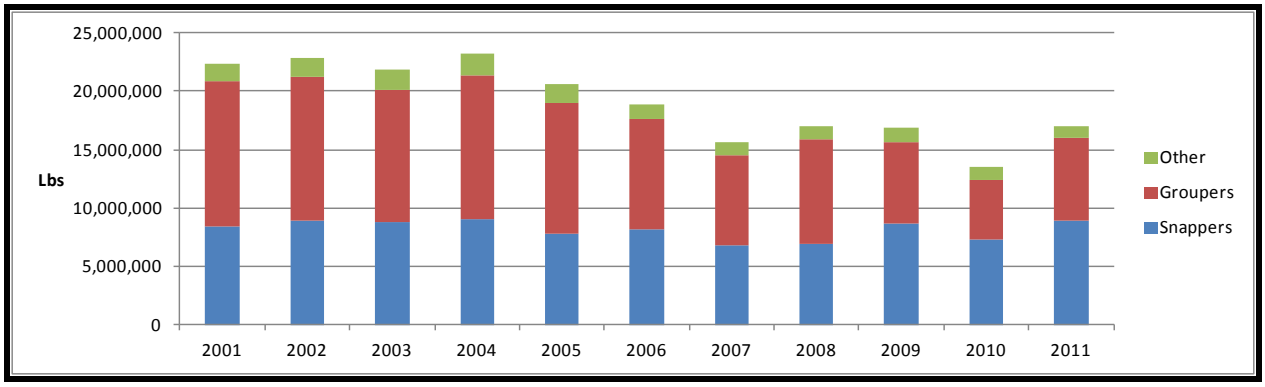


Figure 3.1.2. Annual commercial landings (lbs ww) of Gulf reef fish by species complex, 2001 – 2011. Source: NMFS Accumulated Landings System (ALS).

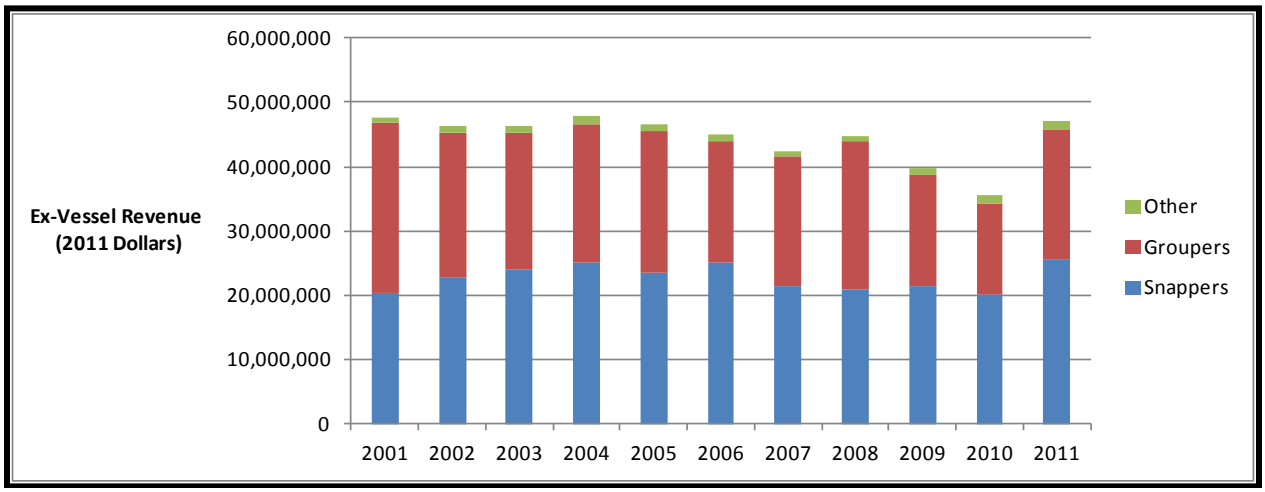


Figure 3.1.3. Ex-vessel revenue (2011 dollars) of annual commercial landings of Gulf reef fish by species complex, 2001 – 2011. Source: NMFS ALS.

Florida's west coast accounts for the majority of annual landings of Gulf reef fish (Figure 3.1.4), which mirrors that coast's first-place ranking in net tonnage of documented vessels with a Gulf reef fish permit. From 2001 through 2011, landings on Florida's west coast represented from approximately 71 to 80% of annual Gulf reef fish landings by weight and approximately 68 to 79% by value. Louisiana's share averaged approximately 15% from 2001 to 2005 and dropped to slightly over 10% from 2006 to 2011.

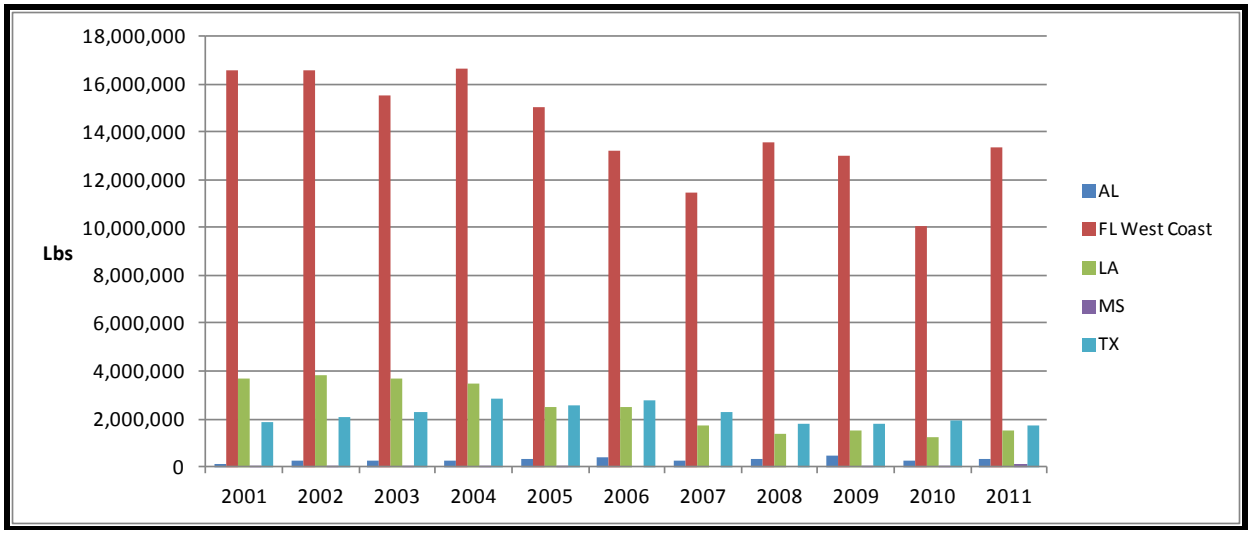


Figure 3.1.4. Annual commercial landings (lbs ww) of Gulf reef fish by state, 2001 – 2010. Source: NMFS ALS.

As shown in Figures 3.1.2 and 3.1.3 above, snappers (queen, mutton, blackfin, red, cubera, gray, lane, silk, yellowtail, wenchman, and vermilion) and groupers (speckled hind, yellowedge, red, warsaw, snowy, black, yellowmouth, gag, scamp, and yellowfin) have been and remain the primary commercial reef fish species landed in the Gulf of Mexico. Combined commercial landings of snappers and groupers represent, on average, approximately 93% of annual reef fish commercial landings by weight and 97% by value from 2001 to 2011 (Figure 3.1.5). Grouper landings have tended to rank first and snapper landings second because the price of grouper tends to be greater than the price of snapper. Snapper landings exceeded grouper landings in 2009 and 2010 largely because regulations restricted the harvest of the two most landed species of grouper: red grouper and gag. Beginning in 2009, there were annual catch limits (ACLs) and accountability measures for gag and red grouper, a seasonal prohibition on the use of bottom longline gear in the eastern Gulf for some waters (>50 fathoms in 2009, >35 fathoms from 2010 on), and a 4-month closure of the area during the gag spawning season. Annual landings of groupers and snappers represented, on average, approximately 54% and 39% of annual reef fish landings (by weight), respectively, from 2001 to 2005, and approximately 45% and 48%, respectively from 2006 to 2011.

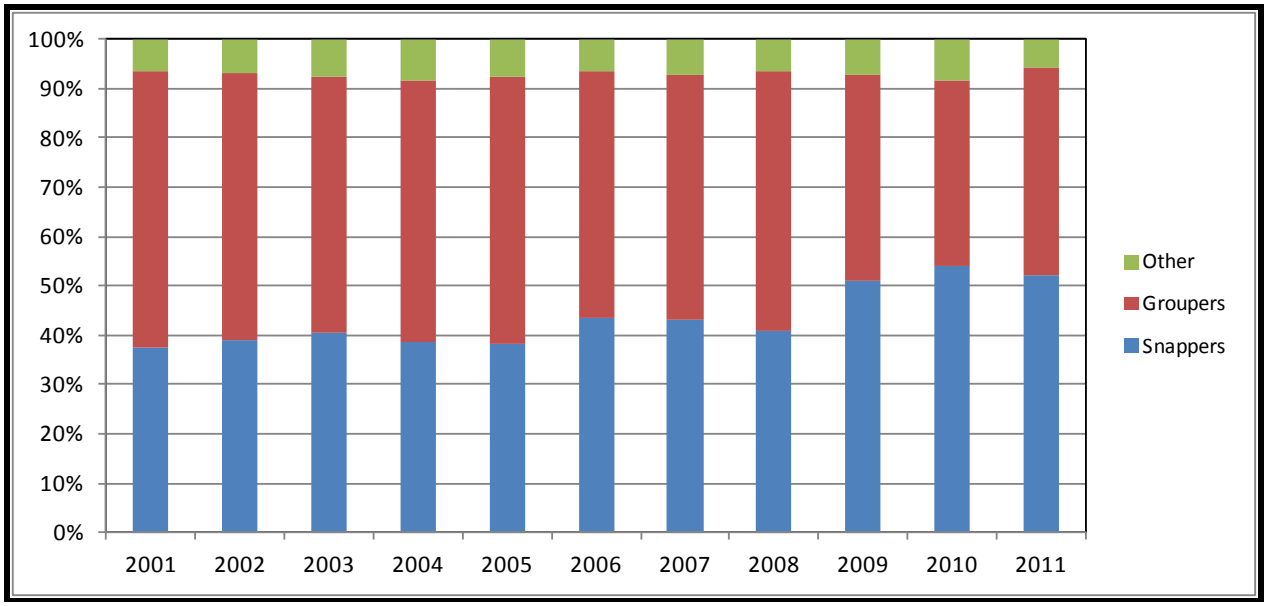


Figure 3.1.5. Percent of annual commercial landings (lbs ww) of Gulf reef fish by species complex, 2001 – 2011. Source: NMFS ALS.

The relative importance of snapper species to commercial Gulf reef fish fishermen varies substantially across the states. From 2001 to 2005, for example, snapper landings represented all of Mississippi's annual landings of reef fish, but snapper represented less than a fourth of annual landings of reef fish for the west coast of Florida (Table 3.1.4). Snapper landings represent a majority of commercial Gulf reef fish landings in Alabama, Louisiana, and Texas. Mississippi had no landings of reef fish from 2006 to 2008.

Table 3.1.4. Snapper landings as percent of annual commercial landings (lbs ww) of Gulf reef fish, 2001 – 2010. Source: NMFS ALS.

Year	AL	FL West Coast	LA	MS	TX
2001	99.46%	20.95%	84.13%	100.00%	88.45%
2002	65.21%	23.66%	78.58%	100.00%	83.10%
2003	61.42%	25.24%	78.34%	100.00%	78.51%
2004	75.49%	22.37%	74.29%	100.00%	86.72%
2005	82.38%	21.72%	79.24%	100.00%	85.69%
2006	83.00%	25.61%	83.15%	NA	88.59%
2007	78.10%	29.03%	80.09%	NA	83.98%
2008	89.50%	30.80%	75.62%	NA	83.54%
2009	86.34%	43.08%	74.51%	100.00%	79.11%
2010	87.38%	44.33%	82.69%	100.00%	81.45%

Three of the 11 snapper species within the Gulf reef fish fishery are primary targets of commercial fishermen: red, vermilion, and yellowtail snapper. Combined annual landings of these three species represent from approximately 91% to 94% of all annual commercial landings of snapper within the fishery from 2001 through 2010 (Figure 3.1.6). The percents of vermilion snapper and yellowtail snapper annual landings show a general increase from 2001 to 2009, while those of red snapper generally decreased over the same nine years in response to regulatory changes to end overfishing of red snapper and rebuild from its overfished status. In 2009, an updated Gulf red snapper stock assessment showed that the stock was recovering, and an increase in the total allowable catch (TAC) was warranted. In response, the TAC was increased in 2010, and the commercial quota was increased from 2.55 mp in 2009 to 3.542 mp whole weight (ww) in 2010. The resultant landings of red snapper increased from approximately 2.484 mp ww in 2009 to approximately 3.392 mp ww in 2010. In 2011, the TAC again increased, and the commercial quota increased to 3.66 mp ww, with actual landings of 3.595 mp ww. In 2012, the commercial quota was 4.121 mp ww, and preliminary landings as of November 2, 2012 are 3.893 mp ww.

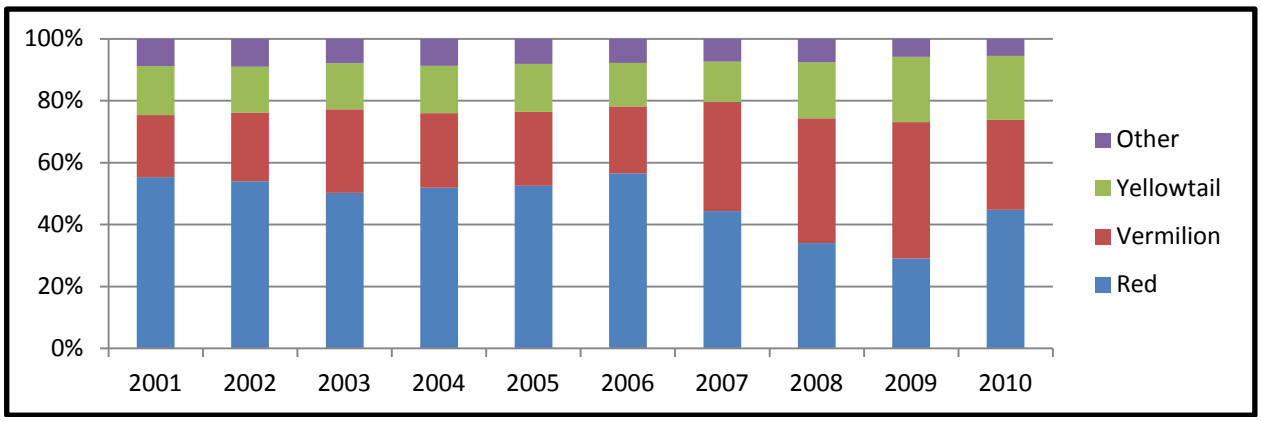


Figure 3.1.6. Percent of annual commercial Gulf coast landings of snapper by species, 2001 – 2010. Source: NMFS ALS.

The relative importance of commercial landings of red, vermilion and yellowtail snapper varies across the Gulf states. Florida's west coast had all of the commercial landings of yellowtail snapper from 2001 to 2010 and 99.99% of all of the commercial landings in 2011. Mississippi had no commercial landings of vermilion snapper during those years (Figure 3.1.7). Red snapper ranks first among commercially landed snapper species in Alabama, Louisiana, Mississippi, and Texas; however, in 2010, no red snapper were landed by commercial fishermen in Mississippi. Yellowtail snapper ranked first among these three snapper species landed in Florida's west coast, while vermilion snapper ranked second.

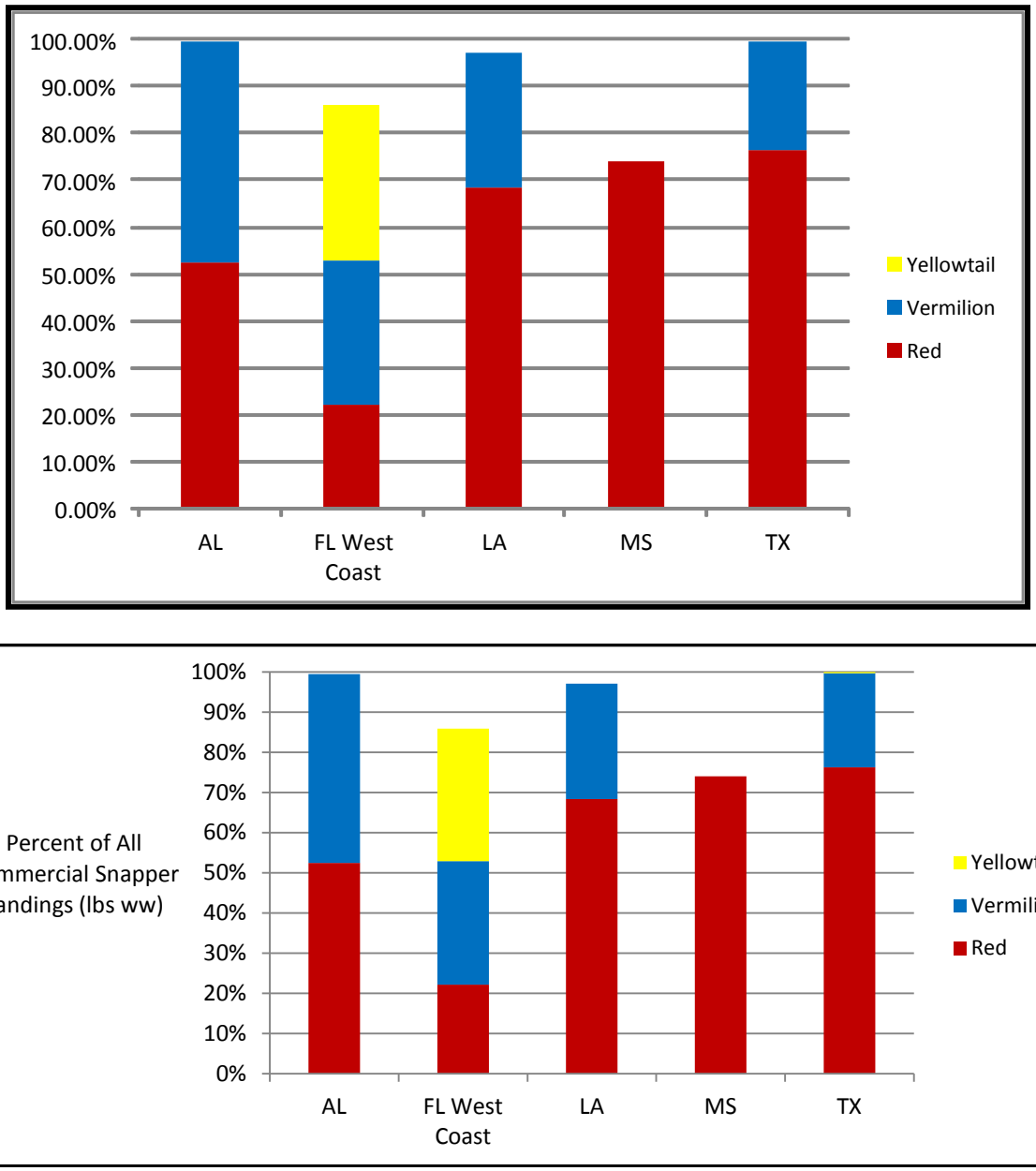


Figure 3.1.7. Average percent of annual commercial landings of snapper complex (lbs ww) by species, 2001 – 2011. Source: NMFS ALS.

Vermilion snapper are found in the same waters as red snapper; however, market demand for vermilion snapper has been and remains lower than the market demand for red snapper. Red snapper is a favorite of many households and restaurants because of its claims to have superior flavor and versatility in cooking. Due to the difference in demand, red snapper yields a substantially higher price than vermilion snapper. For example, on June 28, 2012, an online fish seller listed prices of vermilion and red snapper (whole fish) as $7.25 and $11.95 per pound, respectively. From 2001 to 2009 the average annual ex-vessel price of a pound of Gulf red snapper was from 33 cents to $1.61 higher than the average annual ex-vessel price of a pound of

Gulf vermilion snapper. An average of 2.34 pounds of red snapper was landed for every pound of vermilion snapper from 2001 to 2006, but the ratio declined from 2007 to 2009 as the commercial quota for red snapper was reduced when the red snapper rebuilding plan was revised (Figure 3.1.8). The commercial quota for red snapper, however, has more recently been increasing. The 2012 and 2013 commercial quotas for red snapper were set at approximately 4.12 mp and approximately 4.42 mp (whole weight), respectively, which suggests commercial landings of red snapper would rise while those of vermilion snapper would fall in 2012 and 2013. However, as a result of the allowable biological catch (ABC) having been exceeded in 2012 due to recreational sector overharvest, the 2013 ABC and quotas are currently being reevaluated.

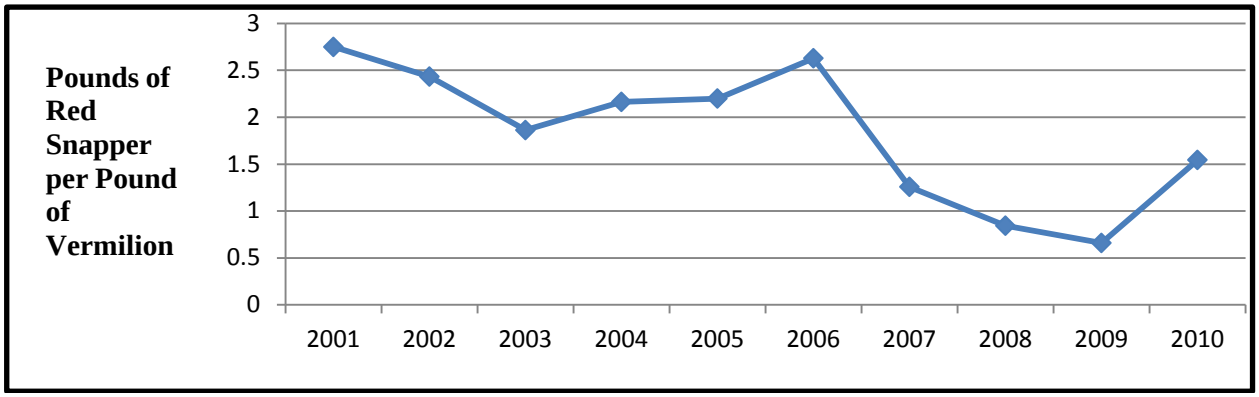
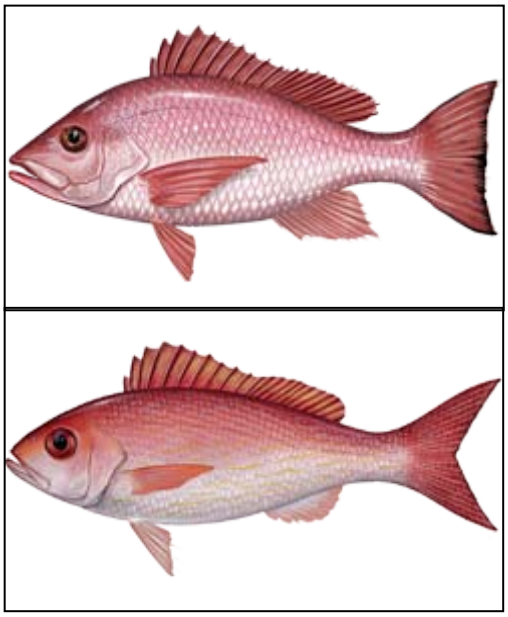


Figure 3.1.8. Pounds of red snapper landed per pound of vermilion snapper landed, 2001 – 2010. Source: NMFS ALS.

Despite the significant difference in demand for and prices of vermilion and red snapper, vermilion snapper is a close substitute to red snapper. It is difficult for consumers to tell them apart even when whole (Figure 3.1.9). Such similarity has made it easier to illegally label and sell vermilion snapper as the higher priced red snapper. That is evidenced by a series of consumer studies that concern species substitution. For example, Marko et al. (2004) found 77% of fish labeled as red snapper in eight states were actually vermilion snapper or other snapper species, and they estimated that from 60% to 94% of the fish sold as red snapper in the U.S. is mislabeled. A Consumer Reports study conducted in 2009 of seafood purchased at retail stores and restaurants in New York, New Jersey, and Connecticut and found that 12 of the 22 fish claimed to be "red snapper" were not. In one of the retail stores, shoppers were paying $22.99 a pound for what was labeled as "red snapper," but was actually vermilion snapper (Consumer Report, December 2011). And in 2011, Oceana conducted two studies of seafood sales in the Boston and Los Angeles areas that produced similar results. In Boston-area supermarkets, the study found that seafood was mislabeled as often as 25% to 70% of the time for fish like red snapper, wild salmon and Atlantic cod (Warner 2011). In the Los Angeles area, all 34 fish identified as "snapper" were mislabeled; and consumers in the area who believed they were purchasing red snapper were actually receiving species varying from farmed tilapia to pollock (Warner 2011). When sold as fillets, snapper species are more difficult to differentiate, although

their skin is frequently left attached to aid in identification. These studies suggest the differences in demand are mostly perceptual regarding the value of red snapper and those perceptions may change. In the future, demand for vermilion snapper could increase if consumers increasingly recognize vermilion snapper's value as a close substitute for red snapper.



The red snapper (top) has a pinkish red color over the length of its entire body, is whitish below; has a long triangular snout, and its anal fin is sharply pointed. The vermilion snapper (bottom) is more reddish over the entire length of its body, has a series of short and irregular lines on its sides, has diagonal blue lines formed by spots on the scales above the lateral line, lacks large canine teeth, and the orientation of its mouth and eye give the appearance of it looking upward.

Figure 3.1.9. Red and vermilion snapper. Source: NOAA Fish Watch.

Vermilion Snapper

Most commercial harvesting of vermilion snapper within the Gulf EEZ occurs off of Florida's west coast as shown in Figure 3.1.10. Florida's west coast also typically ranks first in commercial landings of the species. On average, Florida's west coast accounted for approximately 53% of annual commercial landings of vermilion snapper from 2001 to 2011; however, its share rose to approximately 71% in 2011 (Figure 3.1.11). Louisiana's share has declined substantially, while those of Florida, Texas, and Alabama generally increased over the 11-year period. In most years, Mississippi had no commercial landings of the species.

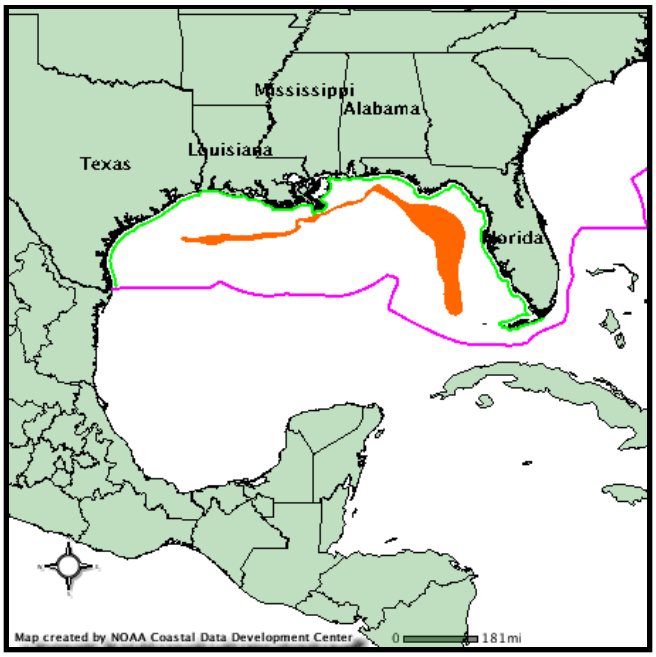


Figure 3.1.10. Location of commercial harvesting of vermilion snapper in Gulf EEZ. Source: NOAA Coastal Ecosystem Management Maps.

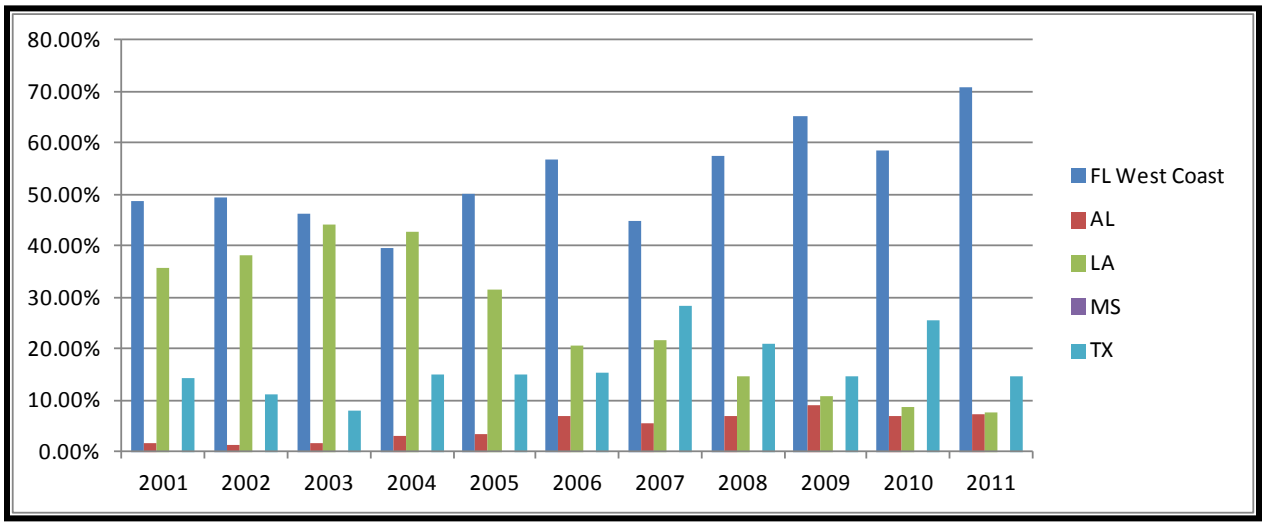


Figure 3.1.11. Percent of all commercial landings (lbs ww) of Gulf vermilion snapper by state, 2000 – 2011. Source: NMFS ALS.

From 2001 through 2011, annual commercial landings of vermilion snapper varied between approximately 1.72 mp and 3.77 mp ww (Figure 3.1.12). Some of this variation was due to regulatory changes that directly and indirectly affected vermilion snapper harvest. For example, vermilion snapper fishing was directly affected by a 40-day closed federal commercial season from April 22 through May 31 and an increase in the minimum size of vermilion snapper in

2005. Two years later, the 40-day closed season was eliminated and the minimum size was reduced. Also vermilion snapper fishing was and continues to be indirectly affected by the red snapper quota, which in 2008 and 2009 was at its lowest level.

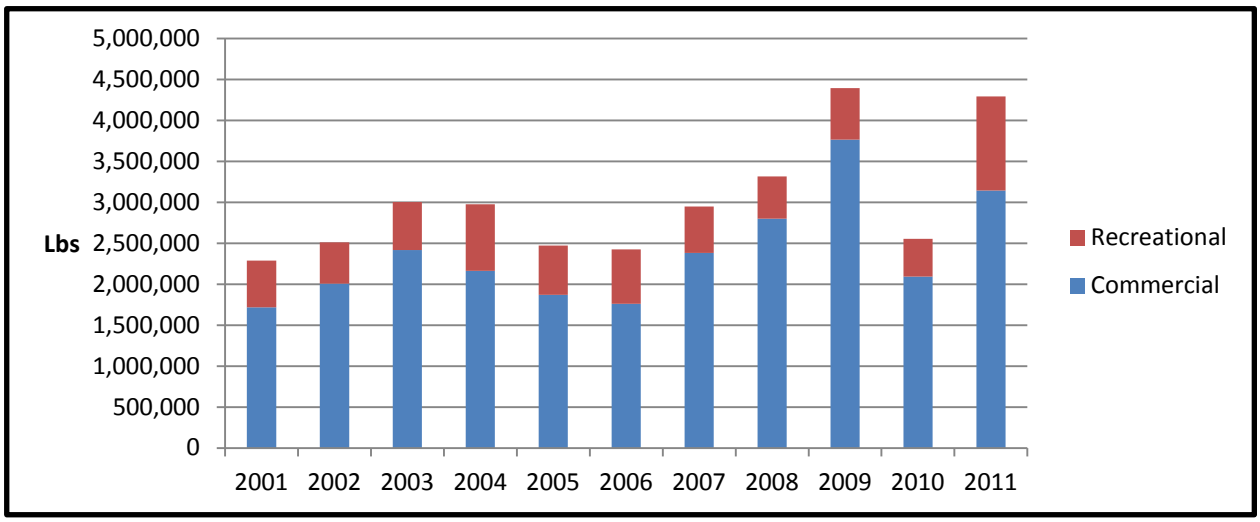


Figure 3.1.12. Commercial and recreational Gulf coast landings of vermilion snapper (lbs ww), 2001 – 2011. Source: SERO.

Commercial landings tend to represent a greater proportion of total landings than recreational landings of vermilion snapper as shown in Figure 3.1.12. From 2001 to 2011, commercial landings represented from approximately 73% to 86% of combined annual landings. As of September 11, 2012, approximately 1.754 mp were landed by the commercial sector and as of June 30, approximately 0.425 mp were landed by the recreational sector in 2012. At those 2012 rates, approximately 0.850 mp would be landed by recreational fishers and approximately 2.518 mp would be landed by commercial fishermen, for an annual total of 3.360 mp, which is less than the ACL of 3.42 mp. Monthly trips and landings, however, tend to vary considerably, with the number of trips increasing at the end of the calendar year. If there had been an increase in the number of trips taken after September 2012, sector combined annual landings would have been closer to 3.50 mp, which would have exceeded the ACL and triggered an early closure of the federal commercial and recreational fishing seasons. The season, however, was not closed before the end of 2012.

Monthly commercial fishing trips that land vermilion snapper in Florida have varied considerably since 2004 (Figure 3.1. 13). In 2006 and 2007, the federal commercial sector was closed from April 22 through May 31. The number of trips tends to peak in June; however, the number of June trips in 2010 was substantially less than the norm because of the Deepwater Horizon MC252 oil spill that led to a series of closures. In addition to federal closures, natural and technological disasters also substantially curtail trips and landings. For example, in September 2004, Hurricanes Frances, Ivan, and Jeanne greatly reduced fishing activity in the Gulf of Mexico.

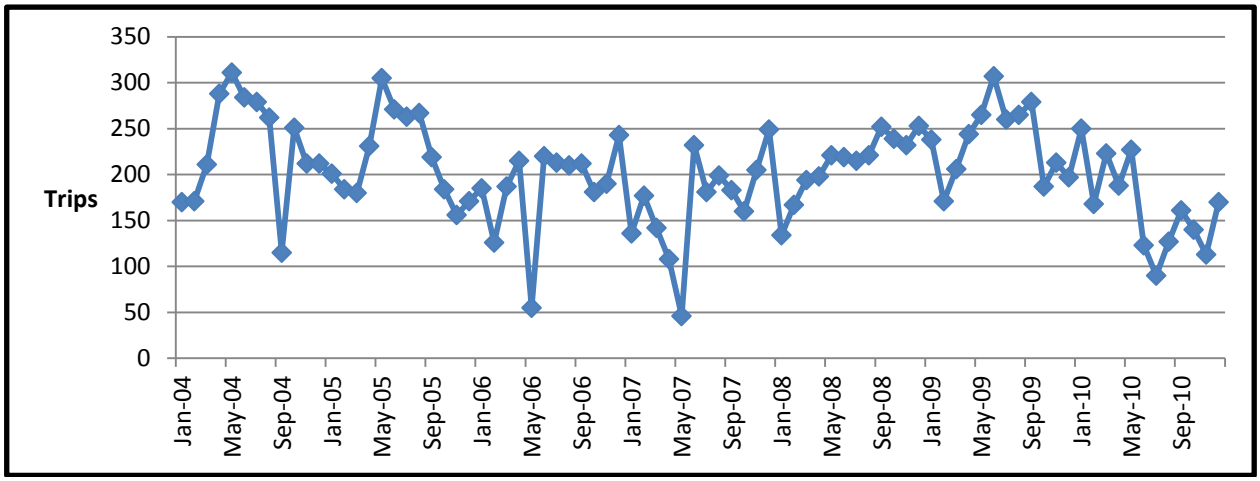


Figure 3.1.13. Number of commercial trips that landed vermilion snapper in Florida by month, January 2004 – December 2010. Source: FWRI commercial landings summary.

The average number of pounds of vermilion snapper landed per commercial trip (among trips with landings of the species) generally increased during 2001 to 2011 (Figure 3.1.14), although it fell in 2010, most likely as a result of the Deepwater Horizon MC252 oil spill as previously mentioned. In part, the increasing trend may be due to both a general increase in the ex-vessel price of the species and reduced landings of red snapper. As shown in Figure 3.1.15, the average annual nominal ex-vessel price of vermilion snapper has increased since 2002.

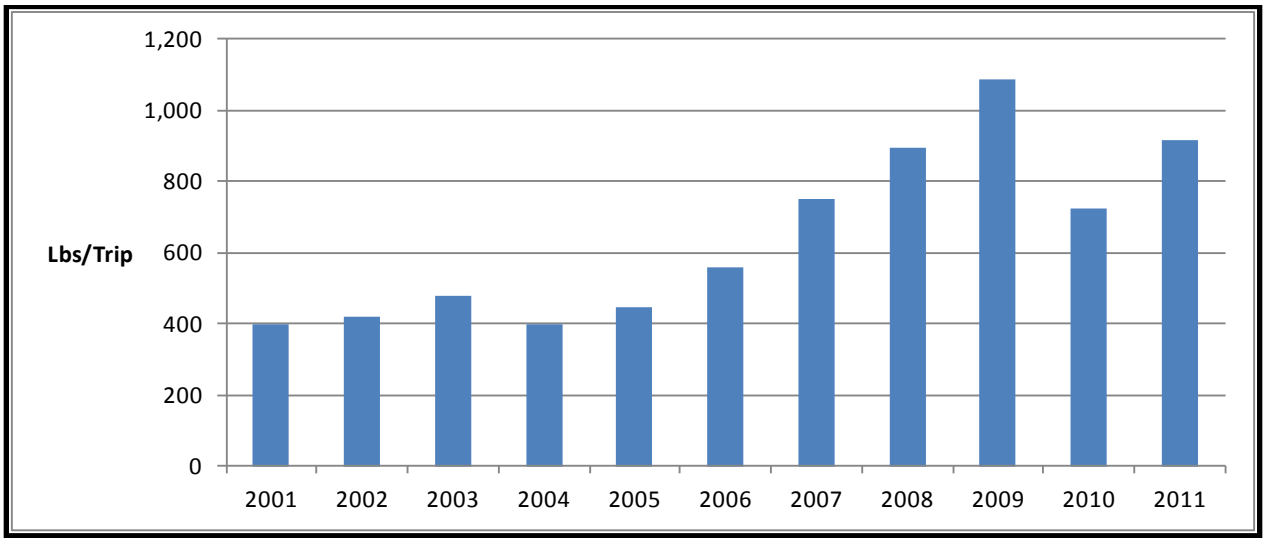


Figure 3.1.14. Average pounds of vermilion snapper landed per commercial trip on Florida's west coast, 2004 – 2010. Source: FWRI commercial landings summary.

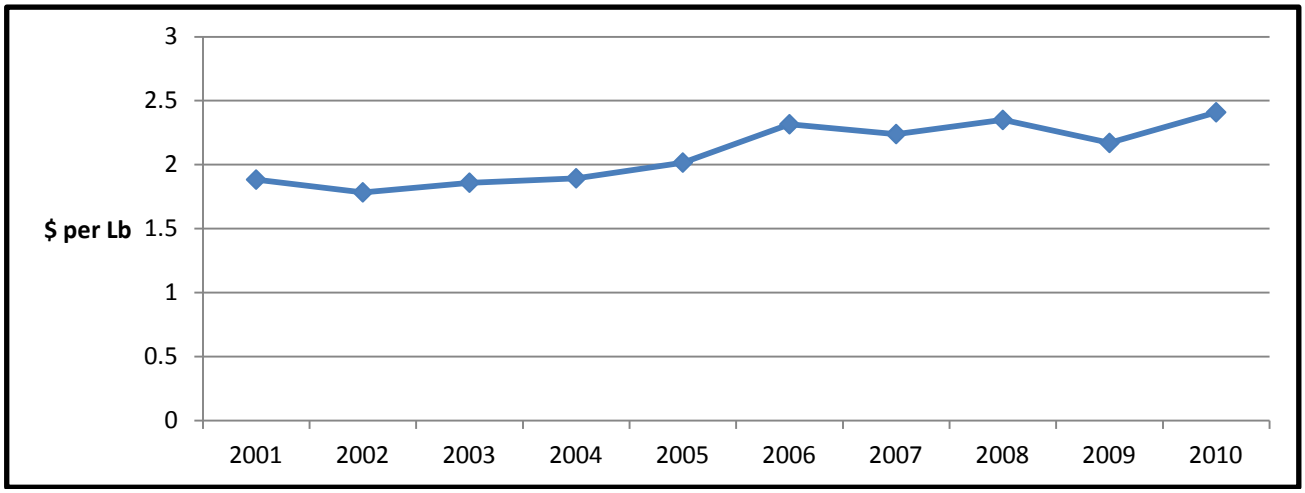


Figure 3.1.15. Average (nominal) dollars per pound (ww) of vermilion snapper, 2001 – 2010. Source: FWRI commercial landings summary.

Vermilion snapper are harvested in the commercial sector primarily with vertical hook-and-line gear (handline and bandit gear). Longlines represent approximately 2% to 3% of total annual landings of the species. Fishermen targeting reef fish species in the Gulf are required to use circle hooks and dehooking devices to improve the chance of survival of any unintentionally caught fish. They are also required to use venting tools when releasing reef fish. Management prohibits the use of trawl gear, fish traps, entanglement nets, and bottom longlines in certain areas in the Gulf to reduce bycatch. Moreover, several areas are also closed to fishing to protect sensitive snapper and grouper populations.

Yellowtail Snapper

From 2001 to 2010, annual commercial landings averaged approximately 82% of all Gulf landings of yellowtail snapper, although the share varied from approximately 72% to 94% (Figure 3.1.1.16). From 2001 to 2010, 99.2% of annual landings occurred in Monroe County, Florida. If Monroe County landings are excluded, the annual average for Gulf yellowtail snapper commercial landings from 2001 to 2010 is 4,626 lbs ww. If 25% of Monroe County landings are included in Gulf commercial landings, the annual average is 332,167 lbs ww from 2001 to 2010.

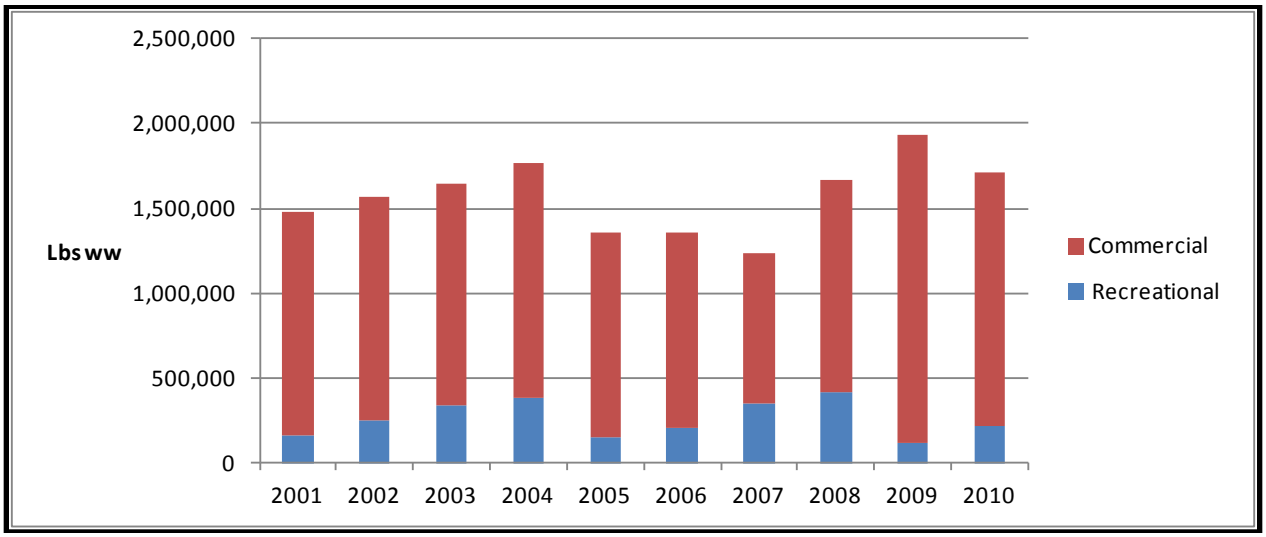


Figure 3.1.16. Commercial and recreational Gulf coast landings of yellowtail snapper (lbs ww), if all Monroe County landings are included, 2001 – 2010. Source: SERO.

As of November 7, 2012, Gulf commercial landings of yellowtail snapper totaled 398,635 lbs ww, which is substantially less than the ACL of 725,000 lbs. If that rate of commercial landings continues for the rest of 2012, annual commercial landings in 2012 would be 467,630 lbs ww, which is approximately 64% of the ACL. If recreational landings by the end of 2012 were 18% of total yellowtail snapper landings, combined landings would be 570,280 lbs ww, which is still less than the ACL.

There was a decline in the number of commercial fishing trips that landed yellowtail snapper in Florida from 2001 to 2010, from over 9,000 in 2001 and 2002 to less than 6,000 in 2010 and 2011. The number of monthly trips tends to be lowest from September to November and highest in March and June; however, the number of June trips in 2010 were substantially less than the norm because of the Deepwater Horizon MC252 oil spill that led to a series of closures. In addition to federal closures, natural and technological disasters also substantially curtail trips and landings. For examples, Hurricanes Frances, Ivan, and Jeanne greatly reduced fishing activity in the Gulf of Mexico in September 2004, and Hurricane Wilma greatly reduced fishing activity along the Florida Keys in 2005.

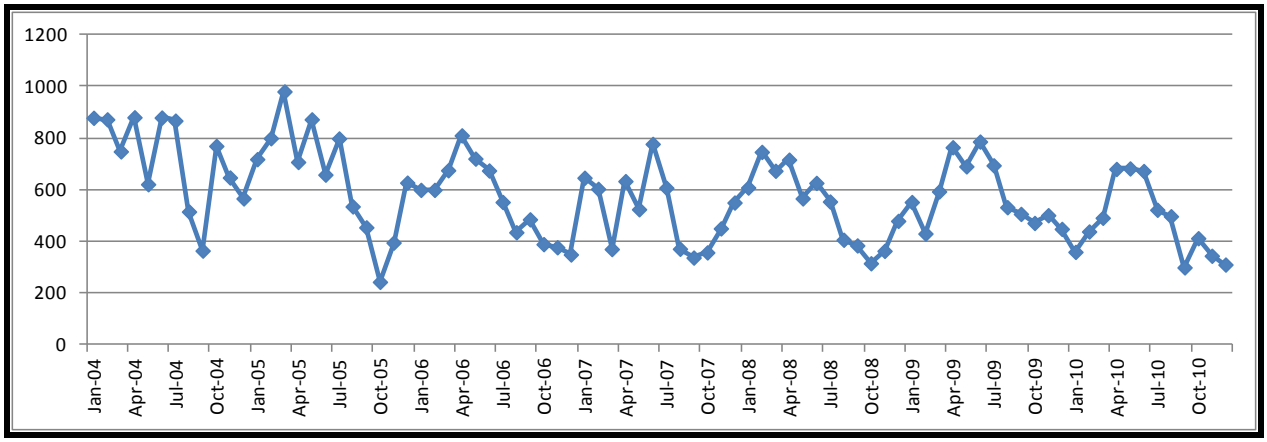


Figure 3.1.17. Number of commercial trips that landed yellowtail snapper in Florida by month, January 2004 – December 2010. Source: FWRI commercial landings summary.

The number of commercial trips that landed yellowtail snapper on Florida's west coast ranged from less than 5,000 to almost 8,100 from 2001 to 2010. On average, approximately 85% of these annual trips landed in Monroe County. Landings per trip are substantially higher in Monroe County. The average number of pounds of yellowtail snapper landed in Monroe County per commercial trip (among trips with landings of the species) ranged from 167 to 301 versus 27 to 83 lbs ww for all other Gulf coast counties (Figure 3.1.17). The average number of pounds per trip increased substantially after 2007 in Monroe County. In part, the increasing trend may be due to both a general increase in the ex-vessel price of the species (Figure 3.1.18) and reduced landings of red snapper and other more valued species.

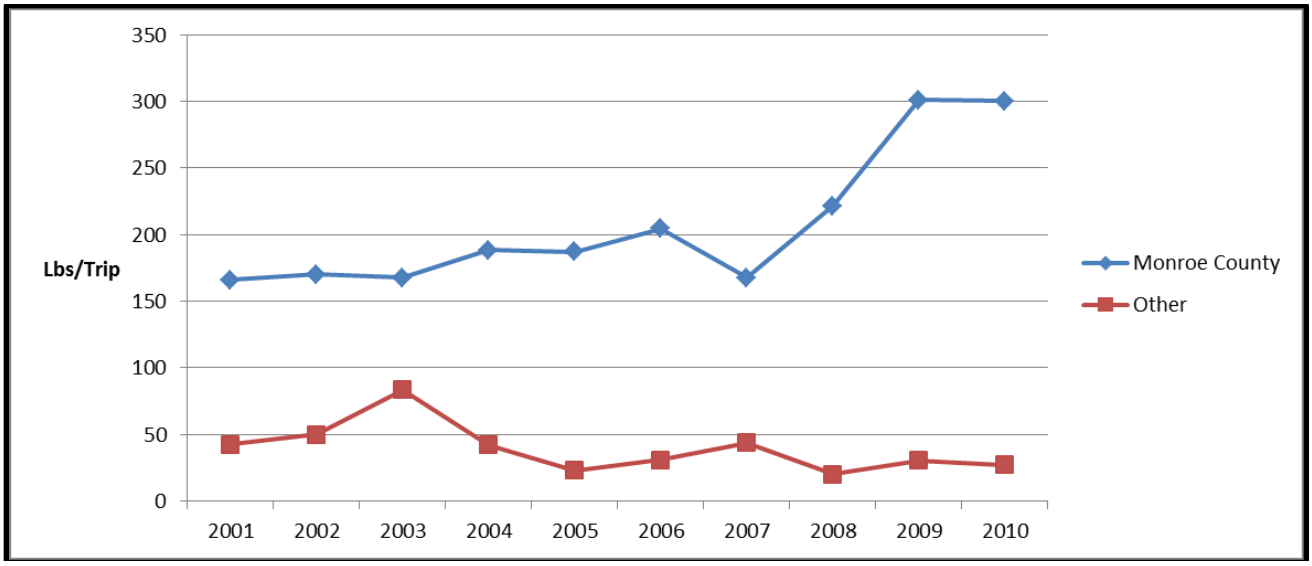


Figure 3.1.18. Average pounds of yellowtail snapper landed per commercial trip on Florida's west coast, 2004 – 2011. Source: FWRI commercial landings summary.

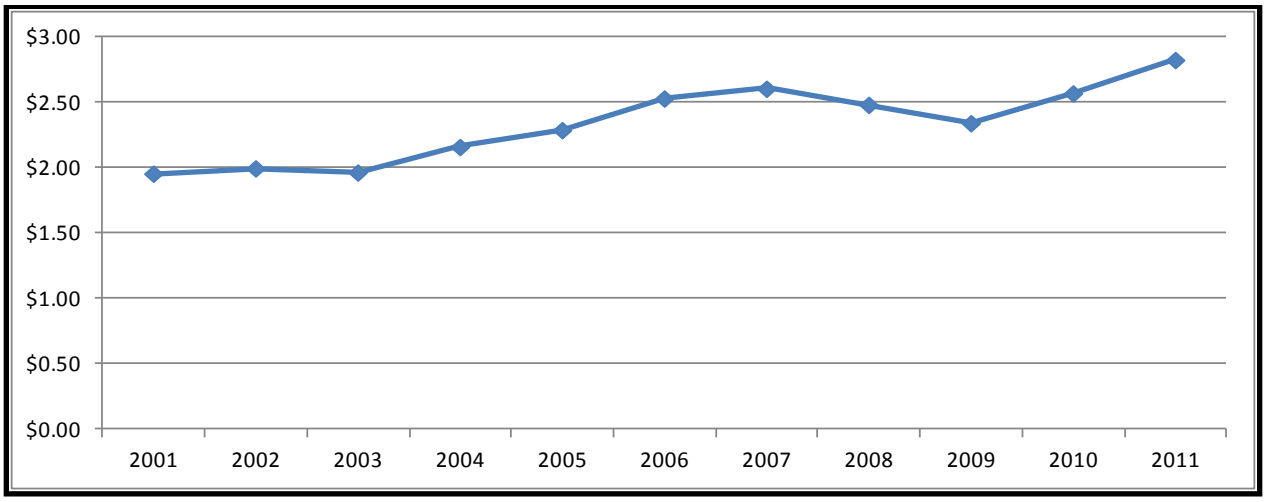


Figure 3.1.19. Average (nominal) dollars per pound (ww) of yellowtail snapper, 2001 – 2011. Source: FWRI commercial landings summary.

Yellowtail snapper are harvested primarily with hook-and-line gear. Florida requires commercial (and recreational) fishermen to use circle hooks, de-hooking devices, and venting tools when harvesting yellowtail snapper.

Gulf Charter/Headboat Permit and Historical Captain Endorsement Holders and Other Recreational Fishers

Recreational fishing in federal waters occurs on for-hire vessels and those owned or rented by private anglers. Those who operate vessels for-hire and harvest Gulf reef fish in the EEZ are required to have a limited access permit: either a Gulf Reef Fish Charter Vessel/Headboat Permit or Historical Gulf Captain Charter/Headboat Endorsement/Permit for Reef Fish. As of September 11, 2012, there were 1,241 holders of a Gulf Reef Fish Charter Vessel/Headboat Permit. Approximately 97% of these permits were held by residents of a Gulf state (Table 3.1.5). Also as of that date 31 individuals held a Historical Captain Endorsement.

Table 3.1.5. Resident state of Gulf Reef Fish Charter Vessel/Headboat Permit and Historical Captain Endorsement holders. Source: SERO list of current permit holders.

State	Charter/ Headboat Permit	% Charter/ Headboat Permits	Captain Permit	% Captain Permit
AL	132	10.64%	3	9.68%
FL	719	57.94%	17	54.84%
LA	102	8.22%	5	16.13%
MS	49	3.95%	2	6.45%
TX	204	16.44%	4	12.90%
Gulf	1,206	97.18%	31	100.00%
Non-Gulf	35	2.82%	0	0.00%
Total	1,241	100.00%	31	100.00%

Some of the Charter Vessel/Headboat Permit holders also have a Gulf reef fish permit that allows their vessels to be used to harvest commercial quantities when not operating as for-hire vessels. Of the aforementioned 812 vessels with a Gulf reef fish permit, 150 or approximately 18.5% also have a Gulf reef fish charter vessel/headboat permit (Table 3.1.6). Almost three quarters (74%) of these dual-permitted vessels are owned by Florida residents and 93 (62%) are documented vessels. Total net tonnage of the documented vessels is almost 2,500. The average net tonnage of these dual-permitted documented vessels is 16.5, as opposed to 22.3, which is the average net tonnage of all documented vessels with a Gulf reef fish permit.

Table 3.1.6. Vessels with Gulf Reef Fish and Gulf Reef Fish Charter Vessel/Headboat Permits by state of hailing port. Source: SERO list of current permit holders and NMFS/USCG vessel data base.

State of Hailing Port	Vessels	Documented	Non-Documented	Total Net Tonnage Documented Vessels
AL	14	11	3	437
FL	111	68	43	1,700
LA	6	3	3	110
MS	1	1	0	7
TX	18	10	8	220
Total	150	93	57	2,474

Two of the 31 vessels with Historical Gulf Captain Charter/Headboat Endorsements for Reef Fish also have Gulf reef fish permits. Both of these vessels have a hailing port in Florida, are documented, and when combined have a total net tonnage of 21.

A Charter Vessel/Headboat Permit for Gulf reef fish that does not have a historical captain endorsement is fully transferable, with or without sale of the permitted vessel, except that no transfer is allowed to a vessel with a greater authorized passenger capacity than that of the vessel to which the moratorium permit was originally issued, as specified on the face of the permit being transferred. A Charter Vessel/Headboat Permit for Gulf reef fish that has a Historical Captain Endorsement may only be transferred to a vessel operated by the historical captain, cannot be transferred to a vessel with a greater authorized passenger capacity than that of the vessel to which the moratorium permit was originally issued, as specified on the face of the permit being transferred, and is not otherwise transferable.

When the above dual-permitted vessels are operating under their Gulf reef fish permit (as commercial vessels), their harvests count as commercial landings and can exceed the recreational daily bag limit that is 20 vermilion snapper per person within the 20 reef fish combined total. When operating as for-hire vessels, vermilion snapper and other reef fish are taken under the bag limit and cannot be sold. Hence, their landings are recreational.

The share of recreational landings of vermilion snapper in the Gulf states area by for-hire vessels has shown a generally increasing trend from 2001 through 2011 (Figure 3.1.20). A partial explanation for this increasing trend is that for-hire vessels, on average, can land more vermilion snapper per trip than private vessels because they typically have more anglers on board and do land more vermilion snapper after the recreational season for red snapper closes. The red snapper recreational season was open three months in 2009, four months in 2010, and less than two months in 2011. In 2012, the season opened on June 1 and ended July 17. This includes a six-day extension to account for bad weather during the 2012 season.

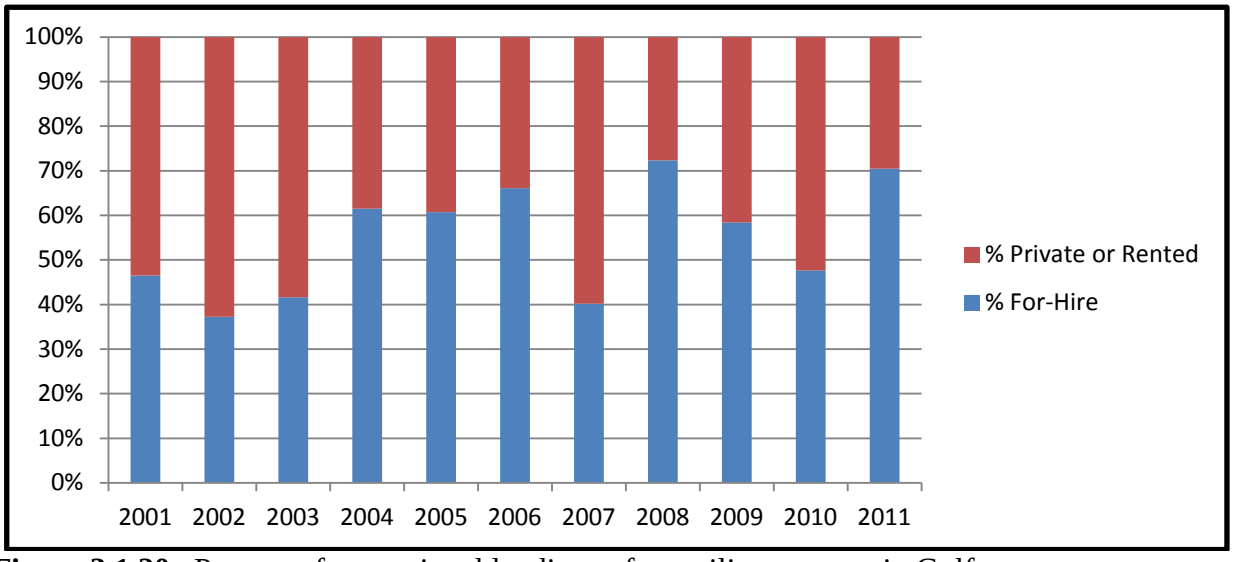


Figure 3.1.20. Percent of recreational landings of vermilion snapper in Gulf states area, excluding Texas, by for-hire (charter/headboat) or private (or rented) vessel. Source: NMFS MRIP.

Most recreational landings of yellowtail snapper occur on Florida's west coast. All of Alabama, Louisiana, and Texas recreational landings of yellowtail snapper from 2001 through 2010 were taken onboard for-hire vessels. However, along Florida's west coast, for-hire and private/rental vessels average approximately 47% and 53% of annual landings (by weight), respectively (Figure 3.1.21).

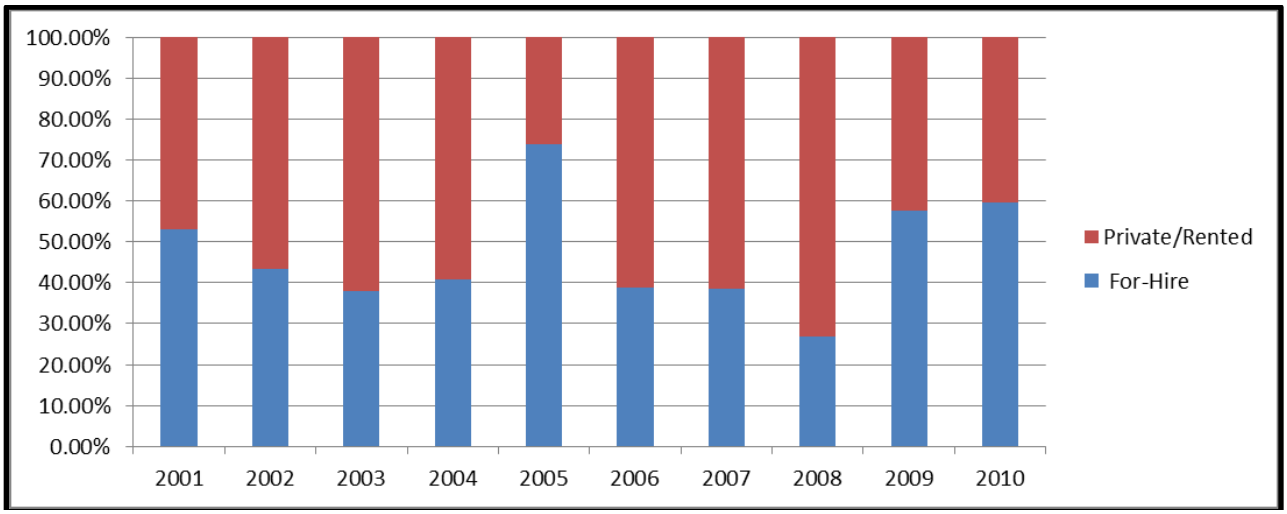


Figure 3.1.21. Percent of annual recreational landings (lbs ww) of yellowtail snapper by for-hire and private/rented vessels, 2001 – 2010. Source: NMFS MRIP.

Recreational landings of vermilion snapper varied considerably from 2001 to 2011, with a substantial increase in 2011 (Figure 3.1.22). In part, the increase in 2011 may be due to Florida and Alabama anglers increasing fishing effort following the closures caused by the Deepwater Horizon MC252 oil spill in 2010, which reduced all recreational landings. Preliminary estimates of recreational landings in four of the states during the first six months of 2012 suggest a decrease from 2011 landings in 2012 and realignment with previous years' landings (Figure 3.1.23).

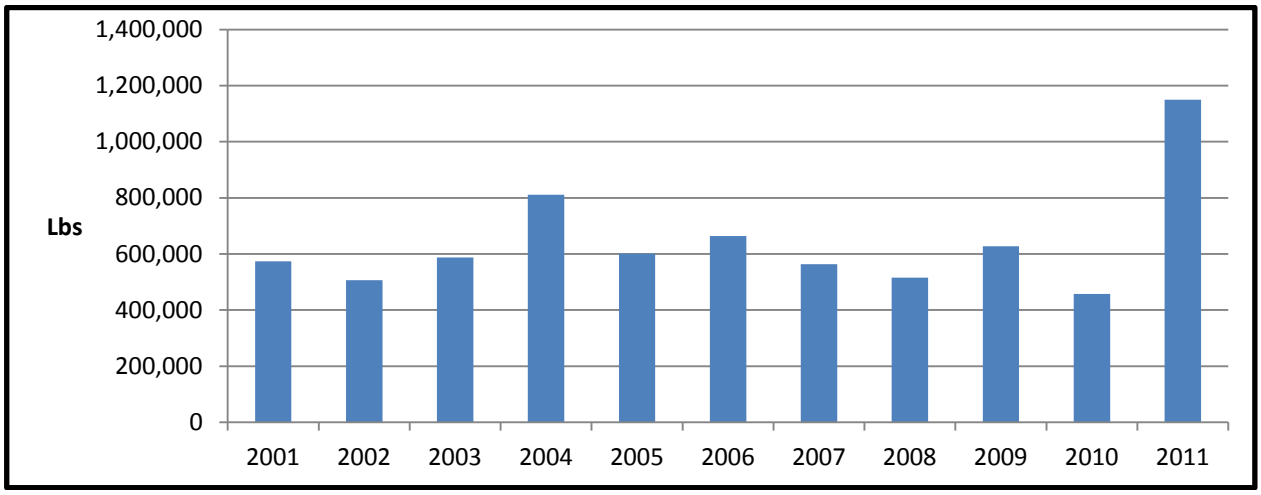


Figure 3.1.22. Recreational landings of vermilion snapper (lbs ww), 2001 – 2011. Source: SERO.

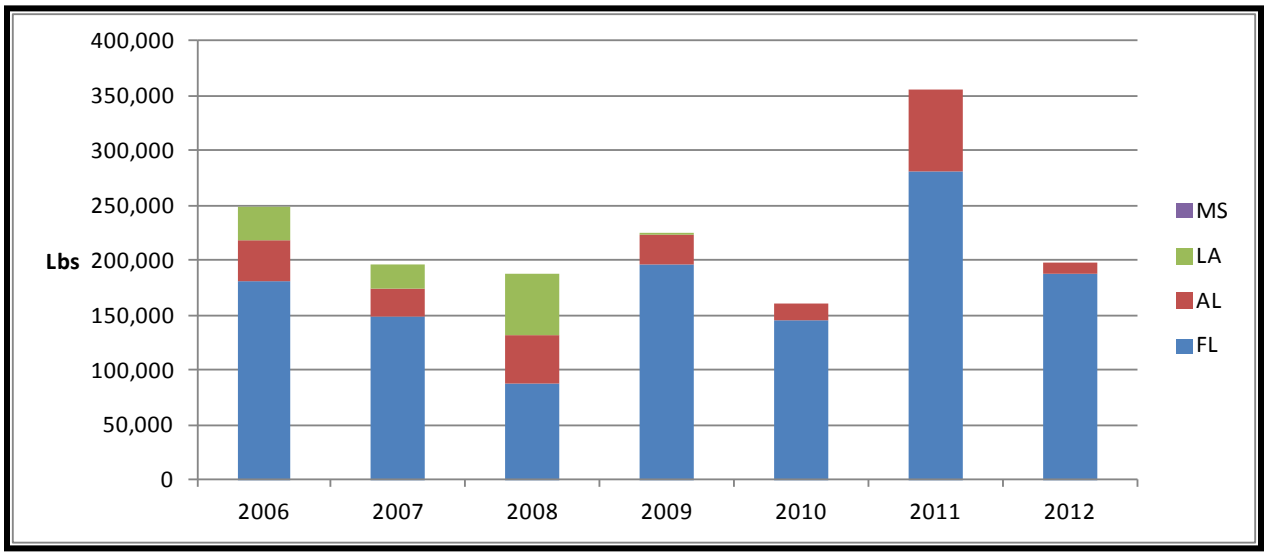


Figure 3.1.23. Recreational landings of vermilion snapper (lbs) in Alabama, Florida, Louisiana and Mississippi, January through June, 2006 – 2012. Source: NMFS MRIP.

Recreational landings of yellowtail snapper varied considerably from 2001 to 2011, dropping substantially after peaking in 2008 (Figure 3.1.24). The average of annual landings from 2009 to 2011 is about 40% of the average from 2006 to 2008. Although there were no recreational landings of yellowtail snapper in Texas in 2001 and 2002, there have been landings of the species there since 2003; however, these landings represent from zero to 0.03% of all recreational landings of yellowtail snapper. Preliminary estimates of recreational landings in four of the states during the first six months of 2012 do not suggest a significant difference from the average for those months (Figure 3.1.25 Florida's west coast accounts typically for approximately 99% of recreational landings (lbs ww). Just like on the commercial side of yellowtail snapper landings, Monroe County accounts for the large majority of recreational landings of yellowtail snapper of Florida's west coast counties.

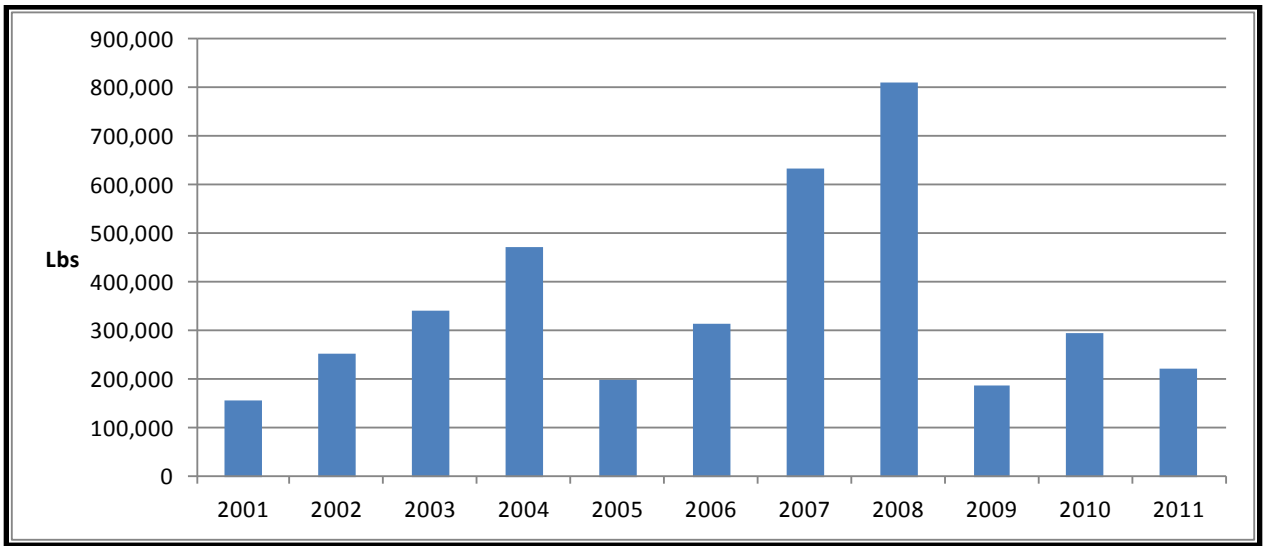


Figure 3.1.24. Recreational landings of yellowtail snapper (lbs ww), 2001 – 2011. Source: SERO.

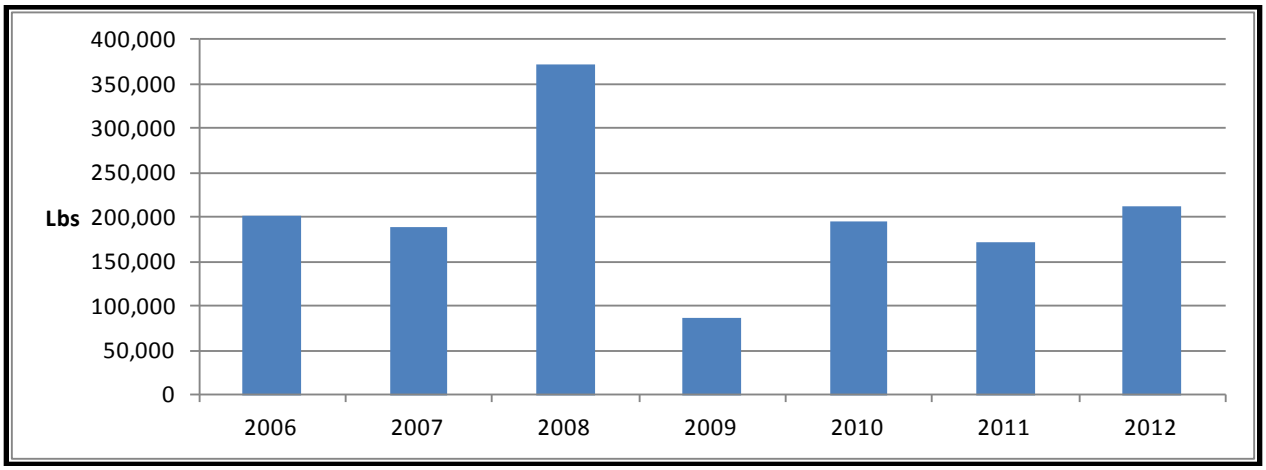


Figure 3.1.25. Recreational landings of yellowtail snapper (lbs ww) in Alabama, Florida, Louisiana and Mississippi, January through June, 2006 – 2012. Source: NMFS MRIP.

Relatively few recreational fishing trips along the Gulf coast primarily target vermilion or yellowtail snapper. Recreational fishermen in the Gulf tend to favor other reef fish, especially grouper and red snapper or take trips that target multiple reef fish species. From 2004 to 2011, an average of less than a tenth of a percent of recreational fishing trips reported targeted vermilion snapper as their primary target species, although there was an increase to 0.11% in 2011. Most of this increase was in trips off Alabama (Table 3.1.7).

Table 3.1.7. Number and percent of recreational fishing trips that targeted vermilion snapper, 2004 – 2011. Source: NMFS MRFSS.

Year	Recreational Fishing Trips		
	Targeting Vermilion Snapper	All	% Trips
2004	8,003	24,355,357	0.03%
2005	5,428	21,906,426	0.02%
2006	5,089	23,862,890	0.02%
2007	3,148	24,267,431	0.01%
2008	2,439	24,108,842	0.01%
2009	12,980	22,296,834	0.06%
2010	6,326	20,766,690	0.03%
2011	24,408	22,252,475	0.11%
Average	8,478	22,977,118	0.04%

Florida's west coast typically ranks first and Alabama second in the number of recreational trips that target vermilion snapper; however, the positions were reversed in 2011 (Figure 3.1.26). There were no trips that targeted vermilion snapper out of Mississippi from 2004 to 2011 and the only trips out of Louisiana occurred in 2007.

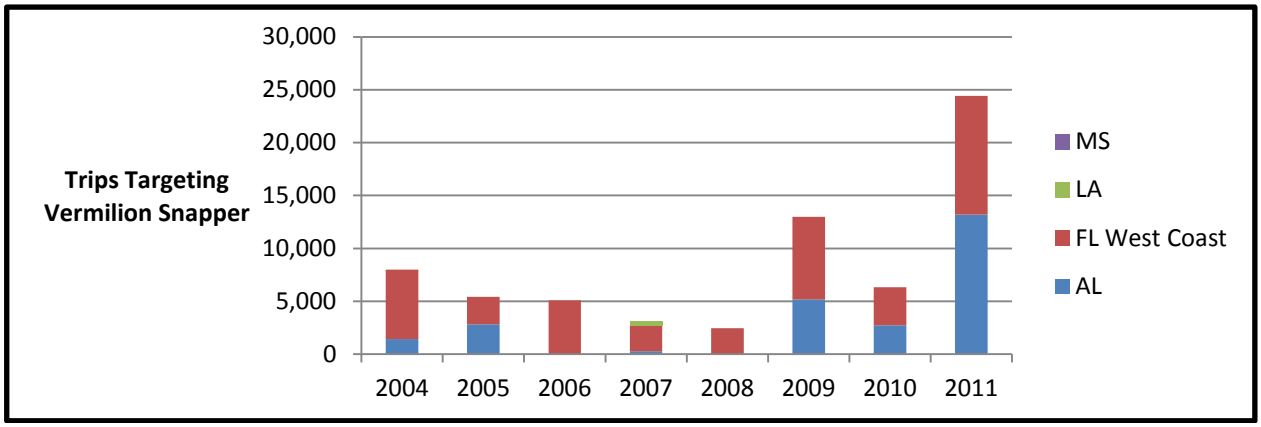


Figure 3.1.26. Number of annual recreational trips that targeted vermilion snapper by state, 2004 – 2011. Source: NMFS MRFSS.

Vermilion and yellowtail snapper are typically targeted offshore. From 2004 to 2011, there was only one year (2009) that had onshore trips that targeted vermilion snapper. Of the trips off shore that targeted vermilion snapper, private/rental vessels tended to make the large majority of trips, except in 2008 when none of the private/rental trips targeted vermilion snapper (Figure

3.1.27). The 12 inch total length (TL) minimum size limit for yellowtail snapper in state and federal waters off Florida likely eliminates recreational fishermen from catching legally sized fish inshore.

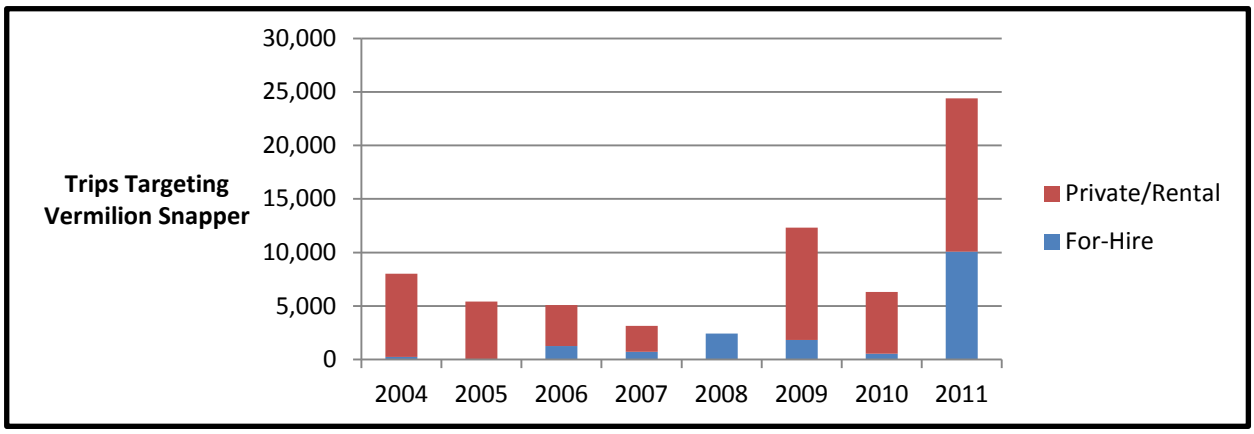


Figure 3.1.27. Annual offshore recreational trips that targeted vermilion snapper by vessel/mode, 2004 – 2011. Source: NMFS MRFSS.

Recreational trips that target vermilion snapper tend to decrease in the late fall and into the winter months (Table 3.1.8). On average, the three waves from May to October represent approximately 76% of the annual trips that target vermilion snapper each year. The two waves from November to February account for less than 10% of annual trips.

Table 3.1.8. Percent of annual recreational fishing trips that targeted vermilion snapper by wave, 2004 – 2011. Source: NMFS MRFSS.

Year	% Jan-Feb	% Mar-Apr	% May-Jun	% Jul-Aug	% Sep-Oct	% Nov-Dec
2004	0.00%	55.72%	0.00%	44.15%	0.00%	0.14%
2005	0.00%	7.63%	11.62%	0.00%	48.11%	32.64%
2006	24.98%	0.00%	0.00%	27.10%	47.93%	0.00%
2007	0.00%	14.36%	76.75%	0.00%	0.00%	8.89%
2008	0.00%	0.00%	35.26%	36.45%	28.29%	0.00%
2009	1.73%	19.51%	18.19%	44.83%	15.74%	0.00%
2010	0.00%	8.79%	43.55%	0.00%	47.66%	0.00%
2011	3.68%	11.71%	23.29%	48.99%	7.98%	4.35%
Average	3.80%	14.71%	26.08%	25.19%	24.46%	5.75%

Average annual landings of vermilion snapper per trip by vessel/mode that targeted the species varied considerably from 2004 to 2011 (Figure 3.1.27). Private/rented vessels' average landings per trip varied from 10 to 820 lbs (of those trips that targeted vermilion snapper), while for-hire vessel trips ranged from 16 to 123 lbs. Average landings per trip of private/rented vessels tend to be substantially larger than those of for-hire vessels; however, the rankings reversed in 2011.

The average number of yellowtail snapper landed per recreational trip off Florida's Gulf coast varied between two and six from 2001 to 2009.

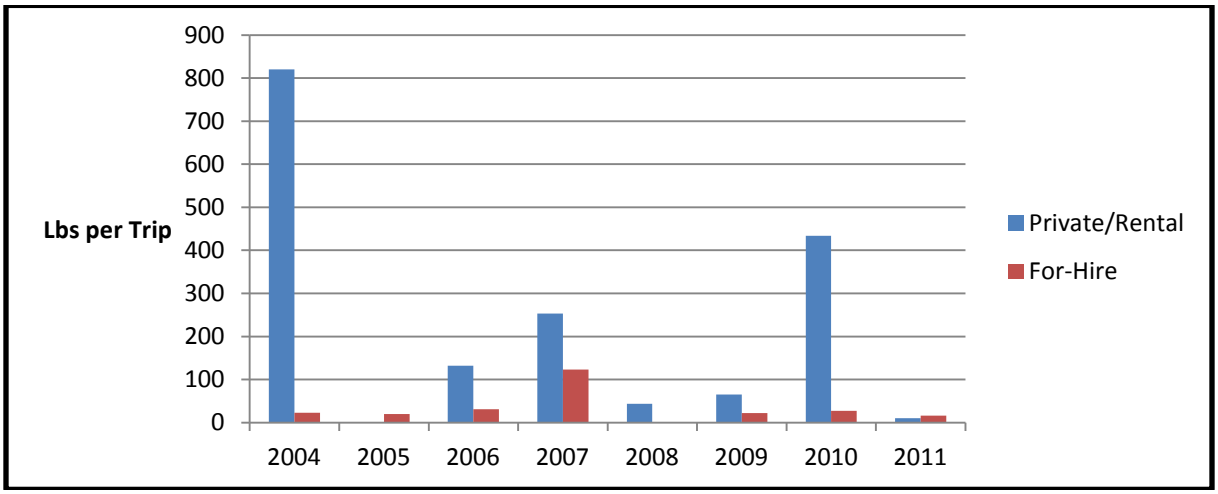


Figure 3.1.28. Average pounds of vermilion snapper per trip that targeted vermilion snapper by vessel/mode, 2004 – 2011. Source: NMFS MRFSS.

Gulf of Mexico Reef Fish Dealer Permit Holders

Commercial vessels landing reef fish can only sell their catch to federally permitted fish dealers. Because there is no income or sales requirement to acquire a federal dealer permit nor a suspension on new permits, the total number of dealers can rise (and fall) over the course of the year and from year to year. As of September 20, 2012, there were 201 entities with a valid Gulf Reef Fish Dealer Permit. Approximately 94% of the holders of these permits reside in a Gulf state, and approximately seven out of every ten permit holders reside in Florida (Table 3.1.9). Of those 12 who reside out of the Gulf-states area, three reside in New York and another three in North Carolina. States of the other permit holders include Massachusetts, Maryland, South Carolina and Montana.

Table 3.1.9. Number and percent of Gulf Reef Fish Dealer permits by state of permit holder. Source: SERO list of current permit holders.

State	Permit Holders	% Permit Holders
AL	7	3.48%
FL	142	70.65%
LA	18	8.96%
MS	3	1.49%
TX	19	9.45%
Gulf	189	94.03%
Non-Gulf	12	5.97%
Total	201	100.00%

3.2 Description of the Physical Environment

The Gulf of Mexico has a total area of approximately 600,000 square miles (1.5 million km^2), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel. Oceanic conditions are primarily affected by the Loop Current (Figure 3.2.1), the discharge of freshwater into the northern Gulf, and a semi-permanent, anti-cyclonic gyre in the western Gulf.

The Gulf is both a warm temperate and a tropical body of water (McEachran and Fechhelm 2005). Based on satellite derived measurements from 1982 through 2009, mean annual sea surface temperature ranged from 73 to 83º F (23 to 28º C) including bays and bayous (Figure 3.2.1). In general, mean sea surface temperature increases from north to south depending on time of year with large seasonal variations in shallow waters (NODC 2012: http://accession.nodc.noaa.gov/0072888).

For a more detailed description of the physical environment of the vermilion and yellowtail snapper, see the EIS for the Generic Essential Fish Habitat (EFH) Amendment and the Generic ACL/AM Amendment, which are incorporated here by reference (GMFMC 2004b; GMFMC 2011a).

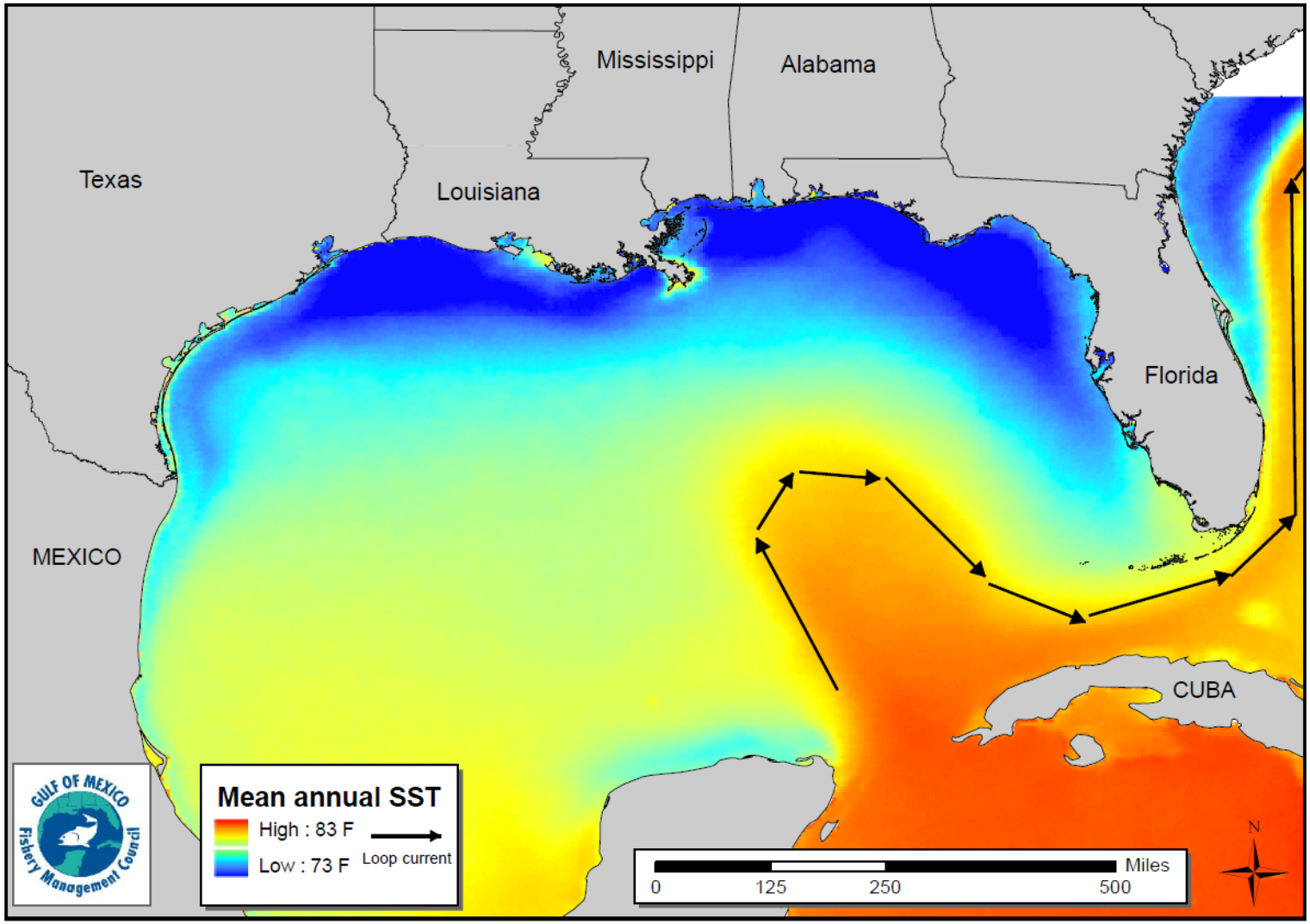


Figure 3.2.1. Mean annual sea surface temperature derived from the Advanced Very High Resolution Radiometer (AVHRR) Pathfinder Version 5 sea surface temperature data set (http://pathfinder.nodc.noaa.gov).

Environmental Sites of Special Interest Relevant to Vermilion Snapper and Yellowtail Snapper (Figure 3.2.2)

Environmental sites of special interest include the longline/buoy area closure.

Longline/Buoy Gear Area Closure – Permanent closure to use of these gears for reef fish harvest inshore of 20 fathoms (36.6 meters) off the Florida shelf and inshore of 50 fathoms (91.4 meters) for the remainder of the Gulf and encompasses 72,300 square nautical miles (nm^2) or 133,344 km^2. Bottom longline gear is prohibited inshore of 35 fathoms (54.3 meters) during the months of June through August in the eastern Gulf, but is not depicted in Figure 3.2.2.

Madison-Swanson and Steamboat Lumps Marine Reserves - No-take marine reserves sited on gag spawning aggregation areas where all fishing is prohibited except surface trolling from May through October (219 nm^2 or 405 km^2).

The Edges Marine Reserve – All fishing is prohibited from January through April and possession of any fish species is prohibited, except for such possession aboard a vessel in transit with fishing gear stowed as specified. The provisions of this do not apply to highly migratory species (390 nm^2 or 1,338 km^2).

Tortugas North and South Marine Reserves - No-take marine reserves cooperatively implemented by the state of Florida, National Ocean Service, the Gulf of Mexico Fishery Management Council (Council), and the National Park Service (see jurisdiction on chart) (185 square nautical miles). In addition, Generic Amendment 3 (GMFMC 2005) for addressing EFH requirements, Habitat Areas of Particular Concern (HAPC), and adverse effects of fishing in the following fishery management plans (FMPs) of the Gulf of Mexico: Shrimp, Red Drum, Reef Fish, Coral and Coral Reefs in the Gulf of Mexico and Spiny Lobster and the Coastal Migratory Pelagic resources of the Gulf and South Atlantic prohibited the use of anchors in these HAPCs.

Individual reef areas and bank HAPCs of the northwestern Gulf including: East and West Flower Garden Banks, Stetson Bank, Sonnier Bank, MacNeil Bank, 29 Fathom, Rankin Bright Bank, Geyer Bank, McGrail Bank, Bouma Bank, Rezak Sidner Bank, Alderice Bank, and Jakkula Bank - Pristine coral areas protected by preventing the use of some fishing gear that interacts with the bottom (263.2 nm^2 or 487.4 km^2). Subsequently, three of these areas were made into marine sanctuaries (i.e., East and West Flower Garden Banks and Stetson Bank). Bottom anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots on coral reefs are prohibited in the East and West Flower Garden Banks, McGrail Bank, and on the significant coral resources on Stetson Bank.

Florida Middle Grounds HAPC - Pristine soft coral area protected from use of any fishing gear interacting with the bottom (348 nm^2 or 644.5 km^2).

Pulley Ridge HAPC - A portion of the HAPC where deepwater hermatypic coral reefs are found is closed to anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots (2,300 nm^2 or 4,259 km^2).

Alabama Special Management Zone - In the Alabama Special Management Zone, fishing by a vessel operating as a charter vessel or headboat, a vessel that does not have a commercial permit for Gulf reef fish, or a vessel with such a permit fishing for Gulf reef fish, is limited to hook-and-line gear with no more than 3 hooks. Nonconforming gear is restricted to bag limits, or for reef fish without a bag limit, to 5% by weight of all fish aboard.

In addition to the above, there is one site listed in the National Register of Historic Places in the Gulf of Mexico. This is the wreck of the *U.S.S. Hatteras*, located in federal waters off Texas.

Additionally, Generic Amendment 3 for addressing EFH requirements (GMFMC 2005) requires a weak link in the tickler chain of bottom trawls on all habitats throughout the Gulf EEZ. A weak link is defined as a length or section of the tickler chain that has a breaking strength less than the chain itself and is easily seen as such when visually inspected. Also, the amendment establishes an education program on the protection of coral reefs when using various fishing gears in coral reef areas for recreational and commercial fishermen.

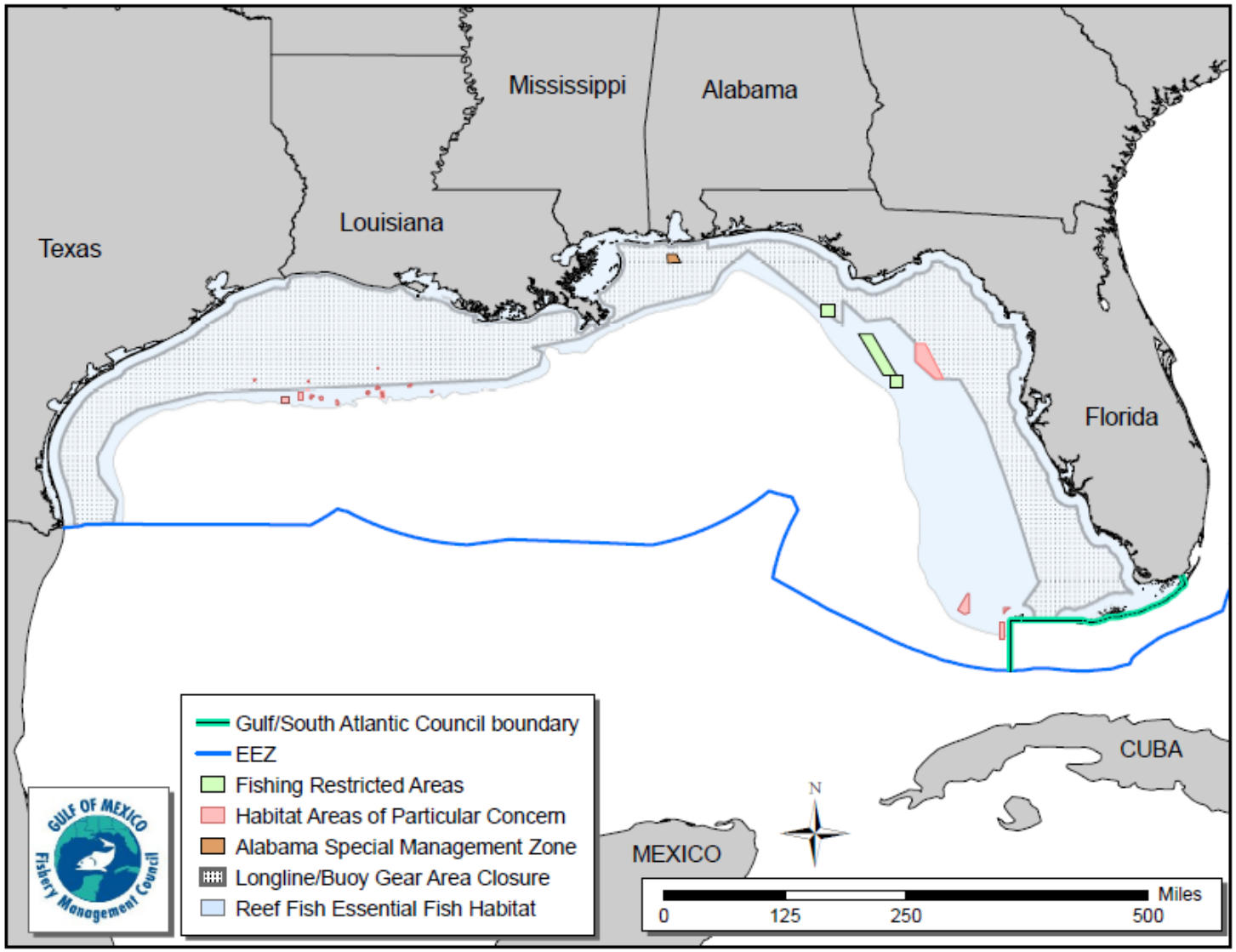


Figure 3.2.2. Map of most fishery management closed areas in the Gulf of Mexico.

The Deepwater Horizon MC252 oil spill in 2010 affected at least one-third of the Gulf of Mexico from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. The impacts of the Deepwater Horizon MC252 oil spill on the physical environment are expected to be significant and may be long-term. However, the oil remained outside most of the west Florida shelf where many shallow-water grouper species are particularly abundant (GMFMC 2004b). Oil was dispersed on the surface. However, because of the heavy use of dispersants (both at the surface and at the wellhead), oil was also documented as being suspended within the water column, some even deeper than the location of the broken well head. Floating and suspended oil and non-floating tar-balls washed ashore in several areas of the Gulf of Mexico. Whereas suspended and floating oil degrades over time, tar balls are persistent in the environment and can be transported hundreds of miles. For more information on physical impacts of the Deepwater Horizon MC252 oil spill, see http://www.noaa.gov/deepwaterhorizon/.

3.3 Description of the Biological/Ecological Environment

The biological environment of the Gulf of Mexico, including the species addressed in this amendment, is described in detail in the final EIS for the Generic EFH amendment and is incorporated here by reference (GMFMC 2004b). This includes summaries of their life histories.

3.3.1 Status of the Vermilion Snapper Stock

A description of vermilion snapper life history, biology, and stock status is summarized and incorporated here by reference from Amendment 23 (GMFMC 2004a). In summary, vermilion snapper has a typical reef fish life history where eggs and larvae are pelagic. Larvae then settle to the bottom. Adult and juvenile vermilion snapper are associated with hard bottom habitats. Vermilion snapper are gonochoristic (do not change sex) unlike many grouper and porgy species.

The Gulf vermilion snapper stock has been assessed since 1991. Early stock assessments were reviewed by the Council's Reef Fish Stock Assessment Panel (RFSAP), a panel comprised of stock assessment experts from various marine resource agencies and academic institutions. Based on the information contained in the assessments, the RFSAP provided management advice to the Council. The following summarizes the assessments and RFSAP recommendations.

The first Gulf vermilion snapper stock assessment was conducted in 1991 (Goodyear and Schirripa 1991, RFSAP 1991). Little age and growth data existed at that time, so growth curves and mortality functions were developed from the literature. These limitations meant that yield-per-recruit and other age-structured analyses were not possible. Based on past landings, the RFSAP recommended that landings be limited to 2.0-2.9 mp.

An updated vermilion snapper stock assessment was completed in 1993 (Goodyear and Thompson 1993, RFSAP 1993, Schirripa 1992). The fishing mortality rate (F) was estimated to be close to the F associated with harvesting the maximum yield per recruit (MAX). As a result,

the RFSAP cautioned against any expansion of the harvest because the yield-per-recruit curve indicated additional effort would not produce higher yields and would decrease SPR.

A 1996 assessment indicated the Gulf vermilion snapper stock was approaching overfishing (Schirripa 1996a and b, RFSAP 1996).

A 1998 assessment (Schirripa 1998) used a virtual population analysis (VPA) model to estimate the condition of the stock. Transitional SPR was estimated to be between 21% and 27%. Consequently, the stock was not overfished relative to threshold of 20% SPR. The RFSAP cautioned, however, that the transition to defining overfishing thresholds as being equal to F_{MSY} would likely mean lowering future ABCs (RFSAP 1998).

In 2000, an assessment update was conducted (Schirripa and Legault 2000) and a maximum fishing mortality threshold (MFMT) of F_{MSY} was established. $F_{30\% SPR}$ was used as a proxy for F_{MSY}. The assessment concluded there was a 93% chance overfishing occurred in 1996 ($F_{1996} > F_{MSY}$) and a 30% chance stock biomass was below minimum stock size threshold (MSST) (i.e., overfished). Projections computed through 1999 indicated there was a 73% chance overfishing occurred in 1999 and a 59% chance the stock was overfished.

New information about vermilion snapper age and growth, new fishery-dependent and fishery-independent standardized indices of abundance, and landings estimates updated through 1999 were used in a 2001 assessment (Porch and Cass-Calay 2001). Estimated stock status varied greatly among the models using age-structured analysis and so was not used to judge the condition of the stock. Instead, a non-equilibrium surplus production model was used. Based on estimates of F and biomass from the model, the RFSAP (RFSAP 2001) concluded the stock was overfished and experiencing overfishing.

In 2006, the Southeast Data, Assessment, and Review (SEDAR) process was used to assess vermilion snapper (SEDAR 9 2006c). Using a surplus production model that included the ability to use age data where available, the assessment determined vermilion snapper was neither overfished nor experiencing overfishing but stock biomass was generally declining and fishing mortality (F) was increasing. Under projected constant fishing mortality levels that existed prior to the implementation of Amendment 23 (vermilion snapper rebuilding plan) (GMFMC 2004a), spawning stock biomass is expected to be stable or increase slightly in the future.

In 2011, a SEDAR update assessment was conducted for vermilion snapper (SEDAR 9 Update 2011a, b and c). This assessment was presented to the Scientific and Statistical Committee (SSC) in October 2011. A continuity run using the state-space age production model (SSASPM) was conducted using exactly the same data inputs and methodology used in the 2006 SEDAR benchmark assessment (except for updated data streams). A second run, referred to as the alternative shrimp bycatch run, included shrimp fishery effort data in the model which allows a decline in effort and identifies shrimp effort specifically for depths greater than 10 fathoms. A third run was made using the Stock Synthesis (version 3) model, but this was exploratory in nature and not considered part of the update assessment. Stock Synthesis (version 3) will be used as the base model in the next benchmark assessment. All of the model runs showed that F

was below the overfishing threshold, and the current spawning stock biomass ($SSB_{current}$) was above the overfished threshold (i.e., was not overfished).

Upon reviewing the update assessment in October 2011, the Scientific and Statistical Committee (SSC) favored the alternative shrimp bycatch run as the more realistic model. To derive an acceptable biological catch (ABC), the SSC applied Tier 1 of the new ABC Control Rule developed in the Generic ACL/AM Amendment to the assessment. A score of P* = 0.398 resulted, indicating that within a range of 30% to 50%, a probability of 39.8% (that the ABC exceeds the true value of overfishing limit (OFL)) was an appropriate level of risk due to scientific uncertainty in the assessment. However, the Council was concerned that the small buffer between OFL and ABC (2% to 5%) did not adequately capture the scientific uncertainty, and returned the OFL and ABC recommendations to the SSC for further evaluation at a subsequent meeting.

The SSC reconvened in June 2012 to reevaluate its OFL and ABC recommendations for vermilion snapper (GMFMC 2012a). During the meeting, the SSC examined an alternative method for determining ABC developed by Ralston et al. (2011) and used by the Pacific Fishery Management Council. In comparison with the Gulf Council ABC control rule, the Ralston et al. (2011) approach produced results similar to those from the existing ABC control rule, suggesting that the results produced by the current ABC control rule are valid.

During the June 2012 SSC meeting, Southeast Fisheries Science Center (SEFSC) staff reported that a problem had been found with the estimate of $F_{SPR\ 30\%}$ used as a proxy for F_{MSY} (GMFMC 2012a). This problem was corrected, and yield projections were run using both $F_{SPR\ 30\%}$ and F_{MAX} as proxies for F_{MSY}. The SSC, after evaluating both proxies, felt that F_{MAX} should be used as the proxy rather than $F_{SPR\ 30\%}$ in this case. After replacing $F_{SPR\ 30\%}$ with F_{MAX} as the proxy for F_{MSY}, and applying the P* of 39.8% to the revised probability function, the projections resulted in the yield streams shown in Table 1.1.1. The OFL values initially go down and then back up due to the presence of a weak year class passing through the system.

Table 3.2.1. Required Sustainable Fisheries Act (SFA) and Magnuson-Stevens Act evaluations for alternative run with Gulf-wide shrimp effort. Spawning stock biomass (SSB) measures are in terms of egg production.

Criteria	Definition	Revised 2012 Projections F_{MAX} Directed Yields
Mortality Rate Criteria		
F_{MSY}	F_{MAX} as proxy	0.41
MFMT (Amend 23)	F_{MAX}	0.41
F_{OY} (Amend 23)	75% of F_{MAX}	0.30
$F_{CURRENT}$	2007-2009 mean F	0.34
$F_{CURRENT}$/MFMT	2007-2009 mean F/F_{MAX}	0.83
Base M	M = 0.25 all ages	0.25
Biomass Criteria		
SSB_{MSY}	Equil. egg production @ F_{MAX}	1.17E+14
MSST	$(I-M)*SSB_{MSY}$ where M=0.25	8.80E+13
$SSB_{CURRENT}$	SSB_{2010}	1.08E+14
$SSB_{CURRENT}/SSB_{MSY}$	SSB_{2010}/SSB_{FMAX}	0.92
$SSB_{CURRENT}$/MSST		1.23
Equilibrium MSY	Equilibrium Yield @ F_{MAX}	4.61 mp (WW)
Equilibrium OY	Equilibrium Yield @ 75% of F_{MAX}	4.59 mp (WW)
	Yield Streams	
OFL (Directed Yield)	Annual Yield @ MFMT	
	2012	4.81 mp
	2013	4.59 mp
	2014	4.56 mp
	2015	4.57 mp
	2016	4.58 mp
	2017	4.59 mp
Annual OY (Directed Yield)	Annual Yield @ F_{OY}	
	2012	3.75 mp
	2013	3.82 mp
	2014	4.01 mp
	2015	4.19 mp
	2016	4.32 mp
	2017	4.41 mp
ABC (Directed Yield)	P* = 39.8%	
	2012	4.68 mp
	2013	4.41 mp
	2014	4.34 mp
	2015	4.33 mp
	2016	4.33 mp

Source: Table 25 in SEDAR 9 Update 2012. (ABC values for 2015 and 2016 were calculated by SEFSC staff during the June SSC meeting.)

3.3.2. Status of the Yellowtail Snapper Stock

A description of yellowtail snapper life history and biology is summarized and incorporated here by reference from the Generic ACL/AM Amendment (GMFMC 2011a). In summary, yellowtail snapper are tropical reef fish that are most abundant in the Bahamas, south Florida, and the Caribbean. Yellowtail snapper live to a maximum observed age of 23 years. Females reach 50% maturity at 9.1 inches total length and 1.7 years. They are primarily landed in Florida, but MRFSS has documented recreational landings in low numbers off of Louisiana and the south Atlantic states of Georgia, South Carolina, and North Carolina. Yellowtail snapper spawning extends over most of the spring and summer, peaking during May to July. In the continental U.S., a large spawning aggregation is reported to form during May to July at Riley's Hump near the Dry Tortugas off Key West, Florida.

The first yellowtail snapper stock assessment for the South Atlantic was conducted in 1992 (Huntsman et al. 1992), and the first SEDAR benchmark assessment was conducted in 2003 (SEDAR 3 2003) with FWRI as the lead agency. Huntsman et al. (1992) estimated that the first fully recruited age to the fishery was age-3 fish. SEDAR 3 (2003) estimated for 2001 that when the stock biomass was compared to the minimum stock size threshold (MSST), the ratio of SSB_{2001}/SSB_{MSST} was 1.78 (not overfished) and the fishing mortality rate compared to the fishing mortality rate at optimum yield (OY), F_{2001}/F_{OY} was 0.92 (not overfishing).

A benchmark yellowtail snapper assessment was conducted in 2012 by FWRI (O'Hop et al. 2012). This was not a SEDAR assessment, but it was submitted to a joint meeting of the South Atlantic SSC and Gulf Standing and Special SSC for review in October 2012. Whereas the previous yellowtail snapper assessment in 2003 (SEDAR 3) used a release mortality estimate of 30%, this assessment used a lower bound for release mortality of 10% for the recreational sector, and 11.5% for the commercial sector, based on observer data. Yellowtail snapper live to a maximum observed age of 23 years. Females reach 50% maturity at 9.1 inches total length and 1.7 years. The assessment was conducted with a statistical catch-at-age model (ASAP2). Fishery-dependent data included commercial logbooks, MRFSS, and the headboat survey. Fishery-independent data came from the NMFS/University of Miami Reef Visual Census. Results from the assessment indicate that, as of 2010, the yellowtail snapper stock is neither overfished nor experiencing overfishing. Using $F_{30\% SPR}$ as a proxy for F_{MSY}, the ratio $F_{2010}/F_{30\%} = 0.153$ (not overfishing), and the ratio $SSB_{2010}/SSB_{F \text{ at } 30\% SPR} = 3.357$ (not overfished).

Because the stock biomass was well above the level needed to sustain MSY, a joint Gulf and South Atlantic SSC provided management advice based on the equilibrium levels of MSY. Consequently, the joint SSC established OFL at the equilibrium MSY yield is 4.61 mp s total removals (landings plus dead discards), or 4.51 mp in landings.

To set ABC, the Gulf and South Atlantic Councils have separate ABC control rules for establishing the appropriate P* (acceptable risk of overfishing). Using the South Atlantic ABC control rule resulted P* =0.40. Using Tier 1 of the Gulf ABC control rule resulted in P* = 0.416. Since the results were very close, the joint SSC agreed to use P* = 0.40 to set the ABC. When this P* was applied to a probability distribution function prepared by FWRI, the resulting ABC

was 4.13 mp total removals, or 4.05 mp in landings. When apportioned between the South Atlantic and Gulf jurisdictions, the resulting regional ABCs in terms of landings were:

South Atlantic: **3.0375 mp ww**
Gulf of Mexico: **1.0125 mp ww**

3.3.3. Status of Reef Fish Stocks

The Reef Fish FMP currently encompasses 31 species. Stock assessments and stock assessment reviews have been conducted for 13 species and can be found on the Council (www.gulfcouncil.org) and SEDAR (www.sefsc.noaa.gov/sedar) websites. The assessed species are:

- red snapper (SEDAR 7 2005; SEDAR 7 Update 2009)
- vermilion snapper (Porch and Cass-Calay 2001; SEDAR 9 2006c; SEDAR 9 Update 2011c)
- yellowtail snapper (Muller et al. 2003; SEDAR 3 2003; O'Hop et al. 2012)
- mutton snapper (SEDAR 15A 2008)
- gray triggerfish (Valle et al. 2001; SEDAR 9 2006a; SEDAR 9 Update 2011a)
- greater amberjack (Turner et al. 2000; SEDAR 9 2006b; SEDAR 9 Update 2010)
- hogfish (Ault et al. 2003; SEDAR 6 2004b)
- red grouper (NMFS 2002; SEDAR 12 2007; SEDAR 12 Update 2009)
- gag (Turner et al. 2001; SEDAR 10 2006; SEDAR 10 Update 2009)
- black grouper (SEDAR 19 2010)
- yellowedge grouper (Cass-Calay and Bahnick 2002; SEDAR 22 2011b)
- tilefish (golden) (SEDAR 22 2011a)
- goliath grouper (Porch et al. 2003; SEDAR 6 2004a; SEDAR 23 2011)

The National Marine Fisheries Service Office of Sustainable Fisheries updates its Status of U.S. Fisheries Report to Congress on a quarterly basis utilizing the most current stock assessment information. The most recent update can be found at: (http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm). The most recent update at the time of this writing is the first quarter report of the 2012 Status of U.S. Fisheries which classifies gag, red grouper, and the other 11 reef fish species as follows:

Overfished and Experiencing Overfishing:

- gag
- greater amberjack
- gray triggerfish

Overfished but not Experiencing Overfishing:

- red snapper

Not Overfished or Experiencing Overfishing:

- yellowtail snapper
- yellowedge grouper
- vermilion snapper
- black grouper
- red grouper
- mutton snapper
- tilefish (golden)

Unknown:

- hogfish – may be experiencing growth overfishing
- goliath grouper – not experiencing overfishing, but benchmarks do not reflect appropriate stock dynamics to determine overfished status
- Stock assessments have not been conducted for the other species, so their classification is unknown.

3.3.4. Protected Species

There are 28 different species of marine mammals that may occur in the Gulf of Mexico. All 28 species are protected under the Marine Mammal Protection Act (MMPA) and six are also listed as endangered under the Endangered Species Act (ESA) (i.e., sperm, sei, fin, blue, humpback and North Atlantic right whales). Other species protected under the ESA occurring in the Gulf of Mexico include five sea turtle species (Kemp's Ridley, loggerhead, green, leatherback, and hawksbill); two fish species (Gulf sturgeon and smalltooth sawfish), and two coral species (elkhorn coral and staghorn coral). Information on the distribution, biology, and abundance of these protected species in the Gulf of Mexico is included in the final EIS to the Council's Generic EFH Amendment (GMFMC 2004b) and the February 2005, October 2009, and September 2011 ESA biological opinions on the reef fish fishery (NMFS 2005; NMFS 2009; NMFS 2011). Marine Mammal Stock Assessment Reports and additional information are also available on the NMFS Office of Protected Species website: http://www.nmfs.noaa.gov/pr/species/.

The MMPA 2012 List of Fisheries (76 FR 73912) considers vertical line gear and longline gear as Category III gears (remote likelihood of/no known incidental mortality or serious injury of marine mammals). These gears are the dominant gear used in the Gulf reef fish fishery - vertical line (90%) and longline (5.4%) gear by weight of landings. This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. Dolphins are the only species documented as interacting with

this Gulf fishery. [7] Bottlenose dolphins prey on the bait, catch, and/or released discards of fish from the reef fish fishery.

All five species of sea turtles are adversely affected by the Gulf reef fish fishery. Incidental captures are relatively infrequent, but occur in all commercial and recreational hook-and-line components of the reef fish fishery. Captured sea turtles can be released alive or can be found dead upon retrieval of the gear as a result of forced submergence. Sea turtles released alive may later succumb to injuries sustained at the time of capture or from exacerbated trauma from fishing hooks or lines that were ingested, entangled, or otherwise still attached when they were released. Sea turtle release gear and handling protocols are required in the commercial and for-hire reef fish fisheries to minimize post-release mortality.

Smalltooth sawfish also interact with the Gulf reef fish fishery, but to a much lesser extent. Smalltooth sawfish primarily occur in the Gulf off peninsular Florida. Incidental captures in the commercial and recreational hook-and-line components of the reef fish fishery are rare events, with only eight smalltooth sawfish estimated to be incidentally caught annually, and none are expected to result in mortality (NMFS 2005). Fishermen in this fishery are required to follow smalltooth sawfish safe handling guidelines. The long, toothed rostrum of the smalltooth sawfish causes this species to be particularly vulnerable to entanglement in fishing gear.

On November 30, 2012, NMFS proposed listing 66 species of corals under the ESA, of which 12 species were proposed to be classified as endangered.[8] Five of the 12 species occur in the Gulf of Mexico region; however, because of protections including closed areas (see section 3.2 for listing), NMFS believes the continued authorization of the Gulf of Mexico reef fish fishery is not likely to jeopardize the continued existence of any species proposed for listing.

3.3.5. Deepwater Horizon MC252 Oil Spill

The Deepwater Horizon MC252 oil spill in 2010 affected at least one-third of the Gulf area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. Crude oil is a complex mixture of thousands of chemical compounds. The oil from the Deepwater Horizon MC252 spill is relatively high in alkanes, which can readily be used by microorganisms as a food source. As a result, the oil from this spill is likely to biodegrade more readily than crude oil in general. The Deepwater Horizon MC252 oil is also relatively much lower in polyaromatic hydrocarbons (PAHs). PAHs are highly toxic chemicals that tend to persist in the environment for long periods of time, especially if the spilled oil penetrates into the substrate on beaches or shorelines. Like all crude oils, MC252 oil contains volatile organic compounds (VOCs) such as benzene, toluene, and xylene. Some VOCs are acutely toxic but because they evaporate readily, they are generally a concern only when oil is fresh.[9]

[7] Source: http://sero.nmfs.noaa.gov/pr/mm/dolphins/bdconservation.htm
[8] Source: http://sero.nmfs.noaa.gov/pr/esa/82CoralSpecies.htm
[9] Source: http://sero.nmfs.noaa.gov/sf/deepwater_horizon/OilCharacteristics.pdf

In addition to the crude oil, 1.4 million gallons of the dispersant, Corexit 9500A®, was applied to the ocean surface and an additional 770,000 gallons of dispersant was pumped to the mile-deep well head. No large-scale applications of dispersants in deep water had been conducted until the Deepwater Horizon MC252 oil spill. Thus, no data exists on the environmental fate of dispersants in deep water. However, a recent study found that, while Corexit 9500A® and oil are similar in their toxicity, when Corexit 9500A® and oil were mixed in lab tests, toxicity to microscopic rotifers increased up to 52-fold (Rico-Martínez et al. 2013). This suggests that the toxicity of the oil and dispersant combined may be greater than anticipated.

Oil could exacerbate development of the hypoxic "dead" zone in the Gulf as could higher than normal input of water from the Mississippi River drainage. For example, oil on the surface of the water could restrict the normal process of atmospheric oxygen mixing into and replenishing oxygen concentrations in the water column. In addition, microbes in the water that break down oil and dispersant also consume oxygen; this could lead to further oxygen depletion. However, the hypoxic "dead" zone occurs in the northern Gulf, not on the west Florida shelf.

The affected areas were outside of the west Florida Shelf where vermilion snapper and yellowtail snapper are primarily found. Therefore the effects of the oil spill on vermilion snapper populations and their essential fish habitat would likely be minimal.

For protected species, a consultation pursuant to Endangered Species Act Section 7(a)(2) was reinitiated as a result of Deepwater Horizon MC252 spill.

On September 30, 2011, the Protected Resources Division released a biological opinion, which after analyzing best available data, the current status of the species, environmental baseline (including the impacts of the recent Deepwater Horizon MC252 oil release event in the northern Gulf), effects of the proposed action, and cumulative effects, concluded that the continued operation of the Gulf reef fish fishery is not likely to jeopardize the continued existence of green, hawksbill, Kemp's ridley, leatherback, or loggerhead sea turtles, nor the continued existence of smalltooth sawfish (NMFS 2011a).

3.4 Description of the Economic Environment

As of July 9, 2012, there were 812 valid Gulf commercial reef fish permits, and approximately 99% of these permit holders have mailing addresses in one of the Gulf states. Almost 80% of the 812 permits are issued to addresses in Florida. In November 2012, that number increased to 814.

As of September 20, 2012, there were 201 entities with a valid Gulf Reef Fish Dealer Permit. Approximately 94% of these permits provide an address/are located in a Gulf state, and approximately seven out of every ten permits are located/based in Florida.

As stated in the Description of the Fishery (Section 3.1), Florida's west coast accounts for the majority of annual landings of Gulf reef fish, which mirrors that coast's first-place ranking in net tonnage of documented vessels with a Gulf commercial reef fish permit. From 2001 to 2011, landings on Florida's west coast represented from approximately 71% to 80% of annual Gulf reef fish landings by weight and approximately 68% to 79% by value.

The relative importance of snapper species to commercial Gulf reef fish fishermen varies substantially across the states. Snapper landings represented all of Mississippi's annual landings of reef fish from 2001 to 2010, almost 80% of Louisiana's landings of reef fish, and over 80% of Alabama's and Texas' landings of reef fish. The importance of snapper to Florida's west coast landings of reef fish increased over the decade from representing approximately 21% of all reef fish landings in 2001 to approximately 44% of reef fish landings in 2010.

The significance of red, vermilion, and yellowtail snapper commercial landings varies greatly across the Gulf. Florida's west coast had all of the commercial landings by weight of yellowtail snapper from 2001 to 2010 and 99.99% of all of the commercial landings in 2011. Mississippi had no commercial landings of vermilion snapper during those years. Red snapper ranks first among commercially landed snapper species in Alabama, Louisiana, Mississippi, and Texas; however, in 2010, no red snapper were landed by commercial fishermen in Mississippi. Yellowtail snapper ranked first by weight among the three snapper species landed on Florida's west coast, while vermilion snapper ranked second.

Alabama commercial landings, hailing ports and dealers

The two coastal counties of Mobile and Baldwin comprise the Mobile Bay region and account for all marine landings in Alabama. Mobile Bay covers an area of 2,829 square miles and in 2010 it had 591,599 residents and 233,433 households. The median household income was $45,485 and per capita income was $24,958. As of October 2012, the unemployment rate (seasonally unadjusted) was 8.7% in Mobile and 7.2 % in Baldwin County.

Forty-two (5.17%) of the Gulf commercial reef fish permit holders reside in Alabama. Twenty-five (59.5%) of these 42 permits correspond to documented vessels, and of these 25 vessels, 22 have a hailing port in Alabama and the other three have a hailing port in Florida. Vice versa, there are three documented vessels that have a hailing port in Alabama and are owned by Florida entities with a Gulf commercial reef fish permit.

Thirty-six percent of the 25 documented vessels with an Alabama hailing port have Orange Beach as their hailing port, and another 32% hail from Bayou La Batre and Dauphin Island (Table 3.4.1). Orange Beach's nine vessels account for approximately 39% of total net tonnage, while the eight combined vessels hailing from Dauphin Island and Bayou La Batre account for approximately 38% of the total net tonnage. Every one of these hailing ports is found in either Mobile or Baldwin County, the only Alabama counties along the Gulf coast.

Table 3.4.1. Number and total net tonnage of documented vessels with a Gulf reef fish permit by AL hailing port as of July 9, 2012. Source: SERO list of current permit holders and SERO list of current permit holders.

Hailing Port	Vessels	Percent	Total Net Tonnage	Percent
Alabama Port, AL	1	4.00%	18	2.47%
Bayou La Batre, AL	4	16.00%	117	16.05%
Bon Secour, AL	2	8.00%	37	5.08%
Dauphin Island, AL	4	16.00%	159	21.81%
Elberta, AL	1	4.00%	39	5.35%
Foley, AL	1	4.00%	9	1.23%
Gulf Shores, AL	1	4.00%	12	1.65%
Mobile, AL	2	8.00%	57	7.82%
Orange Beach, AL	9	36.00%	281	38.55%
Alabama	25	100.00%	729	100.00%

The 17 undocumented vessels are owned by residents of four counties: Baldwin, Chilton, Dale, and Mobile. Fifteen (88%) of these vessels are owned by residents of Baldwin and Mobile Counties.

As of July 9, 2012, eight residents of Alabama had a Gulf reef fish dealer permit, and as of September 11, 2012, seven after one went bankrupt (http://business-bankruptcies.com). Bon Secour ranks first by number of dealers. Bayou La Batre and Theodore are tied for second (Table 3.4.2). All of the dealers are located in Mobile and Baldwin Counties. There are no limits on the number of dealer permits that can be issued, so it possible that the number of dealers in Alabama could increase in the future.

Table 3.4.2. Location of Alabama's Gulf of Mexico Reef Fish Dealer Permit Holders as of September 11, 2012. Source: SERO list of current permit holders.

City/Town	County	Census Statistic Area	Dealers	% Dealers
Bayou La Batre	Mobile	Mobile Metropolitan	2	28.57%
Bon Secour	Baldwin	Daphne-Fairhope-Foley Micropolitan	3	42.86%
Theodore	Mobile	Mobile Metropolitan	2	28.57%
Total Alabama			7	100.00%

The above reef fish dealers are found in the Fresh and Frozen Seafood Processing industry as defined under the North American Industry Classification System (NAICS 311712[10]). In 2010, there were 21 employer establishments in that industry in Alabama. Eighteen (86%) of the employer establishments were located in the Mobile Bay region: 16 in Mobile County and two in Baldwin County. The 16 establishments in Mobile County had 375 paid employees and combined annual payrolls of $6.506 million (U.S. Census Bureau, 2010 County Business

[10] Industries are categorized by the North American Industry Classification System (NAICS) and are a fundamental part of the Economic Census and other surveys of economic activity.

Patterns). The two establishments in Baldwin County had from 100 to 249 paid employees and an undisclosed combined payroll. These dealers participate within the broader industrial category of Seafood Product Preparation and Packaging industry (NAICS 31171). In 2010, there were 49 non-employee firms in the Seafood Product Preparation and Packaging industry (NAICS 31171) in Mobile County with receipts of $2.202 million. There was a small number of non-employee firms in Baldwin County; however, the number and receipts are undisclosed.

Landings of species other than reef fish, especially shrimp, greatly exceed those of reef fish. For example, in 2010, reef fish represented approximately 1.8% of all commercial landings in Alabama. While average landings of all species per capita (Mobile Bay region) in 2010 was approximately 24.7 lbs ww, average reef fish landings per capita in the region was less than half a lb ww that year. The average lbs ww of all species per household in the region was approximately 63, but approximately one for reef fish.

Florida commercial landings, hailing ports, and dealers

Approximately 80% (647) of the Gulf reef fish permit holders reside in Florida. Of these 647 permits, 387 (59.8%) correspond to documented vessels and 378 of them have a hailing port in Florida, whereas nine have a hailing port in another Gulf state (seven in Louisiana and two in Alabama). Ten other documented vessels have a hailing port in Florida but are owned by non-Florida entities with a Gulf reef fish permit (two in Alabama, two in Louisiana, four in Georgia, one in Wyoming, one in Texas). In total, 388 (81%) of the documented vessels that correspond to a Gulf reef fish permit have a hailing port in Florida. These vessels range in net tonnage from 5 to 72 (Figure 3.4.1).

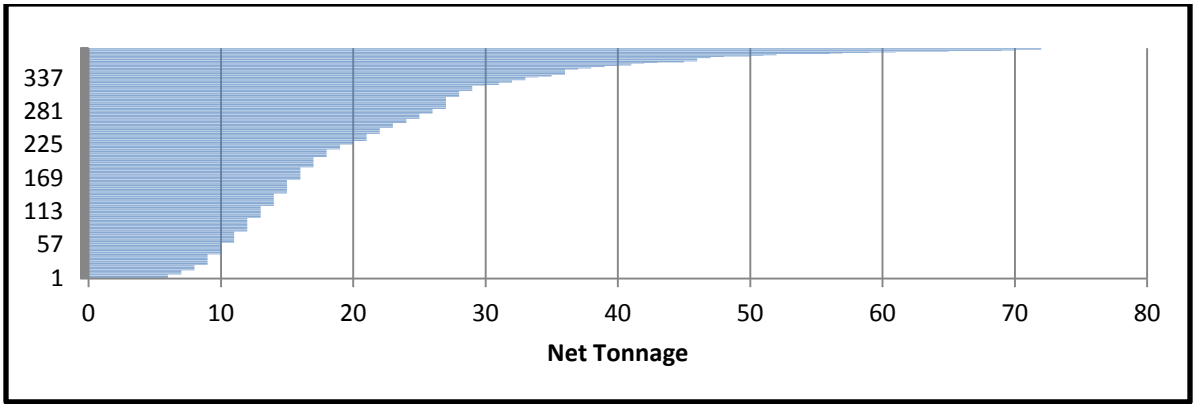


Figure 3.4.1. Net tonnage of documented vessels with Gulf reef fish permit and FL hailing port. Source: NMFS/United States Coast Guard (USCG) vessel data base and SERO list of current permit holders.

These 388 documented vessels hail from 78 ports in Florida. Panama City ranks first by both number of documented vessels (60, 15.5% and total net tonnage (1,581, ~20%). Destin, Key West, Cortez and Madeira Beach complete the top five hailing ports with an additional 149 vessels or approximately 38% of the 388 vessels. The top five ports by total net tonnage are Panama City, Destin, Cortez, Key West and Pensacola, which have a combined total net tonnage

of 3,753 that represents approximately 46 percent of Florida's total net tonnage. The top 25 hailing ports by number of vessels represent approximately 80% (309) of the documented vessels and the top 25 by total net tonnage account for 83% (6,739) of total net tonnage.

Table 3.4.3. Number and total net tonnage of documented vessels with Gulf reef fish permit by Florida hailing port. Source: NMFS/USCG vessel data base and SERO list of current permit holders.

Hailing Port	Vessels	% Total	Total Net Tonnage	% Total	Hailing Port	Vessels	% Total	Total Net Tonnage	% Total
Alligator Point	1	0.26%	14	0.17%	**Naples**	5	1.29%	84	1.04%
Anna Maria Island	1	0.26%	16	0.20%	**New Port Richey**	3	0.77%	32	0.40%
Apalachicola	13	3.35%	235	2.91%	**New Smyrna Beach**	1	0.26%	18	0.22%
Belleair	1	0.26%	26	0.32%	**Niceville**	2	0.52%	35	0.43%
Big Pine Key	1	0.26%	9	0.11%	**Ochlockonee Bay**	1	0.26%	15	0.19%
Boca Grande	1	0.26%	12	0.15%	**Palm Harbor**	1	0.26%	9	0.11%
Bokeelia	1	0.26%	17	0.21%	**Palmetto**	2	0.52%	32	0.40%
Bradenton	1	0.26%	29	0.36%	**Panacea**	3	0.77%	60	0.74%
Captiva	1	0.26%	11	0.14%	**Panama City**	60	15.46%	1,581	19.57%
Carrabelle	9	2.32%	106	1.31%	**Panama City Beach**	6	1.55%	199	2.46%
Cedar Key	1	0.26%	9	0.11%	**Pensacola**	18	4.64%	363	4.49%
Clearwater	9	2.32%	184	2.28%	**Pensacola Beach**	1	0.26%	65	0.80%
Clearwater Beach	2	0.52%	36	0.45%	**Perdido Key**	2	0.52%	17	0.21%
Cocoa Beach	1	0.26%	13	0.16%	**Port Canaveral**	1	0.26%	19	0.24%
Cortez	20	5.15%	520	6.44%	**Port Charlotte**	1	0.26%	12	0.15%
Crawfordville	1	0.26%	24	0.30%	**Port Orange**	1	0.26%	57	0.71%
Crystal River	9	2.32%	128	1.58%	**Port St Joe**	3	0.77%	86	1.06%
Destin	27	6.96%	805	9.96%	**Redington Shores**	1	0.26%	18	0.22%
Dunedin	1	0.26%	24	0.30%	**Ruskin**	4	1.03%	131	1.62%
Englewood	1	0.26%	36	0.45%	**Safety Harbor**	1	0.26%	18	0.22%
Everglades	1	0.26%	27	0.33%	**Santa Rosa Beach**	1	0.26%	17	0.21%
Fort Myers	1	0.26%	17	0.21%	**Sarasota**	2	0.52%	46	0.57%
Fort Myers Beach	4	1.03%	62	0.77%	**Satellite Beach**	1	0.26%	12	0.15%
Fort Walton Beach	2	0.52%	55	0.68%	**Sebastian**	1	0.26%	6	0.07%
Gulf Breeze	3	0.77%	71	0.88%	**Seminole**	4	1.03%	71	0.88%
Hernando Beach	4	1.03%	52	0.64%	**Shalimar**	1	0.26%	9	0.11%
Hudson	8	2.06%	121	1.50%	**Southport**	3	0.77%	48	0.59%
Indian Rocks Beach	2	0.52%	23	0.28%	**St James City**	1	0.26%	15	0.19%
Indian Shores	1	0.26%	8	0.10%	**St Marks**	7	1.80%	123	1.52%

Hailing Port	Vessels	% Total	Total Net Tonnage	% Total	Hailing Port	Vessels	% Total	Total Net Tonnage	% Total
Inglis	1	0.26%	8	0.10%	**St Petersburg**	4	1.03%	53	0.66%
Johns Pass	2	0.52%	37	0.46%	**St Petersburg Beach**	2	0.52%	34	0.42%
Key Largo	2	0.52%	22	0.27%	**Steinhatchee**	8	2.06%	101	1.25%
Key West	23	5.93%	484	5.99%	**Summerland Key**	1	0.26%	13	0.16%
Lakeland	1	0.26%	29	0.36%	**Tampa**	7	1.80%	124	1.53%
Largo	6	1.55%	113	1.40%	**Tarpon Springs**	15	3.87%	271	3.35%
Lynn Haven	5	1.29%	91	1.13%	**Tavernier**	2	0.52%	35	0.43%
Madeira Beach	19	4.90%	350	4.33%	**Treasure Island**	2	0.52%	32	0.40%
Marathon	5	1.29%	157	1.94%	**Yankeetown**	1	0.26%	13	0.16%
Mexico Beach	2	0.52%	48	0.59%					
Miami	14	3.61%	240	2.97%	**Florida**	388	100%	8,143	100%

The above 78 hailing ports are located in 27 counties. Bay County has the most documented vessels with a Gulf reef fish permit, with approximately 20% (76) of the vessels and approximately 24% (1,976) of the total net tonnage (Table 3.4.4). Pinellas County ranks second with 73 vessels and a combined net tonnage of 1,307. Approximately 62% of the documented vessels and 67% of the total net tonnage are found in the following counties: Bay, Pinellas, Okaloosa, Monroe, and Manatee. The top 10 counties have approximately 82% of the vessels and 86% of total net tonnage.

Table 3.4.4. Number and total net tonnage of documented vessels with Gulf reef fish permit by Florida County of hailing port. Note two ports are located in two counties. Source: NMFS/USCG vessel data base and SERO list of current permit holders.

County of Hailing Port	Vessels	Net Tonnage	% Vessels	% Net Tonnage
Bay	76	1,967	19.59%	24.16%
Pinellas	73	1,307	18.81%	16.05%
Okaloosa	32	904	8.25%	11.10%
Monroe	34	720	8.76%	8.84%
Manatee	24	597	6.19%	7.33%
Escambia	21	445	5.41%	5.46%
Franklin	23	355	5.93%	4.36%
Hillsborough	11	255	2.84%	3.13%
Miami-Dade	14	240	3.61%	2.95%
Wakulla	11	207	2.84%	2.54%
Pasco	11	153	2.84%	1.88%
Citrus	9	128	2.32%	1.57%
Lee	8	122	2.06%	1.50%
Collier	6	111	1.55%	1.36%
Taylor	8	101	2.06%	1.24%
Gulf	3	86	0.77%	1.06%
Volusia	2	75	0.52%	0.92%
Santa Rosa	3	71	0.77%	0.87%
Hernando	4	52	1.03%	0.64%
Sarasota	2	46	0.52%	0.56%
Brevard	3	44	0.77%	0.54%
Charlotte & Sarasota	1	36	0.26%	0.44%
Levy	3	30	0.77%	0.37%
Polk	1	29	0.26%	0.36%
Walton	1	17	0.26%	0.21%
Leon	1	15	0.26%	0.18%
Charlotte	1	12	0.26%	0.15%
Charlotte & Lee	1	12	0.26%	0.15%
Indian River	1	6	0.26%	0.07%
Total	388	8,143	100.00%	100.00%

With the exception of Miami-Dade, all of the top 10 counties by hailing port are on the west coast of Florida. Other east coast counties with a hailing port of a permitted vessel include Lee, Volusia, Brevard, and Indian River. Polk and Leon are not located on the Gulf coast, but are nearby.

Pinellas County ranks first among the 34 Florida counties where a permitted Gulf reef fish dealer resides with approximately 18% of the dealers (Table 3.4.5). In turn to complete the top six are Monroe (14.89%), Lee (7.09%), Bay (4.96%), Franklin (4.26%), and Miami-Dade (4.26%). Approximately 53% of the dealers reside in the top six counties and approximately 67% reside in the top ten. Gulf coastal counties combine to represent approximately 82% of the dealers, and all west coast counties combine to represent approximately 84%. Florida dealers primarily operate in fresh and frozen seafood processing (NAICS 311712); however, other industries represented include seafood merchant wholesalers (NAICS 424460), seafood markets (NAICS 445220), and full service restaurants (NAICS 722110).

Table 3.4.5. Florida Gulf reef fish dealers by county as of September 11, 2012. Source: SERO list of current permit holders.

County	Dealers	% Dealers	County	Dealers	% Dealers
Pinellas	*24*	*17.02%*	***Hernando***	*2*	*1.42%*
Monroe	*21*	*14.89%*	**Indian River**	2	1.42%
Lee	*10*	*7.09%*	**Orange**	2	1.42%
Bay	*7*	*4.96%*	**Alachua**	1	0.71%
Franklin	*6*	*4.26%*	***Charlotte***	*1*	*0.71%*
Miami-Dade	6	4.26%	***Dixie***	*1*	*0.71%*
Santa Rosa	*6*	*4.26%*	**Duval**	1	0.71%
Collier	*5*	*3.55%*	***Gulf***	*1*	*0.71%*
Hillsborough	*5*	*3.55%*	***Leon***	*1*	*0.71%*
Manatee	*5*	*3.55%*	***Levy***	*1*	*0.71%*
Okaloosa	*5*	*3.55%*	**Palm Beach**	1	0.71%
Brevard	3	2.13%	***Sarasota***	*1*	*0.71%*
Broward	3	2.13%	**St. Lucie**	1	0.71%
Citrus	*3*	*2.13%*	***Walton***	*1*	*0.71%*
Pasco	3	2.13%	**Total**	141	100.00%
Polk	3	2.13%	*Gulf Coast Counties Italicized*		
Taylor	*3*	*2.13%*			
Volusia	3	2.13%			
Wakulla	*3*	*2.13%*			

In 2010, Florida's population was approximately 18.8 million residents. Reef fish represent a substantial portion of all commercial finfish landings in Florida. In 2010, for example, reef fish represented approximately 24% by weight of all commercial finfish landings. Average per capita (production of) commercial landings that year was 4.84 lbs ww, while the averages of per capita finfish and reef fish landings were 2.66 lbs ww and 0.64 lbs ww, respectively, in 2010.

Snappers and groupers are the primary species of reef fish landed commercially in Florida. From 2006 to 2010, combined landings of snappers and groupers represented from 82% to 87% of reef fish landings. Historically, groupers have ranked first and snappers second; however, in 2010, the rankings reversed.

Pinellas County ranked first in commercial landings of groupers from 2006 to 2010, while Monroe ranked first in commercial landings of snappers. During that 5-year period, Pinellas County's commercial landings of grouper represented an average of approximately 45% of the state's annual commercial landings of grouper, and Monroe County's commercial landings of snapper represented an average of approximately 33% of all snapper commercial landings.

The most popular snapper species landed commercially in Florida are red, vermilion, and yellowtail snapper. In 2010, for example, the three species represented approximately 90% of all commercial snapper landings by weight and approximately 92% by value. The average ex-vessel price for red snapper in 2010 was $3.49 per lb ww, while the average ex-vessel prices of vermilion and yellowtail snapper were $2.49 and $2.60 per lb ww, respectively, that year. Preliminary estimates for 2011 landings suggest the average ex-vessel prices per lb ww of these three snapper species increased: to $3.52 for red, $2.61 for vermilion, and $2.85 for yellowtail.

Historically, the boundary between the east and west coasts has been drawn at the Miami-Dade and Monroe County line. The west coast of the state typically accounts for a substantial majority of annual commercial landings of all species and all snapper species. In 2010, for example, the west coast landed approximately 90% of commercial landings of all snapper and 90% of all red, vermilion, and yellowtail snapper commercial landings.

The counties' shares of combined annual landings of these three snapper species vary considerably, for example, in 2010, from zero to almost 34% of pounds landed. Monroe County ranked first with 33.6% of the landings, and the other top ten counties in turn were Bay (20.8%), Okaloosa (17.3%), Escambia (6.3%), Franklin (5.4%), Pinellas (4.6%), Duval (4.4%), Miami-Dade (3.6%) and St. Johns (1.1%). Together, these ten counties accounted for approximately 97% of combined commercial landings of red, vermilion, and yellowtail snapper in 2010.

Per capita landings (lbs ww) of vermilion snapper in 2010 vary from zero to 9.42 in west coast counties. Although Franklin County ranked fourth in commercial landings of vermilion snapper, it ranked first in per capita production (9.42 lbs/resident), which far exceeds second-place Bay County's landings of 3.17 lbs/resident (Table 3.4.6). Only one other county (Santa Rosa) had per capita commercial landings of vermilion snapper greater than one pound. Escambia, which ranked ahead of Franklin County by pounds landed, had per capita landings of 0.57 lbs ww. Per capita landings of yellowtail snapper were zero for all of the west coast counties except Monroe, which had per capita landings of 20.54 lbs ww/resident.

Table 3.4.6. Per capita commercial landings of yellowtail and vermilion snapper in west coast counties, 2010. Source: FWRI commercial landings summary.

County	2010 population	Per Capita Vermilion Snapper Landings (lbs ww/resident)	Per Capita Yellowtail Snapper Landings (lbs ww/resident)
Escambia	297,619	0.57	0.00
Santa Rosa	151,372	0.00	0.00
Okaloosa	180,822	2.17	0.00
Walton	55,043	0.00	0.00
Bay	168,852	3.17	0.00
Gulf	15,863	0.00	0.00
Franklin	11,549	9.42	0.00
Wakulla	30,776	0.02	0.00
Jefferson	14,761	0.00	0.00
Taylor	22,570	0.00	0.00
Dixie	16,422	0.03	0.00
Levy	40,801	0.01	0.00
Citrus	141,236	0.00	0.00
Hernando	172,778	0.01	0.00
Pasco	464,697	0.00	0.00
Pinellas	916,542	0.02	0.00
Hillsborough	1,229,226	0.00	0.00
Manatee	322,833	0.00	0.00
Sarasota	379,448	0.00	0.00
Charlotte	159,978	0.00	0.00
Lee	618,754	0.00	0.00
Collier	321,520	0.00	0.00
Monroe	73,090	0.04	20. 54

Bay County's ranking in annual commercial landings of vermilion snapper increased through the 2000s, while Escambia and Okaloosa Counties' shares of landings fell during the decade. By 2009 and 2010, Bay County ranked first with over a third of the landings in Florida (Figure 3.4.2). The top six counties accounted for an average of approximately 98% of all commercial vermilion snapper landings in the state from 2006 to 2010. Two of these six counties (Duval and St. Johns) are on the Atlantic coast; collectively, these counties represented, on average, approximately 14% of annual commercial landings of vermilion snapper.

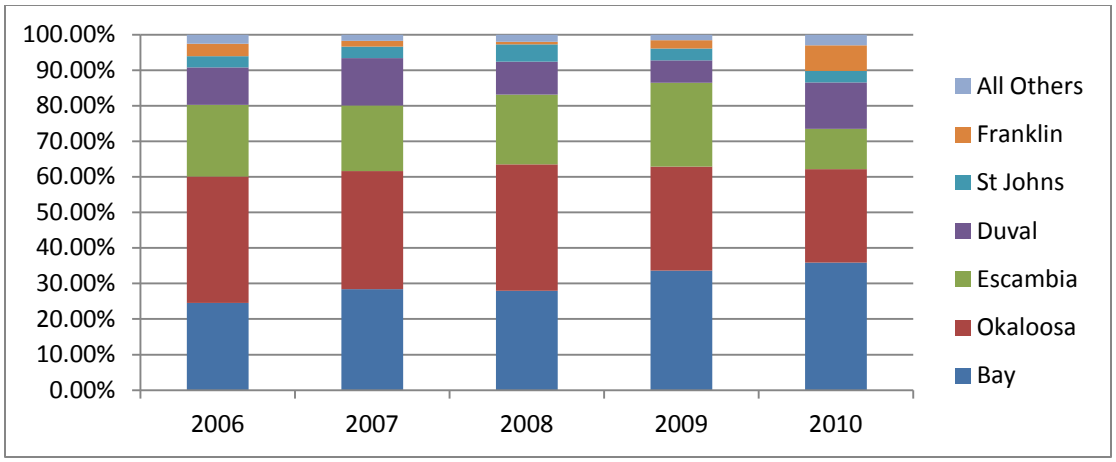


Figure 3.4.2. Percent of Florida's annual commercial vermilion snapper landings (lbs ww) by county, 2006 – 2010. Source: FWRI commercial landings summary.

When east coast counties are excluded, Bay County's rise in the past six years is more striking. Preliminary summaries of 2011 commercial landings of vermilion snapper place the county with approximately 42% of all Florida Gulf coast landings (Figure 3.4.3). The top six west coast counties accounted for slightly over 99% of all Gulf coast landings in 2011.

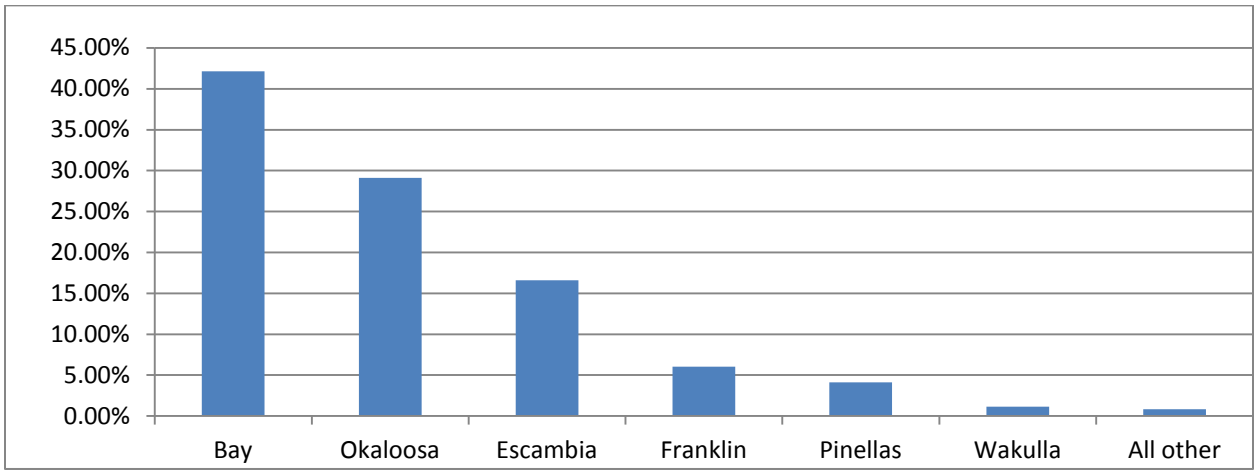


Figure 3.4.3. Percent of annual commercial vermilion snapper landings on Gulf coast (lbs ww) by county, 2011 (preliminary). Source: FWRI commercial landings summary.

Unemployment rates dropped in all west coast counties from October 2011 to October 2012 (Table 3.4.7). Monroe County had the lowest unemployment rates, whereas Hernando had the highest.

Table 3.4.7. Unadjusted unemployment rates for west coast counties. Source: FL Department of Economic Development, December 2012.

County	Unemployment Rate		
	Oct-12	Sep-12	Oct-11
Escambia	8.1	8.6	9.8
Santa Rosa	7.0	7.6	8.6
Okaloosa	5.7	6.0	7.0
Walton	5.4	5.5	6.7
Bay	7.8	8.0	9.8
Gulf	8.1	8.3	9.6
Franklin	6.0	6.3	7.6
Wakulla	5.9	6.6	8.0
Jefferson	7.7	8.0	8.4
Taylor	9.1	9.5	10.7
Dixie	9.7	10.2	12.6
Levy	8.8	9.4	10.8
Citrus	9.2	9.9	11.6
Hernando	9.8	10.4	13.3
Pasco	9.1	9.7	11.7
Pinellas	7.9	8.4	10.2
Hillsborough	8.0	8.6	10.1
Manatee	8.2	9.0	10.4
Sarasota	8.3	8.7	10.5
Charlotte	8.5	9.1	10.5
Lee	8.5	9.2	10.7
Collier	8.4	9.3	10.3
Monroe	4.7	5.0	6.3

Median household income from 2007 to 2011 ranged from $34,243 to $56,876 in the west coast counties. Dixie County had the lowest median household income and Collier County had the highest (Table 3.4.8). Franklin County had the largest percent of residents living below poverty level during that time period with 24% and Santa Rosa the smallest with 10.8%. Recall that Franklin County also had the highest per capita landings of vermilion snapper in 2010.

Table 3.4.8. Median household income and percent of resident population below poverty, 2007 – 2011. Source: U.S. Census Bureau, State and County QuickFacts.

County	2007 - 2011	
	Median Household Income	% Residents Below Poverty Income
Escambia	$43,707	16.9%
Santa Rosa	$55,913	10.8%
Okaloosa	$54,149	11.7%
Walton	$46,926	14.9%
Bay	$48,225	12.4%
Gulf	$41,291	17.5%
Franklin	$37,017	24.0%
Wakulla	$54,151	12.8%
Jefferson	$42,096	16.1%
Taylor	$38,005	17.4%
Dixie	$34,243	16.3%
Levy	$35,920	22.6%
Citrus	$38,189	15.8%
Hernando	$42,700	12.8%
Pasco	$44,103	14.0%
Pinellas	$45,891	12.6%
Hillsborough	$50,195	15.0%
Manatee	$48,181	13.6%
Sarasota	$49,212	11.0%
Charlotte	$45,112	11.4%
Lee	$49,444	13.5%
Collier	$56,876	13.5%
Monroe	$53,889	11.6%
Florida	$47,827	14.7%

Louisiana commercial landings, hailing ports and dealers

As of July 9, 2012, a total of 41 Gulf reef fish permits are held by Louisiana vessel owners. Nineteen of these 41 fishing vessels are documented and the remaining 23 are of Louisiana registry. All but one of the 19 documented vessels have a hailing port in Louisiana; the one that does not has a hailing port of Destin, FL. Eight other documented vessels with a Gulf reef fish permit and with a hailing port in Louisiana are owned by residents of Florida (seven) and Illinois (one). The net tonnage of the 25 documented vessels with a hailing port in Louisiana varies from 9 to 52 (Figure 3.4.4).

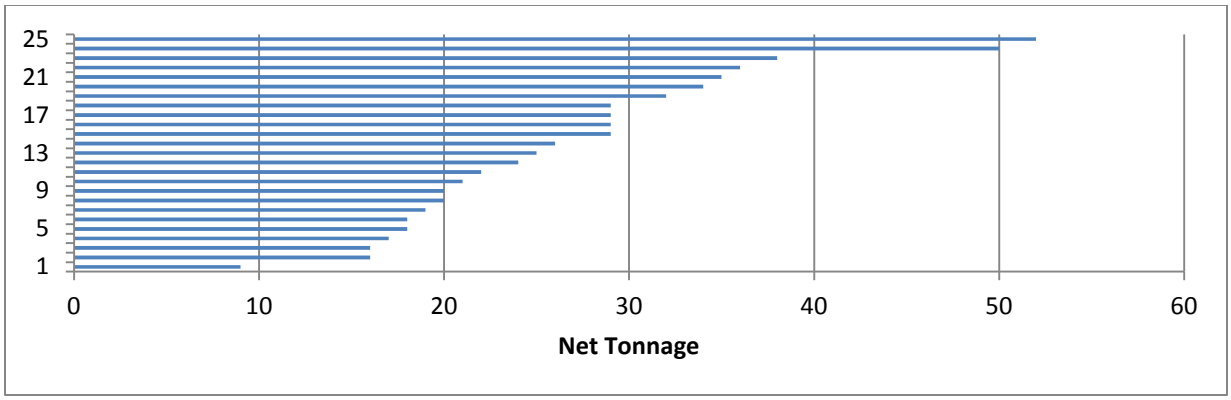


Figure 3.4.4. Net tonnage of documented vessels with Gulf reef fish permit and LA hailing port. Source: NMFS/USCG vessel data base and SERO list of current permit holders.

The combined net tonnage of the above 25 documented vessels is 664 and those with a hailing port in New Orleans represent almost 37% of the total net tonnage (Table 3.4.9). The vessels with hailing ports in Galliano and Grand Isle combine to have approximately 35 percent of the total net tonnage. These three hailing port represent 72 percent of the vessels and almost 72 percent of the total net tonnage.

Table 3.4.9. Number and total net tonnage of documented vessels with Gulf reef fish permit by LA hailing port. Source: NMFS/USCG vessel data base and SERO list of current permit holders.

Hailing Port	Vessels	Percent	Total Net Tonnage	Percent
Baton Rouge	1	4.00%	52	7.83%
Cameron	1	4.00%	17	2.56%
Creole	1	4.00%	36	5.42%
Cut Off	1	4.00%	19	2.86%
Galliano	5	20.00%	113	17.02%
Grand Isle	5	20.00%	121	18.22%
Mandeville	1	4.00%	38	5.72%
New Orleans	8	32.00%	243	36.60%
Venice	2	8.00%	25	3.77%
Louisiana	25	100.00%	664	100.00%

The number of licensed commercial fishermen fell during 2001 to 2008, increased during 2008 to 2010, then fell slightly in 2011 (Figure 3.4.5). In 2011, a total of 12,252 resident, 922 non-resident, and 1,051 senior (70 years and older) commercial fisherman licenses were sold. Since 2000, the average number of apprentice licenses issued each year has been three.

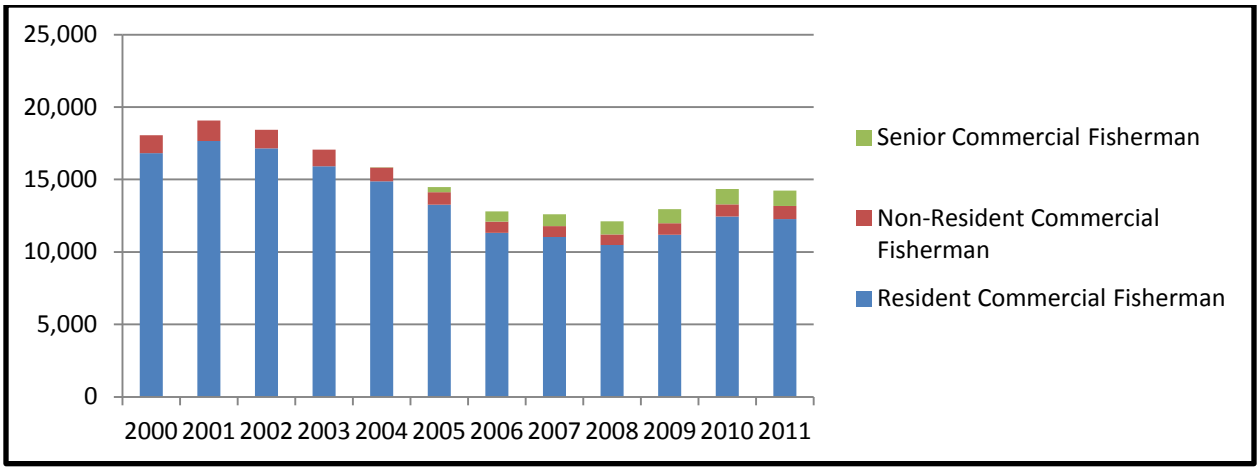


Figure 3.4.5. Number of resident, non-resident, and senior commercial fisherman licenses, 2000 – 2011. Source: LA Dept of Wildlife and Fisheries.

Louisiana requires a Commercial Vessel License to fish commercially in Gulf waters. The number of Commercial Vessel Licenses has followed a similar trend as the number of commercial fisherman licenses (Figure 3.4. 6). In 2011, 9,923 resident and 898 non-resident vessel licenses were issued by the state. The number of licensed resident commercial fishermen per vessel has varied from 1.21 to 1.29 over the 12-year period, while that of licensed non-resident fishermen per vessel has varied from 0.98 to 1.05.

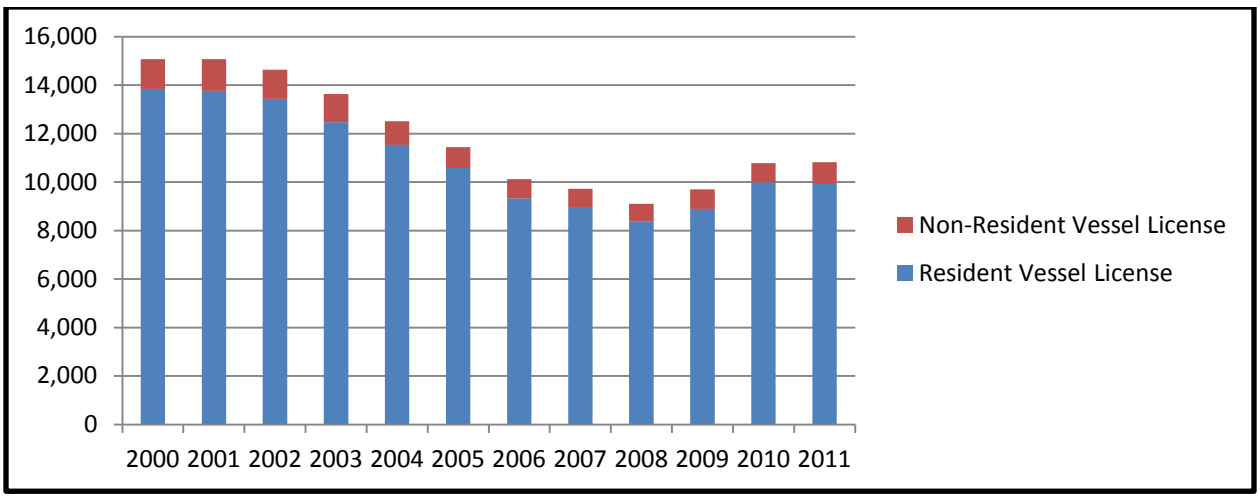


Figure 3.4.6. Number of resident and non-resident commercial vessel licenses, 2000 – 2011. Source: LA Dept. of Wildlife and Fisheries.

Louisiana regulations define a wholesale/retail dealer as any individual person, firm, association, corporation, partnership or any legal entity that buys or handles by any means whatsoever any species of fish/seafood whether fresh, frozen, processed or unprocessed for sale or resale, including bait species, whether on a commission basis or otherwise. Wholesale/retail seafood dealers include, but are not limited to, any person who makes sales of seafood on a wholesale basis, including any dock, distributor, broker, fish factory, platform, processing plant, or anyone

shipping fish out of or into the state for resale. A wholesale/retail seafood dealer is the only licensee who can legally purchase fish from a commercial fisherman and resell such fish. Here fish refers to finfish, shellfish and crustaceans.

A licensed commercial fisherman may only sell to a wholesale/retail seafood dealer, unless s/he also possesses a Fresh Products License. In the past 12 years, there has been a slight decline in the number of resident licensed wholesale/retail seafood dealers and a general increase in non-resident licensed dealers (Figure 3.4.7). In 2011, a total of 1,118 resident and 119 non-resident businesses had a wholesaler/retailer dealer license. If a licensed commercial fisherman possesses a Fresh Products License, s/he may only sell fish to a consumer within the state and must maintain "trip ticket" records and file monthly reports as required. Licensed wholesale/retail seafood dealers are prohibited from purchasing fish from commercial fishermen without state and federal permits required to harvest and sell the species being sold. A LA licensed wholesale/retail seafood dealer who receives reef fish harvested from the Gulf EEZ must also possess a federal Annual Dealer Permit.

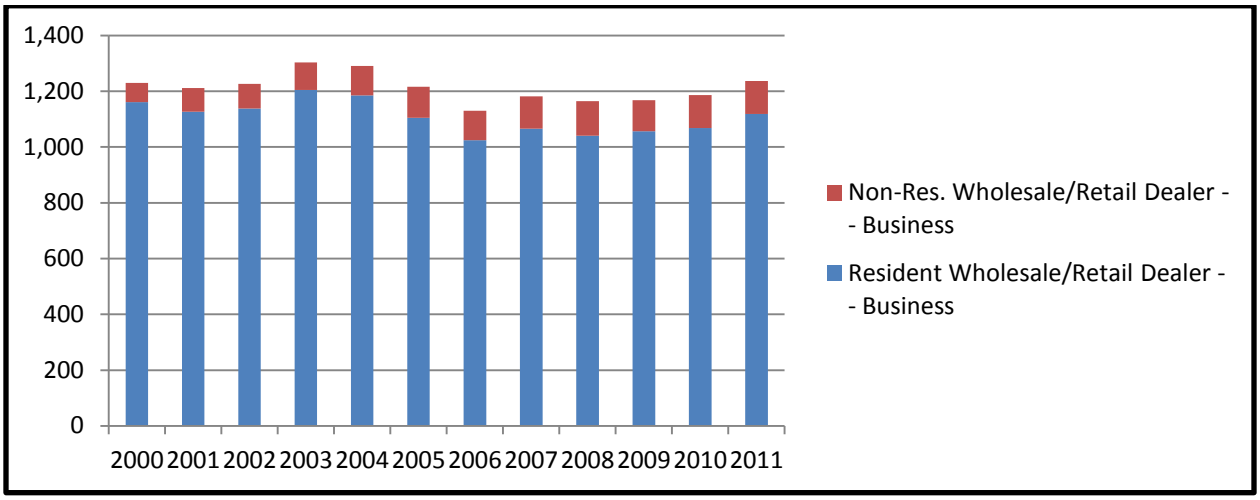


Figure 3.4.7. Number of resident and non-resident licensed wholesale/retail seafood dealers, 2000 – 2011. Source: LA Dept. of Wildlife and Fisheries.

As of September 11, 2012, there were 18 dealers located within LA with a Gulf Reef Fish Annual Dealer Permit. Over a quarter of these dealers were located in Plaquemines Parish (Table 3.4.10).

Table 3.4.10. Louisiana reef fish dealers by county as of 9/11/2012. Source: SERO list of current permit holders.

Parish	Dealers	% Dealers
Calcasieu	1	5.56%
Cameron	1	5.56%
Jefferson	3	16.67%
Lafourche	3	16.67%
Orleans	2	11.11%
Plaquemines	5	27.78%
St Tammany	1	5.56%
Terrebonne	2	11.11%
Total	18	100.00%

Licensed retail seafood dealers may only purchase fish/seafood from a licensed wholesale/retail seafood dealer, and may only sell fish/seafood directly to the consumer for personal or household use. The numbers of licensed resident and non-resident seafood retail dealers have shown different trends (Figure 3.4.8). A restaurant or grocer that sells raw fish, such as oysters and sushi, must possess a Retail Seafood Dealer's License; however, those that sell cooked fish to the consumer are not so required. Entities that possess a Retail Seafood Dealer's License are not authorized to purchase fish from commercial fishermen.

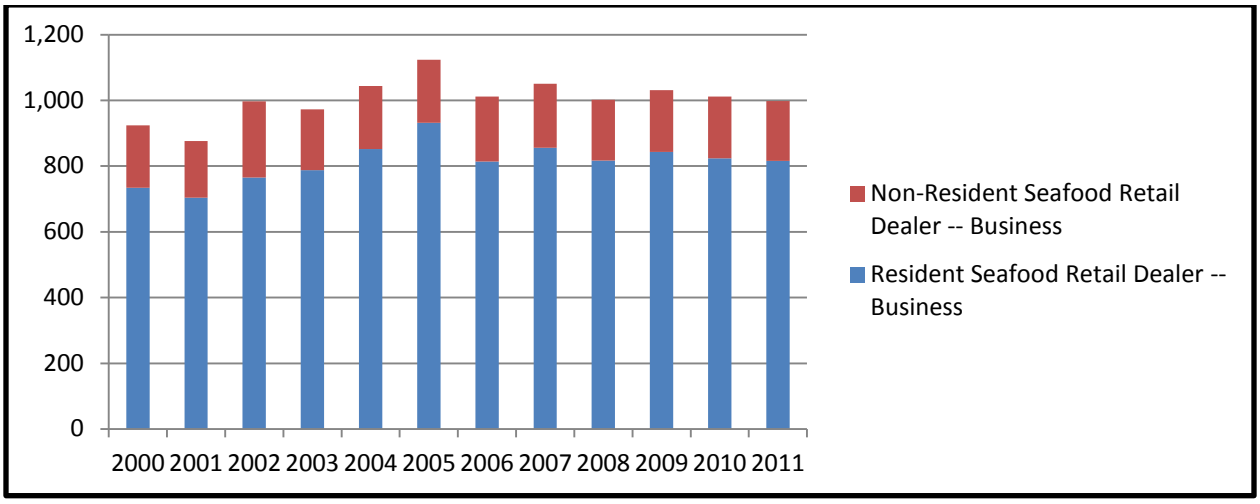


Figure 3.4.8. Number of resident and non-resident seafood retail dealers, 2000 – 2011. Source: LA Dept. of Wildlife and Fisheries.

From 2001 to 2010, there were no commercial landings of yellowtail snapper in Louisiana. Vermilion snapper represented approximately 30% and red snapper approximately 67% of annual snapper commercial landings in the state during that 10-year period.

Mississippi commercial landings, hailing ports and dealers

Four of the 10 vessels owned by Mississippi entities with a Gulf reef fish permit are documented, and all four of the documented vessels have their hailing port in Pascagoula. The documented vessels range in net tonnage from seven to 47 (Figure 3.4.9). Five of the six undocumented vessels are owned by entities residing in Pascagoula. Three residents possess a Gulf Reef Fish Dealer Permit.

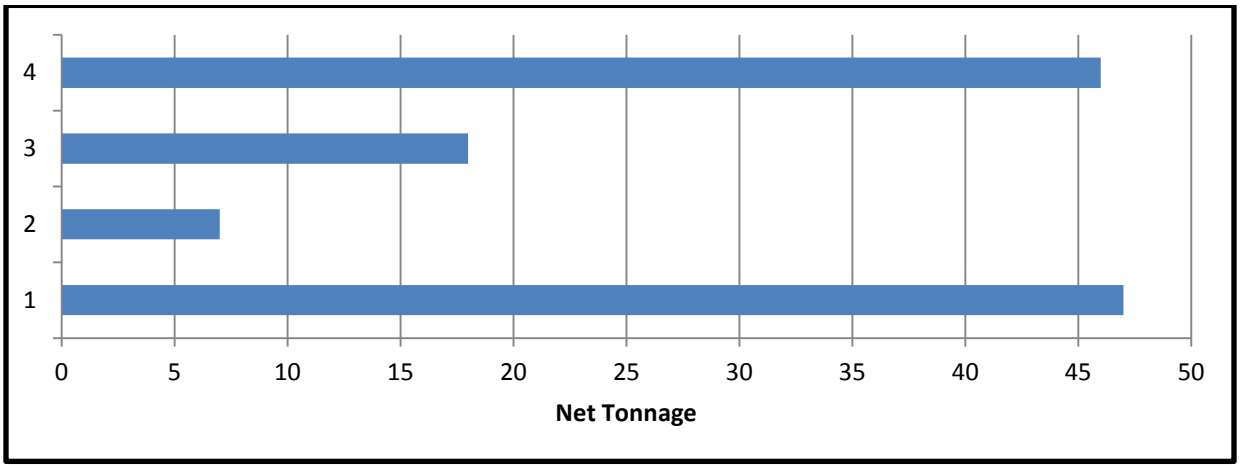


Figure 3.4.9. Net tonnage of documented vessels with a Gulf reef fish permit and with hailing ports in Mississippi. Source: NMFS/USCG vessel data base and SERO list of current permit holders.

Reef fish represent a very small fishery in Mississippi. In 2010, for example, reef fish landings represented 0.006% of all pounds landed in 2010. All commercial landings of reef fish were snapper species from 2001 to 2010. None of the commercial landings during that time included yellowtail or vermilion snapper.

Texas commercial landings, hailing ports and dealers

Nineteen residents of Texas are Gulf Reef Fish Dealers and 61 hold a Gulf reef fish permit. Thirty-five of the permits correspond to documented vessels with net tonnage ranging from 9 to 64 (Figure 3.4.10). Total net tonnage of the 35 documented vessels is 903.

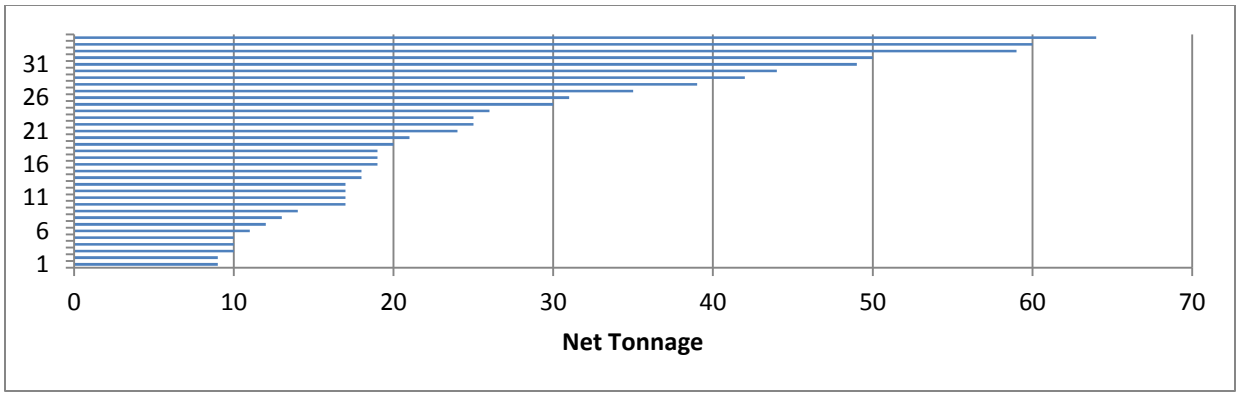


Figure 3.4.10. Net tonnage of documented vessels with a Gulf reef fish permit and with hailing ports in Texas. Source: NMFS/USCG vessel data base and SERO list of current permit holders.

Thirty-three of the documented vessels have a hailing port in Texas. Over half the documented vessels have Galveston as their home port making it the highest ranked (Table 3.4.11). Houston ranks second with almost a third of the number of vessels that hail out of Galveston, but Houston's vessels tend to be larger, and its total net tonnage is more than half of Galveston's. These ports represent seven coastal counties.

Table 3.4.11. Number and total net tonnage of documented vessels with a Gulf reef fish permit by TX hailing port. Source: NMFS/USCG vessel data base and SERO list of current permit holders.

TX Hailing Port	Vessels	Net Tonnage	% Total Net Tonnage	County
Alvin	1	49	5.66%	Brazoria
Anahuac	1	31	3.58%	Chambers
Freeport	3	44	5.08%	Brazoria
Galveston	17	407	47.00%	Galveston
Houston	6	237	27.37%	Harris
Matagorda	2	53	6.12%	Matagorda
Palacios	1	18	2.08%	Matagorda
Port Aransas	1	18	2.08%	Nueces
Port Mansfield	1	9	1.04%	Willacy
Total	33	866	100.00%	

Galveston is also the most common residence of permit holders with a non-documented vessel. Houston ranks second (Figure 3.4.11).

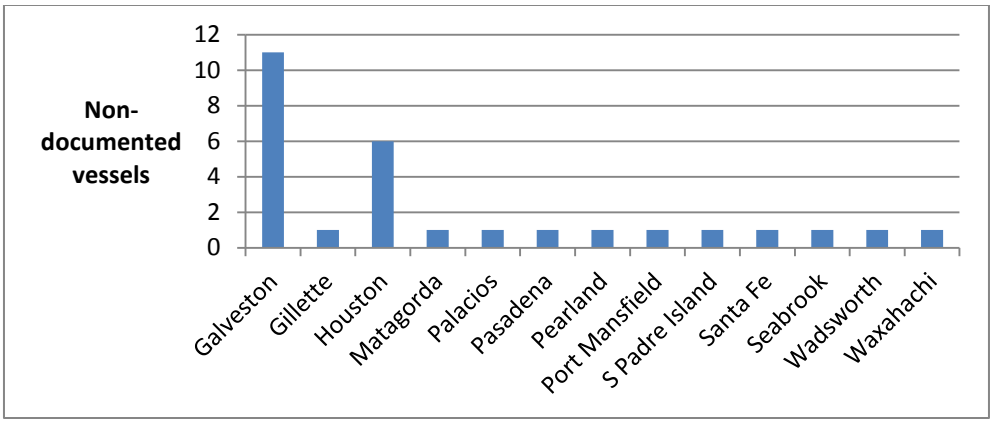


Figure 3.4.11. Residence of permit holders with non-documented fishing vessel. Source: SERO list of current permit holders and NMFS/USCG vessel data base.

The 19 reef fish dealers located in Texas as of September 11, 2012, are located within 12 counties. Almost a third of the dealers are located within Harris County (Table 3.4.12). Each of the three inland counties of Leon, Travis and Tyler is home to one dealer.

Table 3.4.12. Texas reef fish dealers by county as of 9/11/2012. Source: SERO list of current permit holders.

County	Dealer	% Dealers
Aransas	1	5.26%
Brazoria	1	5.26%
Cameron	1	5.26%
Galveston	3	15.79%
Harris	6	31.58%
Jefferson	1	5.26%
Leon	1	5.26%
Matagorda	1	5.26%
Nueces	1	5.26%
Travis	1	5.26%
Tyler	1	5.26%
Willacy	1	5.26%
Total	19	100.00%

From 2001 to 2010 there were no commercial landings of yellowtail snapper in Texas. Reef fish fishermen out of Texas have historically tended to focus most of their efforts on landing red snapper; however, vermilion snapper landings represented a larger portion of snapper landings after 2006 (Figure 3.4.12).

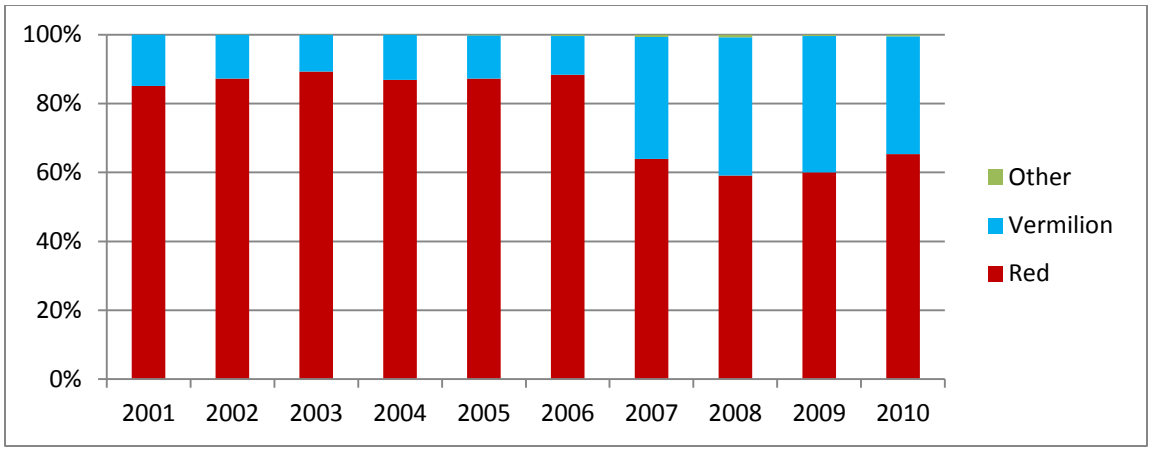


Figure 3.4.12. Vermilion and red snapper landings as percent of all commercial snapper landings in Texas from 2001 to 2010. Source: NMFS ALS.

More information about the economic environment of Texas can be found within the Description of the Fishery and the Description of the Social Environment and is incorporated by reference.

3.5 Description of the Social Environment

This section includes a description of the recreational and commercial portions of the vermilion snapper and yellowtail snapper components of the reef fish fishery. The description is based on the geographical distribution of landings and the relative importance of vermilion snapper and yellowtail snapper for commercial and recreational communities. A spatial approach enables the consideration of fishing communities and consideration of the importance of fishery resources to those communities, as required by National Standard 8.

Social Importance of Fishing

Socio-cultural values are qualitative in nature making it difficult to measure social valuation of marine resources and fishing activity. The following description includes multiple approaches to examining fishing importance. These spatial approaches focus on the community level (based on the address of dealers or permit holders) and identify importance by "community", defined according to geo-political boundaries (cities). A single county may thus have several communities identified as reliant on fishing, and the boundaries of these communities are not discrete in terms of residence, vessel homeport, and dealer address. For example, a fisherman may reside in one community, homeport his vessel in another, and land his catch in yet another. Furthermore, while commercial fishing data are available at the species level, these data are not available for recreational fishing which must be addressed more generally. Despite these caveats, the analysis identifies where most fishing activity takes place.

To identify the communities of greatest engagement in recreational fishing, a factor analysis was run on a set of predictor variables including the number of federal charter permits, number of

vessels designated recreational by owner address, number of vessels designated recreational by homeport (SERO permit office 2008), and recreational fishing infrastructure (MRIP site survey 2010). The 20 communities with the highest factor scores are identified in Table 3.5.1 as the communities of greatest recreational fishing engagement. However, this measure does not adjust for population size meaning that larger communities are given more weight over smaller communities. The ranking addresses recreational fishing generally and is not specific to vermilion snapper or yellowtail snapper. Ideally, additional variables quantifying the importance of recreational fishing to a community would be included (such as the amount of recreational landings in a community, number of recreational fishing related businesses, etc); however, these data are not available at the community level.

Another approach ranks communities by total landings in pounds by year to identify commercial reliance on vermilion snapper and yellowtail snapper. This approach does not provide the number of pounds of catch, data which is confidential at the community level for many places with vermilion snapper and yellowtail landings.

Another approach utilizes a measure called the local quotient (lq) to identify commercial reliance on vermilion snapper and yellowtail snapper. The lq is a way to measure the relative importance of a particular species among all landings in the same community. The lq is calculated by dividing the total pounds (or value) of landings of a given species in a community by the total pounds (or value) of all commercial species for that same community. Thus, the lq represents the proportion of landings of a given species among other landed species, suggesting the relative importance of species to the community.

The data used for the lq measure were assembled from the accumulated landings system (ALS) which includes landings of all species from both state and federal waters and is based on dealers' reports. Because of this, the address of a dealer may not be the coastal community where the dealer's facilities are located. These measures are an attempt to quantify the importance of vermilion snapper and yellowtail snapper to communities around the Gulf coast and suggest where impacts from management actions are more likely to be experienced.

Vermilion Snapper

Vermilion snapper is landed throughout the Gulf although commercial landings are greatest in the Florida Panhandle, Louisiana, and Texas. The majority of vermilion snapper is landed by the commercial sector (range of approximately 73% to 86% was landed by the commercial sector from 2001 through 2011 and about 14% to 27% was landed by the recreational sector during the same time period, Figure 3.1.13). Total vermilion snapper landings have ranged from 2,289,040 to 4,392,679 lbs ww from 2001 through 2011 (Figure 3.1.13). Commercial landings have been higher since the red snapper individual fishing quota (IFQ) program was implemented in 2007. Some commercial fishermen who did not receive red snapper IFQ shares have likely shifted effort toward vermilion snapper since the implementation of the IFQ program. Recreational landings nearly doubled from 2009 to 2011 (Table 1.1.2) and have further increased in 2012 according to current projections (increase of 25%, as described in Section 3.1) from previous

years. There is currently no allocation for vermilion snapper between the commercial and recreational sectors.

Vermilion Snapper Recreational Fishing

Landings for the recreational sector are not available by species at the community level; therefore, it is difficult to identify communities as dependent on recreational fishing for vermilion snapper. The 20 Gulf communities which scored highest for recreational fishing engagement based on the analysis described above are listed in Table 3.5.1. Because the analysis used discrete geo-political boundaries, Panama City and Panama City Beach had separate values for the associated variables. Calculated independently, each still ranked high enough to appear in the top 20 list suggesting a greater importance for recreational fishing.

Table 3.5.1. Top ranking communities based on recreational fishing engagement and reliance, in descending order.

Community	County	State
Destin	Okaloosa	FL
Orange Beach	Baldwin	AL
Panama City	Bay	FL
Port Aransas	Nueces	TX
Pensacola	Escambia	FL
Panama City Beach	Bay	FL
Naples	Collier	FL
St. Petersburg	Pinellas	FL
Freeport	Brazoria	TX
Biloxi	Harrison	MS
Galveston	Galveston	TX
Clearwater	Pinellas	FL
Fort Myers Beach	Lee	FL
Sarasota	Sarasota	FL
Tarpon Springs	Pinellas	FL
Dauphin Island	Mobile	AL
Apalachicola	Franklin	FL
Carrabelle	Franklin	FL
Port St. Joe	Gulf	FL
Marco Island	Collier	FL

Source: SERO permit office 2008, MRIP site survey 2010.

Vermilion Snapper Commercial Fishing

Asevident in Figure 3.5.1 and Table 3.5.2, a large portion of the dealer-reported landings are located in the Florida Panhandle. Five separate communities included in the top 10 list (Table 3.5.2) are located in the Florida Panhandle. In addition, concentrations of landings occur in Louisiana, Texas, and Alabama. Nearly 50% of vermilion snapper was landed in the top two communities of Destin and Panama City, Florida in 2011. The next four communities of Pensacola, Florida; Port Bolivar, Texas; Golden Meadow, Louisiana; and Bayou La Batre, Alabama made up about 32% of commercial vermilion snapper landings. The remaining communities of Galveston, Texas; Apalachicola, Florida; Fort Walton Beach, Florida; and Bon Secour, Alabama represented about 11% of the 2011 commercial vermilion snapper landings.

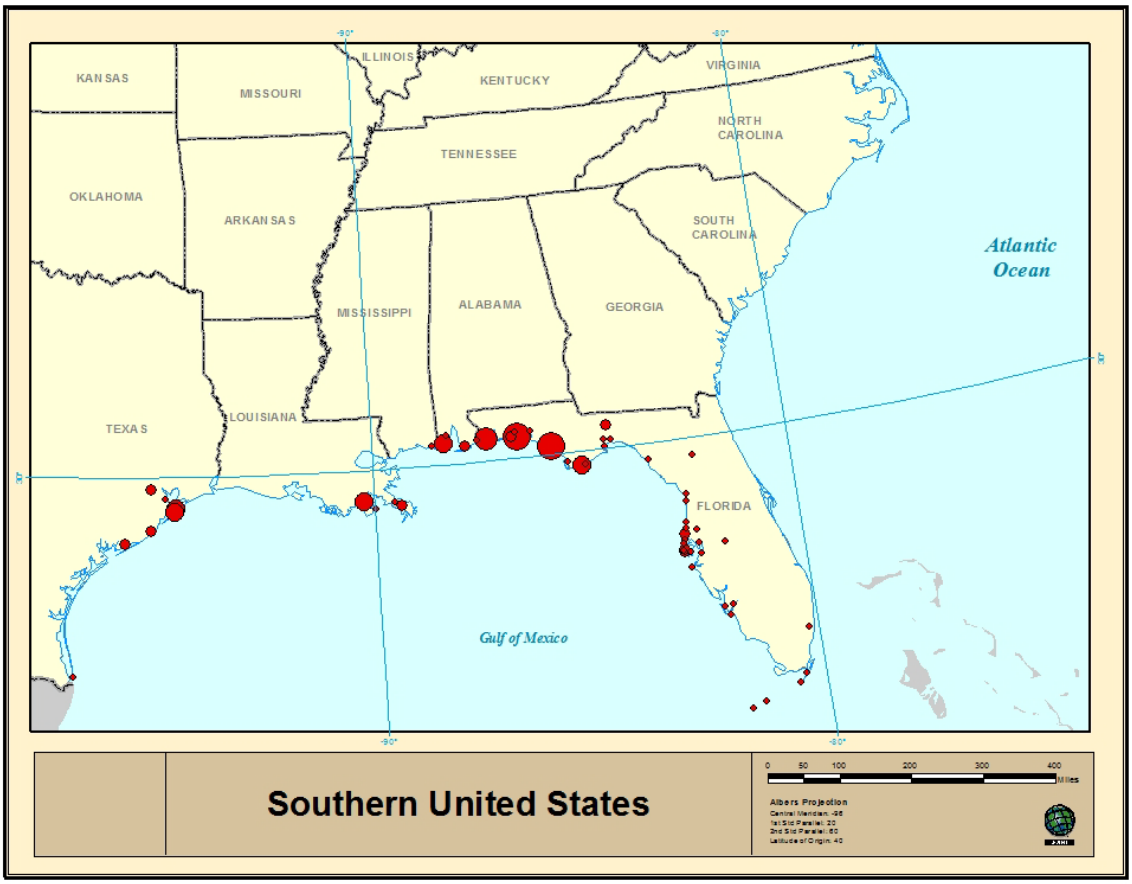


Figure 3.5.1. Distribution of commercial vermilion snapper landings for 2011. The size of the red circle is proportional to landings, based on dealer reports. Source: ALS dealer reports 2011.

Table 3.5.2. Top 10 Gulf communities based on commercial landings in pounds of vermilion snapper for 2011, in descending order.

State	Community
FL	Destin
FL	Panama City
FL	Pensacola
TX	Port Bolivar
LA	Golden Meadow
AL	Bayou La Batre
TX	Galveston
FL	Apalachicola
FL	Fort Walton Beach
AL	Bon Secour

Source: ALS dealer reports 2011.

Importance of Vermilion Snapper to Communities

The previous figure and table identified communities where vermilion snapper landings are most abundant. However, this does not necessarily reflect the importance of vermilion snapper in relation to other landed species in those communities. No data are available for the proportion of recreational landings of vermilion snapper by community, but these data are available for the commercial sector. It cannot be assumed that the proportion of commercial vermilion snapper landings among other species in a community would be similar to its proportion among recreational landings within the same community because commercial landings include many species that may not be caught by the recreational sector.

Comparing the communities of recreational importance (Table 3.5.1) and those with greater commercial landings (Table 3.5.2), five communities overlap: Destin, Panama City, Pensacola, and Apalachicola, Florida, and Galveston, Texas. The following five figures employ the lq analysis described above to examine the relative importance of vermilion snapper landings in each community. The proportions of the top 15 commercial species are shown and include state managed species.

Destin

Destin, Florida ranks first for the number of reef fish charter permits in 2010, with 118 federal permits. Destin also ranks first in terms of commercial vermilion snapper landings in 2011 (Table 3.5.2). Of the commercially landed species in Destin, vermilion snapper makes up about 22% of all landings and is the second most commonly landed species or species group (king and cero mackerels combined make up the largest amount of landings) and is the most commonly landed reef fish species.

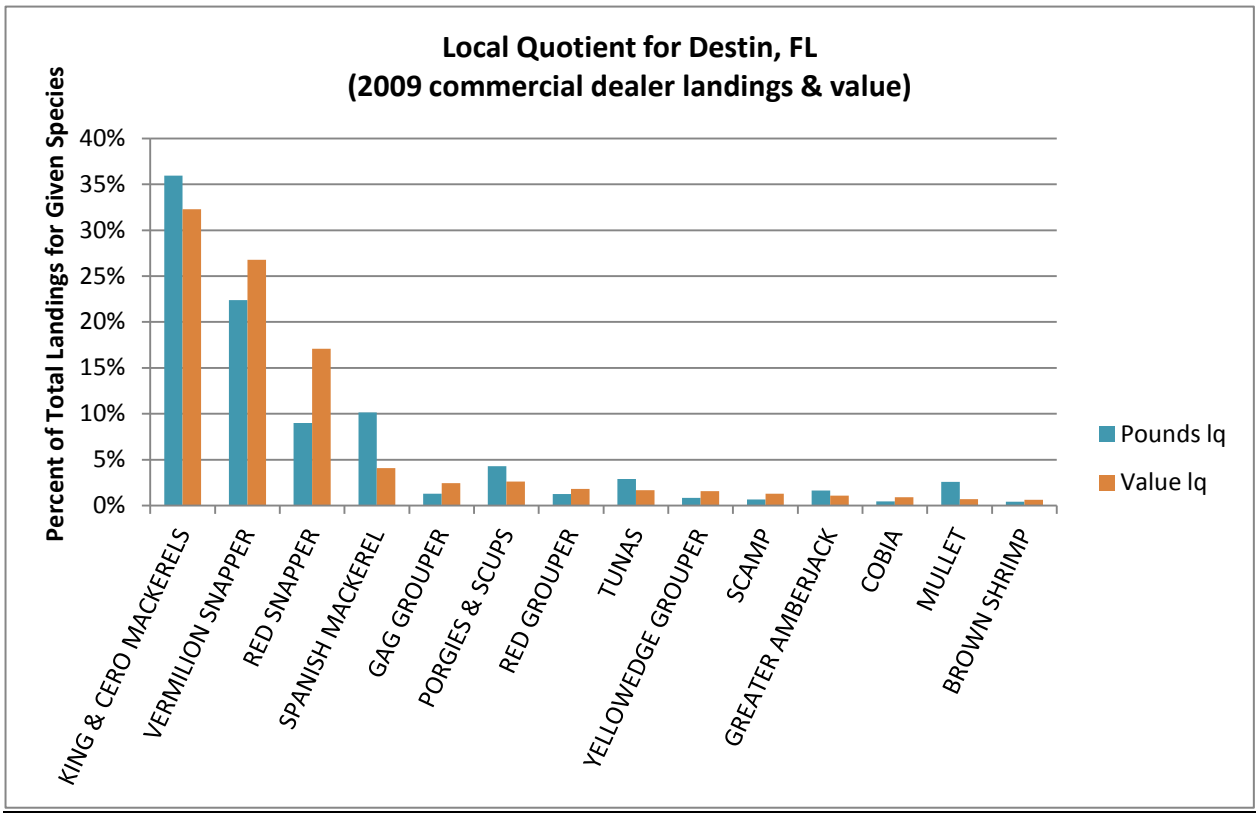


Figure 3.5.2. Proportion (lq) of commercial landings and value for top 15 species out of total landings and value for Destin, Florida. Source: ALS dealer reports 2009.

Panama City

Panama City, Florida was ranked third for the number of reef fish charter permits in 2010 with 67 federal permits. Both Panama City and Panama City Beach ranked within the top 10 recreational fishing communities based on the fishing involvement analysis discussed above suggesting a higher level of involvement across geo-political boundaries. Panama City also ranks second for commercial vermilion snapper landings in 2011 (Table 3.5.2). Of the commercially landed species, vermilion snapper makes up about 24% of all commercial landings and is the most important species in terms of pounds and value.

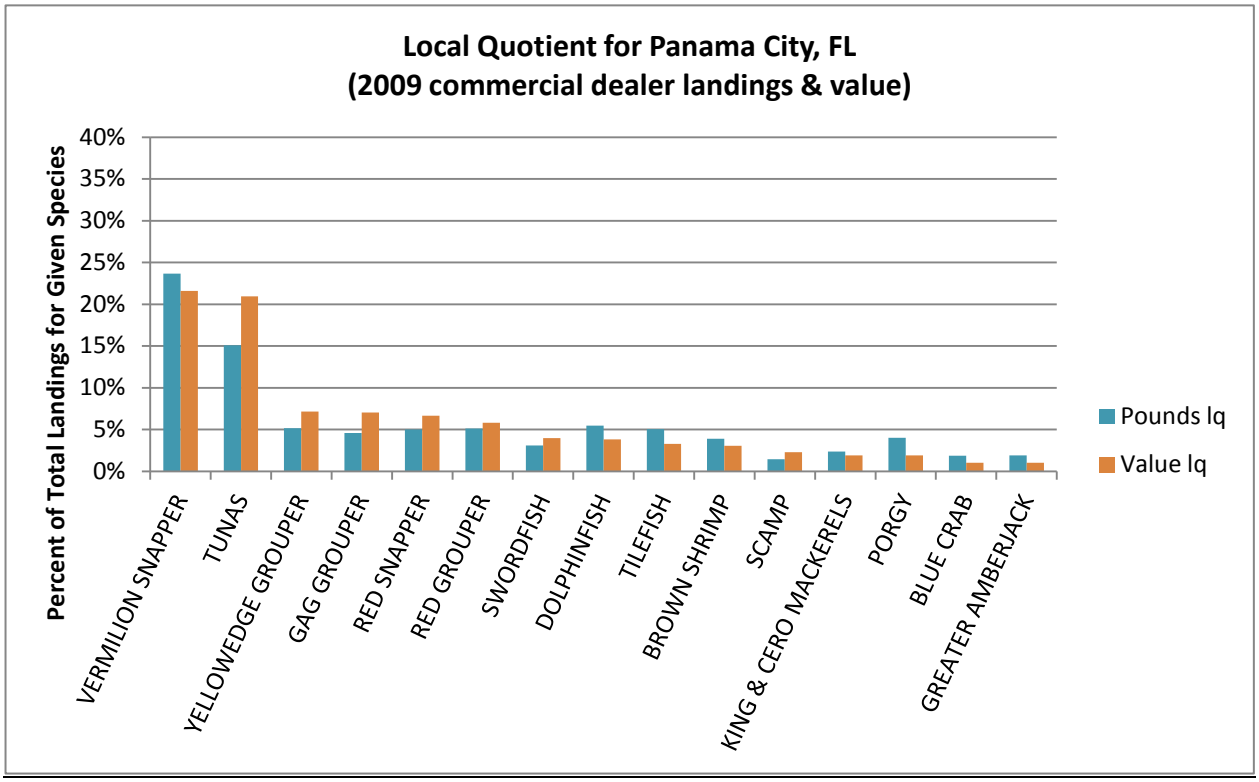


Figure 3.5.3. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Panama City, Florida. Source: ALS dealer reports 2009.

Pensacola

Pensacola ranked tenth in terms of the number of reef fish charter permits for the year 2010 with 35 federal permits. Pensacola also ranks third for commercial vermilion snapper landings in 2011 (Table 3.5.2). Of the commercially landed species, vermilion snapper makes up about 51% of all commercial landings in pounds and 64% in value. It is the most important commercial species in terms of pounds and value.

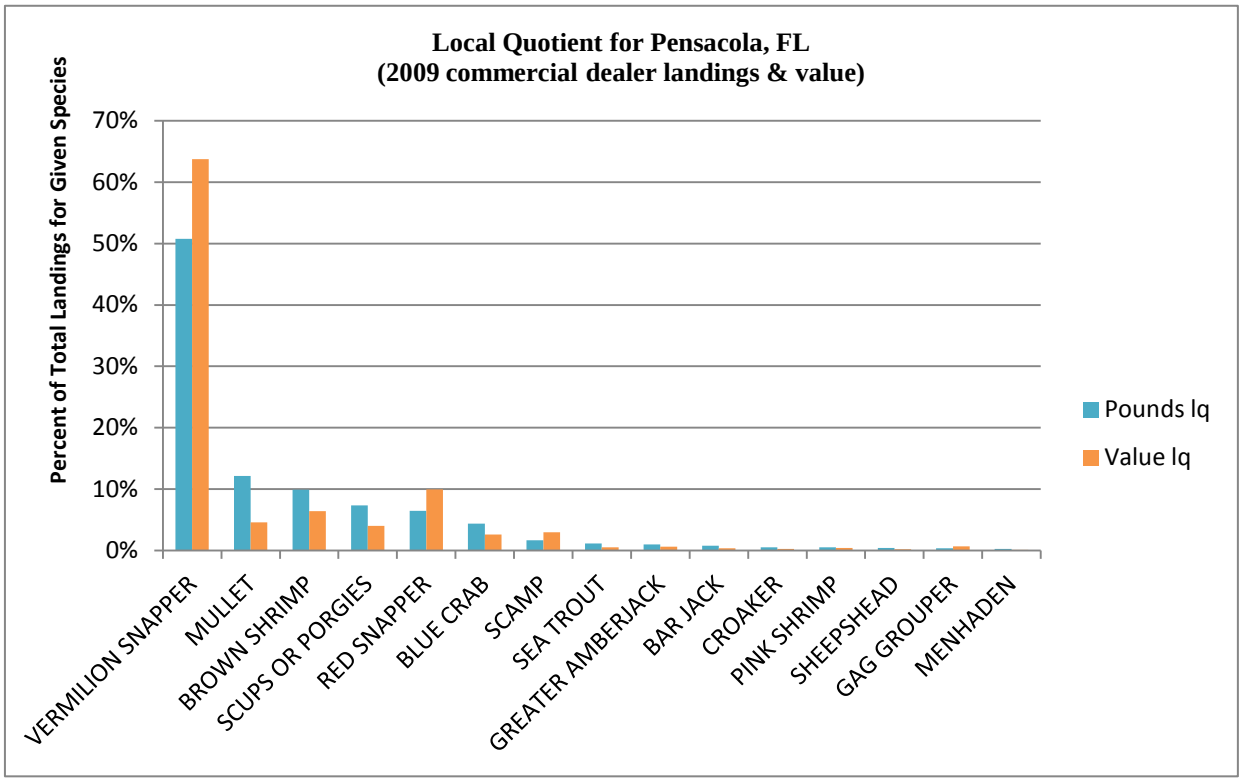


Figure 3.5.4. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Pensacola, Florida. Source: ALS dealer reports 2009.

Apalachicola

Apalachicola ranked seventeenth in terms of the number of reef fish charter permits for the year 2010 with 20 federal permits. Apalachicola also ranks eighth in terms of commercial vermilion snapper landings in 2011 (Table 3.5.2). Of the commercially landed species, vermilion snapper makes up about 2% of all commercial landings in Apalachicola. Although Apalachicola ranks among those communities with the most landings of vermilion snapper, proportionally vermilion is not as important as other species, even reef fish species.

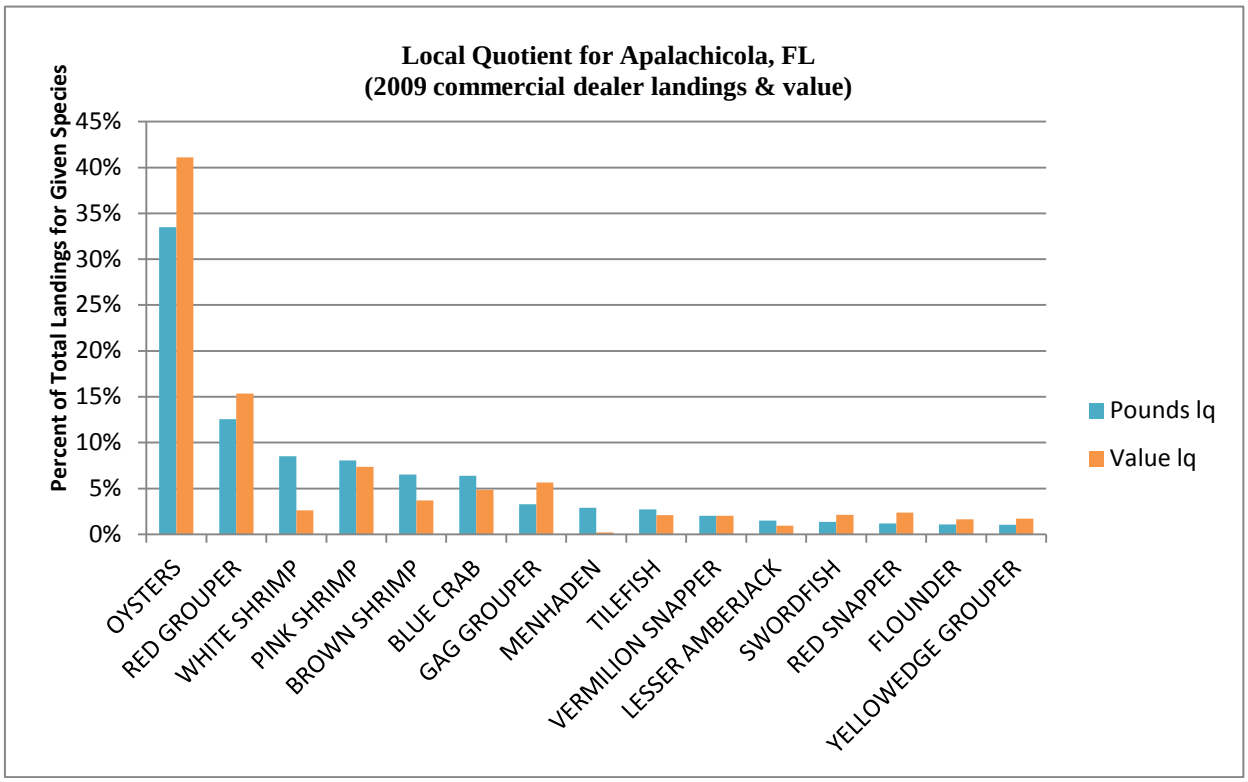


Figure 3.5.5. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Apalachicola, Florida. Source: ALS dealer reports 2009.

Galveston

Galveston, Texas ranks fifth in terms of the number of reef fish charter permits for the year 2010 with 45 federal permits. Galveston also ranks fifth in terms of commercial vermilion snapper landings in 2011 (Table 3.5.2). Although shrimp makes up the majority of commercial landings, vermilion snapper is the second most important reef fish species, representing nearly 4% of total landings. .

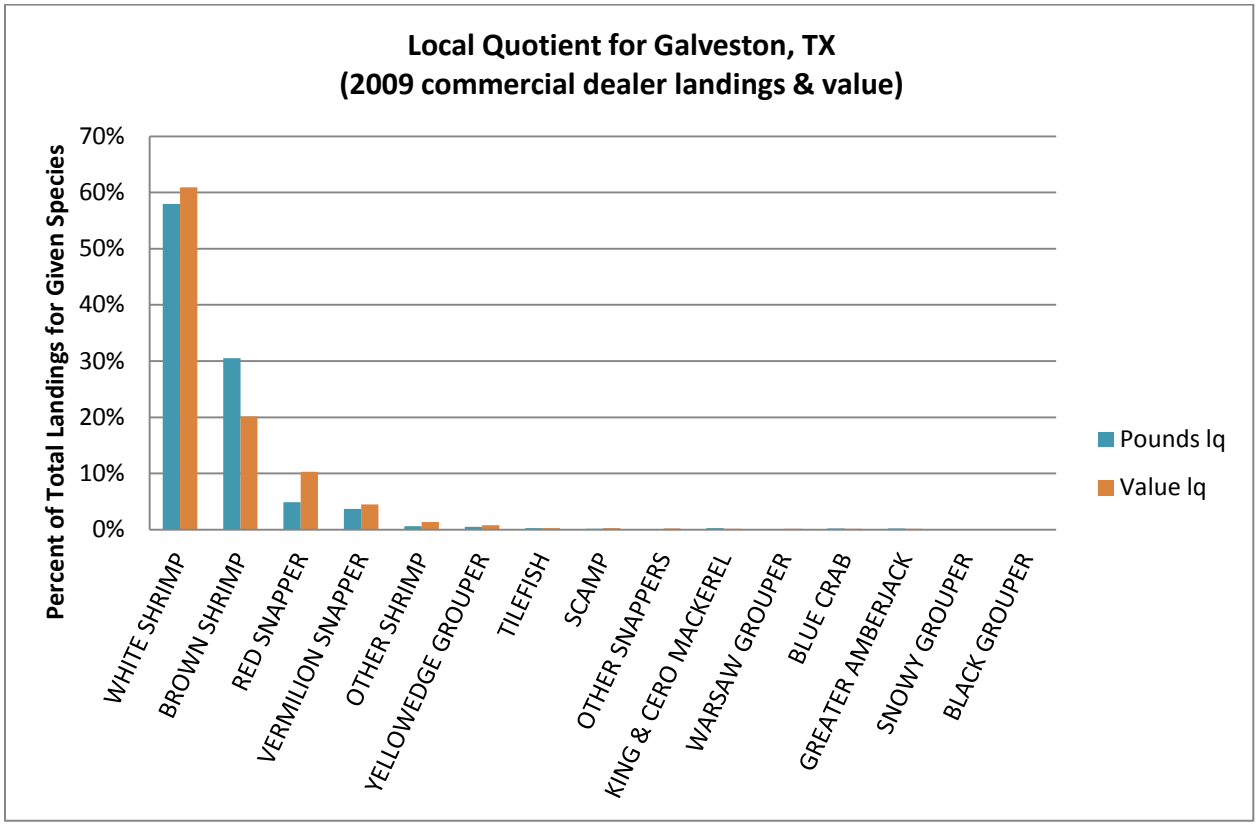


Figure 3.5.6. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Galveston, Texas. Source: ALS dealer reports. 2009.

Yellowtail Snapper

Although yellowtail snapper is landed in all states in the Gulf of Mexico, a very small amount is landed in states other than Florida. Nearly all of the yellowtail snapper catch is landed in Monroe County, Florida. The majority of Gulf yellowtail snapper are landed by the commercial sector (Table 1.1.3). Total Gulf yellowtail snapper landings have ranged from 253,894 to 921,212 lbs from 2001 to 2011 (Table 1.1.3). There is currently no allocation for yellowtail snapper between the commercial and recreational sectors.

Yellowtail Snapper Recreational Fishing

A small proportion of Gulf yellowtail snapper is landed by the recreational sector. From 2001 to 2011 recreational landings have ranged from about 1% to 6% of the total Gulf yellowtail snapper landings (Table 1.1.3). As explained above, landings for the recreational sector are not available by species at the community level; therefore, it is difficult to identify communities as dependent on recreational fishing for yellowtail snapper. The 20 Gulf communities which scored highest for recreational fishing engagement are listed above in Table 3.5.1. Since nearly all commercial landings are centered around the Florida Keys as described below in the commercial fishing section, communities in the Florida Keys are also included in the recreational analysis. Table 3.5.3 identifies recreational fishing communities in the Florida Keys

Table 3.5.3. Florida Keys recreational fishing communities.

Community	State
Islamorada	FL
Cudjoe Key	FL
Key West	FL
Tavernier	FL
Little Torch Key	FL
Marathon	FL
Sugarloaf Key	FL
Big Pine Key	FL
Key Largo	FL
Summerland Key	FL

Source: SERO permit office 2008, MRIP site survey 2010.

Yellowtail Snapper Commercial Fishing

Yellowtail snapper is landed commercially in all states in the Gulf of Mexico; however the majority of yellowtail snapper is landed in Florida in communities located in the Florida Keys. The following description includes a community-level analysis which contains commercial landings made to Gulf communities including the Florida Keys.

Figure 3.5.7 and Table 3.5.4 include landings of yellowtail snapper made to the Florida Keys (from both the Gulf and South Atlantic area fished locations). These landings are included because most yellowtail snapper landings occur in the Florida Keys which are located on the edge of the jurisdictional boundary between the Gulf and South Atlantic Councils. As explained in the Generic ACL/AM Amendment (GMFMC 2011a), it is plausible that fishermen in the Florida Keys (Monroe County) could fish both state and federal waters in one day, possibly on both coasts; however only one area fished location is documented in logbooks (GMFMC 2011a).

Gulf and South Atlantic yellowtail snapper landings for Florida Keys communities are included in this analysis to address this possibility.

Seven of the communities included in the top 10 list (Table 3.5.4) are located in the Florida Keys and made up a total of about 98.9% of landings in 2011. The top three communities alone (Key West, Marathon, and Key Largo, Florida) made up about 90% of landings.

Figure 3.5.7. Distribution of commercial yellowtail snapper landings for 2011. The size of the red circle is proportional to landings, based on dealer reports. Source: ALS dealer reports 2011.

Table 3.5.4. Top 10 Gulf communities based on commercial landings in pounds of yellowtail snapper for 2011, in descending order.

State	Community
FL	Key West
FL	Marathon
FL	Key Largo
FL	Islamorada
FL	Summerland Key
FL	Tavernier
FL	Cape Coral
FL	Marathon Shores
FL	Cortez
FL	Marco Island

Source: ALS dealer reports 2011.

Importance of Yellowtail Snapper to Communities

The previous figure and table identified where commercial yellowtail snapper landings are most abundant. However, this does not necessarily reflect the importance of yellowtail snapper in relation to other landed species in those communities. No data are available for the proportion of recreational landings of yellowtail snapper by community, but these data are available for the commercial sector. It cannot be assumed that the proportion of commercial yellowtail snapper landings among other species in a community would be similar to its proportion among recreational landings within the same community because commercial landings may include species not caught by the recreational sector.

Comparing the communities of recreational importance (Table 3.5.1 and Table 3.5.3; however recreational landings in the Gulf represents a much smaller proportion of total landings therefore communities on both lists that have a smaller amount of commercial landings have not been described in detail below) and those with greater commercial landings (Table 3.5.4), seven communities overlap: Islamorada, Key Largo, Key West, Marathon, Marco Island, Summerland Key, and Tavernier, Florida. The following figures employ the lq analysis described above to examine the relative importance of yellowtail snapper landings in the community. Lq figures have been provided for the top four communities by commercial landings because these communities include a large portion of the commercial landings and include yellowtail snapper as one of their top five species by pounds or value. These communities include Islamorada, Key Largo, Key West, and Marathon, Florida. The proportions of the top 15 commercial species are shown and include state managed species.

Islamorada

Six reef fish charter permits were held by community members of Islamorada, Florida in 2010. Islamorada ranks fourth in terms of commercial yellowtail snapper landings in 2011 when Florida Keys communities' landings are included (Table 3.5.4). Of the commercially landed species, yellowtail snapper makes up about 7% of all commercial landings (Figure 3.5.8).

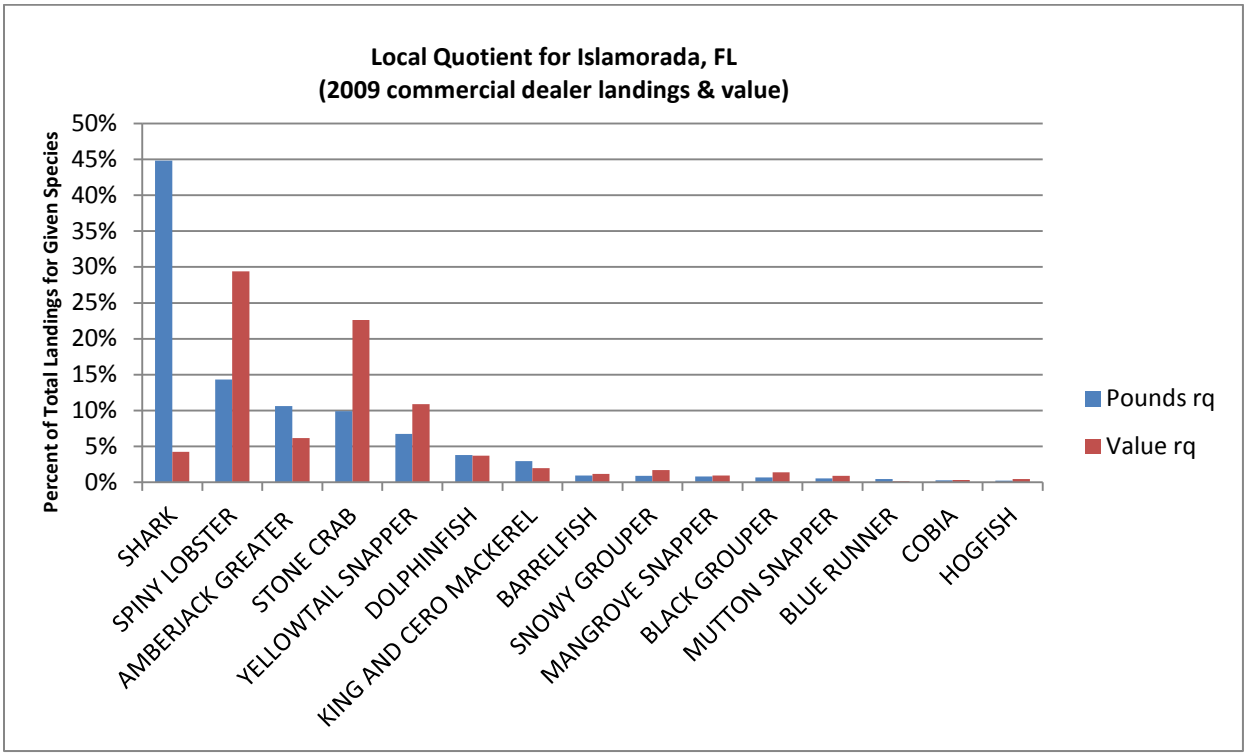


Figure 3.5.8. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Islamorada, Florida. Source: ALS dealer reports. 2009.

Key Largo

No reef fish charter permits were held by community members of Key Largo, Florida in 2010. Key Largo ranks third in terms of commercial yellowtail snapper landings in 2011 when Florida Keys communities' landings are included (Table 3.5.4). Of the commercially landed species, yellowtail snapper makes up about 13% of all commercial landings (Figure 3.5.9).

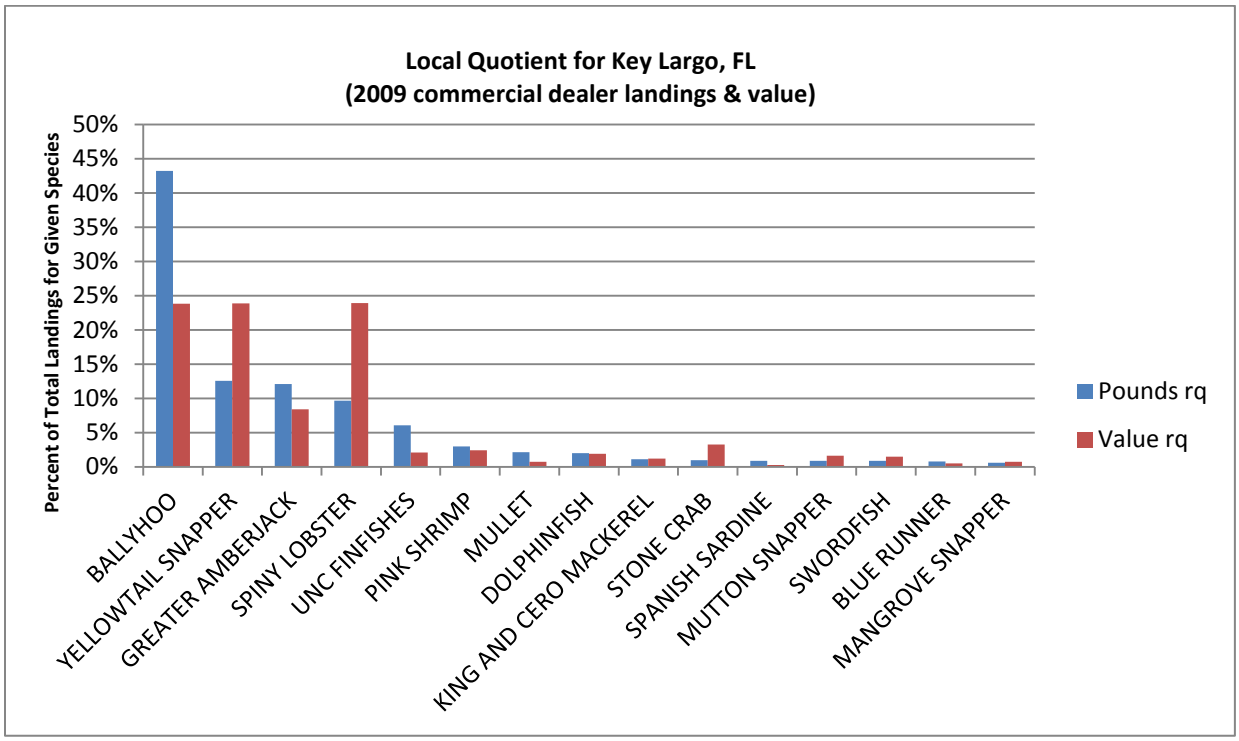


Figure 3.5.9. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Key Largo, Florida. Source: ALS dealer reports. 2009.

Key West

No reef fish charter permits were held by residents of Key West, Florida in 2010. Key West ranks first in terms of commercial yellowtail snapper landings in 2011 when Florida Keys communities' landings are included (Table 3.5.4). Of the commercially landed species, yellowtail snapper makes up about 19% of all commercial landings (Figure 3.5.10).

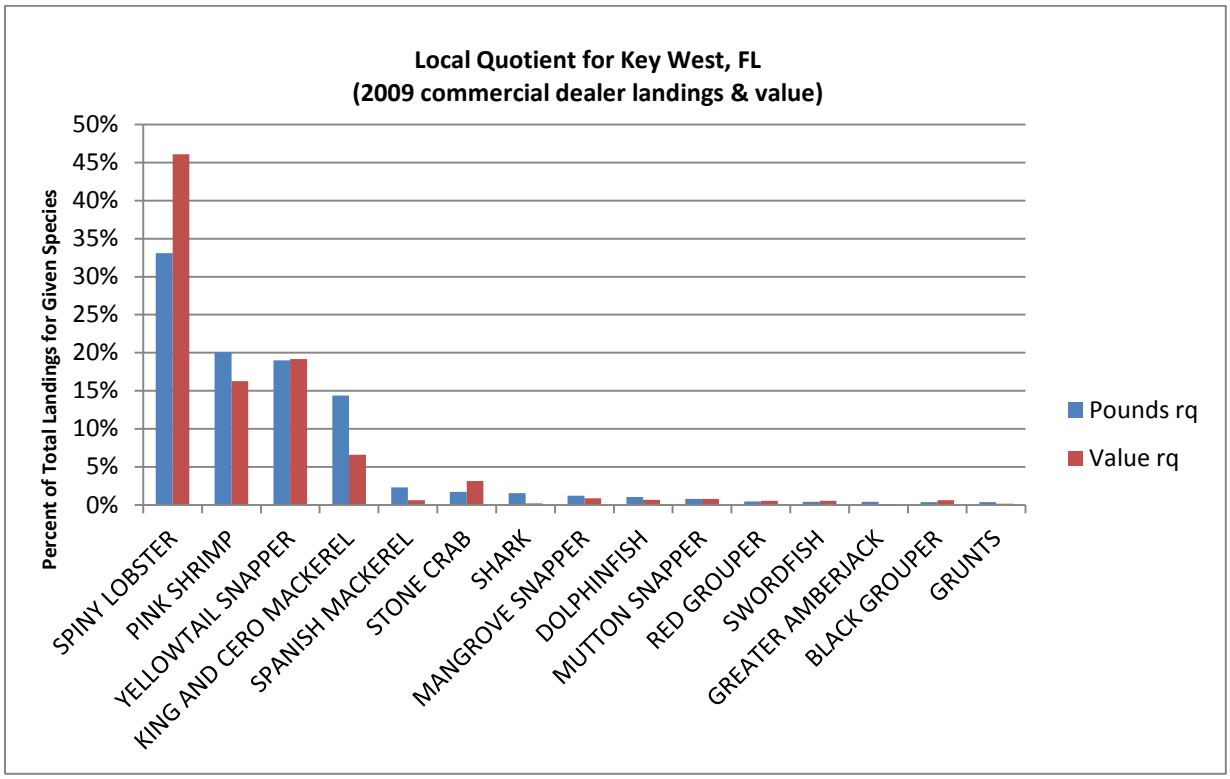


Figure 3.5.10. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Key West, Florida. Source: ALS dealer reports. 2009.

Marathon

Marathon, Florida ranked twentieth in terms of the number of reef fish charter permits for the year 2010 with 19 federal permits. Marathon also ranks second in terms of commercial yellowtail snapper landings in 2011 when Florida Keys communities' landings are included (Table 3.5.4). Of the commercially landed species, yellowtail snapper makes up about 5% of all commercial landings (Figure 3.5.11).

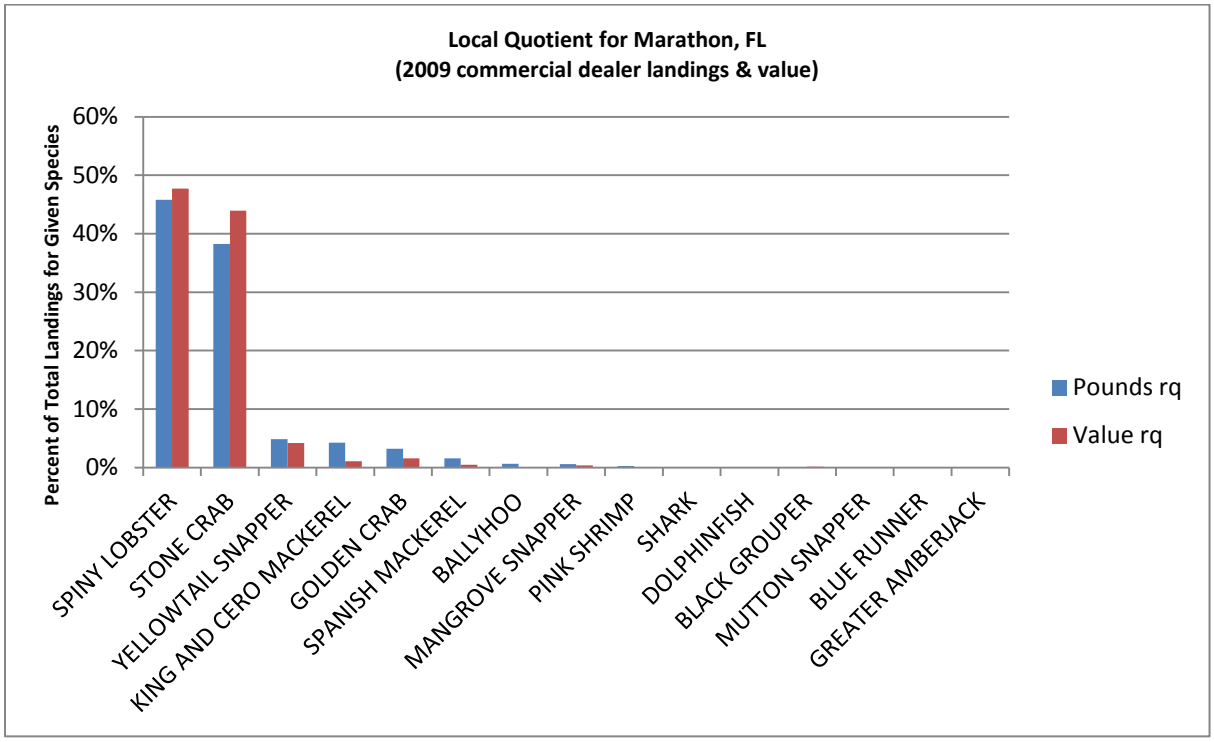


Figure 3.5.11. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Marathon, Florida. Source: ALS dealer reports. 2009.

3.5.1 Environmental Justice Considerations

Executive Order 12898 requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. The main focus of Executive Order 12898 is to consider "the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories…" This executive order is generally referred to as environmental justice (EJ).

Persons employed in the reef fish fishery, in vermilion or yellowtail snapper fishing, and in associated businesses and communities along the Gulf coast would be expected to be affected by this proposed action. Information on the race and income status of groups at the different participation levels (e.g., vessel owners, crew, dealers, processors, employees, and employees of associated support industries), however, is not available. Because this proposed action could be expected to affect fishermen and associated industries in numerous communities along the Gulf coast, census data (available at the county level, only) have been assessed to examine whether any coastal counties have poverty or minority rates that exceed the EJ thresholds.

The threshold for comparison that was used was 1.2 times the state average such that, if the value for the county was greater than or equal to 1.2 times the state average, then the county was considered an area of potential EJ concern (EPA 1999). Census data for the year 2010 was used. For Florida, the estimate of the minority (interpreted as non-white, including Hispanic) population was 39.5%, while 13.2% of the total population was estimated to be below the poverty line. These values translate in EJ thresholds of approximately 47.4% and 15.8%, respectively (Table 3.5.1.1). Based on the demographic information provided, no potential EJ concern is evident with regard to the percent of minorities for the counties of the west coast of Florida. With regard for poverty, Dixie (3.8%), Franklin (8%), Gulf (1.7%), Jefferson (4.6%), Levy (3.3%), and Taylor (7.1%) counties exceed the threshold by the percentage noted. No potential EJ concern is evident for the remaining counties which fall below the poverty and minority thresholds. The same method was applied to the remaining Gulf states.

Table 3.5.1.1. Each state's average proportion of minorities and population living in poverty, and the corresponding threshold used to consider an area of potential EJ concern (Census Bureau 2010).

	Minorities		Poverty	
State	% Population	EJ Threshold	% Population	EJ Threshold
FL	39.5	47.4	13.2	15.8
AL	31.5	37.8	16.8	20.2
MS	41.2	49.4	21.4	25.7
LA	38.2	45.8	18.4	22.1
TX	52.3	62.7	16.8	20.1

In Alabama, Mobile was the only county to exceed the minority threshold (by 1.7%). Neither of Alabama's coastal counties exceeded the poverty threshold for potential EJ concern. No coastal county in Mississippi exceeded either threshold. In Louisiana, Orleans Parish exceeded the minority threshold by 25% and the poverty threshold by 1.3%. Texas has several counties that exceeded the thresholds. In descending order of magnitude for exceeding the minority threshold were Willacy (26.3%), Cameron (24.7%), Kleberg (12.3%), Kenedy (9%), Nueces (2.8%), and Harris (.8%). Exceeding the poverty threshold were Kenedy (32.3%), Willacy (26.8%), Cameron (15.6%), Kleberg (6%), and Matagorda (1.8%). Willacy, Kenedy, Cameron, and

Kleberg counties exceed both the minority and poverty thresholds and are the communities identified as most likely to be vulnerable to EJ concerns.

Vermilion Snapper EJ Concerns

Table 3.5.1 provided a summary of 20 communities considered substantially dependent on recreational fishing, and Table 3.5.2 depicted the top 10 communities with the greatest landings of vermilion snapper. In comparing these communities with the preceding analysis identifying counties with potential EJ concerns, six of the communities listed as important to recreational or commercial fishing are located in five counties identified as having potential for EJ concerns. In Florida, both Apalachicola and Carrabelle are located in Franklin County, which exceeded the poverty threshold by 8%; Port St. Joe in Gulf County exceeded the poverty threshold by 1.7%. Bayou La Batre and Dauphin Island in Mobile County, Alabama exceeded the minority threshold for EJ concerns by 1.7%, but did not exceed the poverty threshold. In Texas, Port Aransas in Nueces County exceeded the minority threshold by 2.8%.

People in these communities may be affected by fishing regulations in two primary ways: participation and employment. Although these communities may have the greatest potential for EJ concerns, no data are available on the race and income status for those involved in the local fishing industry (employment), or for their dependence on vermilion snapper specifically (participation). Action 1 could negatively impact the communities involved in vermilion snapper fishing and processing because no action could result in an in-season closure if landings reach the status quo stock ACL . The proposed bag limit reduction in Action 2 could have some negative social impacts from decreasing the vermilion that may be retained to 10 fish on angler trips, with about 7% of angler trips that could be affected. Based on the analysis above, the greatest risk would likely arise in Franklin County (exceeds the poverty threshold by 8%).

Yellowtail Snapper EJ Concerns

Table 3.5.3 provided a summary of Florida Keys recreational fishing communities and Table 3.5.4 provides the top 10 communities with the greatest commercial landings of yellowtail snapper. In comparing these communities with the preceding analysis identifying counties with potential EJ concerns, Monroe County (which includes nearly all yellowtail snapper landings) does not exceed the minority or poverty threshold.

Although this comparison suggests that the Monroe County communities do not exceed the minority or poverty threshold, it should be noted that no data are available specifically on the race and income status for those involved in the local fishing industry (employment) and thus the results may be inconclusive. And because Action 3 would increase the ACL, positive benefits may be expected for the individuals involved in yellowtail snapper fishing and processing. The increase of the ACL would prevent or delay an in-season closure of yellowtail snapper harvest which would allow for the continuation of fishing and processing of yellowtail snapper. Therefore, no negative EJ concerns are expected to arise as a result of this action.

Reef Fish Venting Tool Requirement EJ Concerns

Because so many communities are involved in reef fish fishing, fishermen in all coastal counties could be impacted by the proposed modification to the venting tool requirement. However, Action 4 proposes to eliminate the requirement to have a venting tool on board. Thus, no negative impacts are expected because it would remove the burden of purchasing and maintaining a tool to be compliant with federal law. Therefore, no EJ concerns are expected to arise as a result of this action.

3.6 Description of the Administrative Environment

3.6.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act (16 U.S.C. § 1801 et seq.)), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the EEZ, an area extending 200 nautical miles from the seaward boundary of each of the coastal states, and authority over U.S. anadromous species and continental shelf resources that occur beyond the EEZ.

Responsibility for federal fishery management decision-making is divided between the Secretary of Commerce (Secretary) and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional Councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for promulgating regulations to implement proposed plans and amendments after ensuring management measures are consistent with the Magnuson-Stevens Act and with other applicable laws summarized in Section 10. In most cases, the Secretary has delegated this authority to the National Marine Fisheries Service (NMFS).

The Council is responsible for fishery resources in federal waters of the Gulf. These waters extend to 200 nautical miles offshore from the nine-mile seaward boundary of Florida and Texas, and the three-mile seaward boundary of Alabama, Mississippi, and Louisiana. The length of the Gulf coastline is approximately 1,631 miles. Florida has the longest coastline of 770 miles along its Gulf coast, followed by Louisiana (397 miles), Texas (361 miles), Alabama (53 miles), and Mississippi (44 miles).

The Gulf of Mexico Fishery Management Council (Council) consists of seventeen voting members: 11 public members appointed by the Secretary; one each from the fishery agencies of Texas, Louisiana, Mississippi, Alabama, and Florida; and the Regional Administrator of the National Marine Fisheries Service Southeast Region. The public is also involved in the fishery management process through participation on advisory panels and through Council meetings that, with few exceptions for discussing personnel matters, are open to the public. The regulatory process is also in accordance with the Administrative Procedures Act (APA), in the

form of "notice and comment" rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments.

The management process is conducted though the development and periodic amendment of FMPs. The Council currently has six FMPs: reef fish, shrimp, corals and coral reefs, red drum, spiny lobster, and migratory pelagic species. The spiny lobster and migratory pelagic species FMPs are managed jointly with the South Atlantic Fishery Management Council. Within the Reef Fish FMP, certain regulatory actions, referred to as framework actions, can be implemented through a framework process that was initially described in the Generic ACL/AM Amendment (GMFMC 2011a), and is proposed to be modified in Amendment 38 (GMFMC 2012b). The framework procedure reduces the administrative requirements to implementing regulatory changes while still providing for public input and a full review relative to applicable laws.

Regulations contained within FMPs are enforced through actions of the National Oceanographic and Atmospheric Agency's (NOAA's) Office for Law Enforcement, the United States Coast Guard, and various state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. Council's Law Enforcement Advisory Panel and the Gulf States Marine Fisheries Commission's Law Enforcement Committee have developed a five-year "GOM Cooperative Law Enforcement Strategic Plan - 2006-2011."

3.6.2 State Fishery Management

The purpose of state representation at the Council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. The state governments of Texas, Louisiana, Mississippi, Alabama, and Florida have the authority to manage their respective state fisheries. Each of the five Gulf states exercises legislative and regulatory authority over their states' natural resources through discrete administrative units. Although each agency is the primary administrative body with respect to the states natural resources, all states cooperate with numerous state and federal regulatory agencies when managing marine resources. A more detailed description of each state's primary regulatory agency for marine resources is provided in Amendment 23 (GMFMC 2004a).

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Action 1 - Establish Vermilion Snapper Stock Annual Catch Limits from 2013-2016+

4.1.1 Direct and Indirect Effects on the Physical Environment

Direct and indirect effects on the physical environment resulting from the harvest of vermilion snapper have been discussed in detail in Amendments 23 (GMFMC 2004a) and in the February 2007 Regulatory Amendment (GMFMC 2007a) and are incorporated here by reference.

Hook-and-line is the primary gear used by the recreational sector to harvest vermilion snapper and overall is expected to have a very minor negative effect on hard bottom habitat and no effect on the water column. Hook-and-line gear could break hard bottom structures through snagging or entanglement and abrasions to structures could result from lines or weights (Barnette 2001). Impacts to both soft and hard corals would be greater than impacts associated with hard-bottom areas for the reasons described above. Impacts to natural habitat surrounding artificial reefs are expected to be negligible, because these structures are generally placed in areas less vulnerable to disturbance, such as sand and mud bottom. Lost fishing gear and tackle that is slow to degrade could result in long-term adverse effects if the gear continues to damage habitat over time. Anchoring over hard-bottom areas would also directly damage benthic habitat. At least some of the vermilion snapper fishing participants, however, particularly headboat and charter boat sectors, drift fish in the water column rather than anchor while fishing thus reducing the amount of bottom contact.

The commercial vermilion snapper sector uses various forms of vertical lines (rod-and-reel, electric or hydraulic reels, hand lines) and to a much lesser extent, longlines to harvest vermilion snapper. Vertical lines are used for a majority of the harvest, while longlines represent approximately 2-3% of the total annual harvest. Vertical gear and longlines can damage habitat through snagging or entanglement. Longlines can also damage hard-bottom structures during retrieval as the line sweeps across the seafloor (Barnette, 2001). Generally these gears are not believed to have much negative impact on bottom structures and are considerably less destructive than some other commercial gears, such as traps and trawls (Barnette 2001).

Anchor damage by vertical-line fishing vessels, particularly by the recreational sector, is also potentially damaging. Bohnsack (in Hamilton 2000) points out that “favorite” fishing areas such as reefs are targeted and revisited multiple times, particularly with the advent of global positioning technology. The cumulative effects of repeated anchoring could damage the hard-bottom areas where fishing for vermilion snapper occurs.

This action affects both the commercial and recreational sectors. Differences in impacts to the physical environment would be due to changes in fishing effort as a result of changes in the annual catch limit (ACL). There is no commercial to recreational allocation. However, landings

are dominated by the commercial sector, which accounted for 76% of the total landings between 1986 and 2011 (Table 1.1.2). Therefore, most of the impacts to the physical environment would come from vertical line gear.

These alternatives would not directly affect the physical environment. Indirectly, if additional fishing days result from increases in the ACL, the alternatives could affect the physical environment relative to the duration and level of fishing effort over the course of the fishing season. Level and duration of effort together define the total cumulative amount of effort (i.e., gear-hours of soak time) which affects the potential for gear to impact the physical environment. As discussed earlier in this section, vertical lines are the primary gear used in both the recreational and commercial sectors. While there is some potential for the adverse impacts described above, these gears are generally not believed to have much negative impact on bottom structures (Barnette 2001). Further, the vermilion snapper season is currently open year round, so any opportunity for further increase in duration of effort is limited. As a result, the potential for both direct and indirect effect is considered to be insignificant.

Preferred Alternative 1 and **Alternative 4** set an ACL that stays the same from year to year. **Alternatives 2, 3,** and **5** set ACLs that change from year to year. If the ACL is used as a proxy for the amount of fishing effort and potential impact with the physical habitat, then **Preferred Alternative 1** would have the least impact. **Alternative 5** would have the next smallest effect. However, the ACLs and cumulative 2013-2016 ACLs for **Preferred Alternative 1** and **Alternative 5** are nearly identical and thus the effects would be very similar (Table 4.1.1.1). From a practical standpoint, the effect of these two alternatives can be considered to be the same. The greatest impact would come from **Alternatives 2** and **4** which have the greatest ACLs and cumulative ACLs (Table 4.1.1.1). Because **Alternatives 2** and **4** have nearly identical cumulative ACLs, they should have very similar effects on the physical environment. **Alternative 3** is intermediate in its impact between **Preferred Alternative 1/Alternative 5** and **Alternatives 2** and **4**. The relative ranking of potential impacts to the physical environment as related to the cumulative ACLs is shown in Table 4.1.1.1.

Table 4.1.1.1. Ranking of impacts to the vermilion snapper stock (lowest to highest) of alternatives based on 1-year and cumulative 4-year ACLs as a proxy for effort. ACLs are in millions of pounds (mp).

Alternative	**1**	**2**	**3**	**4**	**5**
Rank	1	5	3	4	2
2013 ACL	3.42 mp	4.41 mp	4.19 mp	4.32 mp	3.44 mp
Cumulative 2013-2016 ACL	13.68 mp	17.41 mp	16.53 mp	17.28 mp	13.75 mp

4.1.2 Direct and Indirect Effects on the Biological/Ecological Environment

Vermilion snapper management actions that affect the biological/ecological environment mostly relate to the impacts of fishing on a species' population size, life history, and the role of the species within its habitat. Removal of fish from the population through fishing reduces the overall population size. Fishing gears have different selectivity patterns which refer to a fishing method's ability to target and capture organisms by size and species. This would include the number of discards, mostly sublegal fish or fish caught during seasonal closures, and the mortality associated with releasing these fish.

Fishing can affect life history characteristics of reef fish such as growth and maturation rates. For example, Hood and Johnson (1999) found that the average size-at-age of vermilion snapper from the eastern Gulf captured in 1995-1996 was smaller than that captured in studies occurring in the 1980s. Although this might reflect regional differences in growth (eastern versus western Gulf), Hood and Johnson (1999) believed that this change could also be caused by increasing fishing pressure. If larger fish are more vulnerable to capture, then faster-growing fish within an age-class would be selectively removed from the population, thus depressing the mean size-at-age for older fish. This same trend has been noted by Zhao et al. (1997) for vermilion snapper in the South Atlantic Bight and was also attributed to increased fishing pressure. In addition, both Zhao et al. (1997) and Hood and Johnson (1999) noted faster growth rates and earlier sizes of maturation for South Atlantic and Gulf vermilion snapper populations over time. They speculated this change may also have been due to increases in fishing effort.

The reef fish fishery can affect species outside the reef fish complex. Specifically, sea turtles have been observed to be directly affected by the longline sector of the Gulf reef fish fishery. These effects occur when sea turtles interact with fishing gear and result in an incidental capture injury or mortality and are summarized in GMFMC (2009). A variety of factors may affect the likelihood and frequency of sea turtles being caught in reef fish bottom longline gear. The spatial overlap between fishing effort and sea turtles is one such factor. The more abundant sea turtles are in a given area where the fishing gear is set, the greater probability a sea turtle would be incidentally caught on the gear. However, for sea turtles and other listed species, the most recent biological/ecological opinion for the Reef Fish Fishery Management Plan concluded authorization of the Gulf reef fish fishery managed in the reef fish plan is not likely to jeopardize the continued existence of sea turtles, smalltooth sawfish, or *Acropora* species (NMFS 2011). The primary gears used by the reef fish fishery are longline and hook-and-line. These gears were classified in the 2012 List of Fisheries (76 FR 73912, November 29, 2011) as a Category III fishery with regard to marine mammal species. This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from the fishery is less than or equal to 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock, while allowing that stock to reach or maintain its optimum sustainable population.

Preferred Alternative 1 retains the 3.42 mp ACL that was set in the Generic ACL/AM Amendment (GMFMC 2011a). At the time that this ACL was set, it was equal to the ABC. As a result of the SEDAR 9 update assessment (SEDAR 9 Update 2011b,c), the ABC has been

increased (Table 1.1.1). The ACL in this alternative is lower than any of the other alternatives. Although the 25% buffer that this alternative creates between OFL and ACL is more conservative than recommended by the ACL/ACT control rule (the control rule recommended setting the ACL 5% below ABC, which corresponds to 9% to 11.5% below OFL), the Council was concerned about what direction that the stock might be headed based on observations of Reef Fish AP members who target vermilion snapper and were concerned that the stock appeared to be declining in the most recent years. While a specific probability of overfishing cannot be calculated, this alternative would result in the lowest likelihood of the vermilion snapper stock experiencing overfishing. **Preferred Alternative 1** and **Alternative 5** produce similar ACLs, but the **Preferred Alternative 1** ACL is constant while the **Alternative 5** ACL fluctuates slightly from year to year. The Council felt that the constant ACL **under Preferred Alternative 1** produced a simpler, and therefore preferable, regulation.

Preferred Alternative 1 would also result, over time, in the stock biomass increasing to a new equilibrium level higher than the MSY equilibrium level. From an ecosystem perspective, this increased biomass could produce increased competition with other stocks for available food or habitat. In addition, a closure of vermilion snapper fishing due to the ACL being reached is more likely for this alternative than any of the other alternatives. This could lead to fishing effort shifting to other stocks such as gray triggerfish, cobia or other snappers, and thus could have minor adverse impacts on these stocks. This alternative, however, would have the least adverse impacts on the vermilion snapper stock.

Preferred Alternative 1 also retains the ACT of 2.94 mp. The ACT serves no function in the management of vermilion snapper because there are neither management measures in place nor proposed that use the ACT. Furthermore, the ACT for vermilion snapper does not occur in the codified regulations. Therefore, the ACT is not used in the remaining alternatives.

Alternative 2 sets the ACL equal to the ABC for each year. This results in the ACL fluctuating between 4.33 mp and 4.41 mp. Because of the management uncertainty resulting from the 45-day delay in availability of recreational catch estimates for each wave, this alternative has the greatest likelihood that ABC would be exceeded. Overfishing would not occur unless the harvest also exceeds the OFL, but the likelihood of overfishing occurring would exceed the 39.8% probability level associated with ABC. The likelihood of a closure of vermilion snapper fishing due to the ACL being reached is lower than for any of the other alternatives, and therefore effort shifting to other stocks is less likely. However, other species may still be taken on trips where vermilion snapper are caught. This alternative would have the least adverse impacts on the stocks subject to effort shifting, but the greatest potential for adverse impacts on the vermilion snapper stock if OFL is exceeded.

Alternative 3 sets the ACL at a level 5% below the ABC for each year. This results in the ACL fluctuating between 4.11 mp and 4.19 mp. The concern about catches exceeding ABC due to the management uncertainty discussed above apply to the alternative, but to a lesser extent since there is a buffer between ACL and ABC. The likelihood of the stock experiencing overfishing, and adverse impacts on the biological/ecological environment, would be less than under **Alternative 2** or **Alternative 4**, but greater than under **Alternative 1** or **Alternative 5**.

Alternative 4 sets an ACL that is fixed at 4.32 mp each year. This corresponds to the OY level in 2016 (where OY is defined as the yield when fishing at 75% of the fishing mortality rate corresponding to MSY). Although this is below the ABCs for each year during 2013-2016, it is only slightly below the 4.33 mp ABC in 2015 and 2016, and is higher than the other alternatives. Therefore, the likelihood of adverse impacts to the vermilion snapper stock is only slightly less than **Alternative 2**, and higher than the other alternatives. Correspondingly, the potential for adverse impacts to other stocks due to effort shifting is slightly greater than **Alternative 2** and less than the other alternatives.

Alternative 5 sets the ACL at 75% of the OFL for each year. This results in the ACL fluctuating between 3.42 mp and 3.46 mp. For 2014, the ACL for **Preferred Alternative 1** and **Alternative 5** are identical. Of the remaining years, the **Alternative 5** ACL is only slightly higher than **Preferred Alternative 1** and is lower than the other alternatives. Therefore, the likelihood of adverse impacts on the vermilion snapper stock is only slightly greater than **Preferred Alternative 1**, and lower than the other alternatives.

In summary, the ranking of the alternatives from least to greatest adverse impacts to the vermilion snapper stock (and greatest to least adverse impacts on other stocks due to effort shifting) is as follows:

1. **Preferred Alternative 1**
2. **Alternative 5** (**Preferred Alternative 1** and **Alternative 5** are nearly identical in impacts)
3. **Alternative 3**
4. **Alternative 4**
5. **Alternative 2** (**Alternatives 4** and **2** are nearly identical in impacts)

4.1.3 Direct and Indirect Effects on the Economic Environment

Action 1 would establish ACLs for the vermilion snapper stock from 2013 and beyond. **Preferred Alternative 1** (status quo) would keep the ACL at its current value of 3.42 mp ww, whereas **Alternatives 2** through **5** would increase the ACL beyond that value (Table 4.1.3.1). **Alternative 2** entails the largest increases in the ACL, followed in turn by **Alternatives 4, 3** and **5**. These increases of the ACL represent potential increases in combined annual commercial and recreational landings of vermilion snapper. However, Reef Fish AP members who target vermilion snapper have suggested, based on personal observations, that the vermilion snapper stock in recent years may not be in as healthy a condition as in previous years. With higher ACLs there is less of a buffer between the ACL and the OFL, leading to an increased likelihood that overfishing may occur. In this situation, accountability measures may be triggered that result in season closures, which in the long run could have adverse economic impacts.

Table 4.1.3.1. Alternative vermilion snapper ACLs and increases, 2013 to 2022.

Years after 2012	Year	Action 1	Alternative (mp lbs ww)				
			1	2	3	4	5
1	2013	ACL	3.42	4.41	4.19	4.32	3.44
		Change from baseline	0.00	0.99	0.77	0.90	0.02
2	2014	ACL	3.42	4.34	4.12	4.32	3.42
		Change from baseline	0.00	0.92	0.70	0.90	0.00
3	2015	ACL	3.42	4.33	4.11	4.32	3.43
		Change from baseline	0.00	0.91	0.69	0.90	0.01
4	2016	ACL	3.42	4.33	4.11	4.32	3.46
		Change from baseline	0.00	0.91	0.69	0.9	0.04
5	2017	ACL	3.42	4.33	4.11	4.32	3.46
		Change from baseline	0.00	0.91	0.69	0.90	0.04
6	2018	ACL	3.42	4.33	4.11	4.32	3.46
		Change from baseline	0.00	0.91	0.69	0.90	0.04
7	2019	ACL	3.42	4.33	4.11	4.32	3.46
		Change from baseline	0.00	0.91	0.69	0.90	0.04
8	2020	ACL	3.42	4.33	4.11	4.32	3.46
		Change from baseline	0.00	0.91	0.69	0.90	0.04
9	2021	ACL	3.42	4.33	4.11	4.32	3.46
		Change from baseline	0.00	0.91	.069	.090	0.04
10	2022	ACL	3.42	4.33	4.11	4.32	3.46
		Change from baseline	0.00	0.91	0.69	0.90	0.04
		Total 10-Year Change	0.00	9.19	6.99	9.00	0.31

Between 2001 and 2010, commercial landings represent a greater proportion of total landings than recreational landings, representing from 73% to 86% of combined annual landings. From 2006 through 2010, the commercial sector's average annual share was approximately 81%, but from 2007 through 2010, that share rose to 83%. This analysis uses a commercial share of 82% and a recreational share of 18% to estimate the potential economic impacts of the various alternatives on the two sectors. Over the 10-year period from 2013 through 2022, **Alternative 2** would generate potential additional landings of approximately 7.536 mp in the commercial sector and approximately 1.654 mp in the recreational sector (Table 4.1.3.2). These potential additional commercial landings also represent potential increases of economic benefits to wholesalers, retailers and consumers of vermilion snapper. In the long run, however, **Preferred Alternative 1** has the least likelihood of overfishing occurring, and consequently, **Preferred Alternative 1** is expected to have the least net economic benefits, followed in turn by **Alternatives 2, 4, 3** and **5**.

Table 4.1.3.2. Potential short-run increases in vermilion snapper landings, 2013 – 2022.

Years after 2012	Year	Additional Commercial Landings				
		Alternative (Lbs ww)				
		1	2	3	4	5
1	2013	0	811,800	631,400	738,000	16,400
2	2014	0	754,400	574,000	738,000	0
3	2015	0	746,200	565,800	738,000	8,200
4	2016	0	746,200	565,800	738,000	32,800
5	2017	0	746,200	565,800	738,000	32,800
6	2018	0	746,200	565,800	738,000	32,800
7	2019	0	746,200	565,800	738,000	32,800
8	2020	0	746,200	565,800	738,000	32,800
9	2021	0	746,200	565,800	738,000	32,800
10	2022	0	746,200	565,800	738,000	32,800
10-Year Total		0	7,535,800	5,731,800	7,380,000	254,200

Years after 2012	Year	Additional Recreational Landings				
		Alternative (Lbs ww)				
		1	2	3	4	5
1	2013	0	178,200	138,600	162,000	3,600
2	2014	0	165,600	126,000	162,000	0
3	2015	0	165,600	124,200	162,000	1,800
4	2016	0	165,600	124,200	162,000	7,200
5	2017	0	165,600	124,200	162,000	7,200
6	2018	0	165,600	124,200	162,000	7,200
7	2019	0	165,600	124,200	162,000	7,200
8	2020	0	165,600	124,200	162,000	7,200
9	2021	0	165,600	124,200	162,000	7,200
10	2022	0	165,600	124,200	162,000	7,200
10-Year Total		0	1,654,200	1,258,200	1,620,000	55,800
Combined Change		0	9,190,000	6,990,000	9,000,000	310,000

The average annual Gulf-wide ex-vessel price of vermilion snapper has exhibited a generally increasing trend since 2002, although it declined significantly in 2009. From 2007 through 2010, the average annual ex-vessel price was $2.29 per pound ww (2011 dollars), and $2.31 from 2008 through 2010 (2011 dollars). Using an average price of $2.30 per pound ww, **Alternative 2** would generate the largest potential increase in ex-vessel revenue ($17.33 million), followed by **Alternative 4** ($16.97 million), **Alternative 3** ($13.18 million), **Alternative 5** ($0.58 million) and last **Preferred Alternative 1** ($0) (Table 4.1.3.3). These short-run increases in landings and associated revenues are not without increases in trip costs. Consequently, the potential and

actual net benefits of each alternative to commercial fishermen are less than the potential and actual increases in ex-vessel revenue.

Table 4.1.3.3. Potential short-run increases of ex-vessel revenue, 2013 – 2022.

Years after 2012	Year	Additional Ex-Vessel Revenue Alternative (2011 Dollars)				
		1	**2**	**3**	**4**	**5**
1	2013	$0	$1,867,140	$1,452,220	$1,697,400	$37,720
2	2014	$0	$1,735,120	$1,320,200	$1,697,400	$0
3	2015	$0	$1,716,260	$1,301,340	$1,697,400	$18,860
4	2016	$0	$1,716,260	$1,301,340	$1,697,400	$75,440
5	2017	$0	$1,716,260	$1,301,340	$1,697,400	$75,440
6	2018	$0	$1,716,260	$1,301,340	$1,697,400	$75,440
7	2019	$0	$1,716,260	$1,301,340	$1,697,400	$75,440
8	2020	$0	$1,716,260	$1,301,340	$1,697,400	$75,440
9	2021	$0	$1,716,260	$1,301,340	$1,697,400	$75,440
10	2022	$0	$1,716,260	$1,301,340	$1,697,400	$75,440
10-Year Total		$0	$17,332,340	$13,183,140	$16,974,000	$584,660

The above potential increases in commercial vermilion snapper landings are maximum changes in the short run, assuming the commercial sector's share is 82%. If the commercial sector's share is larger than 82%, the potential increases in commercial landings (pounds and dollars) caused by **Alternatives 2** through **5** would be greater; and, conversely, if the commercial sector's share is less than 82%, the potential increases would be smaller. The actual increases in commercial landings may be smaller than the potential increases. For example, actual increases would be less than potential increases if annual landings do not meet the proposed ACL. If annual landings never rise beyond the current ACL, the impact between the different alternatives (both pounds and dollars) would be zero.

From 2006 through 2010, private and rented recreational fishing vessels landed an average of 41.6% of the recreational sector's vermilion snapper landings taken from the Gulf EEZ, while for-hire fishing vessels landed the remaining 58.4%. The potential increases in recreational landings and associated economic benefits would be divided along these percentages (41.6% private/rented recreational fishing vessels and 58.4% for-hire fishing vessels). Currently, recreational fishermen are limited by a bag limit of 20 vermilion snapper per angler within the 20 reef fish aggregate bag limit. It is presumed in Table 4.1.3.4, that the current bag limit would not limit the potential change in recreational landings and annual recreational landings associated with the different proposed ACLs. **Alternative 2** would generate the largest potential increases in landings by private/rented and for-hire vessels, followed, in turn, by **Alternatives 4, 3** and **5** (Table 4.1.3.4). **Preferred Alternative 1** would allow for no increases in potential (or actual) recreational landings.

Table 4.1.3.4. Potential short-run increases of landings by anglers aboard private/rented vessels and for-hire vessels, 2013 – 2022.

Years after 2012	Year	Additional Landings by Private/Rented Vessels				
		Alternative (Lbs ww)				
		1	2	3	4	5
1	2013	0	74,131	57,658	67,392	1,498
2	2014	0	68,890	52,416	67,392	0
3	2015	0	68,141	51,667	67,392	749
4	2016	0	68,141	51,667	67,392	2,995
5	2017	0	68,141	51,667	67,392	2,995
6	2018	0	68,141	51,667	67,392	2,995
7	2019	0	68,141	51,667	67,392	2,995
8	2020	0	68,141	51,667	67,392	2,995
9	2021	0	68,141	51,667	67,392	2,995
10	2022	0	68,141	51,667	67,392	2,995
10-Year Total		0	688,147	523,411	673,920	23,213

Years after 2012	Year	Additional Landings by For-Hire Vessels				
		Alternative (Lbs ww)				
		1	2	3	4	5
1	2013	0	104,069	80,942	94,608	2,102
2	2014	0	96,710	73,584	94,608	0
3	2015	0	95,659	72,533	94,608	1,051
4	2016	0	95,659	72,533	94,608	4,205
5	2017	0	95,659	72,533	94,608	4,205
6	2018	0	95,659	72,533	94,608	4,205
7	2019	0	95,659	72,533	94,608	4,205
8	2020	0	95,659	72,533	94,608	4,205
9	2021	0	95,659	72,533	94,608	4,205
10	2022	0	95,659	72,533	94,608	4,205
10-Year Total		0	966,053	734,789	946,080	32,587
Combined Change		0	1,654,200	1,258,200	1,620,000	55,800

The benefits of the potential increases of landings by anglers aboard private/rented vessels can be estimated in dollars by using the concept of consumer surplus. Consumer surplus is the difference between the maximum amount that a consumer would be willing and able to pay to obtain an additional unit of a good less the amount the consumer does pay. In the case of recreational fishing, estimates of consumer surplus are typically generated by willingness-to-pay studies of private anglers, asking them how much they would be willing and able to pay at most to land another fish or take another trip less what they actually pay. Haab et al. (2009), Gentner (2009), and Carter and Liese (2012), for example, generate estimates of the average consumer

surplus of a fish from $121.94 to $26.52 (in 2010 dollars). None of these estimates are focused specifically on vermilion snapper or snapper species and all assume no income differences across anglers (in part to have constant marginal utility of income); however, the economic analysis for Reef Fish Amendment 32 used an estimate of average consumer surplus per fish of $85 (in 2008 dollars) and average whole weight of a fish of 7.23 pounds to generate an average consumer surplus per pound of $11.76 (in 2008 dollars), which would be revised to $12.85 (2011 dollars), assuming an annual inflation rate of 1.3%. Thus, the potential increases in consumer surplus for each alternative are estimated to be equal to the maximum potential increases in pounds landed by private/rented vessel landings multiplied by $12.85 per pound. **Preferred Alternative 1** would generate no changes in potential or actual consumer surplus. **Alternatives 2** through **5** would generate potential increases in consumer surplus in the short run ranging from $0.30 million to $8.84 million. If the recreational sector's share is greater, however, such as if it is 20%, the potential increase in consumer surplus is greater; and conversely, if the share is smaller (15%), the potential would be smaller. Similarly, if the share of anglers aboard private/rented vessels is greater than 41.6%, **Alternatives 2 through 5** would generate potential short-term increases in consumer surplus ranging from $0.30 million to $8.84 million (Table 4.1.3.5). If the recreational sector's share is greater, for example, if it is 20%, the potential increase in consumer surplus is greater; and conversely, if the share is smaller (15%), the potential increase would be smaller. In the long run, however, **Preferred Alternative 1** may generate the greatest consumer surplus because it may have the lowest likelihood of the vermilion snapper stock experiencing overfishing. **Alternative 5** may generate the second largest consumer surplus in the long run, followed in turn by **Alternatives 3, 4 and 2**.

Table 4.1.3.5. Potential short-run increases in consumer surplus (to anglers aboard private/rented vessels).

Years after 2012	Year	Potential Increases of Consumer Staples Alternative (2011 Dollars)				
		1	2	3	4	5
1	2013	$0	$952,586	$740,900	$865,987	$19,244
2	2014	$0	$885,231	$673,546	$865,987	$0
3	2015	$0	$875,609	$663,294	$865,987	$9,622
4	2016	$0	$875,609	$663,294	$865,987	$38,488
5	2017	$0	$875,609	$663,294	$865,987	$38,488
6	2018	$0	$875,609	$663,294	$865,987	$38,488
7	2019	$0	$875,609	$663,294	$865,987	$38,488
8	2020	$0	$875,609	$663,294	$865,987	$38,488
9	2021	$0	$875,609	$663,294	$865,987	$38,488
10	2022	$0	$875,609	$663,294	$865,987	$38,488
10-Year Total		$0	$8,842,692	$6,725,834	$8,659,872	$298,284

This analysis uses an estimate of the average producer surplus per for-hire trip that targets vermilion snapper of $145.63 (David Carter, NMFS, SEFSC, pers. comm., February 6, 2012). From 2006 to 2010, there was an average 1,361 for-hire trips that targeted vermilion snapper, and the average pounds of vermilion snapper landed per targeted trip was 87 pounds. Hence, the average producer surplus per pound is estimated to be $1.67 per pound whole weight. **Alternative 2** would generate the largest potential increase in producer surplus, followed by in turn by **Alternative 4**, **Alternative 3**, **Alternative 5**, and **Preferred Alternative 1** (Table 4.1.3.6). If the recreational sector's share of annual vermilion snapper landings is larger or the for-hire sector's share of recreational landings is larger, the potential increases in producer surplus caused by **Alternatives 2 through 5** would be greater. Conversely, if either the recreational sector's or for-hire sector's share of landings is smaller, the potential increases in producer surplus would be smaller. In the long run, however, **Preferred Alternative 1** may generate the greatest producer surplus because it may have the lowest likelihood of the vermilion snapper stock experiencing overfishing. **Alternative 5** may generate the second largest producer surplus in the long run, followed in turn by **Alternatives 3, 4 and 2**.

Table 4.1.3.6. Potential short-run increases in producer surplus (anglers aboard for-hire fishing vessels), 2013 – 2022.

Years after 2012	Year	Potential Increases of Producer Surplus Alternative (2011 Dollars)				
		1	2	3	4	5
1	2013	$0	$173,795	$135,174	$157,995	$3,511
2	2014	$0	$161,506	$122,885	$157,995	$0
3	2015	$0	$159,751	$121,130	$157,995	$1,756
4	2016	$0	$159,751	$121,130	$157,995	$7,022
5	2017	$0	$159,751	$121,130	$157,995	$7,022
6	2018	$0	$159,751	$121,130	$157,995	$7,022
7	2019	$0	$159,751	$121,130	$157,995	$7,022
8	2020	$0	$159,751	$121,130	$157,995	$7,022
9	2021	$0	$159,751	$121,130	$157,995	$7,022
10	2022	$0	$159,751	$121,130	$157,995	$7,022
10-Year Total		$0	$1,613,308	$1,227,097	$1,579,954	$54,421

In conclusion, **Alternative 2** of Action 1 could generate the largest potential increases in net economic benefits in the short run, followed in turn by **Alternatives 4, 3, 5** and **Preferred Alternative 1**. **Preferred Alternative 1**, however, could generate the largest net economic benefits over the long run because it may generate the lowest likelihood of the vermilion snapper stock experiencing overfishing; it is followed in turn by **Alternatives 5, 3, 4 and 2**. Further discussion of the significance of the expected economic effects is provided in Chapters 5 and 6.

4.1.4 Direct and Indirect Effects on the Social Environment

This action establishes how much vermilion snapper would be allowed to be caught by the commercial and recreational sectors, collectively. Generally, greater adverse impacts on the social environment would be expected from a lower amount of fish allowed to be landed, and less adverse impacts may be expected from allowing more fish to be landed. Impacts would affect all fishermen as a group if the ACL is reached, as reaching the ACL would trigger the in-season AM, closing all harvest of vermilion snapper until the next January 1 when a new fishing year starts. Although in-season closures would incur negative impacts by disrupting fishing behavior and prohibiting further landings throughout the rest of the calendar year, the short-term impacts from such a closure are not expected to be significant, as these potential short-term impacts would be expected to be mitigated by avoiding long-term impacts should overfishing occur.

Fishing for vermilion snapper has never been closed in-season, as the in-season AM was implemented in 2012. In the last ten years, landings exceeded the status quo stock ACL of 3.42 mp twice: in 2009 and 2011 (Table 1.1.2). As of November 30, 2012, fishing for vermilion snapper remained open and approximately 84% of the ACL was calculated to have been landed.[11] Under the status quo stock ACL, if landings in 2013 are similar to 2011 (4.29 mp) fishing for vermilion snapper may be closed before the end of 2013, if the in-season AM is triggered. Because the stock ACL is the smallest under **Preferred Alternative 1**, it is most likely that the in-season closure would be triggered by selection of this alternative. An in-season closure could result in negative impacts should vermilion snapper landings reach the status quo stock ACL (3.42 mp) and trigger the in-season closure to all harvest of vermilion snapper by both the commercial and recreational sectors for the remainder of 2013.

The remaining alternatives propose increases to the amount of vermilion snapper that may be harvested (stock ACL). The alternatives use different approaches to configuring the stock ACL. Impacts do not result from the method used to determine the amount of fish available for harvest. Rather, short-term impacts would relate to the amount of fishing activity that is restricted through a prohibition of landing vermilion snapper should the in-season closure be triggered. The lower the stock ACL, the more likely it would be reached and the earlier the in-season closure would occur.

Table 4.1.4.1. Comparison of stock ACLs under the Action 1 alternatives.

Vermilion Snapper Stock ACL under alternatives					
Year	**Preferred Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 5**
2013	3.42 mp	4.41 mp	4.19 mp	4.32 mp	3.44 mp
2014	3.42 mp	4.34 mp	4.12 mp	4.32 mp	3.42 mp
2015	3.42 mp	4.33 mp	4.11 mp	4.32 mp	3.43 mp
2016+	3.42 mp	4.33 mp	4.11 mp	4.32 mp	3.46 mp

[11] http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/stock_gulf/index.html Accessed November 30, 2012.

Table 4.1.4.1 compares the stock ACLs under the alternatives. It is unknown when (and if) landings would reach the proposed stock ACLs of each of the alternatives, at which time landing vermilion snapper would be prohibited for the remainder of the year. The greatest adverse impacts (the earliest closure) are likely to occur under **Preferred Alternative 1** (no action) and **Alternative 5** because they have the lowest ACLs (3.42 mp and 3.42-3.46 mp, respectively). Intermediate impacts may be expected from **Alternative 3**. A season closure would be least likely under **Alternative 2** because it has the highest ACLs and would result in the least adverse impacts in the short-term. **Alternative 4** would closely follow **Alternative 2**, and would be less likely to trigger an in-season closure than **Alternatives 1-3**. Should the ACL not be met and the season not be closed, no impacts would be expected from any of the alternatives.

On the other hand, there is concern that effort shifting toward vermilion snapper among fishermen of both sectors is occurring. Thus, maintaining the status quo stock ACL (**Preferred Alternative 1**) until the benchmark assessment can be completed may be prudent and mitigate future impacts from a reduction to the stock ACL, should vermilion snapper be found to be overfished or experiencing overfishing. Landings could be increasing in recent years due to effort shifting or increased effort, or from an improvement in the stock's condition, resulting in greater abundance. While **Alternatives 2-4** could potentially result in fewer short-term impacts if an in-season closure is avoided, these alternatives could result in negative long-term impacts if the stock ACL must be reduced.

4.1.5 Direct and Indirect Effects on the Administrative Environment

Changing the ACL and removing the ACT is an administrative action and it would have administrative effects, but these effects are minor. For all of the alternatives except **Preferred Alternative 1**, changing the ACL requires a rulemaking. **Alternative 4** requires a change to a single ACL that would remain in place until modified by a future action, similar to **Preferred Alternative 1**. **Alternatives 2, 3, and 5** each require an annual change to the ACL from 2013 through 2016; however, these ACLs could also be put in place through a single rulemaking. All other aspects of having an ACL such as monitoring the catch and closing vermilion snapper fishing should the ACL be met would be the same as no action (**Preferred Alternative 1**). Since the stock is not overfished, nor is it under a rebuilding plan, there are no provisions for overage adjustments. Indirect effects from changing the ACL would occur from resulting management action due to a new ACL. However, the only management action under consideration is a possible change in the recreational bag limit under Action 2. Increasing the ACL, as in **Alternatives 2, 3, 4 and 5** could reduce the administrative burden because a closure is less likely. However, by increasing the ACL, the buffer between ACL and ABC is reduced, as is the buffer between ACL and OFL. As a result, the risk of overfishing also increases should the catch rates increase, particularly for the recreational sector where there is a 45-day delay in the reporting of catch estimates under MRIP. Should overfishing occur, management action would be needed to reduce the fishing mortality. The relative difference in risk of overfishing is inversely related to the size of the buffer between the OFL and the ACL, i.e., a larger buffer results in a lower likelihood of overfishing occurring. In terms of lowest to highest risk, the alternatives rank as follows:

Preferred Alternative 1

1. **Alternative 5** (**Preferred Alternative 1** and **Alternative 5** are nearly identical in risk of overfishing)
2. **Alternative 3**
3. **Alternative 4**
4. **Alternative 2** (**Alternatives 4** and **2** are nearly identical in risk of overfishing)

4.2 Action 2 - Vermilion Snapper Bag Limit

4.2.1 Direct and Indirect Effects on the Physical Environment

Direct and indirect effects on the physical environment resulting from the harvest of vermilion snapper have been discussed in detail in Amendments 23 (GMFMC 2004a) and in the February 2007 Regulatory Amendment (GMFMC 2007a) and are incorporated here by reference. Those impacts are reviewed for Action 1 in Section 4.1.1 and apply to this action as well.

This action only affects recreational fishing for vermilion snapper. Less than 3% of angler trips harvest 15 to 20 vermilion snapper, and less than 7% harvest 10 to 20 vermilion snapper (Figure 4.2.1.1). The alternatives in this action are unlikely to reduce the number of angler trips, but for the 3 to 7% of angler trips that catch 10 or more vermilion snapper, the alternatives that reduce the bag limit may result in less soak time of the fishing gear, and thus a reduction in the potential for adverse effects on the physical environment.

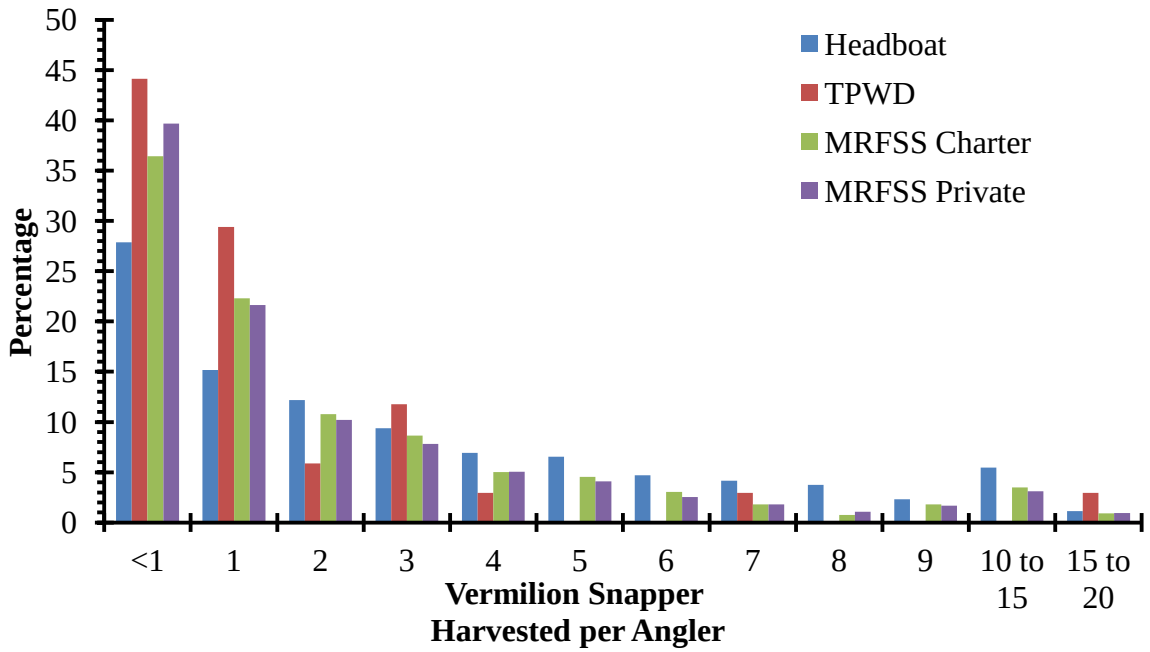


Figure 4.2.1.1. Vermilion snapper harvested per angler during 2009-2011. Source: NMFS Southeast Regional Office.

Alternative 1 allows the highest vermilion snapper bag limit, 20 fish. This alternative provides the greatest potential for adverse impacts to the physical environment. **Alternative 2** reduces the bag limit to 15 fish, and may reduce gear soak time, and therefore adverse impacts, for approximately 3% of the angler trips. **Preferred Alternative 3** reduces the bag limit to 10 fish, and may further reduce gear soak time, and therefore adverse impacts, for approximately 7% of the angler trips. Because the alternatives in this action affect only a small percentage of angler trips, and would likely shorten rather than eliminate those trips, any difference in impacts to the physical environment among the alternatives would likely be minor.

4.2.2 Direct and Indirect Effects on the Biological/Ecological Environment

Vermilion snapper management actions that affect the biological/ecological environment mostly relate to the impacts of fishing on a species' population size, life history, and the role of the species within its habitat. Removal of fish from the population through fishing reduces the overall population size. Fishing gears have different selectivity patterns which refer to a fishing method's ability to target and capture organisms by size and species. This would include the number of discards, mostly sublegal fish or fish caught during seasonal closures, and the mortality associated with releasing these fish.

Fishing can affect life history characteristics of reef fish such as growth and maturation rates. For example, Hood and Johnson (1999) found that the average size-at-age of vermilion snapper from the eastern Gulf of Mexico captured in 1995-1996 was smaller than that captured in studies occurring in the 1980s. Although this might reflect regional differences in growth (eastern versus western Gulf of Mexico), Hood and Johnson (1999) felt that this change could also be caused by increasing fishing pressure. If larger fish are more vulnerable to capture, then faster-growing fish within an age-class would be selectively removed from the population, thus depressing the mean size-at-age for older fish. This same trend has been noted by Zhao et al. (1997) for vermilion snapper in the South Atlantic Bight and was also attributed to increased fishing pressure. In addition, both Zhao et al. (1997) and Hood and Johnson (1999) noted faster growth rates and earlier sizes of maturation for South Atlantic and Gulf vermilion snapper populations over time. They speculated this change may have also have been due to increases in fishing effort.

Changes in the abundance from fishing (e.g., changing fishing selectivities) are likely to have ecological effects. However, the relationships among species in marine ecosystems are complex and poorly understood. As a result, the nature and magnitude of ecological effects are difficult to predict with any accuracy. Without knowing how an increase or decrease in the abundance of vermilion snapper would affect other populations or that it would even be detectable, the ecological effects of the various alternatives cannot be distinguished at this time.

It is important to note that some species such as red snapper, greater amberjack, red grouper, and gag are being managed to improve their stock condition. Other species like vermilion snapper are being managed to maintain a certain stock condition. As a result, the effects of improving other stocks could have an adverse effect on healthy stocks through competition for food or space.

The reef fish fishery can affect species outside the reef fish complex. Specifically, sea turtles have been observed to be directly affected by the longline sector of the Gulf reef fish fishery. These effects occur when sea turtles interact with fishing gear and result in an incidental capture injury or mortality and are summarized in GMFMC (2009). A variety of factors may affect the likelihood and frequency of sea turtles being caught in reef fish bottom longline gear. The spatial overlap between fishing effort and sea turtles is one such factor. The more abundant sea turtles are in a given area where the fishing gear is set, the greater probability a sea turtle would be incidentally caught on the gear. However, for sea turtles and other listed species, the most

recent biological/ecological opinion for the reef fish fishery management plan concluded authorization of the Gulf of Mexico reef fish fishery managed in the reef fish plan is not likely to jeopardize the continued existence of sea turtles, smalltooth sawfish, or *Acropora* species (NMFS 2011). Because the reef fish fishery is prosecuted primarily with longline and hook-and-line gear, it was classified in the 2012 List of Fisheries (76 FR 73912, November 29, 2011) as a Category III fishery with regard to marine mammal species. This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from the fishery is less than or equal to 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock, while allowing that stock to reach or maintain its optimum sustainable population.

The setting of the ACL has no direct impact on the biological/ecological environment, but indirectly affects the biological/ecological environment by dictating what management measures are needed to hold the harvest to the ACL.

The alternatives in this action only affect the recreational sector. As shown in Table 1.1.2, from 1986 to 1995, recreational harvest of vermilion snapper fluctuated between 587,000 pounds and slightly over 1 mp. Between 1996 and 2000, recreational harvest dropped to a range between 306,000 and 919,000 pounds. The reasons for this decline are not known. From 2001 to 2009, recreational harvest fluctuated between 506 and 810 thousand pounds. Harvest in 2010 was constrained by emergency regulations that closed a large part of the Gulf of Mexico during most of the summer due to the Deepwater Horizon MC252 oil spill. However, in 2011, recreational harvest jumped to an all-time high of 1.15 million pounds. This is 90% higher than the average catch during 2001 through 2009. It remains to be seen whether this increase indicates a trend of increasing recreational harvest. The combined commercial and recreational harvest in 2011 (4.29 mp) is below the current ABC, but would have exceeded the ACL in three of the alternatives in Action 1. **Alternatives 2 and 3** of Action 2 are intended, not to reduce harvest, but to prevent further increases in harvest in order to reduce the likelihood of overfishing occurring. Therefore, any effects on the biological/ecological environment from this action would likely be minor.

Alternative 1 leaves the vermilion snapper bag limit unchanged. If the 2011 recreational harvest indicates a trend of increasing recreational harvest, it could result in ACL closures or of the ACL and possibly the ABC being exceeded, resulting in overfishing. The increase in vermilion snapper harvest could be an artifact of the 2010 restrictions leaving more fish in the water and available to be caught in 2011, or it could be an effort shifting response to increasing restrictions in recreational harvest of red snapper and other reef fish. If it is the later, then the increases in harvest can be expected to continue, potentially resulting in overfishing.

Alternative 2 reduces the vermilion snapper bag limit to 15 fish within the 20-reef fish aggregate bag limit. As shown in Figure 4.2.1.1, this would impact approximately 3% of the angler trips, and would reduce recreational vermilion snapper harvest by about 1.2% relative to **Alternative 1**. This would slightly offset the increase in harvest seen in 2011, but not to the full extent of the increase. Limiting the harvest of vermilion snapper to 15 fish within the 20-reef fish aggregate bag limit may result in an increase in the catch of other species in the aggregate

bag limit, adversely effecting those species. These include lane snapper, gray triggerfish, almaco jack, and all tilefishes. Gray triggerfish is currently classified as overfished and is under a rebuilding plan. **Alternative 2** would have slightly less adverse impacts on the vermilion snapper stock than **Alternative 1**, but would have greater adverse impacts on other stocks in the aggregate bag limit, particularly gray triggerfish.

Preferred Alternative 3 reduces the vermilion snapper bag limit to 10 fish within the 20-reef fish aggregate bag limit. As shown in Figure 4.2.1.1, this would impact approximately 7% of the angler trips, and would reduce recreational vermilion snapper harvest by about 4.4% relative to **Alternative 1**. **Preferred Alternative 3** would offset the increase in harvest seen in 2011 by a greater amount than under **Alternative 2**, but still not to the full extent of the increase. Limiting the harvest of vermilion snapper to 10 fish within the 20 reef fish aggregate bag limit may result in a greater increase in the catch of other species in the aggregate bag limit than under **Alternative 2**. Species that would be adversely affected by this alternative include lane snapper, gray triggerfish, almaco jack, and all tilefishes. Gray triggerfish is currently classified as overfished and is under a rebuilding plan. **Preferred Alternative 3** would have slightly less adverse impacts on the vermilion snapper stock than **Alternative 2** or **Alternative 1**, but would have greater adverse impacts on other stocks in the aggregate bag limit, particularly gray triggerfish. However, given the small change in harvest level (4.4%) and the presence of a rebuilding plan for gray triggerfish, adverse impacts on other species are not expected to be significant.

4.2.3 Direct and Indirect Effects on the Economic Environment

Action 2 would change the daily recreational bag limit for vermilion snapper within the aggregate reef fish bag limit. **Alternative 1** would maintain the current bag limit at 20 vermilion snapper per angler within the 20 reef fish aggregate bag limit, and, as such, **Alternative 1** would have no positive or negative economic impact beyond the status quo. **Alternative 2** would reduce the daily bag limit to 15 vermilion snapper per angler and **Preferred Alternative 3** to 10. Based on catches per angler during 2009 – 2011, **Alternative 2** would reduce the number of vermilion snapper caught annually by 1.2% and **Preferred Alternative 3** would reduce the number by 4.4%. From 2002 to 2011, an annual average of 648,308 lbs ww of vermilion snapper were landed by the recreational sector, but that average increased to 744,869 lbs ww for 2009 to 2011. If those two annual averages represent the range of average annual landings, **Alternative 2** would generate an average annual loss of recreational landings from 7,780 to 8,938 lbs ww, while **Preferred Alternative 3** would generate an average annual loss from 28,526 to 32,774 lbs ww. Those estimates assume all bag limits would be compatible; however, they are not. Florida has a daily bag limit of 10 vermilion snapper per angler, and the other Gulf states either have no vermilion snapper bag limit or vermilion snapper is included in a 20-snapper aggregate limit. **Alternatives 1** and **2** are not compatible with Florida's bag limit, but **Preferred Alternative 3** is. Conversely, **Alternative 1** is compatible with an aggregate bag limit that allows up to 20 vermilion snapper per angler per dayEither **Alternative 1** or **2** would continue to limit Florida's ability to manage the resource and enforce its bag limit. **Preferred Alternative 3** would establish compatible federal and Florida bag limits, which would benefit

Florida's management and enforcement. . It is estimated, It is likely that in states that have no or higher bag limits, either **Alternative 2** or **Preferred Alternative 3** would increase fishing for vermilion snapper in state waters in order to exceed the federal bag limit. **Preferred Alternative 3** would require anglers in Florida to extend their existing practices of catching vermilion snapper in state waters into federal waters, which would likely increase the numbers of smaller vermilion snapper that they release as they act to mitigate for losses of pounds.

If the recreational sub-sector percentages of the above range of losses are incurred by recreational fishermen aboard private/rented (41.6%) and for-hire vessels (58.4%), and same assumptions that were used to produce estimates of consumer surplus and producer surplus for Action 1 are made, **Alternative 2** would generate an average annual loss of consumer surplus from $41,587 to $47,781 and average annual loss of producer surplus from $4,543 to $5,220, for a total ranging from $46,130 to $53,001 (Table 4.2.3.1). **Preferred Alternative 3** would generate a total of average annual losses ranging from $169,145 to $194,338. These estimates presume maximum losses; state bag limits are compatible and private anglers and for-hire operations do not take actions to mitigate for losses of economic benefits. However, as stated above, the bag limits are not compatible, so those potential losses are overestimated. In addition to exceeding the federal bag limit by legally fishing in state waters where there is no or a higher limit, recreational fishermen may react to either **Alternative 2** or **Preferred Alternative 3** by increasing catch of other reef fish in the EEZ within the aggregate bag limit. For example, anglers may increase landings of lane snapper, gray triggerfish, Almaco jack, and tilefishes, although gray triggerfish is currently classified as overfished. If as a result of either **Alternative 2** or **Preferred Alternative 3**, landings of any of these other species could increase to a level that reduced their status, **Preferred Alternative 3** would present a greater risk than **Alternative 2**; however, the actual risk is limited by the aggregate bag limit.

Table 4.2.3.1. Average annual losses to private anglers and for-hire operators.

Aboard Private/Rented Vessels				
Alternative	Lbs Decrease		Consumer Surplus Decrease	
	Low	High	Low	High
1	0	0	$0	$0
2	3,236	3,718	$41,587	$47,781
3	11,867	13,634	$152,486	$175,198

Aboard For-Hire Vessels				
Alternative	Lbs Decrease		Producer Surplus Decrease	
	Low	High	Low	High
1	0	0	$0	$0
2	4,543	5,220	$4,543	$5,220
3	16,659	19,140	$16,659	$19,140

Total				
Alternative	Lbs Decrease		Combined Decrease	
	Low	High	Low	High
1	0	0	$0	$0
2	7,780	8,938	$46,130	$53,001
3	28,526	32,774	$169,145	$194,338

In the long run, **Preferred Alternative 3** is expected to produce the largest net economic benefit to those who fish for vermilion snapper, because it would provide for the largest improvement in the stock over time, followed in turn by **Alternative 2** and **Alternative 1**. **Preferred Alternative 3**, however, may also reduce net economic benefits in the long run for those who fish for other reef fish, particularly gray triggerfish. Further discussion of the significance of the expected economic effects is provided in Chapters 5 and 6.

4.2.4 Direct and Indirect Effects on the Social Environment

Reducing the bag limit for vermilion snapper within the aggregate reef fish bag limit is expected to affect only those fishermen who would land more vermilion snapper than the respective reduction. Currently, all 20 fish of the aggregate bag limit may be vermilion snapper (**Alternative 1**), and no impacts are expected from retaining the status quo bag limit. Assuming that past landings (Figure 4.2.1.1) are representative of ongoing fishing behavior, reducing the bag limit to 15 vermilion snapper within the aggregate bag limit (**Alternative 2**) would be expected to affect less than 3% of angler trips. Reducing the bag limit to 10 vermilion snapper within the 20 reef fish bag limit (**Preferred Alternative 3**) may be expected to affect approximately 7% of angler trips. Thus, **Preferred Alternative 3** would result in slightly greater impacts than **Alternative 2**, by decreasing the fish that may be retained on more angler trips. Nevertheless, for the majority of anglers and angler trips, negative impacts would not be expected from reducing the bag limit, while positive benefits for all fishermen could result from

reducing the bag limit if the reduction constrains landings below the selected ACL and thus avoids an in-season closure. The expected reductions from the proposed bag limits, however, are small (1.2% under **Alternative 2** and 4.4% under **Preferred Alternative 3**). It is also unknown whether landings would reach the ACL and trigger the in-season closure with or without the bag limit reduction.

Gray triggerfish is another species included within the reef fish aggregate bag limit. An amendment currently under development proposes to reduce the number of gray triggerfish which may be landed within the aggregate bag limit to two. Reducing both the vermilion snapper and gray triggerfish components of the bag limit may compound the impacts on fishermen as the options for reef fish species which may be retained are further restricted.

4.2.5 Direct and Indirect Effects on the Administrative Environment

Creating a bag limit for vermilion snapper would increase administrative effects by adding an additional regulation. Under **Alternative 2** and **Preferred Alternative 3**, this would be more complex than a simple bag limit since it would be a bag limit within a bag limit. This would not create additional administrative impacts relative to a simple bag limit, but the added complexity could create confusion among anglers and enforcement officers, effectively reducing compliance. The impact on the administrative environment would be equal for **Alternative 2** and **Preferred Alternative 3**. Since **Alternative 1** does not change the bag limit, there would be no change to the administrative environment or to enforcement and compliance.

4.3 Action 3 – Establish Yellowtail Snapper Stock Annual Catch Limit

4.3.1 Direct and Indirect Effects on the Physical Environment

The setting or adjusting of an annual catch limit has no direct effects on the physical environment. However, it could have indirect effects by changing the level of fishing effort associated with yellowtail snapper fishing.

Yellowtail snapper are found in sandy areas near offshore reefs at depths of 32–230 feet (SEDAR 3 2003). They are fast-moving, roaming fish, but tend to stay close to reefs (Shipp 2012). Nearly all of the recreational and commercial harvest is with hook-and-line gear (including bandit rigs), but catches have also been reported using spears, gill nets, cast nets and fish traps (SEDAR 3 2003). Effects from setting yellowtail snapper ACL on the physical environment are expected to be similar to those reported in Section 4.1.1 for vermilion snapper ACL. Hook-and-line gear is expected to have a very minor negative effect on hard bottom habitat and no effect on the water column. Hook-and-line gear could break hard bottom structures through snagging or entanglement and abrasions to structures could result from lines or weights (Barnette, 2001). Impacts to both soft and hard corals would be greater than impacts associated with hard-bottom areas for the reasons described above. Impacts to natural habitat surrounding artificial reefs are expected to be negligible, because these structures are generally placed in areas less vulnerable to disturbance, such as sand and mud bottom. Lost fishing gear and tackle that is slow to degrade could result in long-term adverse effects if the gear continues to damage habitat over time. Anchoring over hard-bottom areas would also directly damage benthic habitat. However, as discussed above, yellowtail snapper are found mainly over sand bottom near reefs.

Alternative 1 sets the lowest ACL and is therefore expected to have the least indirect effects on the physical environment. **Preferred Alternative 2** sets an ACL that is 24 percent higher than **Alternative 1** and therefore could result in additional fishing effort and damage to the physical environment. **Alternative 3** sets an ACL that is 40 percent higher than **Alternative 1** and therefore has the potential for the greatest amount of damage to the physical environment. The potential for damage to the reef habitat is expected to be minor for all of the alternatives, however, because fishing effort is expected to be mainly over sandy bottom near the reef rather than directly over the reefs.

4.3.2 Direct and Indirect Effects on the Biological/Ecological Environment

The yellowtail snapper stock crosses the jurisdictional boundaries of the Gulf and South Atlantic Councils. As a result, the ABC is apportioned between the two jurisdictions, with the Gulf of Mexico receiving 25% of the ABC. Effects on the biological/ecological environment depend in part on actions taken by the South Atlantic Fishery Management Council to manage their 75% apportionment. Information on, and analysis of, the South Atlantic apportionment is beyond the

scope of this environmental assessment. Consequently, analysis of the effects of the alternatives is relative to the 25% of ABC apportioned to the Gulf, not to the entire stock.

Alternative 1 retains the yellowtail snapper ACL of 725,000 pounds in the Gulf of Mexico. During 1987 through 1994, this catch level was exceeded every year (Table 1.1.3). During the period 1995 through 2011, annual landings of yellowtail snapper averaged 506,624 pounds, and this catch level was exceeded just two times (Table 1.1.3), although those two times were in recent years (2009 and 2011). **Alternative 1** provides the greatest positive direct effects to the yellowtail snapper resource of the alternatives presented by constraining catch to the lowest level, approximately 72% of the Gulf apportionment of ABC, and minimizing the likelihood of overfishing occurring (i.e., OFL being exceeded). Given that there have been recent years with catches above this level, this ACL level is also likely to periodically trigger accountability measures that would shorten the fishing season in the subsequent year so that the ACL is not exceeded. The same is true for **Preferred Alternative 2**, except that the 2009 and 2011 catches are only slightly over that alternative's ACL. By actually reducing catches relative to what would be landed in the absence of an ACL, **Alternative 1** provides greater protection (beneficial effect) to the yellowtail snapper stock than either **Preferred Alternative 2** or **Alternative 3**, both of which are less likely to constrain catch due to higher ACLs .

Preferred Alternative 2 sets the yellowtail snapper ACL 11% below the 1,012,500 lbs Gulf ABC, or 901,125 lbs. This is an increase relative to the status quo, but it still keeps the catch level below the ABC. Since 1995, annual landings of yellowtail snapper have exceeded this ACL for two out of 15 years (Table 1.1.3). Those two years, however, occurred at the end of the time series (2009 and 2011). This alternative would provide positive direct effects to the yellowtail snapper resource by reducing catches relative to what would be landed in the absence of an ACL in some years. The catch levels in 2009 and 2011, however, were only slightly above this alternative's ACL (<20,000 lbs). Therefore, barring an increase in fishing effort toward yellowtail snapper, the effects of accountability measures to shorten the season in subsequent years would be small relative to **Alternative 1**, resulting in more positive, but likely minor, effects than **Alternative 1**.

Alternative 3 sets the yellowtail snapper ACL equal to the Gulf apportionment of ABC, 1,012,500 pounds. Since 1995, annual landings of yellowtail snapper have not exceeded this ACL (Table 1.1.3). As with the previous alternatives, this alternative would provide positive direct effects to the yellowtail snapper resource by constraining catches below the OFL. Barring an increase in yellowtail snapper fishing effort, the annual catches in most years would be low enough to avoid trigger accountability measures. However, if effort and landings increase, this alternative would be the least likely to prevent the ABC from being exceeded, and therefore the most likely to result in overfishing.

Indirect effects from this action include release mortality and effort shifting to other species during the closed season if there is an ACL closure. This negative indirect effect is most likely to occur under **Alternative 1** because there could be a substantial shortening of the yellowtail snapper season if the accountability measures are triggered. It would be minor under **Preferred Alternative 2** because there would be a smaller shortening of the yellowtail snapper season if the

accountability measures are triggered. It would be minimal under **Alternative 3** because there is a low likelihood of ACL closures being triggered.

4.3.3 Direct and Indirect Effects on the Economic Environment

Action 3 would change the ACL for yellowtail snapper. **Alternative 1** would keep the ACL at its current level of 725,000 lbs, whereas, **Preferred Alternative 2** and **Alternative 3** would increase the ACL. **Preferred Alternative 2** would raise the ACL to 901,125 lbs and **Alternative 3** to 1,012,500 lbs (Table 4.3.3.1). These increases of the ACL represent potential increases in combined annual commercial and recreational landings of yellowtail snapper.

Table 4.3.3.1. Alternative yellowtail snapper ACLs and increases, 2013 to 2022.

Number Years	Year	Action 1	Alternative (Lbs ww)		
			1	Preferred 2	3
1	2013	ACL	725,000	901,125	1,012,500
		Change from baseline	0.00	176,125	287,500
2	2014	ACL	725,000	901,125	1,012,500
		Change from baseline	0.00	176,125	287,500
3	2015	ACL	725,000	901,125	1,012,500
		Change from baseline	0.00	176,125	287,500
4	2016	ACL	725,000	901,125	1,012,500
		Change from baseline	0.00	176,125	287,500
5	2017	ACL	725,000	901,125	1,012,500
		Change from baseline	0.00	176,125	287,500
6	2018	ACL	725,000	901,125	1,012,500
		Change from baseline	0.00	176,125	287,500
7	2019	ACL	725,000	901,125	1,012,500
		Change from baseline	0.00	176,125	287,500
8	2020	ACL	725,000	901,125	1,012,500
		Change from baseline	0.00	176,125	287,500
9	2021	ACL	725,000	901,125	1,012,500
		Change from baseline	0.00	176,125	287,500
10	2022	ACL	725,000	901,125	1,012,500
		Change from baseline	0.00	176,125	287,500
		Total 10-Year Change	0.00	1,761,250	2,875,000

Assuming commercial landings represent, on average, 82% of total vermilion snapper annual landings (see Section 3.1), the above potential increases in landings are assigned at 82% to the commercial fishing sector and 18% to the recreational fishing sector. **Alternative 3** would generate the largest potential increases in annual commercial and recreational landings, followed in turn by **Preferred Alternative 2** and **Alternative 1** (Table 4.3.3.2).

Table 4.3.3.2. Potential short-run increases in yellowtail snapper landings, 2013 – 2022.

Number Years	Year	Additional Commercial Landings		
		Alternative (Lbs ww)		
		1	Preferred 2	3
1	2013	0	144,423	235,750
2	2014	0	144,423	235,750
3	2015	0	144,423	235,750
4	2016	0	144,423	235,750
5	2017	0	144,423	235,750
6	2018	0	144,423	235,750
7	2019	0	144,423	235,750
8	2020	0	144,423	235,750
9	2021	0	144,423	235,750
10	2022	0	144,423	235,750
10-Year Total		0	1,444,225	2,357,500

Number Years	Year	Additional Recreational Landings		
		Alternative (Lbs ww)		
		1	Preferred 2	3
1	2013	0	31,703	51,750
2	2014	0	31,703	51,750
3	2015	0	31,703	51,750
4	2016	0	31,703	51,750
5	2017	0	31,703	51,750
6	2018	0	31,703	51,750
7	2019	0	31,703	51,750
8	2020	0	31,703	51,750
9	2021	0	31,703	51,750
10	2022	0	31,703	51,750
10-Year Total		0	317,030	517,500

Combined Change	0	1,761,250	2,875,000

The average annual Gulf-wide ex-vessel price of yellowtail snapper from 2007 to 2011 was $2.69 per lbs ww from 2007 to 2011 (2011 dollars). Using that average price, **Alternative 3** would generate the largest potential increase in ex-vessel revenue ($6.34 million), followed in order by **Preferred Alternative 2** ($3.88 million), and **Alternative 1** ($0) (Table 4.3.3.3). These short-run increases in ex-vessel revenues are not without associated increases in trip costs. Consequently, the potential net benefit of each alternative to commercial fishermen is less than the potential increase in ex-vessel revenue.

Table 4.3.3.3. Potential increases in ex-vessel revenues from yellowtail snapper landings, 2013 – 2022.

Number Years	Year	Additional Ex-Vessel Revenue Alternative (2011 Dollars)		
		1	Preferred 2	3
1	2013	0	388,497	634,168
2	2014	0	388,497	634,168
3	2015	0	388,497	634,168
4	2016	0	388,497	634,168
5	2017	0	388,497	634,168
6	2018	0	388,497	634,168
7	2019	0	388,497	634,168
8	2020	0	388,497	634,168
9	2021	0	388,497	634,168
10	2022	0	388,497	634,168
10-Year Total		0	$3,884,965	$6,341,675

The above potential increases in commercial yellowtail snapper landings and ex-vessel revenues are maximum changes in the short run, assuming the commercial sector's share is 82%. If the commercial sector's share is larger than 82%, the potential increases in commercial landings (pounds and dollars) caused by **Preferred Alternative 2** and **Alternative 3** would be greater; and, conversely, if the commercial sector's share is less than 82%, the potential increases would be smaller. The actual increases in commercial landings may be smaller than the potential increases. For example, actual increases would be less than potential increases if annual landings do not rise up to the proposed ACL. If annual landings never rise beyond the current ACL, the actual increases in commercial landings (both pounds and dollars) would be zero for **Preferred Alternative 2** and **Alternatives 3 and 1**.

Private and rented recreational fishing vessels landed an average of 53% of the total recreational yellowtail snapper pounds landed from 2001 to 2010, while for-hire fishing vessels landed the remaining 47%. The potential increases in recreational landings and associated economic benefits are so divided: 53% landed by private/rented recreational fishing vessels and 47% landed by those aboard for-hire fishing vessels. **Alternative 3** would generate the largest potential increases in landings by private/rented and for-hire vessels, followed, in turn, by **Preferred Alternative 2**. **Alternative 1** would allow for no potential increase in potential recreational landings (Table 4.3.3.4).

Table 4.3.3.4. Potential increases in recreational landings to private/rented vessels and for-hire vessels, 2013-2022.

Years after 2012	Year	Additional Landings by Private/Rented Vessels Alternative (Lbs ww)		
		1	Preferred 2	3
1	2013	0	16,802	27,428
2	2014	0	16,802	27,428
3	2015	0	16,802	27,428
4	2016	0	16,802	27,428
5	2017	0	16,802	27,428
6	2018	0	16,802	27,428
7	2019	0	16,802	27,428
8	2020	0	16,802	27,428
9	2021	0	16,802	27,428
10	2022	0	16,802	27,428
10-Year Total		0	168,023	274,275

Years after 2012	Year	Additional Landings by For-Hire Vessels Alternative (Lbs ww)		
		1	Preferred 2	3
1	2013	0	14,900	24,323
2	2014	0	14,900	24,323
3	2015	0	14,900	24,323
4	2016	0	14,900	24,323
5	2017	0	14,900	24,323
6	2018	0	14,900	24,323
7	2019	0	14,900	24,323
8	2020	0	14,900	24,323
9	2021	0	14,900	24,323
10	2022	0	14,900	24,323
10-Year Total		0	149,002	243,225

Combined Change	0	317,025	517,500

Potential increases in consumer surplus range from $13 (**Alternative 1**) to $352,443 (**Alternative 3**) annually (Table 4.3.3.5). Producer surplus could potentially increase from zero (**Alternative 1**) to $40,619 (**Alternative 3**) annually. If the recreational share of landings is greater than 18%, **Preferred Alternative 2** and **Alternative 3** would have larger potential increases. Conversely, if the recreational share is smaller, the potential increases would be less. If the share of recreational landings by private/rented vessels is greater than 53%, the potential

gains in consumer surplus would be larger and producer surplus would be less, and vice versa if the share is smaller than 53%.

Table 4.3.3.5. Potential increases in consumer surplus and producer surplus, 2013-2022.

Number Years	Year	Potential Increases of Consumer Surplus		
		Alternative (2011 dollars)		
		1	Preferred 2	3
1	2013	29	215,910	352,443
2	2014	33	215,910	352,443
3	2015	34	215,910	352,443
4	2016	32	215,910	352,443
5	2017	30	215,910	352,443
6	2018	33	215,910	352,443
7	2019	36	215,910	352,443
8	2020	13	215,910	352,443
9	2021	13	215,910	352,443
10	2022	13	215,910	352,443
10-Year Total		265	2,159,099	3,524,434

Number Years	Year	Potential Increases of Producer Surplus		
		Alternative (2011 dollars)		
		1	Preferred 2	3
1	2013	0	24,883	40,619
2	2014	0	24,883	40,619
3	2015	0	24,883	40,619
4	2016	0	24,883	40,619
5	2017	0	24,883	40,619
6	2018	0	24,883	40,619
7	2019	0	24,883	40,619
8	2020	0	24,883	40,619
9	2021	0	24,883	40,619
10	2022	0	24,883	40,619
10-Year Total		0	248,833	406,186

As of November 27, 2012, Gulf commercial landings of yellowtail snapper totaled 434,793lbs ww, which is substantially less than the 82% of the ACL of 725,000 lbs. If that rate of commercial landings continues for the rest of 2012, annual commercial landings in 2012 would be 479,320 lbs ww, which is approximately 66% of the ACL. If recreational landings by the end of 2012 were 18% of total yellowtail snapper landings, although there were no recreational landings as of August 31, 2012, combined landings would be 584,536 lbs ww, which is still less than the ACL. Consequently, the likely increases in commercial landings and recreational

landings of yellowtail snapper and associated net economic benefits would be zero for **Preferred Alternative 2** and **Alternatives 1 and 3**.

4.3.4 Direct and Indirect Effects on the Social Environment

This action establishes how much yellowtail snapper would be allowed to be caught by the commercial and recreational sectors, collectively. In the short-term, negative impacts may be expected from a lower amount of fish allowed to be landed, and positive impacts may be expected from allowing more fish to be landed. If landings are determined to have exceeded the stock ACL two years in a row, landing yellowtail snapper would be closed for the remainder of the second year. Triggering this AM would affect all fishermen as a group and result in negative impacts as fishermen are prohibited from retaining yellowtail snapper. Although there is a stock ACT for yellowtail snapper under the status quo, it is not associated with any management measures and therefore has no relative impact.

Table 4.3.4.1 compares the stock ACLs of the alternatives. **Alternative 1** (no action) would be expected to result in the greatest negative impacts as the least amount of yellowtail snapper are allowed to be landed. Also, it is most likely that the AM would be triggered, because the stock ACL is the lowest of the alternatives. Fewer negative impacts may be expected under **Preferred Alternative 2**, compared to **Alternative 1**, as the larger stock ACL means that more fish are allowed to be landed. The greater stock ACL also makes the triggering of the AM less likely than **Alternative 1**.

Table 4.3.4.1. Comparison of stock ACLs under the Action 3 alternatives.

Year	Alternative 1	Preferred Alternative 2	Alternative 3
ACL	725,000	901,125	1,012,500

If recent landings are representative of future fishing activity, then only under **Alternative 3** would landings be expected to avoid exceeding the stock ACL, thereby resulting in the least short-term negative impacts. However, if **Alternative 3** was selected and the stock ACL (equal to the ABC) is exceeded, then there is also an increased chance that the OFL would be reached, resulting in overfishing. Currently, yellowtail snapper is not classified as an overfished species, so the management of the stock does not require the stricter management measures that are applied to overfished species. Thus, although **Alternative 3** would allow the most fish to be caught, it also has the narrowest buffer between the stock ACL and the OFL of the alternatives. Exceeding the **Alternative 3** stock ACL and the OFL could result in long-term negative impacts if management measures are needed to constrain harvest to the ACL.

4.3.5 Direct and Indirect Effects on the Administrative Environment

Changing the ACL and removing the ACT is an administrative action and it would have administrative effects, but these effects are minor. **Alternative 1** is the status quo, and therefore does not require any rulemaking. **Preferred Alternative 2** and **Alternative 3** each require a change to a single ACL that would remain in place until modified by a future action. These two alternatives differ only in the catch level. Other than the rulemaking needed to change the ACL, all other administrative aspects such as monitoring the catch and closing vermilion snapper fishing should the ACL be met would be the same as no action (**Alternative 1**). Since the stock is not overfished, nor is it under a rebuilding plan, there are no provisions for overage adjustments.

Indirect effects from changing the ACL would occur from resulting management action due to a new ACL. However, the only management action would be the triggering of the accountability measure if the ACL is exceeded. The accountability measure for yellowtail snapper is, if the ACL is exceeded in a given year, to close the fishing season in the subsequent year on the date when the ACL is reached or projected to be reached. Increasing the ACL, as in **Preferred Alternative 2 and Alternative 3**, could reduce the administrative burden because a closure is less likely. The administrative burden would be reduced more for **Alternative 3** than **Preferred Alternative 2** since the likelihood of reaching the ACL under Alternative 3 is lower. By increasing the ACL, the buffer between ACL and ABC is reduced, as is the buffer between ACL and OFL. As a result, the risk of overfishing also increases should the catch rates increase. Should overfishing occur, management action would be needed to reduce the fishing mortality. However, the OFL established in the current stock assessment is 4.51 million pounds of landings (Gulf and South Atlantic combined). The highest annual landing reported for vermilion snapper is 4.17 million pounds in 1991 (Table 1.1.3). Thus the likelihood of overfishing occurring and requiring management action is low under all of the alternatives.

4.4 Action 4 – Reef Fish Venting Tool Requirement

4.4.1 Direct and Indirect Effects on the Physical Environment

The venting tool requirement was established in Amendment 27 as part of a combination of measures requiring venting tools, circle hooks when fishing with natural bait, and dehooking devices. Taken in combination, these management measures could indirectly affect the physical environment by increasing the efficiency of the directed reef fish fishery thereby reducing the level of effort in both the commercial and recreational sectors. The combination of measures could reduce regulatory discard mortality, improve anatomical hooking location, increase mean length at capture of targeted species, decrease handling time, and reduce the take of non-targeted species. The effects of efficiency from the combination of management measures is discussed in Section 5.5 of Amendment 27 (GMFMC 2007b) and is incorporated here by reference.

By itself, venting occurs on board a vessel and has no effects on the physical environment. Alternative descent devices that return the fish to depth, however, could come in contact with the bottom. With some descent devices the fish release mechanism is triggered by the device coming in contact with the bottom, but with other devices the fish is released in mid-water and the device does not reach the bottom. The impacts from the descent gear contacting the bottom are expected to be similar to that of a weight on a weighted fishing line, and are not expected to be significant. Increased efficiency from the combination of venting tools, circle hooks, and dehooking devices could be reduced if venting tools were no longer required, resulting in additional fishing time and additional gear impacts with the sea bottom. In this regard, **Alternative 1** would have no adverse effects since it would leave in place the requirement to possess and use venting tools. **Alternative 2** would require possession of venting tools but not their use. Voluntary use of venting tools would likely be less prevalent than required use, resulting in less efficiency, greater use of alternative descent devices, and slightly more adverse impacts from sea floor and gear impacts than **Alternative 1**. **Preferred Alternative 3** would result in the lowest likelihood of venting tools being used, and therefore the most adverse impacts from increased fishing time and thus, gear impacts on the sea bottom. These impacts are not expected to be significant because, with both **Alternative 2** and **Preferred Alternative 3**, fishermen would be able to utilize alternative fish descent devices which, in some circumstances, could be more efficient than venting in reducing bycatch mortality. Thus, potential adverse impacts from **Alternative 2** or **Preferred Alternative 3** from reduced use of venting tools would likely be offset from increased use of alternative release devices.

4.4.2 Direct and Indirect Effects on the Biological/Ecological Environment

A discussion summarizing recent research into barotrauma and venting is contained in Section 2.4 of this framework action. Recent studies have found that many factors affect the survival of released fish and effectiveness of venting versus use of rapid descent devices or release with no special handling including depth of capture, environmental conditions, handling of the fish, and physiological differences between species (K. Burns, pers. comm). Venting can have potential

benefits when conducted properly and in the right situation, but it is an invasive procedure. In situations where it is not effective or not done properly, venting can increase the possibility of mortality from increased handling and stress on the fish, and damage to internal organs from the venting device. Methods have been developed for returning a fish to depth that, in some cases, may be a better alternative to venting, but require additional equipment, and a fishing pole that is pre-rigged and dedicated to that use.

Alternative 1 maintains the requirement that at least one venting tool be on board and used on a vessel fishing for reef fish. This is the only alternative that requires reef fish to be vented. As discussed above, there are situations when venting can have positive effects on survival of released fish, and situations when venting can have negative effects. The use of alternative methods such as rapid descent devices is not prohibited, but such devices must be used along with, rather than instead of, venting. Since this alternative requires that the fish be vented even when not needed, there is a potential for negative direct effects from mortality occurring as the result of additional handling and stress.

Alternative 2 maintains the requirement to possess a venting tool, but does not require its use. Merely possessing a venting tool has no direct effect on the biological/ecological environment since the tool must be used in order to have an effect. However, the presence of a venting tool onboard facilitates its use in situations when it is appropriate. Therefore, **Alternative 2** has positive indirect effects by allowing the tool to be used when appropriate, but not requiring its use when inappropriate. Given the current state of knowledge on barotrauma issues, allowing venting tools to be used only as needed would likely increase survival of released fish and provide positive benefits to the biological/ecological environment. The decision whether to use the venting tool depends upon the judgment and experience of the fishermen. Therefore, the level of positive effects may be dependent upon outreach programs that promote the proper use of venting tools or other release devices.

Preferred Alternative 3 eliminates both the requirement to possess and the requirement to use venting tools. The mere presence or absence of a venting tool has no direct biological/ecological effect. However, as with **Alternative 2**, there would be positive indirect effects by allowing the venting tools, or other release devices, to be used when appropriate. Under **Preferred Alternative 3**, there is less likelihood that a venting tool would be on board than under either **Alternative 1** or **2**. Therefore, there is a greater likelihood of it not being available to be used when needed. Thus, the indirect positive effects would be smaller under **Preferred Alternative 3** than under **Alternative 2**, but greater than under **Alternative 1**, which requires the use of venting tools whether necessary or not.

Under both **Alternative 2** and **Preferred Alternative 3**, allowing venting tools to be used on an as needed basis rather than at all times would encourage the development and use of alternative methods such as deep-release devices for situations where venting is not appropriate. This would provide additional indirect benefits to the resource by promoting a conservation ethic to release fish in a manner that provides the maximum likelihood for survival.

4.4.3 Direct and Indirect Effects on the Economic Environment

Action 4 would change the venting requirement for reef fish (both commercial and recreational) that was implemented February 28, 2008 (Amendment 27), and has two parts: possession and use of a venting tool. **Alternative 1** would maintain the current requirement of at least one venting tool that must be used to deflate the abdominal cavities of Gulf reef fish to release the fish with minimum damage. **Alternative 2** would eliminate one part of the current requirement, while **Preferred Alternative 3** would eliminate both parts. **Alternative 2** would require at least one venting tool be onboard a fishing vessel, but not its use. By eliminating the use-of-a-venting-tool requirement, both **Preferred Alternative 3** and **Alternative 2** would free up any time and associated cost that fishermen incur to vent and learn how to vent reef fish. **Preferred Alternative 3** would also eliminate the cost of acquiring a new or replacement venting tool, which is estimated to range from $5 to $15. Hence, in summary, , **Preferred Alternative 3** would have the largest economic benefit to commercial and recreational fishermen by eliminating the required cost of acquiring a venting tool, learning how to use it, and using it. It also is expected to have little to no impact on the stocks of reef fish and long-run net economic benefits that derive from those stocks. **Alternative 2** would have the second largest economic benefit by eliminating the cost of learning how to use and using a venting tool. **Alternative 1** would have no added economic benefit beyond the status quo.

4.4.4 Direct and Indirect Effects on the Social Environment

In public testimony, fishermen frequently report frustration at having to throw back fish that will not survive. Thus, the requirement to have and use a venting tool to increase a fish's chance of survival (**Alternative 1**, no action) was generally supported by fishermen when the requirement was implemented. The recent evidence suggesting that venting tools are not as successful in aiding fish survival is mirrored in similar recent public testimony by fishermen, with fishermen also reporting that venting tools are often used incorrectly. Thus, while no additional impacts are expected from retaining the requirement to have and use a venting tool, modification of this rule would likely result in positive impacts as fishermen would have the choice to use a venting tool or some other descent aiding device.

Both **Alternative 2** and **Preferred Alternative 3** would remove the requirement to use the venting tool, resulting in similar impacts regarding use of the venting tool. Fishermen may continue to use the venting tool if they choose and as they find appropriate, but they would no longer be required to do so. Given that fishermen generally do not like to contribute to dead discards, it is likely that fishermen, who know how to properly vent a fish in the appropriate settings, would continue to do so. Fishermen who are not comfortable or competent venting a fish would not be required to attempt the procedure, potentially injuring the fish further. Fishermen would also be free to use any other descent device they choose. Positive impacts may be expected from giving fishermen freedom to decide for themselves whether or not to use the device, and when it is appropriate to do so.

Alternative 2 and **Preferred Alternative 3** differ in whether the requirement remains to possess a venting tool on board the vessel. Because fishermen are currently required to have a venting tool on board (**Alternative 1**), fishermen active since implementation of the rule in 2008 likely already possess the tool on board. Thus impacts would be minimal for most fishermen if the requirement to possess the venting tool on board remains (**Alternative 2**). However, requiring possession on board of a tool that has no required usage (**Alternative 2**) may be perceived by fishermen as an unnecessary government regulation. Thus, removing the requirement to have a venting tool on board, if its use is no longer required (**Preferred Alternative 3**) may be expected to result in positive impacts as fishermen are permitted to decide for themselves what tool to have on board and the conditions in which its use is appropriate. Fishermen who choose to use a venting tool would have one on board without being required to do so. Furthermore, fishermen are free to use any descent device they feel appropriate.

4.4.5 Direct and Indirect Effects on the Administrative Environment

Alternative 1 contains two regulations: 1) possess venting tools, and 2) use venting tools. In terms of direct benefits, since this is the status quo, there is no change to the administrative environment. **Alternative 2** simplifies the regulations and administrative environment, and improves enforceability by repealing the usage requirement while leaving in place the possession requirement. **Preferred Alternative 3** provides the greatest simplification to the administrative environment and regulations by eliminating both provisions. The venting regulation was originally put in place to improve survival of released reef fish through the use of venting, and under some conditions venting can achieve that objective. In order to continue to achieve the benefits of venting under both **Alternative 2** and **Preferred Alternative 3**, the usage requirement may need to be replaced by an enhanced outreach program to instruct fishermen on the proper methods and circumstances for venting, or for using other release methods. Such a program, if implemented, is not part of the proposed action, but would be an indirect effect on the administrative environment. To the extent that it results in a greater conservation attitude, it would be a beneficial effect.

4.5 Cumulative Effects Analysis

Cumulative effects to the human environment through this action would be minor. The cumulative effects from setting the vermilion and yellowtail snapper ACLs have been analyzed, in the environmental impact statement (EIS) for the Generic ACL/AM Amendment (GMFMC 2011a), the cumulative effects of setting the vermilion snapper bag limit were analyzed in the EIS for Amendment 23 (GMFMC 2004a) and the environmental assessment for a 2007 regulatory amendment (GMFMC 2007a), the cumulative effects of establishing the venting tool requirement were analyzed in Amendment 27 (GMFMC 2007b), and cumulative effects to the reef fish fishery have been analyzed in the aforementioned EISs and EA as well as in other recent amendments/EISs (e.g., GMFMC 2004b, 2011b), and are incorporated here by reference. The effects of setting the vermilion and yellowtail snapper ACLs and ACTs in this framework

are most closely aligned with the effects from setting the vermilion and yellowtail snapper ACLs and ACTs in the Generic ACL/AM Amendment (GMFMC 2011a). The effects of setting the vermilion snapper bag limit are most closely aligned with the effects of reducing the vermilion snapper bag limit in Amendment 23 (GMFMC 2004a) and 2007 regulatory amendment (GMFMC 2007a), and the effects of changing the venting tool requirement are mostly aligned with the effects of the venting tool requirement in Amendment 27 (2007b). These analyses found the effects on the biophysical and socioeconomic environments to be positive because they would ultimately restore/maintain stocks at a level that allows the maximum benefits in yield and commercial and recreational fishing opportunities to be achieved. However, short-term negative impacts on the fisheries' socioeconomic environment have occurred and are likely to continue due to the need to limit directed harvest and reduce bycatch mortality. These negative impacts can be minimized by selecting measures that would provide the least disruption to the fishery while maintaining harvest levels consistent with the rebuilding plan. For the recreational sector, this would mean using combinations of bag limits, size limits and closed seasons to minimize disruptions, and for the commercial sector by using a combination of size limits, quotas, and closed seasons.

There is a large and growing body of literature on past, present, and future impacts of global climate change induced by human activities. Some of the likely effects commonly mentioned are sea level rise, increased frequency of severe weather events, and change in air and water temperatures. The Environmental Protection Agency's climate change webpage (http://www.epa.gov/climatechange/) provides basic background information on these and other measured or anticipated effects. A compilation of scientific information on climate change can be found in the United Nations Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007) and incorporated here by reference, and available at http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml#.UGskmK7AMu0. Global climate changes could have significant effects on Gulf fisheries; however, the extent of these effects is not known at this time. Possible impacts are outlined in Amendment 31 (GMFMC 2009), the Generic ACL/AM amendment (GMFMC 2011a), and Amendment 32 (GMFMC 2011b). In addition, oil from the Deepwater Horizon MC252 incident that occurred in April 2010 may affect vermilion snapper populations. However, the effects of this oil on vermilion snapper and other reef fish populations are incomplete and unavailable (see 40 CFR § 1502.22) at this time because studies of the effects of the oil spill are still ongoing. If the oil impacts important habitat for these species or interrupt critical life history stages, the effects could reduce these species' population sizes. Effects on yellowtail snapper would be minimal because this species is primarily found in the waters off the Florida Keys.

Monitoring

The effects of the proposed action are, and will continue to be, monitored through collection of landings data by NMFS, stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations. Landings data for the recreational sector in the Gulf is collected through Marine Recreational Fisheries Statistics Survey (MRFSS), NMFS' Head Boat Survey, and the Texas Marine Recreational Fishing Survey. MRFSS has been replaced by Marine Recreational Information Program, a program designed to improve the monitoring of recreational fishing. Commercial data are collected

through trip ticket programs, port samplers, and logbook programs. Currently, an update Southeast Data, Assessment, and Review assessment of Gulf vermilion snapper is scheduled for 2013. In response to the Deepwater Horizon MC252 incident, increased frequency of surveys of the recreational sector's catch and effort, along with additional fishery independent information regarding the status of the stock are being conducted. This will allow future determinations regarding the impacts of the Deepwater Horizon MC252 incident on various fishery stocks, including gray triggerfish. Currently it is not possible to make such determinations.

CHAPTER 5. REGULATORY IMPACT REVIEW

5.1 Introduction

The NMFS requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) it provides a comprehensive review of the level and incidence of impacts associated with a regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives which could be used to solve the problem; and (3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way.

The RIR also serves as the basis for determining whether any proposed regulations are a "significant regulatory action" under certain criteria provided in Executive Order 12866 (E.O. 12866) and whether the approved regulations will have a "significant economic impact on a substantial number of small business entities" in compliance with the Regulatory Flexibility Act of 1980 (RFA).

5.2 Problems and Objectives

The purpose and need, issues, problems, and objectives of the emergency action are presented in Section 1.2 and are incorporated herein by reference.

5.3 Methodology and Framework for Analysis

This RIR assesses management measures from the standpoint of determining the resulting changes in costs and benefits to society. To the extent practicable, the net effects of the framework action for an existing fishery should be stated in terms of producer and consumer surplus, changes in profits, and employment in the direct and support industries. Where figures are available, they are incorporated into the analysis of the economic impacts of the different actions and alternatives.

5.4 Description of the Fishery

A description of the Gulf reef fish fishery, with particular reference to vermilion snapper and yellowtail snapper, is contained in Chapter 3.

5.5 Economic Impacts of Management Measures

Preferred Alternative 1 of Action 1 would not change the vermilion snapper ACL. Consequently, it would generate no additional economic impact beyond the status quo.

Preferred Alternative 3 of Action 2 would reduce the recreational bag limit from 20 vermilion snapper to 10 vermilion snapper within the 20 fish aggregate reef fish bag limit. **Preferred Alternative 3** is expected to result in a 4.4% decrease of annual recreational landings with associated combined losses of consumer and producer surplus ranging from $169,145 to $194,338. Recreational fishermen may react to the reduced bag limit by increasing catch of other reef fish within the aggregate bag limit. For example, they may increase landings of lane snapper, gray triggerfish, almaco jack, and tilefishes, although gray triggerfish is currently classified as overfished. In the long run, **Preferred Alternative 3** may reduce net economic benefits to those who fish for other reef fish, particularly gray triggerfish.

Preferred Alternative 2 of Action 3 is expected to have no additional economic impact beyond the status quo because current and projected landings of yellowtail snapper are less than the current ACL and an increase of the ACL would have no impact. However, it would allow for a potential increase in annual landings up to 176,125 lbs ww. See Section 4.1.3 (Description of the Direct and Indirect Economic Effects) for more detailed explanations of the potential economic impacts of this and the other alternatives.

Preferred Alternative 3 of Action 4 would eliminate the required time and cost of acquiring or replacing a venting tool ($5 to $15), learning to use it (apprentice commercial fishermen and novice anglers), and using that tool. It is expected to have little to no impact on the stocks of reef fish and long-run net economic benefits that derive from those stocks.

5.6 Private and Public Costs

The preparation, implementation, enforcement, and monitoring of this or any federal action involves the expenditure of public and private resources, which can be expressed as costs associated with the regulations. Costs associated with this emergency action include, but are not limited to Council costs of document preparation, meeting, and other costs; NMFS administration costs of document preparation, meetings and review, and annual law enforcement costs. A preliminary estimate is up to $100,000 before annual law enforcement costs.

5.7 Determination of Significant Action

Pursuant to E.O. 12866, a regulation is considered a “significant regulatory action” if it is expected to result in: (1) an annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2)

create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order.

This rule is not expected to have an adverse effect of $100 million or more, create a serious inconsistency or otherwise interfere with an action taken by another agency, materially alter the budgetary impact of programs or rights or obligations of recipients, or raise novel legal or policy issues.

CHAPTER 6. REGULATORY FLEXIBILITY ACT ANALYSIS

6.1 Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration. The RFA does not contain any decision criteria; instead, the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of the alternatives contained in the FMP or amendment (including framework management measures and other regulatory actions) and to ensure that the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct a regulatory flexibility analysis for each proposed rule. The regulatory flexibility analysis is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. In addition to analyses conducted for the RIR, the initial regulatory flexibility analysis (IRFA) provides: (1) a description of the reasons why action by the agency is being considered; (2) a succinct statement of the objectives of, and legal basis for the proposed rule; (3) an identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule; (4) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; (5) a description of the projected reporting, record-keeping, and other compliance requirements of the final rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; and (6) a description of significant alternatives to the proposed rule which accomplish the stated objectives of applicable statues and which minimize any significant economic impact of the proposed rule on small entities.

6.2 Statement of need for, objectives of, and legal basis for the proposed rule

The purpose and need, issues, problems, and objectives of the emergency action are presented in Section 1.2 and are incorporated herein by reference.

6.3 Identification of federal rules which may duplicate, overlap or conflict with the proposed rule.

No federal rules have been identified that duplicate, overlap or conflict with the proposed rule.

6.4 Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records.

None of the proposed actions impose additional reporting or record-keeping requirements on small entities. **Preferred Alternative 1** of Action 1 is a status-quo alternative. **Preferred Alternative 2** of Action 2 would reduce the number of vermilion snapper that recreational fishermen can land within the daily aggregate reef fish bag limit, but, as such, it would not have a direct economic impact on small businesses in the Charter Fishing Industry. **Preferred Alternative 2** of Action 3 would increase the yellowtail snapper ACL by 176,125 lbs ww, which would allow for an increase in commercial landings of the species. **Preferred Alternative 3** of Action 4 would eliminate the current venting tool requirement.

6.5 Description and estimate of the number of small entities to which the proposed rule will apply.

This proposed rule directly applies to commercial fishing operations that harvest reef fish in federal waters of the Gulf of Mexico. As of November 2012, there were 814 individuals with a Gulf reef fish permit. These 814 individuals are presumed to represent 814 commercial fishing businesses.

Commercial fishermen who harvest reef fish operate in the Finfish Fishing Industry (NAICS 114111). According to SBA Size Standards, a business in the Finfish Fishing Industry is a small business if its annual receipts are less than $4 million. It is presumed here that a substantial number of the 814 businesses are small.

6.6 Substantial number of small entities criterion

The proposed rule would apply to all small businesses that commercially harvest reef fish in federal waters of the Gulf of Mexico.

6.7 Significant economic impact criterion

The outcome of "significant economic impact" can be ascertained by examining two issues: disproportionality and profitability.

Disproportionality: Does the proposed rule place a substantial number of small entities at a significant competitive disadvantage to large entities?

Profitability: Does the proposed rule significantly reduce profit for a substantial number of small entities?

The proposed actions, individually and collectively, would not have a significant adverse economic impact.

6.8 Economic impacts of management measures

Preferred Alternative 1 of Action 1 would have no adverse or beneficial economic impact beyond the status quo. **Preferred Alternative 2** of Action 3 could have a beneficial net economic impact on small businesses in the form of larger net revenues from yellowtail snapper landings. **Preferred Alternative 3** of Action 4 would eliminate the time and cost of acquiring, learning how to use, and using a venting tool. Consequently, these combined proposed actions are expected to generate a net economic benefit.

Preferred Alternative 3 of Action 2 has no direct economic impact on small businesses; however, it would indirectly reduce for-hire operations' recreational landings of vermilion snapper in the short-run.

6.9 Description of significant alternatives

Alternatives 2 through **5** of Action 1 would have increased the ACL for vermilion snapper, which would have generated larger direct short-term economic benefits, but likely smaller direct long-term economic benefits.

Alternative 3 of Action 3 would have allowed for larger increases in yellowtail snapper landings, and therefore, would generate larger direct potential net economic benefits in the short run; however, it also could have the smallest net economic benefit in the long run. **Alternative 1**, the status quo, would not allow for increases in yellowtail snapper landings and associated revenues.

Alternatives 1 and **2** of Action 4 would keep all or part of the economic costs of complying with the current venting requirement, and therefore would have smaller direct economic benefits.

Alternatives 1 and **2** of Action 2 would allow for larger recreational catches of vermilion snapper that in the long-run could have a larger indirect adverse economic impact on for-hire operations.

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Peter Hood	Biologist	Co-Team Lead – Amendment development, Cumulative effects analysis	SERO
Carrie Simmons	Biologist	Physical and biological/ecological environ.	GMFMC
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GMFMC = Gulf of Mexico Fishery Management Council, SERO = Southeast Regional Office of NMFS

REVIEWERS (Preparers also serve as reviewers)

Name	Expertise	Responsibility	Agency
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NOAA/GC = NOAA General Council, SEFSC = Southeast Fisheries Science Center
EFH = Essential Fish Habitat, NEPA = National Environmental Policy Act

CHAPTER 8. LIST OF AGENCIES, ORGANIZATIONS AND PERSONS CONSULTED

Federal Agencies:
Gulf of Mexico Fishery Management Council's
- Scientific and Statistical Committee
- Socioeconomic Assessment Panel

National Marine Fisheries Service
- Southeast Fisheries Science Center
- Southeast Regional Office

U.S. Coast Guard
Environmental Protection Agency

State Agencies:
- Texas Department of Wildlife and Fisheries
- Louisiana Department of Wildlife and Fisheries
- Mississippi Department of Marine Resources
- Alabama Department of Conservation and Natural Resources
- Florida Fish and Wildlife Conservation Commission

CHAPTER 9. REFERENCES

Ault, J. S., S. G. Smith, G. A. Diaz, and E. Franklin. 2003. Florida hogfish fishery stock assessment. University of Miami, Rosenstiel School of Marine Science. Contract No. 7701 617573 for Florida Marine Research Institute, St. Petersburg, Florida.

Barnette, M. C. 2001. A review of the fishing gear utilized within the Southeast Region and their potential impacts on essential fish habitat. NOAA Technical. Memorandum. NMFS-SEFSC-449. National Marine Fisheries Service. St. Petersburg, Florida.

Burns, K. 2012. Gulf of Mexico overview: barotrauma - predation - circle hooks. PowerPoint presentation at the Gulf of Mexico South Atlantic FishSmart workshop on survival of released fish. Available at: http://www.fishsmart.org/Gulf_South%20Atlantic_Workshop/Gulf_SA_presentations/BurnsGOMCharacterization.pdf

Burns, K. M., and C. E. Porch. (personal communication). Effects of venting swim bladders on fish suffering barotraumas. Mote Marine Laboratory, 1600 Ken Thompson Parkway, Sarasota, Florida 34236.

Carter, D.W. and C. Liese. 2012. The Economic Value of Catching and Keeping or Releasing Saltwater Sport Fish in the Southeast USA. *North American Journal of Fisheries Management* 32(4): 613-25.

Cass-Calay, S. L., and M. Bahnick. 2002. Status of the yellowedge grouper fishery in the Gulf of Mexico. Contribution SFD 02/03 – 172. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

Collins, M. R., J. C. McGovern, G.R. Sedberry, J. S. Meister, and R. Pardieck. 1999. Swim bladder deflation in black sea bass and vermilion snapper: Potential for increasing post-release survival. North American Journal of Fisheries Management 19:828-832.

EPA. 1999. EPA Region 4: Interim Policy to Identify and Address Potential Environmental Justice Areas. EPA-904-R-99-004. http://www.enviro-lawyer.com/Interim%20Policy.pdf

Fluech, B., J. Stevely, and B. Staugler. 2012. Practical evaluation of fish recompression tools. PowerPoint presentation at the Gulf of Mexico South Atlantic FishSmart workshop on survival of released fish. Available at: http://www.fishsmart.org/Gulf_South%20Atlantic_Workshop/Gulf_SA_presentations/Stevelyoutreach.pdf

Gentner, B. 2009.Allocation Analysis of the Gulf of Mexico Gag and Red Grouper Fisheries. Prepared to the Coastal Conservation Association.

Gitschlag, G. R. and M. L. Renaud. 1994. Field experiments on survival rates of caged and released red snapper. North American Journal of Fisheries Management 14: 131-136.

GMFMC. 1981. Environmental impact statement and fishery management plan for the reef fish resources of the Gulf of Mexico and environmental impact statement. Gulf of Mexico Fishery Management Council, Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/RF%20FMP%20and%20EIS%201981-08.pdf

GMFMC. 1989. Amendment number 1 to the reef fish fishery management plan including environmental assessment, regulatory impact review, and regulatory flexibility analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/RF%20Amend-01%20Final%201989-08-rescan.pdf

GMFMC. 1995. Amendment 12 to the reef fish fishery management plan for the reef fish resources of the Gulf of Mexico, includes regulatory impact review and environmental assessment. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/RF%20Amend-12%20Final%201995-12.pdf

GMFMC. 1997. Amendment 15 to the fishery management plan for the reef fish resources of the Gulf of Mexico, includes regulatory impact review, initial regulatory flexibility analysis, and environmental assessment. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/AMEND15.pdf

GMFMC. 2004a. Final amendment 23 to the reef fish fishery management plan to set vermilion snapper sustainable fisheries act targets and thresholds and to establish a plan to end overfishing and rebuild the stock, including a final supplemental environmental impact statement and regulatory impact review. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/VS%2023%20Oct%20Final%2010-21-04%20with%20Appendix%20E.pdf

GMFMC. 2004b. Final environmental impact statement for the generic essential fish habitat amendment to the following fishery management plans of the Gulf of Mexico: shrimp fishery of the Gulf of Mexico, red drum fishery of the Gulf of Mexico, reef fish fishery of the Gulf of Mexico, stone crab fishery of the Gulf of Mexico, coral and coral reef fishery of the Gulf of Mexico, spiny lobster fishery of the Gulf of Mexico and South Atlantic, coastal migratory pelagic resources of the Gulf of Mexico and South Atlantic. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20EFH%20EIS.pdf

GMFMC. 2005. Generic amendment number 3 for addressing essential fish habitat requirements, habitat areas of particular concern, and adverse effects of fishing in the following fishery management plans of the Gulf of Mexico: shrimp fishery of the Gulf of Mexico, United States waters, red drum fishery of the Gulf of Mexico, reef fish fishery of the Gulf of Mexico, coastal migratory pelagic resources (mackerels) in the Gulf of Mexico and South Atlantic, stone crab fishery of the Gulf of Mexico, spiny lobster fishery of the Gulf of Mexico and South Atlantic, coral and coral reefs of the Gulf of Mexico. Gulf of Mexico Fishery Management Council. Tampa, Florida.
http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL3_EFH_Amendment.pdf

GMFMC. 2007a. Final regulatory amendment to address vermilion snapper regulations under the fishery management plan for the reef fish fishery of the Gulf of Mexico including environmental assessment, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida.
http://www.gulfcouncil.org/docs/amendments/RegAmend-Feb2007-vermilion.pdf

GMFMC. 2007b. Final amendment 27 to the reef fish fishery management plan and amendment 14 to the shrimp fishery management plan including supplemental environmental impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. 490 pp with appendices.
http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf

GMFMC. 2009. Final amendment 31 to the fishery management plan for reef fish resources in the Gulf of Mexico addresses bycatch of sea turtles in the bottom longline component of the Gulf of Mexico reef fish fishery, includes draft environmental impact statement and regulatory impact review. Gulf of Mexico Fishery Management Council. Tampa, Florida. 261 pp with appendices.
http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20Draft%20RF%20Amend%2031%206-11-09.pdf

GMFMC. 2010. Standing and Special reef fish SSC meeting summary minutes. July 27-29, 2010. Available from the Gulf of Mexico Fishery Management Council. Tampa, Florida.
http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/BB%20AUGUST%202010/G%20-%206%20Standing%20and%20Reef%20Fish%20SSC-Summary%2007-2010.doc

GMFMC. 2011a. Final generic annual catch limits/accountability measures amendment for the Gulf of Mexico fishery management council's red drum, reef fish, shrimp, coral and coral reefs fishery management plans, including environmental impact statement, regulatory impact review, regulatory flexibility analysis, and fishery impact statement. Gulf of Mexico Fishery Management Council. Tampa, Florida.
http://www.gulfcouncil.org/docs/amendments/Final%20Generic%20ACL_AM_Amendment-September%209%202011%20v.pdf

GMFMC. 2011b. Reef Fish Amendment 32: Gag – Rebuilding Plan, Annual Catch Limits, Management Measures; Red Grouper – Annual Catch Limits, Management Measures; Grouper Accountability Measures. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Final%20RF32_EIS_October_21_2011%5B2%5D.pdf

GMFMC. 2011c. Regulatory amendment to the reef fish fishery management plan to set 2011 total allowable catch for red snapper. Gulf of Mexico Fishery Management Council, Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Red%20Snapper%202011%20Regulatory%20Amendment%20-%201-11.pdf

GMFMC. 2012a. Standing and Special Reef Fish SSC Meeting Summary, June 7-8, 2012. Gulf of Mexico Fishery Management Council, Tampa, Florida. ftp://ftp.gulfcouncil.org/Briefing%20Books/Archived%20Briefing%20Books%202012/Briefing%20Book%202012-06/H%20-%204%20Reef%20Fish%20SSC%20Summary%20%28ABC%20Control%20Rule%29%2006-2012.pdf

GMFMC. 2012b. Final amendment 38 to the reef fish fishery management plan for the reef fish resources of the Gulf of Mexico – modifications to the shallow-water grouper accountability measures, including an environmental assessment, fishery impact statement, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. http://www.gulfcouncil.org/docs/amendments/Final%20Amendment%2038%2009-12-2012.pdf

Goodyear, C.P. and M.J. Schirripa. 1991. A biological profile for vermilion snapper with a description of the fishery in the Gulf of Mexico. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Miami Laboratory Contribution: MIA-90/91-78. 53 p.

Goodyear, C.P. and N.B. Thompson. 1993. Updated landings of vermilion in the Gulf of Mexico. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Miami Laboratory Contribution: MIA-92/93-71. 3 p. + app.

Gore, R. H. 1992. The Gulf of Mexico: A treasury of resources in the American Mediterranean. Pineapple Press. Sarasota, Florida.

Haab, T.C., R. Hicks, K. Schnier, and J.C. Whitehead. 2009. Angler Heterogeneity and the Species-Specific Demand for Recreational Fishing in the Southeastern United States. Draft Final Report Submitted for MARFIN Grant #NA06NMF4330055.

Hamilton, A. N., Jr. 2000. Gear impacts on essential fish habitat in the Southeastern Region. , National Marine Fisheries Service, Southeast Fisheries Science Center. Pascagoula, Mississippi.

Hood, P. B., and A. K. Johnson. 1999. Age, growth, mortality, and reproduction of vermilion snapper *Rhomboplites aurorubens*, from the Eastern Gulf of Mexico. Fish. Bull. 97 (4): 828-841.

Huntsman, G. R., J. C. Potts, R. Mays, R. L. Dixon, P. W. Willis, M. Burton, and B. W. Harvey. 1992. A stock assessment of the Snapper-Grouper Complex in the U.S. South Atlantic based on the fish caught in 1990. Report to the South Atlantic Fishery Management Council, One Southpark Circle, Suite 306, Charleston, SC 29407, 104p.

IPCC, 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Loftus, A.J. and G.C. Radonski. 2012. FishSmart Gulf of Mexico/South Atlantic workshop on improving the survival of released fish focusing on barotrauma. 27 pp. Available at: http://www.fishsmart.org/

Marko, P. B., S. C. Lee, A. M. Rice, J. M. Gramling, T. M. Fitzhenry, J. S. McAlistar, G. R. Harper, A. L. Moran. 2004. Mislabeling in a depleted reef fish. *Nature* 430:309.

McEachran, J.D. and J.D. Fechhelm. 2005. Fishes of the Gulf of Mexico. Volume 2 University of Texas Press, Austin.

Muller, R. G., M. D. Murphy, J. de Silva, and L. R. Barbieri. 2003. Final report submitted to the national marine fisheries service, the Gulf of Mexico fishery management council, and the South Atlantic fishery management council as part of the southeast data, assessment, and review (SEDAR) iii. Florida Fish and Wildlife Conservation Commission, FWC-FMRI Report: IHR 2003-10. Florida Fish and Wildlife Research Institute. St. Petersburg, Florida.

NMFS. 2002. Status of red grouper in United States waters of the Gulf of Mexico during 1986-2001, revised. Contribution No. SFD-01/02-175rev. National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

NMFS. 2005. Endangered Species Act – Section 7 consultation on the continued authorization of reef fish fishing under the Gulf of Mexico reef fish fishery management plan and proposed Amendment 23. Biological Opinion, February 15, 2005. 115 p. plus appendices. National Marine Fisheries Service. St. Petersburg, Florida.

NMFS. 2009. Biological Opinion - the continued authorization of reef fish fishing under the Gulf of Mexico reef fish fishery management plan, including Amendment 31, and a rulemaking to reduce sea turtle bycatch in the Eastern Gulf bottom longline component of the fishery. October 13, 2009. National Marine Fisheries Service. St. Petersburg, Florida. Available at: http://sero.nmfs.noaa.gov/pr/esa/Fishery%20Biops/2009%20GOM%20Reef%20Fish%20Re-in%20BO.pdf

NMFS. 2010. Environmental assessment, regulatory impact review, and regulatory flexibility act analysis for a temporary rule to implement measures to limit the Gulf of Mexico gag commercial and recreational harvests and suspend the red grouper individual fishing quota multi-use allocation. National Marine Fisheries Service, Southeast Regional Office. St. Petersburg, Florida Available at: http://sero.nmfs.noaa.gov/sf/pdfs/Gag_EA_111510.pdf

NMFS. 2011. Biological Opinion on the Continued Authorization of Reef Fish Fishing under the Gulf of Mexico Reef Fish Fishery Management Plan. September 30, 2011. Available at: http://sero.nmfs.noaa.gov/pr/esa/Fishery%20Biops/03584%20GOM%20Reef%20Fish%20BiOp%202011%20final.pdf

NMFS. 2012. Emergency Rule to Set the 2012 Annual Catch Limit for the Gulf of Mexico Vermilion Snapper Stock: Draft Environmental Assessment and Regulatory Impact Review. Southeast Regional Office, St. Petersburg, FL.

O'Hop, J., M. Murphy, and D. Chagaris. 2012. The 2012 stock assessment report for yellowtail snapper in the south Atlantic and Gulf of Mexico. Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, St. Petersburg, Florida.

Porch, C. E., and S. L. Cass-Calay. 2001. Status of the vermilion snapper fishery in the Gulf of Mexico – assessment 5.0. Sustainable Fisheries Division Contribution No. SFD-01/01-129. National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

Porch, C. E., A. M. Eklund, and G. P. Scott. 2003. An assessment of rebuilding times for goliath grouper. Contribution: SFD 2003-0018. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.
Ralston, S., A.E. Punt, O.S. Hamel, J.D. DeVore, and R.J. Conser. 2011. A meta-analytic approach to quantifying scientific uncertainty in stock assessments. Fishery Bulletin 109:217-231. http://fishbull.noaa.gov/1092/ralston.pdf
Ralston, S., A.E. Punt, O.S. Hamel, J.D. DeVore, and R.J. Conser. 2011. A meta-analytic approach to quantifying scientific uncertainty in stock assessments. Fishery Bulletin 109:217-231. http://fishbull.noaa.gov/1092/ralston.pdf

Render, J. H., and C. A. Wilson. 1993. Hook-and-line mortality of caught and released red snapper around oil and gas platform structural habitat. Bulletin of Marine Science 55:1106-1111.

Restrepo, V. R., G. G. Thompson, P. M. Mace, W. L. Gabriel, L. L. Low, A. D. MacCall, R. D. Methot, J. E. Powers, B. L. Taylor, P. R. Wade, and J. F. Witzig. 1998. Technical guidance on the use of precautionary approaches to implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act. NOAA Technical Memorandum NMFS-F/SPO-31. NOAA, National Marine Fisheries Service, Silver Spring, Maryland.

RFSAP. 1991. Final report of the reef fish stock assessment panel, October 1991. Available from: Gulf of Mexico Fishery Management Council, 3018 U.S. Highway 301 North, Suite 1000, Tampa, Florida 33619. 34 p.

RFSAP. 1993. 1993 report of the reef fish stock assessment panel. Available from: Gulf of Mexico Fishery Management Council, 3018 U.S. Highway 301 North, Suite 1000, Tampa, Florida 33619. 17 p. + app.

RFSAP. 1996. November 1996 report of the reef fish stock assessment panel. Available from: Gulf of Mexico Fishery Management Council, 3018 U.S. Highway 301 North, Suite 1000, Tampa, Florida 33619. 21 p.

RFSAP. 1998. August 1998 report of the reef fish stock assessment panel (revised). Available from: Gulf of Mexico Fishery Management Council, 3018 U.S. Highway 301 North, Suite 1000, Tampa, Florida 33619. 19 p.

RFSAP. 2001. October 2001 report of the reef fish stock assessment panel. Available from: Gulf of Mexico Fishery Management Council, 3018 U.S. Highway 301 North, Suite 1000, Tampa, Florida 33619. 36 p. + app.

Rico-Martínez, R., T.W. Snell, and T.L. Shearer. 2013. Synergistic toxicity of Macondo crude oil and dispersant Corexit 9500A® to the *Brachionus plicatilis* species complex (Rotifera). Environmental Pollution 173:5-10.

Rudershausen, P.J., J.A. Buckel, and T. Burgess. 2012. Estimating discard mortality of black sea bass (Centropristis striata) using a tag-return approach. PowerPoint presentation at the Gulf of Mexico South Atlantic FishSmart workshop on survival of released fish. Available at: http://www.fishsmart.org/Gulf_South%20Atlantic_Workshop/Gulf_SA_presentations/BuckelSAresearch.pdf

Rummer, J.L. 2007. Factors affecting catch and release (CAR) mortality in fish: insight into CAR mortality in red snapper and the influence of catastrophic decompression. American Fisheries Society Symposium 60:113–132.
Also: Gulf of Mexico Fishery Management Council SEDAR 31-RD29. Available at: http://www.sefsc.noaa.gov/sedar/download/SEDAR31-RD29-%20Factors%20affecting%20CAR%20mortality%20in%20RS.pdf?id=DOCUMENT

Schirripa, M.J. 1992. Analysis of the age and growth of vermilion snapper with an assessment of the fishery in the Gulf of Mexico. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Miami Laboratory Contribution No. MIA-91/92- 74. 47 p.

Schirripa, M.J. 1996a. Status of the vermilion snapper fishery of the Gulf of Mexico: assessment 3.0. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Miami Laboratory Contribution No. MIA-95/96- 61. 17 p. + fig.

Schirripa, M.J. 1996b. Status of the vermilion snapper fishery of the Gulf of Mexico: assessment 3.0, addendum 1. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Miami Laboratory Contribution No. MIA-96/97-19. 11 p.

Schirripa, M.J. 1998. Status of the vermilion snapper fishery of the Gulf of Mexico: assessment 4.0 revised. NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Sustainable Fisheries Division Contribution No. SFD-97/98- 09A. 78 p.

Schirripa, M.J. and C.M. Legault. 2000. Status of the vermilion snapper fishery of the Gulf of Mexico: assessment update (version 4.5). NOAA, NMFS, SEFSC, 75 Virginia Beach Drive, Miami, Florida 33149. Sustainable Fisheries Division Contribution No. SFD-99/00- 108. 33 p.

SEDAR 3. 2003. Complete stock assessment report of yellowtail snapper in the southeastern United States – SEDAR 3, Assessment report 1. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 6. 2004a. SEDAR report 1 the goliath grouper in southern Florida: Assessment review and advisory report. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 6. 2004b. SEDAR report 2 the hogfish in Florida: Assessment review and advisory report. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 7. 2005. Stock assessment report of SEDAR 7 Gulf of Mexico red snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 7 Update. 2009. Update stock assessment report of SEDAR 7 Gulf of Mexico red snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9. 2006a. Stock assessment report 1 of SEDAR 9: Gulf of Mexico gray triggerfish. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9. 2006b. Stock assessment report 2 of SEDAR 9: Gulf of Mexico greater amberjack. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9. 2006c. Stock assessment report 3 of SEDAR 9: Gulf of Mexico vermilion snapper assessment report 3. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9 Update. 2010. SEDAR update stock assessment of greater amberjack in the Gulf of Mexico. Southeast Data, Assessment and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9 Update. 2011a. SEDAR update stock assessment of gray triggerfish in the Gulf of Mexico. Southeast Data, Assessment and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 9 Update. 2011b. An alternative SSASPM stock assessment of Gulf of Mexico vermilion snapper that incorporates the recent decline in shrimp effort (December revision). Southeast Fisheries Science Center, Miami, FL. 87 p.

SEDAR 9 Update. 2011c. SEDAR update stock assessment of vermilion snapper in the Gulf of Mexico – addendum. NMFS, Southeast Fisheries Science Center, Miami, FL. 17 p.

SEDAR 9 Update. 2012. Revised projections to the SEDAR update stock assessment of vermilion snapper in the Gulf of Mexico. NMFS, Southeast Fisheries Science Center, Miami, FL. 24 p.

SEDAR 10. 2006. Gulf of Mexico Gag Grouper Stock Assessment Report 2. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 10 Update. 2009. Stock assessment of gag in the Gulf of Mexico. – SEDAR update assessment. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 12. 2007. SEDAR12-Complete Stock Assessment Report 1: Gulf of Mexico Red Grouper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.
SEDAR 12 Update. 2009. Stock assessment of red grouper in the Gulf of Mexico – SEDAR update assessment. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 15A. 2008. Stock assessment report 3 (SAR 3) South Atlantic and Gulf of Mexico mutton snapper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 19. 2010. Stock assessment report Gulf of Mexico and South Atlantic black grouper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 22. 2011a. Stock assessment report Gulf of Mexico tilefish. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 22. 2011b. Stock assessment report Gulf of Mexico yellowedge grouper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

SEDAR 23. 2011. Stock assessment report South Atlantic and Gulf of Mexico goliath grouper. Southeast Data, Assessment, and Review. North Charleston, South Carolina. http://www.sefsc.noaa.gov/sedar/.

Shipp, R.L. 2012. Dr. Bob Shipp's guide to the fishes of the Gulf of Mexico, second edition. KME Seabooks, Mobile, AL. 250 p.

Stunz, G. 2012. Minimizing discard mortality in the red snapper fishery in the Gulf of Mexico. PowerPoint presentation at the Gulf of Mexico South Atlantic FishSmart workshop on survival of released fish. Available at: http://www.fishsmart.org/Gulf_South%20Atlantic_Workshop/Gulf_SA_presentations/StunzGOMandmarinemammals.pdf

Therberge, S. 2012. Framing the issue in the Gulf of Mexico and SE Atlantic: developing practical, effective methods for reducing barotrauma mortality in fish. PowerPoint presentation at the Gulf of Mexico/South Atlantic FishSmart workshop on survival of released fish. Available at: http://www.fishsmart.org/Gulf_South%20Atlantic_Workshop/Gulf_SA_presentations/Theberge2012FramingSEandGOM.pdf

Turner, S. C., N. J. Cummings, and C. P. Porch. 2000. Stock assessment of Gulf of Mexico greater amberjack using data through 1998. SFD-99/00-100. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

Turner, S. C., C. E. Porch, D. Heinemann, G. P. Scott, and M. Ortiz. 2001. Status of the gag stocks of the Gulf of Mexico: assessment 3.0. August 2001. Contribution: SFD-01/02-134. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

Valle, M., C. Legault, and M. Ortiz. 2001. A stock assessment for gray triggerfish, *Balistes capriscus*, in the Gulf of Mexico. Contribution: SFD-01/02-124. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center. Miami, Florida.

Warner, K. 2011. Seafood fraud found in Boston-area supermarkets. Washington, DC, Oceana. http://oceana.org/sites/default/files/Boston_Seafood_Testing_Report_FINAL.pdf

Wilde, G.R. 2009. Does venting promote survival of released fish? American Fisheries Society, Fisheries 34(1):20-28.

Zhao, B., J. C. McGovern, and P. J. Harris. 1997. Age, growth and temporal change in size-at-age of the vermilion snapper from the South Atlantic Bight. Fish. Bull. 95 (4): 837-848.

APPENDIX A. ALTERNATIVES CONSIDERED BUT REJECTED

There are no alternatives that were considered but rejected. All alternatives considered under Actions 1 - 4 are listed in Section 2.

APPENDIX B. OTHER APPLICABLE LAW

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; 16 U.S.C. 1801 et seq.) provides the authority for fishery management in federal waters of the exclusive economic zone. However, fishery management decision-making is also affected by a number of other federal statutes designed to protect the biological and human components of U.S. fisheries, as well as the ecosystems that support those fisheries. Major laws affecting federal fishery management decision-making are summarized below.

Administrative Procedures Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, National Marine Fisheries Service (NMFS) is required to publish notification of proposed rules in the Federal Register and to solicit, consider, and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day waiting period from the time a final rule is published until it takes effect.

Coastal Zone Management Act

Section 307(c)(1) of the federal Coastal Zone Management Act of 1972 (CZMA), as amended, requires federal activities that affect any land or water use or natural resource of a state's coastal zone be conducted in a manner consistent, to the maximum extent practicable, with approved state coastal management programs. The requirements for such a consistency determination are set forth in National Oceanographic and Atmospheric Agency (NOAA) regulations at 15 C.F.R. part 930, subpart C. According to these regulations and CZMA Section 307(c)(1), when taking an action that affects any land or water use or natural resource of a state's coastal zone, NMFS is required to provide a consistency determination to the relevant state agency at least 90 days before taking final action.

Upon submission to the Secretary, NMFS will determine if this rule is consistent with the Coastal Zone Management programs of the states of Alabama, Florida, Louisiana, Mississippi, and Texas to the maximum extent possible. Their determination will then be submitted to the responsible state agencies under Section 307 of the CZMA administering approved Coastal Zone Management programs for these states.

Data Quality Act

The Data Quality Act (DQA) (Public Law 106-443) effective October 1, 2002, requires the government to set standards for the quality of scientific information and statistics used and disseminated by federal agencies. Information includes any communication or representation of knowledge such as facts or data, in any medium or form, including textual, numerical,

cartographic, narrative, or audiovisual forms (includes web dissemination, but not hyperlinks to information that others disseminate; does not include clearly stated opinions).

Specifically, the Act directs the Office of Management and Budget to issue government wide guidelines that "provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies." Such guidelines have been issued, directing all federal agencies to create and disseminate agency-specific standards to: (1) ensure information quality and develop a pre-dissemination review process; (2) establish administrative mechanisms allowing affected persons to seek and obtain correction of information; and (3) report periodically to Office of Management and Budget on the number and nature of complaints received.

Scientific information and data are key components of fishery management plans (FMPs), amendments, and rulemaking, and the use of best available information is the second national standard under the Magnuson-Stevens Act. To be consistent with the Act, rulemaking must be based on the best information available. They should also properly reference all supporting materials and data, and be reviewed by technically competent individuals. With respect to original data generated fishery management actions, it is important to ensure that the data are collected according to documented procedures or in a manner that reflects standard practices accepted by the relevant scientific and technical communities. Data will also undergo quality control prior to being used by the agency and a pre-dissemination review.

Endangered Species Act

The Endangered Species Act (ESA) of 1973, as amended, (16 U.S.C. Section 1531 et seq.) requires federal agencies use their authorities to conserve endangered and threatened species. The ESA requires NMFS, when proposing a fishery action that "may affect" critical habitat or endangered or threatened species, to consult with the appropriate administrative agency (itself for most marine species, the U.S. Fish and Wildlife Service for all remaining species) to determine the potential impacts of the proposed action. Consultations are concluded informally when proposed actions may affect but are "not likely to adversely affect" endangered or threatened species or designated critical habitat. Formal consultations, including a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" endangered or threatened species or adversely modify designated critical habitat. If jeopardy or adverse modification is found, the consulting agency is required to suggest reasonable and prudent alternatives.

On September 30, 2011, the Protected Resources Division released a biological opinion which, after analyzing best available data, the current status of the species, environmental baseline (including the impacts of the recent Deepwater Horizon MC252 oil release event in the northern Gulf of Mexico), effects of the proposed action, and cumulative effects, concluded that the continued operation of the Gulf of Mexico reef fish fishery is also not likely to jeopardize the continued existence of green, hawksbill, Kemp's ridley, leatherback, or loggerhead sea turtles, nor the continued existence of smalltooth sawfish (NMFS 2011a).

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas, and on the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NMFS) is responsible for the conservation and management of cetaceans and pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea and marine otters, polar bears, manatees, and dugongs.

Part of the responsibility that NMFS has under the MMPA involves monitoring populations of marine mammals to make sure that they stay at optimum levels. If a population falls below its optimum level, it is designated as "depleted," and a conservation plan is developed to guide research and management actions to restore the population to healthy levels.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This amendment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction, development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries, and studies of pinniped-fishery interactions.

Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. The categorization of a fishery in the LOF determines whether participants in that fishery may be required to comply with certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. A summary of the conclusions of the most recent List of Fisheries for gear used by the reef fish fishery can be found in Section 3.3.

Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501 et seq.) regulates the collection of public information by federal agencies to ensure the public is not overburdened with information requests, the federal government's information collection procedures are efficient, and federal agencies adhere to appropriate rules governing the confidentiality of such information. The PRA requires NMFS to obtain approval from the Office of Management and Budget before requesting most types of fishery information from the public. None of the alternatives examined in this environmental assessment have PRA implications.

Executive Orders

E.O. 12630: Takings

The Executive Order on Government Actions and Interference with Constitutionally Protected Property Rights that became effective March 18, 1988, requires each federal agency prepare a Takings Implication Assessment for any of its administrative, regulatory, and legislative policies and actions that affect, or may affect, the use of any real or personal property. Clearance of a regulatory action must include a takings statement and, if appropriate, a Takings Implication Assessment. The NOAA Office of General Counsel will determine whether a Taking Implication Assessment is necessary for this amendment.

E.O. 12866: Regulatory Planning and Review

Executive Order 12866: Regulatory Planning and Review, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NMFS prepares a Regulatory Impact Review (RIR for all fishery regulatory actions that either implement a new fishery management plan or significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society of proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Analysis. A regulation is significant if it a) has an annual effect on the economy of $100 million or more or adversely affects in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments and communities; b) creates a serious inconsistency or otherwise interferes with an action taken or planned by another agency; c) materially alters the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or d) raises novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

E.O. 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations

This Executive Order mandates that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. The Executive Order is described in more detail relative to fisheries actions in Section 3.5.

E.O. 12962: Recreational Fisheries

This Executive Order requires federal agencies, in cooperation with states and tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods including, but not limited to, developing joint partnerships; promoting the restoration of recreational fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic conservation and restoration endeavors; and evaluating the effects of federally-funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and documenting those effects. Additionally, it establishes a seven-member National Recreational Fisheries Coordination Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The Council also is responsible for developing, in cooperation with federal agencies, States and Tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda. Finally, the Order requires NMFS and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

E.O. 13089: Coral Reef Protection

The Executive Order on Coral Reef Protection requires federal agencies whose actions may affect U.S. coral reef ecosystems to identify those actions, utilize their programs and authorities to protect and enhance the conditions of such ecosystems, and, to the extent permitted by law, ensure actions that they authorize, fund, or carry out do not degrade the condition of that ecosystem. By definition, a U.S. coral reef ecosystem means those species, habitats, and other national resources associated with coral reefs in all maritime areas and zones subject to the jurisdiction or control of the United States (e.g., federal, state, territorial, or commonwealth waters).

Regulations are already in place to limit or reduce habitat impacts within the Flower Garden Banks National Marine Sanctuary. Additionally, NMFS approved and implemented Generic Amendment 3 for EFH, which established additional HAPCs and gear restrictions to protect corals throughout the Gulf. There are no implications to coral reefs by the action proposed in this amendment.

E.O. 13132: Federalism

The Executive Order on Federalism requires agencies in formulating and implementing policies, to be guided by the fundamental Federalism principles. The Order serves to guarantee the division of governmental responsibilities between the national government and the states that was intended by the framers of the Constitution. Federalism is rooted in the belief that issues not national in scope or significance are most appropriately addressed by the level of government closest to the people. This Order is relevant to FMPs and amendments given the overlapping authorities of NMFS, the states, and local authorities in managing coastal resources, including

fisheries, and the need for a clear definition of responsibilities. It is important to recognize those components of the ecosystem over which fishery managers have no direct control and to develop strategies to address them in conjunction with appropriate state, tribes and local entities (international too).

No Federalism issues have been identified relative to the action proposed in this amendment. Therefore, consultation with state officials under Executive Order 12612 is not necessary.

E.O. 13158: Marine Protected Areas

This Executive Order requires federal agencies to consider whether their proposed action(s) will affect any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural or cultural resource within the protected area. There are several MPAs, HAPCs, and gear-restricted areas in the eastern and northwestern Gulf.

Essential Fish Habitat

The amended Magnuson-Stevens Act included a new habitat conservation provision known as EFH that requires each existing and any new FMPs to describe and identify EFH for each federally managed species, minimize to the extent practicable impacts from fishing activities on EFH that are more than minimal and not temporary in nature, and identify other actions to encourage the conservation and enhancement of that EFH. To address these requirements the Council has, under separate action, approved an EIS (GMFMC 2004b) to address the new EFH requirements contained within the Magnuson-Stevens Act. Section 305(b)(2) requires federal agencies to obtain a consultation for any action that may adversely affect EFH. An EFH consultation will be conducted for this action.

APPENDIX C. SUMMARIES OF PUBLIC COMMENTS RECEIVED

Written comments received on the framework action are posted on the Council website and are summarized below:

- Leave vermilion and yellowtail regulations as they are because populations are not overfished.
- Venting tools should be required onboard but captain and crew should determine when it's appropriate to use them.
- The preferred bag limit alternatives are fine.
- Venting tools should not be required as long as recompression devices are used.
- Alternative 1, option 2 does not provide adequate assurance that overfishing would not occur.
- Council should rewrite Action 1 to include the Annual Catch Target in the Alternatives. Options 3 and 5 could be rewritten setting the annual catch limit equal to the acceptable biological catch and setting the annual catch target at the level proposed as the annual catch limit in the current document.

The full text of mailed/e-mailed/faxed public comments received before 2/5/2013 can be found at http://bit.ly/YrsmPH .

Comments received online via the Council website can be found at http://bit.ly/WJa3sJ.