

Red Snapper 2013 Quota Increase and Supplemental Recreational Season

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

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COVER SHEET

FRAMEWORK ACTION FOR RED SNAPPER 2013 QUOTA INCREASE AND SUPPLEMENTAL RECREATIONAL SEASON

Including Environmental Assessment (EA), Regulatory Impact Review (RIR), and Regulatory Flexibility Act Analysis (RFAA)

Type of Action

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ABSTRACT

The proposed actions would revise the 2013 quotas for commercial and recreational harvest of red snapper in the Gulf of Mexico. Based on the results of the 2013 SEDAR 31 red snapper benchmark assessment, the current fishing mortality rate is below the maximum fishing mortality threshold. Therefore, the red snapper stock is not experiencing overfishing, and the quotas can be increased consistent with the rebuilding target of biomass at maximum sustainable yield by 2032. Management measures considered in this framework action would adjust the red snapper acceptable biological catch (ABC) from the status quo of 8.46 million pounds (mp) whole weight to 11.0 mp whole weight for 2013. The commercial and recreational sector quotas would be based on the current 51% commercial (5.610 mp) and 49% recreational (5.390 mp) allocation of red snapper. The quota increases would allow a re-opening of the 2013 recreational red snapper season. The proposed actions would establish a continuous supplemental season beginning on October 1.

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ABBREVIATIONS USED IN THIS DOCUMENT

ABC	allowable biological catch
ACL	annual catch limit
ALS	accumulated landings system
AM	accountability measure
Council	Gulf of Mexico Fishery Management Council
EEZ	exclusive economic zone
EFH	essential fish habitat
EJ	environmental justice
E.O.	Executive Order
F	fishing mortality
FMP	fishery management plan
FTE	Full-time Equivalent
GMFMC	Gulf of Mexico Fishery Management Council
Gulf	Gulf of Mexico
gw	gutted weight
IFQ	individual fishing quota
LAPP	limited access privilege program
Lq	local quotient
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
mp	million pounds
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSY	maximum sustainable yield
NMFS	NOAA's National Marine Fisheries Service
OFL	overfishing limit
OY	optimum yield
P*	acceptable probability of overfishing
RA	Regional Administrator, NMFS SERO
RFA	Regulatory Flexibility Act
RFAA	Regulatory Flexibility Act analysis
RIR	regulatory impact review
rq	regional quotient
Secretary	Secretary of Commerce
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SSC	Scientific Statistical Committee
SPR	spawning potential ratio
SRHS	Southeast Region Headboat Survey
ww	whole weight

CHAPTER 1. INTRODUCTION

1.1 Background

The 2006 reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) established new requirements to end and prevent overfishing through the use of annual catch limits (ACLs) and accountability measures (AMs). The National Standard 1 (NS1) guidelines allowed the continued use of existing terminology provided that the terminology and approaches used are consistent with those set forth in the NS1 guidelines. For red snapper, the National Marine Fisheries Service (NMFS) determined the existing quotas are functionally equivalent to sector ACLs, and the sum of the quotas is functionally equivalent to the stock ACL for red snapper.

Since 2010, the quotas for red snapper have been increased annually, although recreational fishing seasons have been decreased due to increasing average size of fish and increasing catch rates, and landings have exceeded the recreational quota. The commercial sector has been managed by an individual fishing quota (IFQ) program since 2007, and landings have not exceeded the commercial quota in that time. For more background on red snapper management, see http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/red_snapper/index.html.

A benchmark assessment for red snapper was conducted in 2012 and 2013 by the Southeast Data, Assessment, and Review process (SEDAR 31 2013). The Scientific and Statistic Committee (SSC) reviewed the assessment in May 2013, and determined the acceptable biological catch (ABC) could be increased to 13.5 million pounds (mp) whole weight (ww) for 2013, the highest level since 1996. However, this ABC was set only 200,000 lbs less than the maximum rebuilding yield ($F_{Rebuild}$) accepted by the SSC. The buffer between $F_{Rebuild}$ and ABC was based only on scientific uncertainty. They indicated during their discussions that the Council should include an additional buffer between the ABC and the quota to account for management uncertainty. The SSC also recommended reduced ABCs for 2014 and 2015 of 11.9 and 10.6 mp ww, respectively.

In response to this new scientific information, the Council requested a framework action to increase the quota for the red snapper component of the reef fish fishery. They determined red snapper fishermen would be better served by a constant quota over the next three years, rather than a decreasing quota, as recommended by the SSC. Although if continued for three years the quota would exceed the current ABC in 2015, the SSC will review the new projections in August and are expected to provide new ABCs based on a constant catch scenario. The Council will review the SSC's new ABC recommendations at its August 2013 meeting and determine whether further revision of the total quota is necessary. An update stock assessment scheduled for 2014 will likely revise the ABC for 2015. The Council also requested that the recreational season re-open in 2013, so that recreational fishermen may have the opportunity to harvest the additional quota.

1.2 Purpose and Need

The purpose of this action is to revise the quotas for commercial and recreational harvest of red snapper in the Gulf of Mexico (Gulf) consistent with the red snapper rebuilding plan and allow each sector to harvest the additional quota. The underlying need for this action is driven by the Magnuson-Stevens Act, which requires NMFS and the regional fishery management councils to prevent overfishing while achieving, on a continuing basis, the optimum yield from federally managed fish stocks, to take into account the importance of fishery resources to fishing communities and provide for sustained participation of such communities, and to rebuild stocks that have been determined to be overfished.

1.3 History of Management

This history of management only covers events pertinent to red snapper quotas. All referenced amendments are amendments to the Fishery Management Plan for Reef Fish of the Gulf of Mexico (FMP), unless stated otherwise. A brief history of management was detailed in the February 2010 Regulatory Amendment (GMFMC 2010) and is incorporated herein by reference. A more complete summary of red snapper management can be found in Amendment 27 (GMFMC 2007) and in Hood et al. (2007).

Amendment 1 (GMFMC 1989) established the procedure for setting sector allocations based on historical percentages of harvest during the base period of 1979-1987. The allocations of 51% to the commercial sector and 49% to the recreational sector were applied to the total allowable catch for each year.

Recreational Sector

Prior to 1997, the red snapper recreational season was open year-round. Catch levels were controlled through minimum size limits and bag limits. From 1997 through 1999, NMFS implemented the recreational quota requirement through an in-season monitoring process by establishing a quota monitoring team that projected closing dates a few weeks in advance. A February 2000 regulatory amendment (GMFMC 2000) replaced the system of in-season monitoring and closure projections with a fixed season based on a pre-season projection of when the recreational quota would be reached.

In 2008, Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2007) revised the rebuilding plan. For the recreational sector, the rule implemented a June 1 through September 30 fishing season in conjunction with a 2.45 mp recreational quota. The implementing regulations for this amendment created the recreational fishing season by establishing fixed closed seasons of January 1 through May 31 and October 1 through December 31. However, NMFS still continued to use pre-season projections to determine if the quota would be reached before September 30 and, if so, set an earlier closing date to constrain harvest within the quota.

In 2012, NMFS implemented a rule that eliminated the fixed recreational closed season for red snapper of October 1 through December 31 (GMFMC 2012). This allows the closing date of the recreational red snapper season to be determined entirely by the projections of when the recreational quota will be reached.

Commercial Sector

Over the years, the commercial management strategy has changed. In 1990, a 3.1-mp quota was established for the red snapper commercial sector and fishing was allowed year-round. The next year the quota was reduced and the sector was closed before the end of the year. The quota was increased to 3.06 mp and 4.65 mp in 1993 and 1996, respectively, but closures due to quotas still continued. In 1997, a management regime was implemented whereby the commercial sector would be open the first 15 days of each month; this was changed to the first 10 days of each month in 2000 with separate spring and fall quotas. After this change, the sector remained open for progressively more days, but only to a maximum of 126 days in 2006.

In 2007, NMFS implemented an IFQ program for the red snapper commercial sector through Amendment 26 (GMFMC 2006). The establishment of the IFQ program has allowed commercial fishing for red snapper year-round. The quota was reduced in 2007 and 2008, but was increased each year from 2010-2013.

2013 Actions

On March 25, 2013, an emergency rule published to give NMFS the authority to set the closure date of the red snapper recreational season in federal waters off individual Gulf states. The closure dates were dependent on whether state regulations are consistent with federal regulations for the red snapper recreational season length or bag limit. On May 31, 2013, the U.S. District Court in Brownsville, Texas, set aside that emergency rule.

On May 29, 2013, NMFS published a final rule setting the 2013 quotas for commercial and recreational harvest of red snapper in the Gulf at the ABC level recommended by the Council's SSC (GMFMC 2013). The SSC recommended an increase for the red snapper ABC from 8.08 mp ww to 8.46 mp ww. The commercial and recreational sector quotas, based on the current 51% percent commercial and 49 % recreational allocation, are 4.315 mp for commercial and 4.145 mp for recreational.

As a result of the Court decision on the emergency rule, on June 10, 2013, the federal red snapper recreational season was adjusted to be the same in federal waters off all five Gulf states. Considering the catches expected later in the year during the extended state-water seasons off Texas, Louisiana, and Florida, NMFS projected the Gulf-wide federal red snapper recreational season could be 28 days long.

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1: Modify the Red Snapper Quotas

Note: For Alternatives 1 through 5 in Action 1, the commercial and recreational sector quotas would be based on the 51%:49% commercial and recreational allocation. The total quota is equal to the sum of the sector quotas. Alternative 6, if selected, would be adopted in conjunction with one of the other alternatives to establish sector targets with separate buffers.

Alternative 1: No Action - Maintain the total quota as defined in the March 2013 Framework Action at 8.46 million pounds (mp) whole weight (ww).

Total quota	Commercial quota	Recreational quota
8.46 mp ww	4.315 mp ww	4.145 mp ww

Alternative 2: Set the quotas based on a total quota of 12.1 mp ww.

Total quota	Commercial quota	Recreational quota
12.1 mp ww	6.171 mp ww	5.929 mp ww

Alternative 3: Set the quotas based on a total quota of 11.5 mp ww.

Total quota	Commercial quota	Recreational quota
11.5 mp ww	5.865 mp ww	5.635 mp ww

Preferred Alternative 4: Set the quotas based a total quota of 11.0 mp ww.

Total quota	Commercial quota	Recreational quota
11.0 mp ww	5.610 mp ww	5.390 mp ww

Alternative 5: Set the quotas based on a total quota of 10.0 mp ww.

Total quota	Commercial quota	Recreational quota
10.0 mp ww	5.1 mp ww	4.9 mp ww

Alternative 6: Apply buffers from the ACL control rule established in the Generic ACL/AM amendment to the preferred quotas selected in the alternatives above to obtain the catch target. The buffer for the commercial sector would be 0%, and the buffer for the recreational sector would be 20%.

Discussion: **Alternative 1** would maintain the current total quota at 8.46 mp as defined in the March 2013 Framework Action (GMFMC 2013). The commercial and recreational quotas

would remain at 4.315 and 4.145 mp, respectively. The commercial sector is under an individual fishing quota (IFQ) program and has maintained landings at approximately 97% of their quota since the IFQ program was implemented in 2007. However, because of increasing fish size and increasing catch rates, the recreational quota has exceeded its quota in five of the last six years (Note: 2010 was the only year without an overage as a result of decreased fishing because of the Deepwater Horizon MC252 oil spill). Due to these factors, the National Marine Fisheries Service (NMFS) estimated the length of the 2013 recreational season would be even shorter than in previous years.

The recreational fishing season for red snapper begins each year on June 1 and continues until the date NMFS projects the recreational quota will be met. The closure date depends on whether state regulations are consistent with federal regulations for the red snapper recreational season length or bag limit. With the current quota (**Alternative 1**), the 2013 fishing season was set at 28 days.

A benchmark stock assessment was conducted by the Southeast Data, Assessment, and Review (SEDAR) process in 2012 and 2013 which produced new estimates of the overfishing limit or OFL (yield when fishing at the maximum fishing mortality rate threshold, MFMT), and yield when fishing at the maximum fishing mortality that has a 50% probability of rebuilding by 2032 (yield at $F_{Rebuild}$). In May 2013, the Gulf of Mexico Fishery Management Council's (Council's) Scientific and Statistical Committee (SSC) met to review the assessment and produced recommendations for the overfishing limit (OFL) and acceptable biological catch (ABC) for 2013-2015 (Table 2.1.1). The OFL was set at $F_{Rebuild}$; subsequent analysis recalculated OFL as fishing at the maximum sustainable yield (F_{MSY}).

Table 2.1.1. Recommended $F_{Rebuild}$ and ABC from the SSC based on the results of SEDAR 31.

Year	$F_{Rebuild}$ (mp ww)	ABC (mp ww)	% buffer
2013	13.7	13.5	1.5%
2014	12.0	11.9	0.8%
2015	10.7	10.6	0.9%

The red snapper quotas for 2013 are currently set equal to the sector allocations of the ABC, and the buffer between the current ABC and yield at $F_{Rebuild}$, which accounts for scientific uncertainty, is 2.65 mp. The new ABC for 2013 recommended by the SSC has a buffer of only 200,000 lbs from the $F_{Rebuild}$ yield (Table 2.1.1). Thus, setting the quota equal to the new ABC would carry a high risk that the 2032 rebuilding target would not be achieved. In fact, recreational landings have exceeded the quota by 737,000 lbs to 2.2 mp every year since 2007, with the exception of 2010. The commercial sector has not exceeded its quota in that timeframe because the sector is managed with an IFQ program.

The Council preferred constant quotas for at least the next three years to bring stability to the fishery. By foregoing some catch in 2013, higher quotas could be set for 2014-2015 and catch could be held relatively constant. Staff from NMFS' Southeast Fisheries Science Center (SEFSC) presented analyses to the Council at their July 2013 meeting showing projected ABCs

for future years if the quotas in each alternative were set for 2013 or 2013 and 2014 (Appendix C, Table 3). The Council has requested the SSC review these projections and consider revising their ABC recommendations for 2014 and 2015. For 2013, the Council prefers to set a conservative quota that would not jeopardize constant or increasing quotas for 2014 and beyond. An update assessment is scheduled to be completed in 2014 and will likely result in a change of quota for 2015 and beyond. The total quota would be allocated into commercial and recreational sector quotas based on the allocation established in Amendment 1 to the Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico (FMP) (GMFMC 1989) of 51% commercial and 49% recreational.

Alternative 2 would establish a quota of 12.1 mp ww. This level is equal to the optimum yield (OY), which is the yield at 75% of the fishing mortality (F) that would produce a spawning potential ratio of 26% ($F_{26\%SPR}$). This alternative would result in an increase in quota, relative to **Alternative 1**, of 43% in 2013. This quota is 1.4 mp less than the recommended 2013 ABC of 13.5 mp, and is equal to the average of the recreational overages for 2009, 2011, and 2012. However, it is above the ABCs for 2014 and 2015. Based on SEFSC projections, it would likely result in decreased quotas for later years (Appendix C, Table 3, scenarios e1 and e2).

Alternative 3 would establish a total quota of 11.5 mp ww. This alternative would result in an increase in quota, relative to **Alternative 1**, of 36% in 2013. This quota is 2 mp less than the recommended 2013 ABC and 0.4 mp less than the constant catch scenario. This number approximates the annual yield at F_{OY} for the model run using high natural mortality (11,592,206 lbs) and the annual yield at $F_{rebuild}$ for the model run using low natural mortality (11,496,901 lbs). It is also near the long-term yield associated with a fishing mortality that rebuilds to 26%SPR by 2032 (11.3mp). This quota is above the ABC for 2015. The 2015 ABC will likely be adjusted based on the 2014 update assessment, but at its current level (10.6 mp), it would require a reduction in quota in 2015.

Preferred Alternative 4 would establish a total quota of 11.0 mp ww, which is equal to the optimum yield (OY) for 2014. This alternative has a greater probability of maintaining a constant or higher quota for the next three years, than **Alternatives 2** and **3** (Appendix C, Table 3, scenarios c1 and c2). This alternative would result in an increase in quota, relative to **Alternative 1**, of 30% in 2013. This quota is 2.5 mp less than the recommended 2013 ABC. The buffer between this quota and the 2013 ABC would account for the highest recreational overage in recent years, which was 2.2 mp in 2009. This quota is also above the ABC for 2015, but even without a new assessment, preliminary projections indicate that the 2015 ABC could be raised above this quota as a result of conservative harvest levels in 2013 and 2014 (Appendix C, Table 3).

Alternative 5 would establish a total quota of 10.0 mp ww, which is based on the level in **Preferred Alternative 4** with a 1 mp buffer. This alternative would result in an increase in quota, relative to **Alternative 1**, of 18% in 2013. This quota is 3.5 mp less than the recommended 2013 ABC. This is the only alternative, other than status quo (**Alternative 1**) that sets the quota below the current ABCs recommended by the SSC for all three years (Appendix C, Table 3, scenarios b1 and b2).

Alternative 6 can be used in conjunction with one of the above alternatives, and would apply buffers to the preferred quotas. Prior to the recent assessment, the SSC established the red snapper ABC as the yield when fishing at 25% below the F_{MSY} proxy fishing mortality rate. This resulted in a buffer between yield at $F_{Rebuild}$ and ABC of approximately 25%. This buffer implicitly took into account all sources of uncertainty when setting catch limits, both scientific uncertainty (how likely it is that the yield at $F_{Rebuild}$ calculated by the stock assessment is actually the correct level needed for the rebuilding plan) and management uncertainty (how likely it is that the regulations implemented by the Council and NMFS will actually keep catches within the prescribed catch levels). Thus, the quota was set equal to the ABC. Beginning with the recent stock assessment, the ABC control rule from the 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 (Generic ACL/AM Amendment)(GMFMC 2011b) is being used to set ABC. As a result, the two types of uncertainty are now separated, with the SSC’s determination of ABC only making adjustments for scientific uncertainty. When only scientific uncertainty is taken into consideration, the buffer between yield at $F_{Rebuild}$ and ABC for each of the next three years is much lower (Table 2.1.1).

In the Generic ACL/AM Amendment (GMFMC 2011b), the Council also developed an ACL/ACT control rule to determine buffers between the ABC and ACL. For red snapper, NMFS determined the existing quotas are functionally equivalent to sector ACLs, and the sum of the quotas is functionally equivalent to the stock ACL for red snapper. The ACL/ACT control rule would apply additional buffers to create target catch levels that account for management uncertainty in maintaining catches at or below the $F_{Rebuild}$ level. It would be applied separately to the recreational and commercial sectors because there is a different level of management uncertainty between the sectors. The control rule recommends a 0% buffer for the commercial sector. This is because the sector is under an IFQ program, has accurate landings data, and has not exceeded its quota in the last four years. The recommended recreational buffer is 20%, primarily because of the quota overages in three of the past four years. Resulting catch limits for each alternative paired with **Alternative 6** are in Table 2.1.2.

Table 2.1.2. Catch targets (millions of pounds) resulting from applying buffers from the ACL/ACT control rule for **Alternatives 1-5** paired with **Alternative 6**. The commercial buffer would be 0% and the recreational buffer would be 20%.

Alternative	Total quota	Commercial quota	Commercial catch target	Recreational quota	Recreational catch target
1	8.46	4.315	4.315	4.145	3.316
2	12.1	6.171	6.171	5.929	4.743
3	11.5	5.865	5.865	5.635	4.508
Preferred 4	11.0	5.610	5.610	5.390	4.312
5	10.0	5.100	5.100	4.900	3.920

Council Conclusions

The Council chose **Alternative 4** to give the greatest likelihood of maintaining constant or increasing quotas for at least the next three years without depriving fishermen of too much additional quota. During public testimony at Council meetings, a majority of stakeholders supported setting management measures that would bring stability to both the commercial and

recreational sectors. Although the quota would exceed the current ABC in 2015, the SSC will review the new projections in August and are expected to provide new ABCs based on a constant catch scenario. The Council will review the SSC's new ABC recommendations at its August 2013 meeting and determine whether further revision of the total quota is necessary. An update assessment is scheduled for 2015 and could also result in a change of quota at that time. A secondary result is that this quota level is 2.5 mp less than the ABC for 2013, creating a de facto 23% buffer between the ABC and total quota. This buffer will help ensure that the stock can be rebuilt by 2032.

The Council did not choose **Alternative 1** or **Alternative 5** because the quotas would be set much lower than the ABC and would unnecessarily penalize fishermen. The Council did not choose **Alternatives 2** or **Alternative 3** because they may not allow constant or increasing quotas after 2013.

The Council did not choose **Alternative 6** for several reasons. First, by setting a total quota that would allow constant catch in later years, the Council has already reduced the catch level 20% below the F_{Rebuild} yield for 2013. That de facto buffer plus the 1.5% buffer between yield at F_{Rebuild} and ABC create a buffer that is close to the buffer created in previous years by setting the quotas to the yield at 75% of F_{MSY} . Thus an additional buffer is not necessary to prevent risking the rebuilding plan or overfishing. Although the control rule determined that management uncertainty was high for the recreational sector, most of this was based on quota overages in recent years. However, reductions in overages are likely for upcoming years because the recent benchmark stock assessment provides data that is more updated than what has recently been used for projections and is based on better models, and because the system for collecting recreational data has improved. Further, a split season for 2013 (Action 2) would allow NMFS to better determine how much quota is available before setting the closing date for a supplemental season, which should result in more accurate projections for 2013. Additionally, the red snapper population has been changing more rapidly than anticipated by the last assessment, but appears to be stabilizing in terms of recruitment and fish size. Other upcoming actions by the Council may also reduce management uncertainty, particularly regional management, which may include a payback provision for the recreational sector and will eliminate problems with inconsistent state regulations.

2.2 Action 2. Set the timing for a supplemental recreational fishing season for red snapper in the Gulf of Mexico for 2013.

Alternative 1. No action. NMFS has the authority to re-open a previously closed sector, and will determine if quota is available to re-open the red snapper recreational season for 2013.

Preferred Alternative 2. NMFS will re-open the red snapper recreational season for 2013, contingent upon there being unused quota available. The additional season would begin on the date in **Option a** or **b** and continue on consecutive days until NMFS projects the quota will be met.

Option a. September 1, or as soon as possible thereafter.

Preferred Option b. October 1.

Alternative 3. NMFS will re-open the red snapper recreational season for 2013, contingent upon there being unused quota available. The additional season would begin on the date in **Option a** or **b** and continue for a series of weekends until NMFS projects the quota will be met.

Option a. September 1, or as soon as possible thereafter.

Option b. October 1.

Discussion: The timing of the current red snapper recreational season did not allow this rule to be in place before the closure date of June 28, 2013. However, NMFS has the authority to re-open red snapper recreational fishing if additional quota is available. **Alternative 1** would allow NMFS to determine if re-opening would be appropriate at some time before the end of 2013, but would not specify a particular date or method (continuous or weekends only). Because of the potential for a quota overage during the June season, the full amount of a quota increase may not be available. If additional quota is available and the sector does not re-open, recreational fishermen would not receive the benefits of the increased quota. However, if there were only enough unused quota left to support a very short season (e.g., one or two days), recreational fishermen could feel obligated to fish under derby-like conditions, which could affect vessel safety. In this situation, it may be less disruptive to recreational fishermen to leave the season closed and allow the unused quota to contribute to a faster rebuilding. If the season did re-open, the decision of when to re-open the season would be made by the Regional Administrator rather than by the Council. Commercial fishermen would still receive any additional allocation in their IFQ accounts.

With all of the alternatives, the closure date of June 28, 2013, would remain, but a second fishing period could occur later in the year if unused quota is available. Preliminary recreational landings estimates from the June season for all states except Texas will be available by mid-August. The difference between **Alternative 1** and **Alternatives 2** and **3** is that in **Alternative 1**, NMFS could choose not to re-open the recreational season, whereas in **Preferred Alternative 2** and **Alternative 3**, NMFS must re-open the recreational season if quota is available. The length of any re-opening would be based on the landings from the June season subtracted from the total recreational quota (original quota plus increase). If landings are over the recreational quota during the June season, the amount of quota available for a re-opening could be reduced or even eliminated. Because of the possibility of an overage during the June season even under an increased quota, all of the alternatives specify that there must be unused quota available for the season to re-open.

The earliest possible opening of a supplemental recreational season would be September 1 (**Option a**); the actual September opening date would depend on the effective date of the final rule. Some for-hire captains have indicated they would rather have a definite start time and more notice to give them time to advertise and book trips. Therefore, the Council is also considering an October 1 opening (**Preferred Option b**). Catch rates for September and October are assumed to be the same, so the number of days under either option would be the same. The projections in Table 2.2.1 assume the current recreational quota of 4.145 mp will be harvested during the June season with no overage. Regardless of the opening date, a second recreational season would provide the opportunity to harvest the allowable catch established by the stock rebuilding plan, thus enhancing social and economic benefits to the fishery.

With **Preferred Alternative 2**, the season would re-open on September 1 or later in September (**Option a**) or October 1 (**Preferred Option b**), contingent upon unused quota being available, and continue until the additional quota is projected to be reached. The opening date for **Option a** would be dependent on the effective date of the final rule implementing the supplemental season. Based on the preliminary analysis provided in Appendix B, **Preferred Alternative 2** would allow the fishing season to be 13-30 days, depending on the quota chosen in Action 1, assuming there is no overage during the June season and the full amount of the increase is available (Table 2.2.1). A continuous season would allow opportunities to fish for people who prefer either weekdays or weekends.

With **Alternative 3**, fishing would only be allowed on weekends (Friday through Sunday; except if opening September 1, the first weekend will be Sunday and Monday). The opening date for **Option a** would be dependent on the effective date of the final rule implementing the supplemental season; the re-opening with **Option b** would be October 1. Based on the preliminary analysis provided in Appendix B, the fishing season could be open on consecutive weekends over 4-8 weekends, for a total of 10-23 days, depending on the quota chosen in Action 1, and assuming there is no overage during the June season and the full amount of the increase is available (Table 2.2.1; Note: the final weekend in some cases may be less than three days). A weekend-only season is preferred by some private anglers because it provides a greater opportunity for people who must work on weekdays to go fishing. For-hire vessel owners may also prefer weekends for the same reason, or they may prefer a continuous season in order to accommodate tourists on weekdays. This action would be for 2013 only, unless changed by subsequent action.

Table 2.2.1. Amount of expected quota available for a supplemental red snapper recreational season and the number of days projected to be available. Projections are preliminary and are dependent on final landings from the June 1-28, 2013, season. Note: Projections for **Alternative 1** would be the same as **Preferred Alternative 2** if NMFS chooses to re-open the red snapper recreational season. The dark blue highlight shows the preferred alternatives.

Action 2, Alt 2 Continuous	Recreational Quota (mp ww)	Supplemental Quota (mp ww)	Number of Days	
Action 1, Alt 1	4.145	0	0	
Action 1, Alt 2	5.929	1.784	30	
Action 1, Alt 3	5.635	1.490	25	
Action 1, Alt 4	5.390	1.245	21	
Action 1, Alt 5	4.900	0.755	13	
Action 2, Alt 3 Weekends				Number of weekends*
Action 1, Alt 1	4.145	0	0	0
Action 1, Alt 2	5.929	1.784	23	8
Action 1, Alt 3	5.635	1.490	19	7
Action 1, Alt 4	5.390	1.245	16	5
Action 1, Alt 5	4.900	0.755	10	3

*Beginning and/or ending weekend may be fewer than 3 days.

The difference in the number of days between **Preferred Alternative 2** and **Alternative 3** with the same amount of quota occurs because catch rates and fishing effort are estimated to be higher on weekends than on weekdays. Allowing fishing during week days would allow additional overall fishing days. Nevertheless, the Council is interested in weekends only as a means to provide more fishing opportunities and extend the season over several months. September and October are peak months for hurricanes in the Gulf; the potential impacts of a storm event on the ability of the sector to harvest the supplemental quota would be mitigated by stretching the fishing season over a longer time period.

Council Conclusions

The Council chose **Alternative 2, Option b** as the preferred alternative after listening to public testimony at their July 2013 meeting. Although they heard testimony for both continuous and weekend-only seasons, and for September and October re-openings, the majority of participants preferred a continuous season beginning October 1. A continuous season allows for more total days of fishing, and provides opportunity for people who fish on week days as well as those that fish on weekends. A re-opening in October would allow more time for for-hire businesses to alert customers and for private anglers to plan trips.

The Council did not choose **Alternative 1** because they wanted to ensure a supplemental season for 2013 if quota is available. They did not choose **Alternative 3** because some businesses and individuals would not be able to fish on week-ends only. The Council did not choose **Alternative 2, Option a** because the rule implementing the supplemental season would likely not be effective before mid-September and they wanted additional time to notice the fleet.

CHAPTER 3. AFFECTED ENVIRONMENT

The affected environment as it pertains to the red snapper component of the Gulf of Mexico (Gulf) reef fish fishery has been described in detail in the following documents: Generic Essential Fish Habitat Amendment (GMFMC 2004b), February 2010 Regulatory Amendment (GMFMC 2010), January 2011 Regulatory Amendment (GMFMC 2011a), Generic Annual Catch Limit/Accountability Measures Amendment (GMFMC 2011b), and February 2013 Framework Action (GMFMC 2013). This information is incorporated by reference and is summarized below. For information on impacts of the Deepwater Horizon MC252 oil spill on the affected environment, see information at http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm.

3.1 Description of the Physical Environment

The Gulf has a total area of approximately 600,000 square miles (1.5 million km²), 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 (Figure 3.2.1). Oceanographic conditions are affected by the Loop Current, discharge of freshwater into the northern Gulf, and a semi-permanent, anti-cyclonic gyre in the western Gulf. The Gulf includes both temperate and tropical waters (McEachran and Fechhelm 2005). Gulf water temperatures range from 54° F to 84° F (12° C to 29° C) depending on time of year and depth of water. Mean annual sea surface temperatures ranged from 73° F through 83° F (23-28° C) including bays and bayous (Figure 3.2.1) between 1982 and 2009, according to satellite-derived measurements (NODC 2012: <http://accession.nodc.noaa.gov/0072888>). In general, mean sea surface temperature increases from north to south with large seasonal variations in shallow waters.

There are several marine reserves, habitat areas of particular concern, and restricted fishing gear areas in the Gulf. These are detailed in GMFMC (2013). The Bureau of Ocean Energy Management lists historic shipwrecks that occur in the Gulf. Most of these sites are in state or deep (>1,000 feet) waters. There is one site located in federal waters in less than 100 feet that could be affected by reef fish fishing. This is the *U.S.S. Hatteras* located approximately 20 miles off Galveston, Texas.

In the Gulf, fish habitat for adult red snapper consists of submarine gullies and depressions; coral reefs, rock outcroppings, and gravel bottoms; oilrigs; and other artificial structures. Eggs and larvae are pelagic and juveniles are common on mud bottoms in the northern Gulf, particularly off Texas through Alabama (GMFMC 2004b).

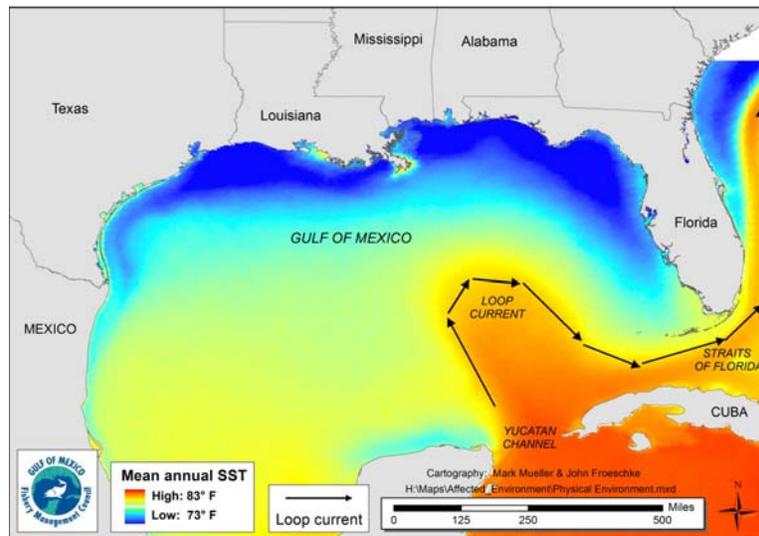


Figure 3.2.1. Physical environment of the Gulf including major feature names and mean annual sea surface temperature as derived from the Advanced Very High Resolution Radiometer Pathfinder Version 5 sea surface temperature data set (<http://accession.nodc.noaa.gov/0072888>)

3.2 Description of the Biological/Ecological Environment

Red Snapper Life History and Biology

Red snapper demonstrate the typical reef fish life history pattern (GMFMC 2004b). Eggs and larvae are pelagic while juveniles are demersal. Spawning occurs over firm sand bottom with little relief during the summer and fall. Adult females mature as early as 2 years and most are mature by 4 years (Schirripa and Legault 1999). Red snapper have been aged up to 57 years (Wilson and Nieland 2001). Until recently, most caught by directed harvest are 2 to 4 years old, but a recently completed stock assessment suggests that the age and size of red snapper in the directed fishery has increased in recent years (SEDAR 31 2013). A more complete description of red snapper life history can be found in Southeast Data, Assessment, and Review (SEDAR) 31 (2013) and the Generic Essential Fish Habitat Amendment (GMFMC 2004b).

Status of the Red Snapper Stock

The most recent red snapper SEDAR benchmark stock assessment was completed in 2013 (SEDAR 31 2013). The assessment used an integrated statistical catch-at-age model (stock synthesis) and used fishery dependent and independent data through 2011. Subsequent to the SEDAR process, an addendum containing additional analyses was prepared by NMFS. The assessment and addendum were reviewed by the Gulf of Mexico Fishery Management Council's (Council's) Scientific and Statistical Committee (SSC) in May 2013¹. The SSC determined the assessment and addendum were based on the best available science.

Because the data were insufficient to estimate the maximum sustainable yield (MSY) directly, the SSC used a proxy specified in the red snapper rebuilding plan (Amendment 22) based on the

¹ GMFMC. Standing and Special Reef Fish SSC Meeting Summary. May 29-31, 2013. Tampa, FL. 14 p.

fishing mortality rate (F) corresponding to a spawning potential ratio² (SPR) of 26%. The SSC selected this value because of concerns regarding the steepness of the spawner-recruit function and that this value was somewhat unrealistic for a stock exhibiting this species' life history traits. When this proxy was applied to the assessment model, the stock was found to be not experiencing overfishing (the current fishing mortality rate is less than the F_{MSY} proxy), but was still overfished (the current spawning stock biomass is less than the minimum stock size threshold). This does not change the Status of Stocks Report to Congress that currently lists the red snapper stock as overfished, but not experiencing overfishing.

Based on the assessment, the SSC recommended a maximum rebuilding yield level and acceptable biological catch (ABC). The rebuilding yield level was set as the yield that would rebuild the stock to 26% spawning potential ratio (SPR) by 2032 under a constant fishing mortality rate strategy ($F_{rebuild-26\% SPR}$). Because uncertainty in the projected yields increases with each projection year, the SSC only provided values out to 2015 (Table 2.1.1). For setting the ABC, the SSC used Tier 1 of the Council's ABC control rule (GMFMC 2011). Tier 1 is applicable when a quantitative assessment provides both an estimate of overfishing limit based on MSY or its proxy and a probability density function of overfishing limit that reflects scientific uncertainty. Application of the control rule generated a P* (acceptable probability of overfishing) of 0.427, which, when applied to the $F_{rebuild-26\% SPR}$ yield streams, set the ABCs for 2013-2015 as listed in Table 2.1.1.

General Information on Reef Fish Species

Descriptions of habitat types and life history stages can be found in more detail in GMFMC (2004b and 2011b). In general, reef fish are widely distributed in the Gulf of Mexico, occupying both pelagic and benthic habitats during their life cycle. In general, both eggs and larval stages are planktonic. Larvae feed on zooplankton and phytoplankton. Exceptions to these generalizations include the gray triggerfish that lay their eggs in depressions in the sandy bottom, and gray snapper whose larvae are found around submerged aquatic vegetation. Juvenile and adult reef fish are typically demersal, and are usually associated with bottom topographies on the continental shelf which have high relief, i.e., coral reefs, artificial reefs, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings. However, several species are found over sand and soft-bottom substrates. Some juvenile snappers (e.g. mutton, gray, red, dog, lane, and yellowtail snappers) and groupers (e.g. Atlantic goliath, red, gag, and yellowfin groupers) have been documented in inshore seagrass beds, mangrove estuaries, lagoons, and larger bay systems (GMFMC 1981). More detail on hard bottom substrate and coral can be found in GMFMC and SAFMC (1982).

Status of Reef Fish Stocks

The Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico currently encompasses 31 species. A listing of the species can be found in GMFMC (2011b). The National Marine Fisheries Service (NMFS) 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>. Stock assessments and stock

²The average fecundity of a recruit over its lifetime when the stock is fished divided by the average fecundity of a recruit over its lifetime when the stock is unfished.

assessment reviews can be found on the Council (www.gulfcouncil.org) and SEDAR (www.sefsc.noaa.gov/sedar) websites. Assessments have been conducted for 13 Gulf of Mexico (Gulf) reef fish species. Gag, greater amberjack, and gray triggerfish are considered overfished and experiencing overfishing; red snapper is considered overfished but not experiencing overfishing; yellowtail snapper, yellowedge grouper, vermilion snapper, black grouper, red grouper, mutton snapper, and tilefish (golden) are considered neither overfished nor experiencing overfishing; and the status is undetermined for hogfish (may be experiencing growth overfishing) and Atlantic goliath grouper (not experiencing overfishing but there is not enough information to determine the overfished status).

3.3 Description of the Economic Environment

3.3.1 Commercial Sector

3.3.1.1 Vessel Activity

A description of the red snapper individual fishing quota (IFQ) program is contained in NMFS (2012) and is available at: http://sero.nmfs.noaa.gov/sf/ifq/2011_RS_AnnualReport_Final.pdf. This description is incorporated herein by reference and is summarized below. Tables 3.3.1.1.1 and 3.3.1.1.2 contain summary vessel and trip counts, landings, and revenue information from vessels landing at least one pound of red snapper from 2007 through 2011. Data from years prior to the implementation of the IFQ program are not representative of current conditions.

The tables contain vessel counts from the NMFS Southeast Fisheries Science Center (SEFSC) logbook (logbook) data (vessel count, trips, and landings) and the NMFS Southeast Regional Office (SERO) Limited Access Privilege Program (LAPP) data (vessel count). Dockside values were generated using landings information from logbook data and price information from the NMFS SEFSC Accumulated Landings System (ALS) data. The logbook and LAPP data programs serve different purposes and use different data collection methods. Consequently, comparative analysis of data from these programs may produce different results, as evidenced by the vessel counts provided in Table 3.3.1.1.1. However, this assessment utilizes logbook data because the logbook program collects data on all species harvested on trips on which red snapper are harvested, as well as harvests by these vessels on trips without red snapper.

On average, 333 vessels per year landed red snapper (Table 3.3.1.1.1). These vessels averaged 2,702 trips per year on which red snapper was landed and 2,153 trips without red snapper (Table 3.3.1.1.1). The average annual total dockside revenue (2011 dollars) was approximately \$9.61 million from red snapper, approximately \$11.20 million from other species co-harvested with red snapper (on the same trip), and approximately \$10.09 million from other species harvested on trips on which no red snapper were harvested (Table 3.3.1.1.2). Total average annual revenues were approximately \$30.89 million, or approximately \$93,000 per vessel (Table 3.3.1.1.2).

Table 3.3.1.1.1. Summary of vessel counts, trips, and logbook landings (pounds gutted weight (lbs gw)) or vessels landing at least one pound of red snapper, 2007-2011.

Year	Number of Vessels, Logbook Data	Number of Vessels, LAPPs Data	Number of Trips that Caught Red Snapper, Logbook Data	Red Snapper Landings (lbs gw)*	“Other Species” Landings Jointly Caught with Red Snapper (lbs gw)	Number of Trips that Only Landed “Other Species”	“Other Species” Landings on Trips without Red Snapper (lbs gw)
2007	319	305	2,578	2,764,467	3,475,938	2,133	3,414,094
2008	308	297	2,274	2,163,312	3,755,670	2,552	4,085,616
2009	296	289	2,329	2,163,632	3,753,024	2,425	3,964,434
2010	376	384	2,970	2,939,254	3,955,422	1,716	2,807,229
2011	367	362	3,361	3,069,031	5,437,573	1,940	4,129,594
Average	333	327	2,702	2,619,939	4,075,525	2,153	3,680,193

Source: NMFS SEFSC Logbook and NMFS SERO LAPPs data.

*Red snapper harvest totals from logbook records for 2007-2011 ranged from 3.4% (2009) to 5.5% (2011) lower than IFQ reported landings for these years.

Table 3.3.1.1.2. Summary of vessel counts and revenue (thousand 2011 dollars) for vessels landing at least one pound of red snapper, 2007-2011.

Year	Number of Vessels, Logbook Data	Dockside Revenue from Red Snapper	Dockside Revenue from “Other Species” Jointly Caught with Red Snapper	Dockside Revenue from “Other Species” Caught on Trips without Red Snapper	Total Dockside Revenue	Average Total Dockside Revenue per Vessel
2007	319	\$10,450	\$9,283	\$9,928	\$29,661	\$93
2008	308	\$8,391	\$10,491	\$11,277	\$30,160	\$98
2009	296	\$7,924	\$9,474	\$10,091	\$27,489	\$93
2010	376	\$10,357	\$11,133	\$7,639	\$29,129	\$77
2011	367	\$10,922	\$15,596	\$11,499	\$38,018	\$104
Average	333	\$9,609	\$11,195	\$10,087	\$30,891	\$93

Source: NMFS SEFSC Logbook and ALS data.

Commercial fishing for red snapper in 2010 appeared to be unaffected, from a landings and revenue perspective, by conditions associated with the Deepwater Horizon MC252 oil spill. As a result, 2010 data were included in the information provided in Tables 3.3.1.1.1 and 3.3.1.1.2. As discussed below, this was not the case for the recreational sector.

3.3.1.2 Commercial Sector Business Activity

Estimates of the business activity (economic impacts) in the U.S. associated with the Gulf red snapper commercial harvests were derived using the model developed for and applied in NMFS (2011a) and are provided in Table 3.3.1.2.1. Business activity for the commercial sector is characterized in the form of full-time equivalent (FTE) jobs, income impacts (wages, salaries, and self-employed income), and output (sales) impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting. The estimates of economic activity include the direct effects (effects in the sector where an expenditure is actually made), indirect effects (effects in sectors providing goods and services to directly affected sectors), and induced effects (effects induced by the personal consumption expenditures of employees in the direct and indirectly affected sectors).

Table 3.3.1.2.1. Average annual business activity associated with the harvests of vessels that harvest red snapper, 2007-2011.

Species	Average Annual Dockside Revenue (thousands) ¹	Total Jobs	Harvester Jobs	Output (Sales) Impacts (thousands) ¹	Income Impacts (thousands) ¹
Red snapper	\$9,609	1,733	226	\$126,515	\$53,920
All species ²	\$30,891	5,572	727	\$406,730	\$173,344

¹2011 dollars.

²Includes dockside revenues and economic activity associated with the average annual harvests of all species, including red snapper, harvested by vessels that harvested red snapper.

In addition to red snapper harvests, as discussed above, vessels that harvested red snapper also harvested other species on trips where red snapper were harvested, as well as on other trips on which no red snapper were harvested. All revenues from all species on all these trips contributed towards making these vessels economically viable and contribute to the economic activity associated with these vessels. The average annual total ex-vessel revenues from all species (including red snapper) harvested during this period (2007-2011) by vessels that harvested red snapper was approximately \$30.89 million (2011 dollars). The business activity associated with these revenues is estimated to support 5,572 FTE jobs (727 in the harvesting sector) and are associated with approximately \$406.73 million in output (sales) impacts and approximately \$173.34 million in income impacts.

3.3.1.3 Dealers

Commercial vessels landing reef fish, including red snapper, can only sell their catch to federally permitted fish dealers. On June 12, 2013, 146 dealers possessed a reef fish dealer permit and the

IFQ endorsement necessary to receive Gulf LAPP species (SERO Permits and LAPP data). Because there are no income or sales requirements to acquire a federal dealer permit or IFQ endorsement, the total number of dealers can vary over the course of the year and from year to year. In addition to red snapper, grouper and tilefish are Gulf LAPP species and not all dealers authorized to receive Gulf LAPP species purchase red snapper. The following results are based on assessment of ALS data. In 2011, 88 dealers purchased red snapper. Sixty-six of these dealers were in Florida, eight in Texas, six in Louisiana, and four each in Alabama and Mississippi. Total red snapper purchased by these dealers in 2011 had an ex-vessel value of approximately \$11.42 million (2011 dollars), or approximately 10.6% of the total revenues, approximately \$108.21 million (2011 dollars), from all marine resource purchases by these dealers. Dependency on red snapper sales varies by dealer, with the percentage of red snapper purchases (value, not pounds) to total purchases varying from less than 1% to 100%. Red snapper purchases in 2011 comprised 10% or more of total purchases for 40 of these dealers, and 5% or less for 35 dealers. Average red snapper dependency (measured as the percentage of red snapper value to total value of all purchases) was highest for Texas and Mississippi dealers, approximately 20.83% in both states, followed by Florida (approximately 5.73%), Louisiana (approximately 4.78%), and Alabama (approximately 2.33%).

3.3.1.4 Imports

Information on the imports of all snapper and grouper species, either fresh or frozen, are available at: http://www.st.nmfs.noaa.gov/st1/trade/cumulative_data/TradeDataProduct.html. Information on the imports of individual snapper or grouper species is not available. In 2011, imports of all snapper and grouper species (fresh and frozen) were approximately 40.31 million pounds valued at approximately \$110.64 million (2011 dollars). These amounts are contrasted with the domestic harvest of all snapper and grouper in the U.S. in 2011 of approximately 19.18 mp valued at approximately \$58.05 million (data available at: http://www.st.nmfs.noaa.gov/Assets/commercial/fus/fus11/02_commercial2011.pdf). Although the levels of domestic production and imports are not totally comparable for several reasons, including considerations of different product form such as fresh versus frozen, and possible product mislabeling, the difference in the magnitude of imports relative to amount of domestic harvest is indicative of the dominance of imports in the domestic market.

3.3.2 Recreational Sector

3.3.2.1 Angler Effort

Recreational effort derived from the Marine Recreational Fisheries Statistics Survey/Marine Recreational Information Program (MRFSS/MRIP) database can be characterized in terms of the number of trips as follows:

1. Target effort - The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted as either the first or second primary target for the trip. The species did not have to be caught.

2. Catch effort - The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.
3. Total recreational trips - The total estimated number of recreational trips in the Gulf of Mexico, regardless of target intent or catch success.

Other measures of effort are possible, such as the number of harvest trips (the number of individual angler trips that harvest a particular species regardless of target intent), and directed trips (the number of individual angler trips that either targeted or caught a particular species), among other measures, but the three measures of effort listed above are used in this assessment. Because of the Deepwater Horizon MC252 oil spill, 2010 was not a typical year for recreational fishing due to the extensive closures and associated decline in fishing in much of the Gulf. For information on the Deepwater MC252 oil spill and associated closures, see: http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm. Estimates of the average annual red snapper effort for the shore, charter, and private/rental boat modes in the Gulf for 2006-2011 with and without 2010 data are provided in Table 3.3.2.1.1. The average annual red snapper target effort for 2006-2011 was approximately 9% less than the average for this period excluding 2010. For red snapper catch effort, the difference was approximately 7%. Because of these differences, this assessment excludes recreational effort data for 2010 from further analysis. Table 3.3.2.1.2 contains estimates for the average annual red snapper recreational effort for 2006-2011 excluding 2010 by state and mode (shore, charter, and private/rental boat only).

Table 3.3.2.1.1. Effects of 2010 data on average annual red snapper recreational effort.

	Target Trips					
	Alabama	West Florida	Louisiana	Mississippi	Texas	Total
Average 2006-2011	98,373	186,656	49,934	7,225	*	342,187
Average w/o 2010	111,846	198,609	58,108	7,729	*	376,292
	Catch Trips					
	Alabama	West Florida	Louisiana	Mississippi	Texas	Total
Average 2006-2011	150,641	465,282	77,689	9,284	*	702,896
Average w/o 2010	163,316	494,783	90,524	9,722	*	758,346

*Unavailable. Source: SERO using MRFSS/MRIP data.

Note: these estimates may vary from those derived from other sources or estimation methodologies.

Table 3.3.2.1.2. Average annual red snapper recreational effort by mode, 2006-2011 excluding 2010.

	Alabama	West Florida	Louisiana	Mississippi	Texas	Total
Shore Mode						
Target trips	610	1,215	0	0	*	1,825
Catch trips	912	1,114	0	0	*	2,026
Charter Mode						
Target trips	22,131	46,389	18,510	33	*	87,064
Catch trips	49,405	212,494	34,418	247	*	296,563
Private/Rental Mode						
Target trips	89,105	151,005	39,598	7,696	*	287,403
Catch trips	112,999	281,175	56,106	9,476	*	459,757
All Modes						
Target trips	111,846	198,609	58,108	7,729	*	376,292
Catch trips	163,316	494,783	90,524	9,722	*	758,346

*Unavailable. Source: SERO using MRFSS/MRIP data.

Note: these estimates may vary from those derived from other sources or estimation methodologies.

Headboat data do not support the estimation of target or catch effort because target intent is not collected and the harvest data (the data reflect only harvest information and not total catch) are collected on a vessel basis and not by individual angler. Table 3.3.2.1.3 contains estimates of the number of headboat angler days for all Gulf of Mexico states for 2006-2011.

Table 3.3.2.1.3. Headboat angler days.

Year	W Florida/Alabama	Louisiana	Mississippi	Texas	Total
2006	124,049	5,005	0	70,789	199,843
2007	136,880	2,522	0	63,764	203,166
2008	130,176	2,945	0	41,188	174,309
2009	142,438	3,268	0	50,737	196,443
2010	111,018	217	*	47,154	158,389
2011	157,025	1,886	1,771	47,284	207,966
Average all	133,598	2,641	*	53,486	189,724
Average w/o 2010	138,114	3,125	1,771**	54,752	196,345

*Confidential. **Because the average totals are used to represent expectations of future activity, the 2011 number of trips is provided as best representative of the emergent headboat fishery in Mississippi.

Source: NMFS Headboat Survey.

3.3.2.2 Permits

The for-hire sector is comprised of charter vessels and headboats (party boats). Although charter vessels tend to be smaller, on average, than headboats, the key distinction between the two types of operations is how the fee is determined. On a charter boat trip, the fee charged is for the entire vessel, regardless of how many passengers are carried, whereas the fee charged for a headboat trip is paid per individual angler.

A federal for-hire vessel permit has been required for reef fish since 1996 and the sector currently operates under a limited access system. On June 24, 2013, there were 1,353 valid (non-expired) or renewable Gulf of Mexico Charter/Headboat Reef Fish Permits. A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration. Although the for-hire permit application collects information on the primary method of operation, the resultant permit itself does not identify the permitted vessel as either a headboat or a charter vessel, operation as either a headboat or charter vessel is not restricted by the permitting regulations, and vessels may operate in both capacities. However, only federally permitted headboats are required to submit harvest and effort information to the NMFS Southeast Region Headboat Survey (SRHS). Participation in the SRHS is based on determination by the SEFSC that the vessel primarily operates as a headboat. Seventy vessels were registered in the SHRS as of March 1, 2013 (K. Brennen, NMFS SEFSC, pers. comm.).

Information on Gulf charter boat and headboat operating characteristics, including average fees and net operating revenues, is included in Savolainen et al. (2012), is incorporated herein by reference, and is summarized below.

There are no specific federal permitting requirements for recreational anglers to fish for or harvest reef fish. Instead, anglers are required to possess either a state recreational fishing permit that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. As a result, it is not possible to identify with available data how many individual anglers would be expected to be affected by this proposed amendment. (Note: although it is not a federal permit, Louisiana has developed an offshore angler permit. Tabulation of these permits would be expected to provide an estimate of only a small portion of the total number of individual anglers expected to be affected by this proposed amendment.)

3.3.2.3 Economic Value

Economic value can be measured in the form of consumer surplus per red snapper trip for anglers (the amount of money that an angler would be willing to pay for a fishing trip in excess of the cost of the trip) and producer surplus per passenger trip for for-hire vessels (the amount of money that a vessel owner earns in excess of the cost of providing the trip). The estimated value of the consumer surplus per red snapper angler trip for a trip on which the angler is allowed to harvest two red snapper is \$56.42 (GMFMC 2010; value updated to 2011 dollars). Estimates of the consumer surplus per fish, instead of per angler trip, for red snapper and other saltwater species are provided in Carter and Liese (2012).

Estimates of the producer surplus per for-hire passenger trip are not available. Instead, net operating revenues, which are the return used to pay all labor wages, returns to capital, and owner profits, are used as the proxy for producer surplus. The estimated net operating revenue is \$154.62 per target charter angler trip and \$51.19 (2011 dollars) per target headboat angler trip regardless of species targeted or catch success (C. Liese, NMFS SEFSC, pers. comm.). Estimates of net operating revenue by target species are not available.

3.3.2.4 Recreational Sector Business Activity

Estimates of the business activity (economic impacts) associated with recreational angling for red snapper were derived using average impact coefficients for recreational angling for all species, as derived from an add-on survey to the MRFSS to collect economic expenditure information, as described and utilized in NMFS (2011a). Estimates of these coefficients for target or catch behavior for individual species are not available. Estimates of the average expenditures by recreational anglers are also provided in NMFS (2011a) and are incorporated herein by reference.

Business activity for the recreational sector is characterized in the form of FTE jobs, output (sales) impacts (gross business sales), and value-added impacts (difference between the value of goods and the cost of materials or supplies). Job and output (sales) impacts are equivalent metrics across both the commercial and recreational sectors. Income impacts (commercial sector) and value-added impacts (recreational sector) are not equivalent, though similarity in the magnitude of multipliers generated and used for the two metrics may result in roughly equivalent values. Similar to income impacts, value-added impacts should not be added to output (sales) impacts because this would result in double counting.

Estimates of the average red snapper effort (2006-2009 and 2011) and associated business activity (2011 dollars) are provided in Table 3.3.2.4.1. Red snapper target effort (trips) was selected as the measure of red snapper effort. More individual angler trips catch red snapper than target red snapper, however, as shown in Tables 3.3.2.1.1 and 3.3.2.1.2. Estimates of the business activity associated with red snapper catch trips can be calculated using the ratio of catch trips to target trips because the available estimates of the average impacts per trip are not differentiated by trip intent or catch success. For example, if the estimated number of catch trips is three times the number of target trips for a particular state and mode, the estimate of the business activity associated with these catch trips would equal three times the estimated impacts of target trips.

The estimates of the business activity associated with red snapper recreational trips are only available at the state level. Addition of the state-level estimates to produce a regional or national total will underestimate the actual amount of total business activity because summing the state estimates will not capture business activity that leaks outside the individual states. A state estimate only reflects activities that occur within that state and not related activity that occurs in another state. For example, if a good is produced in Alabama but sold in Florida, the measure of business activity in Florida associated with its sale in Florida does not include the production process in Alabama. Assessment of business activity at the national (or regional) level would capture activity in both states and include all activity except that which leaks into other nations.

It is noted that these estimates do not, and should not be expected to, represent the total business activity associated with a specific recreational harvest sector in a given state or in total. For example, these results do not state, or should be interpreted to imply, that there are only 154 jobs associated with the charter sector in Alabama. Instead, as previously stated, these results relate only to the business activity associated with target trips for red snapper. Because of the seasonal nature of red snapper fishing, few, if any businesses or jobs, would be expected to be devoted solely to red snapper fishing. The existence of these businesses and jobs, in total, is supported by the fishing for, and expenditures on, the variety of marine species available to anglers throughout the year.

Table 3.3.2.4.1. Summary of red snapper target trips (2006-2009 and 2011 average) and associated business activity (thousand 2011 dollars). Output and value added impacts are not additive.

	Alabama	West Florida	Louisiana	Mississippi	Texas
Shore Mode					
Target trips	610	1,215	0	0	*
Output impact	\$47	\$86	\$0	\$0	*
Value added impact	\$25	\$50	\$0	\$0	*
Jobs	1	1	0	0	*
Private/Rental Mode					
Target trips	89,105	151,005	39,598	7,696	*
Output impact	\$5,416	\$7,163	\$3,374	\$229	*
Value added impact	\$2,965	\$4,259	\$1,659	\$110	*
Jobs	54	68	30	2	*
Charter Mode					
Target trips	22,131	46,389	18,510	33	*
Output impact	\$12,038	\$15,218	\$9,206	\$11	*
Value added impact	\$6,627	\$9,023	\$5,227	\$6	*
Jobs	154	150	93	0	*
All Modes					
Target trips	111,846	198,609	58,108	7,729	*
Output impact	\$17,501	\$22,467	\$12,580	\$240	*
Value added Impact	\$9,617	\$13,332	\$6,886	\$116	*
Jobs	209	219	123	2	*

*Because target information is unavailable, associated business activity cannot be calculated.

Source: effort data from the MRFSS/MRIP, economic impact results calculated by NMFS SERO using the model developed for NMFS (2011a).

Estimates of the business activity (impacts) associated with headboat red snapper effort are not available. The headboat sector in the Southeast is not covered in the MRFSS/MRIP, so estimation of the appropriate impact coefficients for the headboat sector has not been conducted. While appropriate impact coefficients are available for the charter sector, potential differences in certain factors, such as the for-hire fee, rates of tourist versus local participation, and expenditure patterns, may result in significant differences in the business impacts of the headboat sector relative to the charter sector.

3.4 Description of the Social Environment

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

The February 2010 Regulatory Amendment (GMFMC 2010) includes a description of the social environment which includes a detailed discussion of the communities within each state and county that are the most reliant on red snapper. This description focuses on the demographic character of each county in order to aid in understanding the dependence of a particular county on red snapper fishing. The January 2011 Regulatory Amendment (GMFMC 2011a) includes an update on the impacts of the Deepwater Horizon MC252 oil spill. The Gulf of Mexico 2011 Red Snapper Individual Fishing Quota Annual Report (NMFS 2012) provides a detailed discussion of the Gulf commercial red snapper IFQ program. These documents are incorporated herein by reference.

Red snapper are landed in all states in the Gulf of Mexico. The current commercial and recreational quotas for red snapper were established in the March 2013 Regulatory Amendment (GMFMC 2013). The resulting allocation is currently set at 4.315 mp (51%) for the commercial sector and 4.145 mp (49%) for the recreational sector.

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, although 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 3.4.1 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 red 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 this time.

Another approach utilizes measures called the regional quotient (rq) to identify commercial reliance. The rq is a way to measure the relative importance of a given species across all communities in the region and represents the proportional distribution of commercial landings of a particular species. This proportional measure does not provide the number of pounds or the value of the catch; data that might be confidential at the community level for many places. The rq is calculated by dividing the total pounds (or value) of a species landed in a given community, by the total pounds (or value) for that species for all communities in the region.

Another approach utilizes a measure called the local quotient (lq) to identify commercial reliance on red 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 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 facility is located. These measures are an attempt to quantify the importance of red snapper to communities around the Gulf coast and suggest where impacts from management actions are more likely to be experienced.

Recreational Fishing

Red snapper is harvested recreationally in all states in the Gulf; however, most of the recreational catch is harvested in Florida and Alabama (Table 3.4.1). Fishermen in other Gulf states are also involved in recreational red snapper fishing, but these states include a smaller percentage of the total recreational landings.

Table 3.4.1. Percentage by weight of total recreational red snapper landings by state for 2012.

State	Landings
AL	28.1%
FL (Gulf Coast)	41.5%
LA	14.8%
MS	3.7%
TX	12.0%

Source: Southeast Fisheries Science Center (SEFSC) ACL dataset, including MRIP, TPWD, and Southeast Headboat Survey (HBS) landings. Alabama and the Florida Panhandle HBS landings are initially reported to the same headboat fishing area. Landings have been assigned to each state based on the HBS vessel landing records (May 2013).

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 red snapper. The 20 Gulf communities that scored highest for recreational fishing engagement based on the analysis described above are listed in Table 3.4.2. Because the analysis used discrete geographical 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 in that region.

Table 3.4.2. Top ranking Gulf of Mexico 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.

Commercial Fishing

The pattern of red snapper commercial fishing is evident in Figure 3.4.1 and Figure 3.4.2, with the majority of dealer-reported landings located in the Florida Panhandle, Louisiana, and Texas. The top 10 communities make up about 79% of commercial red snapper landings in 2011 (Figure 3.4.2). The top Florida Panhandle communities make up nearly 31% of landings, the top Texas communities make up about 25% of landings, and the community of Golden Meadow, Louisiana alone makes up approximately 18% of commercial landings in 2011 (Figure 3.4.2). Red snapper is also landed commercially throughout the rest of the Gulf.

As reported in NMFS (2012), concentrations of commercial IFQ shares are held in Florida (49%) and Texas (30%). Other shares are held by residents in other Gulf of Mexico states (18%) or non-Gulf of Mexico states (2%). The communities with the largest number of shareholder entities are located in the Florida Panhandle, in the Tampa Bay area of Florida, and in Texas (Table 3.4.3).

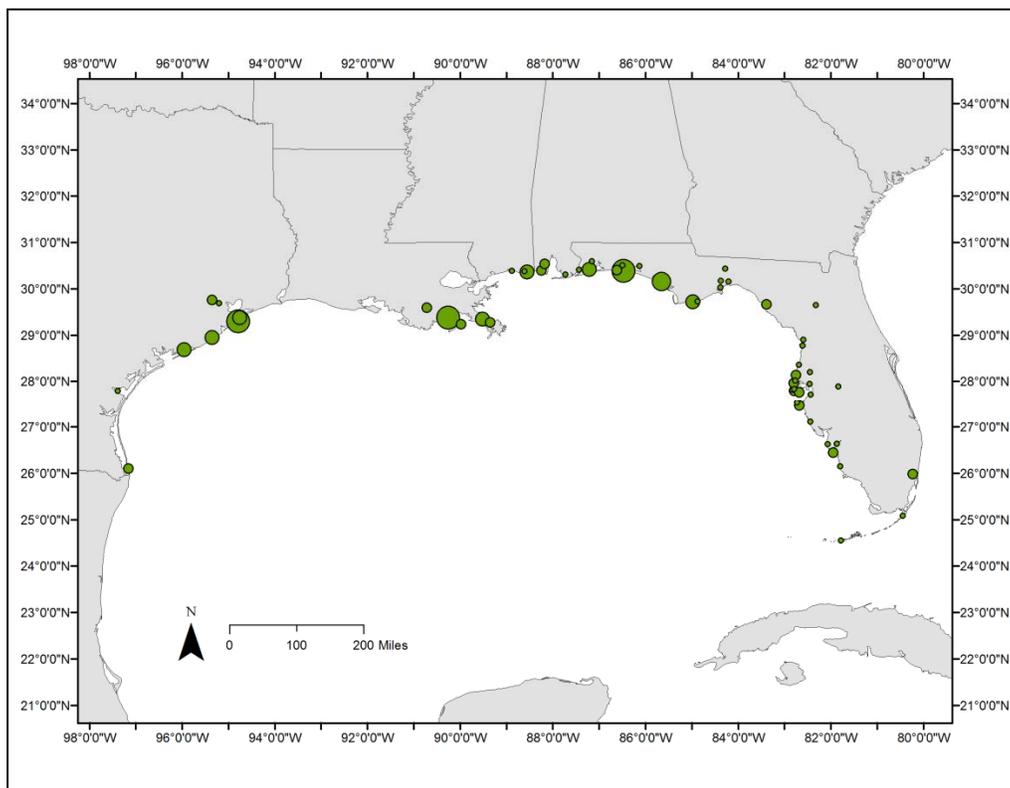


Figure 3.4.1. Distribution of commercial red snapper landings 2011 with the size of the green point proportional to landings, based on dealer reports. Source: ALS dealer reports 2011.

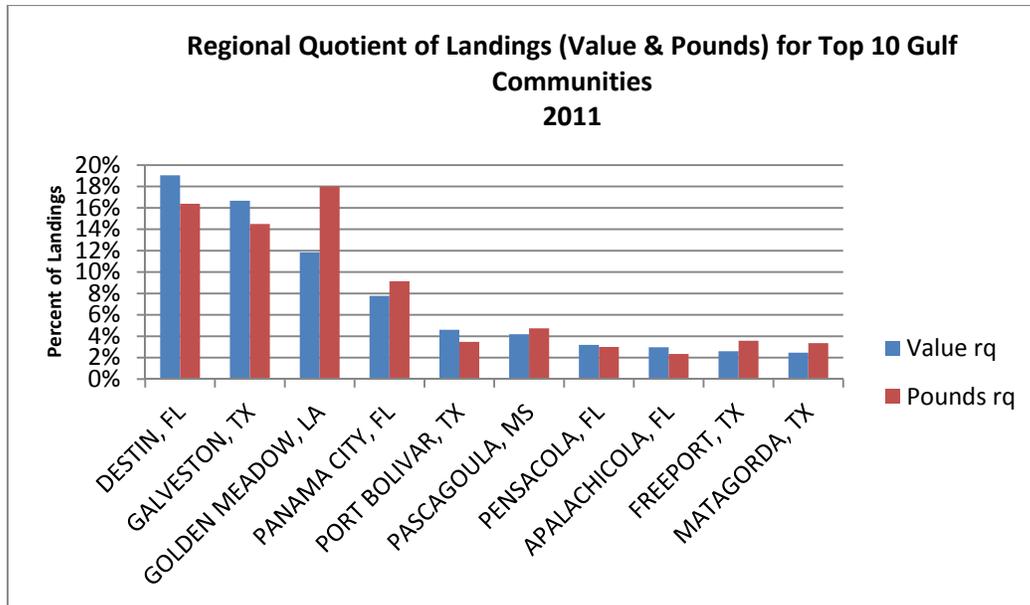


Figure 3.4.2. Proportion of red snapper commercial landings (value and pounds) for top 10 Gulf communities out of total pounds and landings of red snapper. Source: ALS dealer reports 2011.

Table 3.4.3. Top ranking Gulf of Mexico communities by number of shareholder entities, in descending order.

State	City	Number of Shareholders
FL	Panama City	36
FL	Destin	18
FL	Pensacola	13
FL	Cortez	11
FL	St. Petersburg	10
FL	Largo	9
FL	Lynn Haven	9
FL	Tallahassee	9
FL	Apalachicola	8
FL	Clearwater	8
TX	Galveston	8
TX	Houston	8

Source: SERO LAPP/DM Branch 2011.

Importance of Red Snapper to Communities

Figures 3.4.1 and 3.4.2 identify where red snapper landings are most abundant. However, this does not necessarily reflect the importance of red snapper in relation to other landed species in those communities. No data are available for the proportion of recreational landings of red snapper by community, but these data are available for the commercial sector. It cannot be

assumed that the proportion of commercial red snapper landings among other species in a community would be similar to its proportion among recreational landings within the same community because of sector differences in fishing practices and preferences.

Comparing the communities of recreational importance (Table 3.4.1), and those with greater commercial landings (Figure 3.4.2) and IFQ shareholders (Table 3.4.2), five communities overlap: Destin, Panama City, Pensacola, and Apalachicola, Florida and Galveston, Texas. The following five figures (Figures 3.4.3 - 3.4.7) employ the lq analysis described above to examine the relative importance of red 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/headboat permits in 2010, with 118 federal permits. Destin also ranks first in terms of commercial red snapper landings in 2011 (Figure 3.4.2). Of the commercially landed species, red snapper makes up about 9% of all commercial landings (Figure 3.4.3).

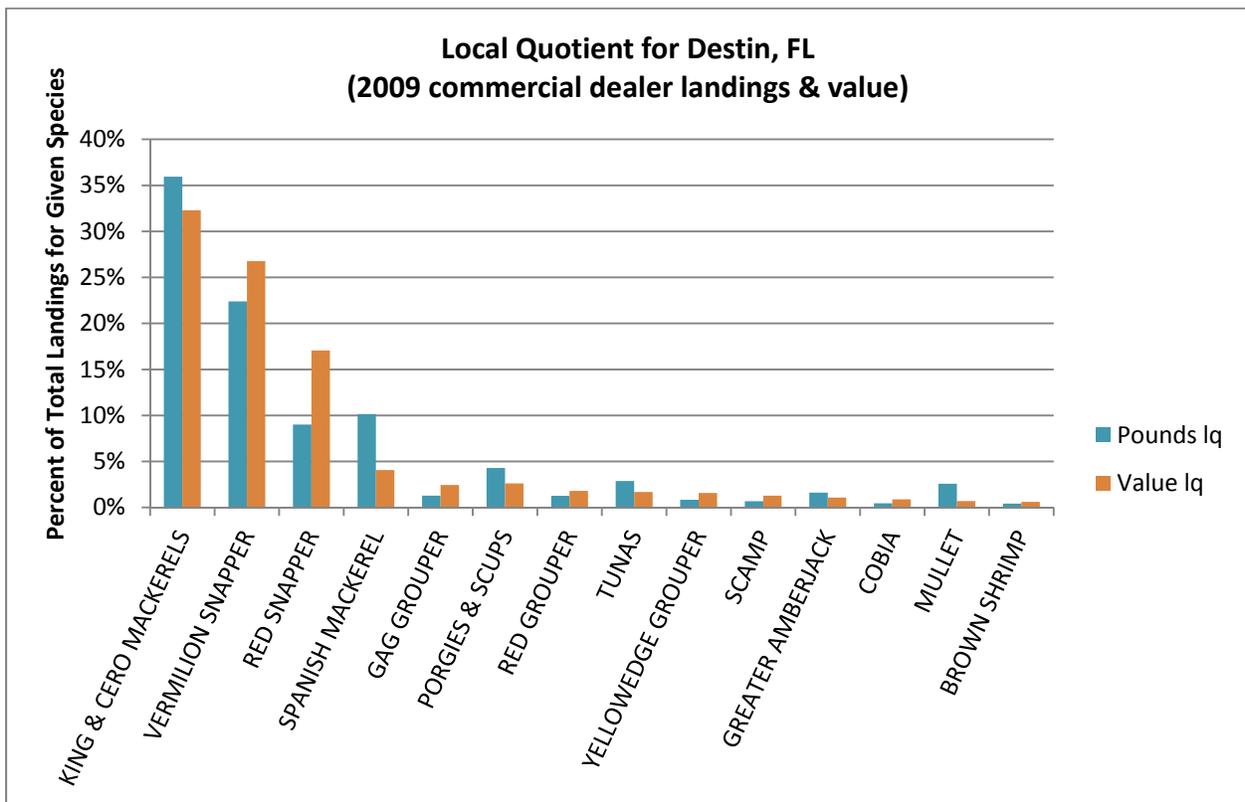


Figure 3.4.3. Proportion (lq) of commercial landings and value for top 15 species out of total landings and value for Destin, Florida. Source: ALS dealer reports 2009.

Galveston

Galveston, Texas, was ranked fifth in terms of the number of reef fish charter/headboat permits in 2010 with 45 federal permits. Galveston also ranked second in terms of commercial red snapper landings in 2011 (Figure 3.4.2). Of the commercially landed species, red snapper made up about 9% of all commercial landings (Figure 3.4.4).

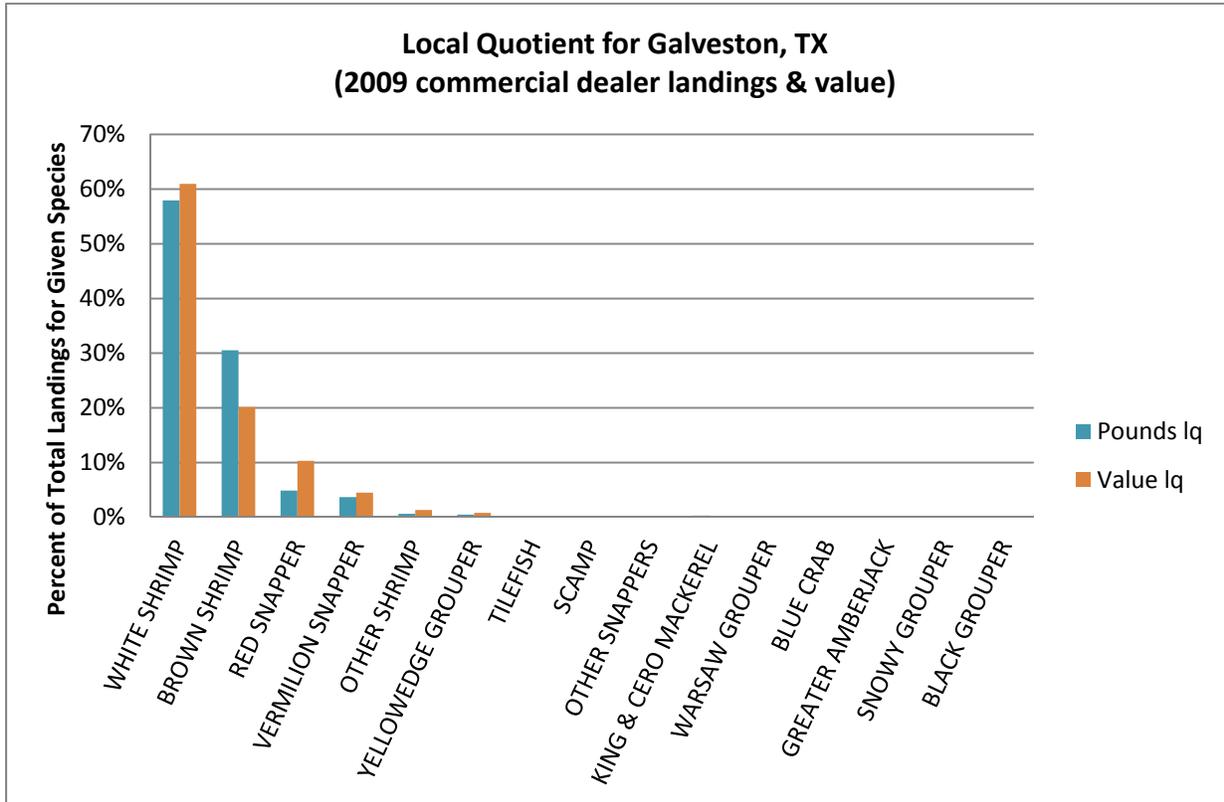


Figure 3.4.4. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Galveston, Texas. Source: ALS dealer reports. 2009.

Panama City

Panama City, Florida was ranked third for the number of reef fish charter/headboat 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 regional involvement across geo-political boundaries. Panama City also ranked fourth in terms of commercial red snapper landings in 2011 (Figure 3.4.2). Of the commercially landed species, red snapper made up about 5% of all commercial landings (Figure 3.4.5).

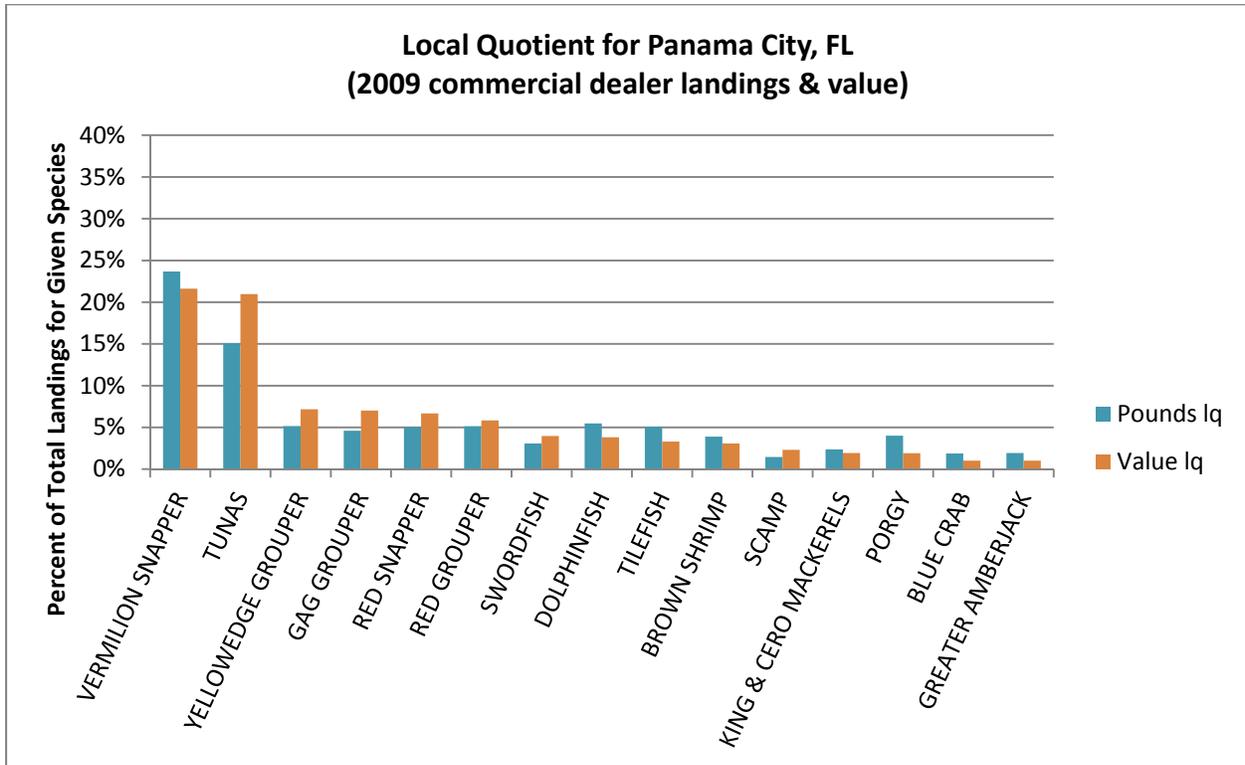


Figure 3.4.5. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Panama City, Florida. Source: ALS dealer reports 2009.

Pensacola

Pensacola ranked tenth in terms of number of reef fish charter/headboat permits in 2010 with 35 federal permits. Pensacola also ranked sixth in terms of commercial red snapper landings in 2011 (Figure 3.4.2). Of the commercially landed species, red snapper made up about 6% of all commercial landings in pounds and 10% in value (Figure 3.4.6).

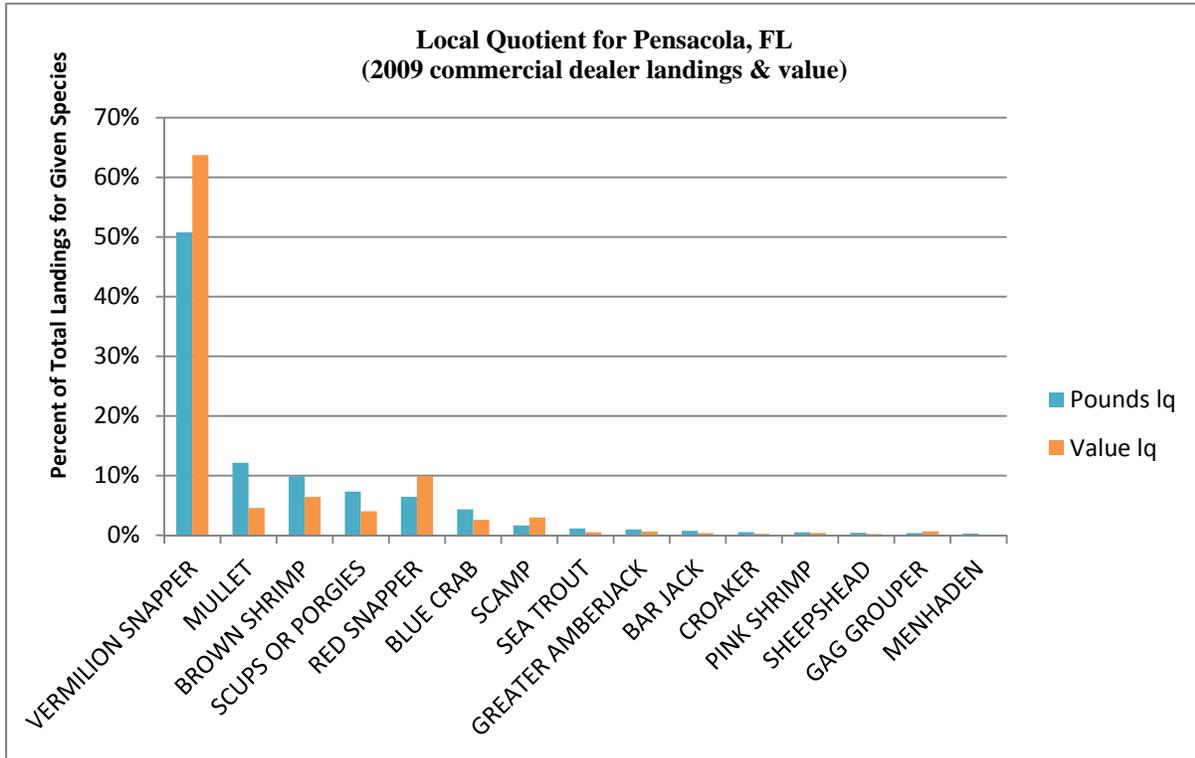


Figure 3.4.6. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Pensacola, Florida. Source: ALS dealer reports 2009.

Apalachicola

Apalachicola ranked seventeenth in terms of the number of reef fish charter/headboat permits in 2010 with 20 federal permits. Apalachicola also ranked eighth in terms of commercial red snapper landings in 2011 (Figure 3.4.2). Of the commercially landed species, red snapper made up about 1% of all commercial landings (Figure 3.4.7).

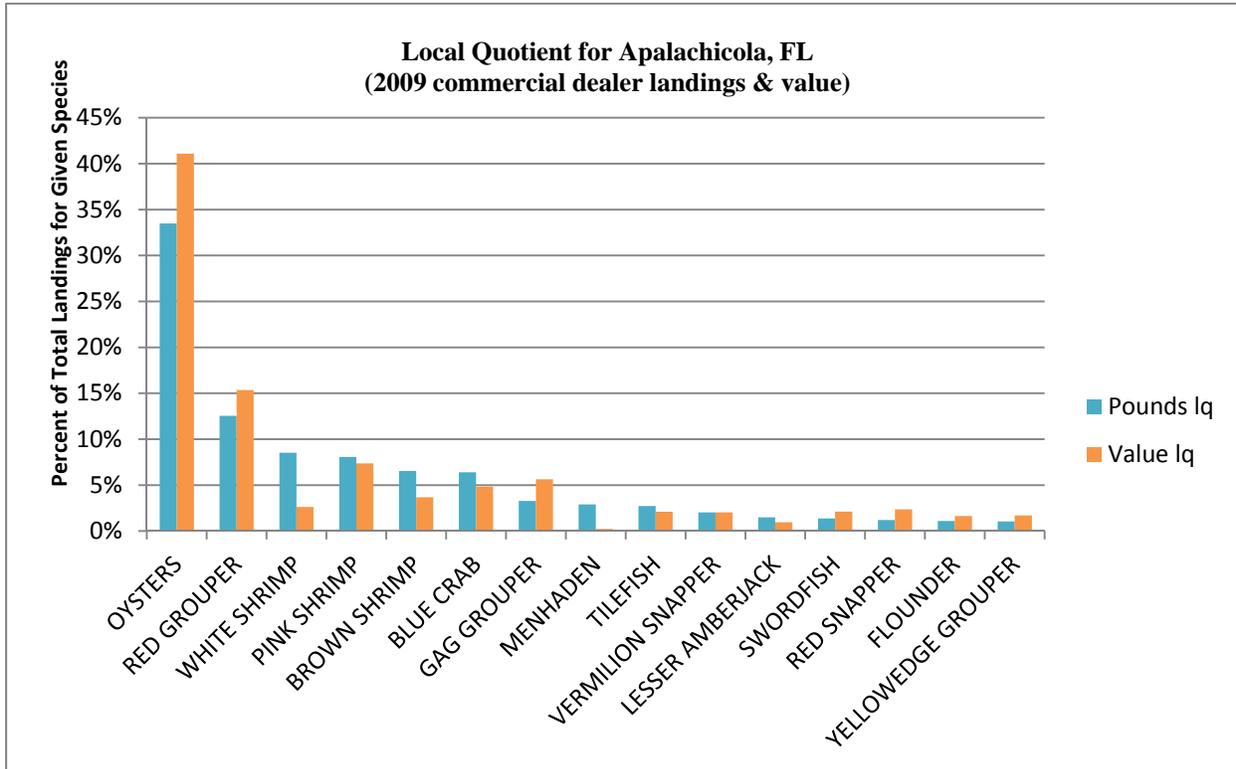


Figure 3.4.7. Proportion (lq) of commercial landings and value for top 15 species out of total commercial landings and value for Apalachicola, Florida. Source: ALS dealer reports 2009.

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).

Red snapper fishermen (commercial and recreational) and associated businesses and communities along the Gulf coast would be expected to be affected by this proposed action. However, information on race, ethnicity, and income status for groups at the different

participation levels (vessel owners, crew, dealers, processors, employees, etc.) 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 were 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 3.4.4). 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 are less than the poverty and minority thresholds. The same method was applied to the remaining Gulf states.

Table 3.4.4. 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).

State	Minorities		Poverty	
	% 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 (0.8%). 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 exceeded both the minority and poverty thresholds and are the communities identified as most likely to be vulnerable to 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%. 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% and Matagorda in Matagorda County exceeded the poverty threshold by 1.8%.

People in these communities may be affected by fishing regulations in two main 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 red snapper specifically (participation).

The proposed action would increase the quota for both the recreational and commercial sectors. Increasing the quota would be expected to result in increased social and economic benefits to red snapper fishermen, communities associated with red snapper fishing, and red snapper consumers and associated businesses because more red snapper could be harvested, processed, sold, and consumed. Because the expected effects of the proposed action would be beneficial and not adverse, EJ issues would not be expected to arise.

3.5 Description of the Administrative Environment

3.5.1 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 Exclusive Economic Zone (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 is shared by 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 Appendix A. In most cases, the Secretary has delegated this authority to 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 the states of Florida and Texas, and the three-mile seaward boundary of the states 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 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 one from NMFS. 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, national security, or litigation briefings, are open to the public. The regulatory process is also in accordance with the Administrative Procedures Act, 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.

Regulations contained within FMPs are enforced through actions of the NOAA’s Office of 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. These activities are being coordinated by the Council’s Law Enforcement Advisory Panel and the Gulf States Marine Fisheries Commission’s Law Enforcement Committee, which have developed a 5-year “Gulf of Mexico Cooperative Law Enforcement Strategic Plan – 2008-2012.”

The red snapper stock in the Gulf of Mexico is classified as overfished, but no longer undergoing overfishing. A rebuilding plan for red snapper was first implemented under Amendment 1 to the FMP (GMFMC 1989), and has undergone several revisions. The current rebuilding plan was established in Amendment 27 to the FMP (GMFMC 2007), and calls for rebuilding the stock to a level capable of supporting MSY on a continuing basis by 2032. Periodic adjustments to the annual catch limit and other management measures needed to affect rebuilding are implemented through amendments and framework actions.

3.5.2 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 respective state’s natural resources through discrete administrative units. Although each agency is the primary administrative body with respect to the state’s 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 22 to the FMP (GMFMC 2004a).

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Action 1: Modify the Red Snapper Quotas

Alternative 1: No Action - Maintain the total quota as defined in the March 2013 Framework Action at 8.46 million pounds (mp) whole weight (ww).

Total quota	Commercial quota	Recreational quota
8.46 mp ww	4.315 mp ww	4.145 mp ww

Alternative 2: Set the quotas based on a total quota of 12.1 mp ww.

Total quota	Commercial quota	Recreational quota
12.1 mp ww	6.171 mp ww	5.929 mp ww

Alternative 3: Set the quotas based on a total quota of 11.5 mp ww.

Total quota	Commercial quota	Recreational quota
11.5 mp ww	5.865 mp ww	5.635 mp ww

Preferred Alternative 4: Set the quotas based a total quota of 11.0 mp ww.

Total quota	Commercial quota	Recreational quota
11.0 mp ww	5.610 mp ww	5.390 mp ww

Alternative 5: Set the quotas based on a total quota of 10.0 mp ww.

Total quota	Commercial quota	Recreational quota
10.0 mp ww	5.1 mp ww	4.9 mp ww

Alternative 6: Apply buffers from the ACL control rule established in the Generic ACL/AM amendment to the preferred quotas selected in the alternatives above to obtain the catch target. The buffer for the commercial sector would be 0%, and the buffer for the recreational sector would be 20%.

4.1.1 Effects on the Physical Environment

Direct and indirect effects on the physical environment when fishing for red snapper have been discussed in detail in Amendment 22 to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico (FMP)(GMFMC 2004a) and Amendment 27 to the FMP (GMFMC 2007). This information is incorporated here by reference and summarized below.

The primary gear used in commercial and recreational fishing for red snapper is vertical line gear. Some commercial landings are from bottom longlines, but this component of the commercial sector lands a small percentage of the total commercial harvest (SEDAR 31 2013). Vertical line gear has the potential to snag and entangle bottom structures. Each individual gear has a very small footprint, and thus only a small potential for impact, but the cumulative impact of the commercial and recreational fishing sector results in a large amount of gear being placed in the water, increasing the potential for impact. The line and weights used by this gear type also can cause abrasions (Barnette 2001). Additionally, vertical line vessels often anchor when fishing, adding to the potential damage of the bottom at fishing locations. Bottom longlines have the potential to break or move hard structures on the sea floor, including rocks, corals, sponges, other invertebrates, and algae, when the line sweeps the bottom (Barnette 2001). If vertical and longline gear are not removed, long-term indirect effects to habitat may occur if the line becomes overgrown with algae or marine life becomes entangled (Hamilton 2000; Barnette 2001).

Changes to the harvest limits could affect the physical environment, due to the increase in the amount of fishing effort and gear type interacting with the substrate over the course of the fishing season. Therefore, the greatest impacts would be associated with the highest quota in **Alternative 2**, and decrease from **Alternative 3** through **Alternative 6**. **Alternative 1** would have no change in effort and the least impact on the physical environment. However, a minor increase in fishing effort is not likely to cause substantial effects to the physical environment.

This action is not expected to change the manner in which the fishery is conducted, except to extend the recreational season and to allow greater harvest by both the commercial and recreational sectors. Few additional impacts on the environment would be expected from the proposed actions relative to recent years because the number of fishing days would be about the same total days as last year. The action, considered in the context of the fishery as a whole, would not be expected to have an adverse impact on essential fish habitat (EFH); therefore, an EFH consultation is not required.

4.1.2 Effects on the Biological/Ecological Environment

Direct and indirect effects on the biological/ecological environment from the harvest of red snapper and from changes in total allowable catch (sector quotas) have been discussed in detail in Amendment 22 to the FMP (GMFMC 2004a) and Amendment 27 to the FMP (GMFMC 2007), and in the March 2013 Framework Action (GMFMC 2013) and are incorporated here by reference and summarized below. Potential impacts of the 2010 Deepwater Horizon MC252 oil spill on the biological/ecological environment are discussed in the January 2011 Regulatory Amendment (GMFMC 2011a) and are also incorporated here by reference and summarized below.

All alternatives are expected to allow the stock to recover by 2032, resulting in positive effects and maintaining consistency with the rebuilding plan. Any future increases in the quotas would also need to be consistent with this plan. **Alternative 1**, because it has the lowest quotas, may allow the stock to recover more quickly than the other alternatives, especially if paired with **Alternative 6**. Alternatively, it may allow recovery by 2032 with higher future quotas under the rebuilding plan. **Alternative 1** would also provide the greatest protection from overfishing

should the stock projections be overly optimistic or should some change occur in the stock that lowers its productivity, such as an episodic mortality event, natural disturbance, or a negative impact from the Deepwater Horizon MC252 oil spill that is as yet unrealized.

Due to overharvest by the recreational sector, the acceptable biological catch (ABC) has been exceeded in five of the last six years. The ABC was not exceeded in 2010, the year of the Deepwater Horizon MC252 oil spill, due to reductions in fishing effort resulting from large area closures that were in place for most of the summer. Because of the previous buffer between the overfishing limit (OFL) and ABC, overfishing has not occurred and the rebuilding plan has remained on schedule. However, the buffer between the yield with a 50% probability of rebuilding (F_{Rebuild}) and ABC recommended in May 2012 by the Gulf of Mexico Fishery Management Council's (Council) Scientific and Statistical Committee (SSC) is greatly reduced, increasing the risk of that the 2032 rebuilding target will not be achieved. **Alternatives 2-6** would set the quota lower than the ABC, which would be expected to help reduce that risk. Clearly, the larger the buffer is, the lower the risk of overfishing and the greater the chance of rebuilding the stock by 2032 or sooner. As such, the greatest adverse risk of overfishing would be expected from **Alternative 2**, followed by **Alternative 3**, **Preferred Alternative 4**, **Alternative 5**, and **Alternative 1**. The risk associated with each of these alternatives would be lowered even further if paired with **Alternative 6**. However, none of these impacts would be expected to be significant. Even if the yield at F_{Rebuild} is exceeded in the short term, subsequent rebuilding projections can produce a revised yield stream that takes such overharvest into account. Consequently, all alternatives are expected to allow the stock to remain within the rebuilding plan time period.

A possibility is that if too much additional quota is released, it could not be harvested before the end of the year. Analyses show that even the highest recreational quota (**Alternative 2**) is estimated to be harvested by the recreational sector before the end of the year (Appendix B). How quickly the commercial sector would harvest their additional quota cannot be estimated, but through the IFQ program, commercial fishers can fish any day of the year or lease their allocation to another fisher who needs it and may use it. Therefore, all of the additional quota would be expected to be harvested under any alternative.

Indirect effects of these alternatives on the ecological environment are not well understood. Changes in the population size structure, as a result of shifting fishing selectivities and increases in stock abundance, could lead to changes in the abundance of other reef fish species that compete with red snapper for shelter and food. Predators of red snapper could increase if red snapper abundance is increased, while species competing for similar resources as red snapper could potentially decrease in abundance if food and/or shelter are less available. Another effect of an expanding red snapper population could be a continuation of the reestablishment of red snapper populations in historical areas of occurrence in the eastern Gulf of Mexico (Gulf). As the red snapper stock rebuilds, one effect has been that the average size of a red snapper caught from recreational fishing has also increased. As a result, the recreational quota has been reached faster with a smaller number of fish, resulting in shorter seasons even with quota increases (see http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/red_snapper/index.html). Consequently, fishermen who are unable to target red snapper during the closed season may

choose to target other species. Species likely to be affected by changes in red snapper abundance include vermilion snapper, gray triggerfish, and gag, which all co-occur with red snapper.

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 MC 252 oil spill in the northern Gulf), effects of the proposed action, and cumulative effects, concluded that the continued operation of the Gulf 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 2011b). On November 30, 2012, NMFS proposed listing 66 species of corals under the Endangered Species Act, of which 12 species were proposed to be classified as endangered. Five of the 12 species occur in the Gulf region; however, because of protections including closed areas identified in Section 3.1, the National Marine Fisheries Service (NMFS) determined the continued authorization of the Gulf reef fish fishery is not likely to jeopardize the continued existence of any species proposed for listing.

The proposed action relates to the harvest of an indigenous species in the Gulf, and the activity being altered does not itself introduce non-indigenous species, and is not reasonably expected to facilitate the spread of such species through depressing the populations of native species. Additionally, it does not propose any activity, such as increased ballast water discharge from foreign vessels, which is associated with the introduction or spread on non-indigenous species.

4.1.3 Effects on the Economic Environment

Quantitative Effects on the Commercial Sector

Estimates of the proposed increase in the red snapper commercial quota and associated expected change in ex-vessel value, gross revenues (ex-vessel value net of 3% cost recovery fee), share value, and allocation value are provided in Table 4.1.3.1. The estimates provided in Table 4.1.3.1 are annual values that would be expected to be received each year the proposed quota increase is in effect. These results are based on the median values of \$4.25, \$25.00, and \$3.00 for ex-vessel value, share, and allocation prices per pound gutted weight (gw), respectively, derived from 2011 transactions. The average values in 2011 for the ex-vessel, share, and allocation prices were \$3.57, \$19.36, and \$2.79 per pound gw, respectively. Median values, however, were used in this analysis because of the large number of zeroes reported in share and allocation transactions.

Table 4.1.3.1. Proposed increase in the red snapper commercial quota and associated estimated change in ex-vessel value, gross revenue, share value, and allocation value per pound gutted weight. Quota in pounds; dollar values in thousand 2011 dollars.

Alternative	Commercial Quota		Ex-Vessel Value	Gross Revenues	Share Value	Allocation Value
	Whole Weight	Gutted Weight				
2	1,856,000	1,672,072	\$7,106	\$6,893	\$41,802	\$5,016
3	1,550,000	1,396,396	\$5,935	\$5,757	\$34,910	\$4,189
4 (Preferred)	1,295,000	1,166,667	\$4,958	\$4,810	\$29,167	\$3,500
5	785,000	707,207	\$3,006	\$2,915	\$17,680	\$2,122
6	Same as Preferred Alternative 4					

Source: National Marine Fisheries Service Southeast Regional Office

As previously discussed, the commercial red snapper harvest in the Gulf is managed under an individual fishing quota (IFQ) program. Although IFQ shares are legally considered a privilege that can be revoked, they are assets that can be freely exchanged in markets and used as collateral for loans. Assuming that red snapper IFQ shares are traded in well-functioning markets, IFQ share prices should be a reflection of the stream of discounted net benefits expected to be derived from holding an additional unit of IFQ share. Detailed discussions on IFQ markets and on determinants of share prices in IFQ markets are provided in Newell et al. (2005a, 2005b). Because IFQ share prices reflect the stream of net benefits expected to derive from an IFQ share, an evaluation of the potential economic effects based on changes in overall asset values would capture long-term economic changes. Short-term economic effects can be approximated by the estimating changes in the aggregate value of red snapper annual allocations. The proposed increases in the red snapper commercial quota would be expected to result in an increase in IFQ share value ranging from approximately \$17.68 million (**Alternative 5**) to approximately \$41.80 million (**Alternative 2**). Annual sale (leasing) of the proposed increased quota would be expected to result in an increase in allocation value ranging from approximately \$2.12 million (**Alternative 5**) to approximately \$5.02 million (**Alternative 2**) per year.

Quantitative Effects on the Recreational Sector

Estimates of the proposed increase in the red snapper recreational quota and associated expected change in angler trips, consumer surplus to recreational anglers, and net operating revenues to for-hire businesses are provided in Table 4.1.3.2. The estimates provided in Table 4.1.3.2 are annual values that would be expected to be received each year the proposed quota increase is in effect. Consumer surplus is the amount of money that an angler would be willing to pay for a fishing trip in excess of the cost of the trip. The estimated changes in consumer surplus were computed based on an average consumer surplus of \$56.42 (2011 dollars) per angler trip (David Carter, SEFSC, personal communication). The comparable measure of economic benefits for for-hire vessels is producer surplus; producer surplus is the amount of money that a vessel owner earns in excess of the cost of providing the trip. Net operating revenues, which are the return used to pay all labor wages, returns to capital, and owner profits, are used as the proxy for producer surplus. For the charter boat and the headboat industries, the estimated changes in producer surplus were calculated based on average net operating revenues of \$154.62 per target

charter angler trip and \$51.19 (2011 dollars) per target headboat angler trip (Christopher Liese, SEFSC, personal communication). Examination of effort response to quota changes from 2009 through 2011³ did not identify a reliable pattern of effort change to use in the estimation of the expected change in angler effort under this proposed action. The absence of a reliable effort response pattern was due to the decline in marine recreational fishing effort in the Gulf in 2010, despite the quota increase, associated with the Deepwater Horizon MC252 oil spill. As a result, the projected changes in recreational target effort in this analysis were based on the ratio of harvested pounds of red snapper per target trip from 2011. For example, hypothetically, if the ratio of pounds per trip for private angler trips was 10 lb per target trip, then the analysis would project that for every 10 lb of quota increase, one additional private angler target trip would be generated. This methodological approach may result in over-estimation of actual effects because it is based on potentially circumstantial relationships rather than a more sophisticated behavior response model. However, this approach would only be expected to affect the magnitude and not the direction of the expected change in economic benefits associated with the proposed alternatives. All estimates of the changes in consumer surplus and net operating revenues are in 2011 dollars.

³ Data for 2012 were not available at the time of this analysis.

Table 4.1.3.2. Proposed increase in the red snapper recreational quota (whole weight) and associated estimated changes in red snapper target trips, consumer surplus and net operating revenues. Quota in pounds; consumer surplus and net operating revenues in thousand 2011 dollars.

Alternative	Recreational Quota	Sector	Trips	Consumer Surplus	Net Operating Revenues
2	1,784,000	Private	158,603	\$8,948	
		Charter	31,146	\$1,757	\$4,816
		Headboat	105,381	\$5,945	\$5,395
		Total	295,131	\$16,650	\$10,211
3	1,490,000	Private	132,466	\$7,473	
		Charter	26,013	\$1,468	\$4,022
		Headboat	88,015	\$4,966	\$4,506
		Total	246,494	\$13,906	\$8,528
4 (Preferred)	1,245,000	Private	110,684	\$6,244	
		Charter	21,736	\$1,226	\$3,361
		Headboat	73,543	\$4,149	\$3,765
		Total	205,963	\$11,620	\$7,126
5	755,000	Private	67,122	\$3,625	
		Charter	13,181	\$744	\$2,038
		Headboat	44,598	\$2,516	\$2,283
		Total	124,901	\$6,745	\$4,321
6	167,000	Private	14,847	\$838	
		Charter	2,916	\$164	\$451
		Headboat	9,865	\$557	\$505
		Total	27,627	\$1,559	\$956

Source: National Marine Fisheries Service Southeast Regional Office.

Business Activity Associated with the Estimated Economic Effects

This section provides estimates of the business activity that may be associated with the potential changes in commercial ex-vessel revenues and recreational angler trips that may occur as a result of the proposed changes in red snapper quota. This business activity is characterized in the form of full time equivalent (FTE) jobs, income impacts (wages, salaries, and self-employed income), output (sales) impacts (gross business sales), and value-added impacts (difference between the value of goods and the cost of materials or supplies). Income and value-added impacts are not equivalent, though similarity in the magnitude of multipliers may result in roughly equivalent values. The methods used and assumptions made to estimate the changes in business activity reported in this section are detailed in GMFMC (2010) and are incorporated herein by reference.

These estimates are provided to inform the decision process of the potential consequences of the proposed management actions. It is important to note that changes in business activity are distributional effects (a dollar spent for one activity, good, or service is a dollar not spent for another) and are not equivalent to changes in economic value. Caution should be used in the

interpretation and use of these results because the method of calculation does not allow for behavioral or substitution changes. For example, for the commercial sector, the method employed “produces” a change in one harvester job for every change in red snapper ex-vessel revenue of approximately \$43,000. In reality, instead of generating more harvester jobs, an increase in red snapper ex-vessel revenue may simply increase the income of current harvesters. For the recreational sector, instead of resulting in a change in the number of red snapper fishing trips, an increase in the red snapper recreational quota may simply allow fishing trips that would otherwise already occur, that could not harvest red snapper in the absence of the increase, to retain red snapper. Thus, total effort, and associated business activity, may not change as much as expected. Additionally, these results do not reflect the net change in business activity that would be affected by increased activity associated with red snapper harvest (e.g., an angler who may take more trips must spend less money on other activities, goods, or services, inducing a reduction in business activity associated with these activities).

Table 4.1.3.3 contains estimates of the potential changes in business activity associated with the estimated change in commercial ex-vessel revenue associated with the proposed changes in the red snapper commercial quota.

Table 4.1.3.3. Potential changes in business activity associated with the estimated change in the commercial sector ex-vessel revenue. Income and output impacts in thousand 2011 dollars.

Industry Sector	Alternative 2	Alternative 3	Preferred Alternatives 4 & 6	Alternative 5
Ex-vessel revenue	\$7,106	\$5,935	\$4,958	\$3,006
Harvesters				
Jobs	167	140	117	71
Income impacts	\$5,860	\$4,894	\$4,089	\$2,479
Output impacts	\$15,231	\$12,720	\$10,627	\$6,442
Primary dealers/processors				
Jobs	102	85	71	43
Income impacts	\$4,927	\$4,115	\$3,438	\$2,084
Output impacts	\$15,333	\$12,805	\$10,698	\$6,485
Secondary wholesalers/distributors				
Jobs	86	72	60	36
Income impacts	\$4,822	\$4,027	\$3,365	\$2,040
Output impacts	\$11,306	\$9,442	\$7,889	\$4,782
Grocers				
Jobs	51	43	36	22
Income impacts	\$2,007	\$1,676	\$1,400	\$849
Output impacts	\$4,365	\$3,646	\$3,046	\$1,846
Restaurants				
Jobs	875	731	611	370
Income impacts	\$22,260	\$18,590	\$15,532	\$9,415
Output impacts	\$47,330	\$39,526	\$33,024	\$20,018
Total				
Jobs	1,282	1,071	894	542
Income impacts	\$39,877	\$33,302	\$27,823	\$16,866
Output impacts	\$93,565	\$78,139	\$65,284	\$39,574

Source: National Marine Fisheries Service Southeast Regional Office.

Table 4.1.3.4 contains estimates of the potential changes in business activity associated with the estimated changes in recreational trips associated with the proposed changes in the red snapper recreational quota. These estimates only cover the private/rental and charter anglers. Red snapper are not typically targeted by shore anglers and, as discussed in Section 3.3, estimates of business activity are not available for the headboat sector in the Gulf.

Table 4.1.3.4. Potential changes in business activity associated with the estimated change in recreational trips. Income and output impacts in thousand 2011 dollars.

	Alternative 2	Alternative 3	Preferred Alternative 4	Alternative 5	Alternative 6
Private/Rental					
Trips	158,603	132,466	110,684	67,122	14,847
Output impact	\$10,062	\$8,403	\$7,022	\$4,258	\$942
Value added impact	\$5,529	\$4,618	\$3,859	\$2,340	\$518
Jobs	93	77	65	39	9
Charter					
Trips	31,146	26,013	21,736	13,181	2,916
Output impact	\$11,830	\$9,880	\$8,256	\$5,006	\$1,108
Value added impact	\$6,835	\$5,708	\$4,770	\$2,892	\$640
Jobs	121	101	84	51	11
Headboat					
Trips	105,381	88,015	73,543	44,598	9,865
Output impact	Unknown	Unknown	Unknown	Unknown	Unknown
Value added impact	Unknown	Unknown	Unknown	Unknown	Unknown
Jobs	Unknown	Unknown	Unknown	Unknown	Unknown
Total					
Trips	295,130	246,494	205,963	124,901	27,627
Output impact	\$21,891	\$18,284	\$15,277	\$9,264	\$2,049
Value added impact	\$12,364	\$10,326	\$8,628	\$5,232	1,157
Jobs	214	178	149	90	20

Source: National Marine Fisheries Service Southeast Regional Office.

Discussion

Given the time available to conduct this analysis, neither price nor behavioral models exist for either the commercial or recreational harvest sectors for red snapper. As a result, changes in quota can only be quantitatively evaluated using fixed relationships – each pound of commercial quota receives a fixed price and each pound of recreational quota induces a fixed change in angler effort (and associated change in economic benefits). Thus, the quantitative economic effects shown in Tables 4.1.3.1-4.1.3.4 uniformly change in magnitude and direction with the proposed change in quota. Stated differently, using this methodology, more quota will always result in proportionately more revenue, recreational effort, consumer surplus, net operating revenue, and business activity, than less quota. Also, as may be obvious from the results provided in the tables, the estimates are based on the assumption that all of the respective quotas will be harvested.

From this narrow perspective, the proposed alternatives would be ranked from the most economic benefits to the least economic benefits according to simply the amount of quota provided: **Alternative 2** would be expected to result in the most economic benefits, followed by

Alternative 3, Preferred Alternative 4, Alternative 5, Alternative 6, and Alternative 1. Of particular note with respect to **Alternative 1**, because of increasing average fish size and catch rates, despite an increasing quota in recent years, the recreational sector has been subjected to shorter and shorter seasons. As a result, although anglers fortunate enough to be able to harvest (catch and retain) red snapper may have experienced increased consumer surplus (because the fish may be larger or limiting-out is more common), shorter seasons result in fewer anglers able to harvest red snapper, with associated potential adverse effects on recreational benefits, for-hire service demand, etc. These adverse effects would be expected to continue and potentially worsen under **Alternative 1** and, conversely, be relieved by **Alternatives 2-6**, with the extent of relief increasing as the proposed quota increases.

In reality, these relationships (price per pound and trip per fish) would not be expected to remain constant as the amount of quota changes. For the commercial sector, increased quota may result in declining average dockside or allocation prices. For the recreational sector, the change in consumer surplus and net operating revenue would be expected to depend on whether the increased quota is harvested on new red snapper target trips or as incidental harvest by anglers who would fish in the absence of an increased quota or extended season. These factors cannot be evaluated with available data. However, the inability to model these effects would only be expected to affect the magnitude of the economic effects of the proposed alternatives and not their ranking. As a result, the estimates shown in Tables 4.1.3.1-4.1.3.4 should be considered upper bounds and the ranking of proposed alternatives provided in the previous paragraph would be unaffected.

Two additional factors that may affect the ranking of the alternatives should be considered. The first factor to consider is the potential for the alternative proposed quotas to affect the biological status of red snapper and adversely affect the rebuilding plan and associated economic benefits. As discussed in Section 2.1, the SSC determined that the red snapper ABC was 13.5 mp for 2013, and 11.9 mp for 2014 (and 10.6 mp for 2015; however, as discussed in Section 2.1, the 2015 ABC is expected to be re-specified by the SSC at their August 2013 meeting). The ABC is the amount of red snapper that can be harvested in these years consistent with the current rebuilding plan. Because only one of the proposed alternatives would establish a total quota in excess of the 2013 and 2014 ABCs, **Alternative 2**, only this alternative would be expected to possibly adversely affect the current rebuilding plan. As a result, no reduction in the long-term economic benefits accruing to achieving the red snapper rebuilding plan would be expected to occur under any of the proposed alternatives except possibly **Alternative 2**, and any harm as a result of **Alternative 2** may be small because the associated quota would only exceed the ABC by 200,000 lb, or less than two percent of the ABC, and would only be in effect for a limited time. Embedded in this determination, however, is the assumption that adequate management measures will be in place to effectively limit harvest to the total quota. More importantly, it is assumed that these management measures will prevent the OFL from being exceeded. If the OFL is exceeded, then the assumption of no adverse resource effects would no longer apply.

The assumption that harvest will be effectively constrained may become less tenable the higher the proposed quota because of the quota overages that have occurred in the recreational sector in recent years. However, as discussed in Chapter 2, the highest proposed total quota, 12.1 mp (**Alternative 2**) is 1.4 mp less than the 2013 ABC specified by the SSC, 13.5 mp. The

difference, 1.4 mp, is also equal to the average of the recreational sector overages for 2009, 2011, and 2012 (because of the Deepwater Horizon MC252 oil spill, 2010 was not a typical year for recreational fishing due to the extensive closures and associated decline in fishing in much of the Gulf). As a result, the assumption that the total red snapper harvest will not exceed either the ABC or the OFL may be reasonable under all of the proposed alternatives. Nevertheless, it remains true that the higher the proposed quota, the greater the likelihood that either or both the ABC and OFL will be exceeded and precipitate an associated reduction in economic benefits. As a result, it may be possible that the actual economic benefits received under **Alternative 2** be less than those received under **Alternative 3** if the ABC or OFL is exceeded under **Alternative 2**, but not under **Alternative 3**. A similar outcome could occur under **Alternative 2** compared to **Preferred Alternative 4**, or under **Alternative 3** compared to **Preferred Alternative 4**, etc. However, as the difference between the quotas under the respective proposed alternatives is increased, the likelihood of shifts in ranking is reduced. Ultimately, any shift in ranking would depend on the amount of overage, the extent of harm to the stock, and the severity of corrective action required, none of which can be reliably forecast with available data.

The second factor to consider is stability. As discussed in Section 2.1, the SSC specified different ABCs for 2013, 2014, and 2015, with the highest ABC specified for 2013 and declining each subsequent year. Although the proposed alternatives, with the exception of **Alternative 1**, may only establish effective quotas for 2013 (the quotas for 2014 and 2015 would depend on the outcome of the August 2013 SSC meeting; see Section 2.1), because of the substantial difference in the ABCs for these three years and their declining path, it is appropriate to evaluate the effects of the proposed alternative quotas within the context of these ABCs. The economic question is, would the economic benefits be expected to be affected by having the widely different quotas that would result for the ABCs for 2013, 2014, and 2015 compared to reducing the total quota, particularly in 2013, and possibly in 2014, in favor of establishing constant, or relatively constant, quotas for the next two or three years? If the total allowable harvest summed over the period is unaffected by whether or not the annual quotas are equal, then the economic issue may reduce to the time preference of the affected entities. Some businesses may believe planning and economic returns are enhanced under stable conditions. Others, however, may prefer a higher quota. Reasons for this may include, but not be limited to, higher financial needs in the near term (e.g., to finance vessel repairs, new vessel acquisition, quota share purchase, general business expansion, or meet personal needs, etc.), concern that subsequent quotas may be reduced independent of the level of current harvest, or expectations that subsequent stock assessments will result in higher quotas in the following years, reducing the need for a lower quota in 2013 (or 2014). Similar considerations may apply to recreational anglers; some may prefer to have a higher quota in 2013 (and 2014) because of personal considerations, or simply lack faith that conditions will not worsen in subsequent years (e.g., the season could be shortened even if the quota is not reduced, similar to what has occurred in recent years).

In the discussion in the next paragraph, it is assumed that reduced harvest in 2013 (and possibly 2014) would not reduce the allowable harvest in 2015 or subsequent years. At worst, the assumption is that the combined harvest in 2013 and 2014 would not result in any change in the allowable harvest in 2015, or subsequent years. Also, this discussion allows for the possibly, but not the requirement, that the allowable harvest in 2014 is less than the 2014 ABC. The 2014 allowable harvest may be less than the ABC under all of the proposed alternatives except

Alternative 2, depending on the outcome of the August 2013 SSC meeting and subsequent Council action.

If the total allowable harvest summed over 2013, 2014, and 2015 is affected by a decrease in 2013 (and possibly 2014) to achieve stable harvest levels, then the economic outcome may depend on whether a reduced total quota in 2013 (and possibly 2014) would be expected to allow for a sufficient increase in harvest in 2015 to result in an increase in the total harvest over the three-year period (this discussion assumes). If harvest in 2015 cannot increase to compensate for the reduced harvest in 2013 (and possibly 2014; and the rebuilding plan is unaffected), then any reduction in allowable harvest from the ABC specified for 2013 (and possibly 2014) would be expected to result in reduced economic benefits as a result of foregone harvest opportunities unless the benefits of stability exceed the value of foregone opportunities. The amount of these reduced benefits would increase the larger the reduction in the 2013 quota (and 2014 quota, if such occurs) relative to the 2013 ABC (and 2014 ABC). If the total three-year quota can increase or stay the same as a result of reduced harvest in the near term, then, absent the time preference issues discussed in the previous paragraph, total economic benefits would be expected to increase under a reduced total quota in 2013 (and 2014). If the net increase in total three-year quota increases the greater the reduction in the near term (relative to the ABCs), then the proposed alternatives would be ranked accordingly.

It is not possible to quantitatively evaluate these considerations with available data and measure their effect on the ranking of the proposed alternatives. As previously stated, for the effects that can be quantified, the higher the quota (absent stock effects), the greater the expected economic benefits. This would be expected to occur even, for example, if an increased commercial quota reduces the average price. Although an increase in the 2013 quota could not be uniformly distributed over the year, due to the late timing of this proposed action in the fishing year, available information does not support a conclusion that price effects would be sufficiently harmful to reduce the total economic benefits to fishermen. Commercial fishermen would still be expected to benefit, just not as much as they might if the increase had been made available since the start of the year, as will occur in 2014. Further, a price reduction, should such occur, would be beneficial to consumers.

Increased quota may also allow more fishermen to harvest red snapper. This possibility has previously been discussed for the recreational sector, but would also apply for the commercial sector. Depending on when the increased quota is released, harvesting the entire increase may be impractical, physically or economically, for share owners or some entities that are active participants in the allocation market. As a result, additional commercial fishermen who do not routinely harvest red snapper may have an opportunity to acquire allocation, increasing the likelihood that the quota will be harvested, and enhancing their economic performance. Even though these entities would have to purchase allocation, it may be cost effective to do so, particularly if used to cover bycatch harvest. Additionally, an increase in the quota may result in a reduction in allocation prices, particularly as the fishing year progresses and the urgency to “move” allocation increases. This would help fishermen needing allocation to cover bycatch harvest and may help make targeting red snapper more economically viable for fishermen without allocation.

4.1.4 Effects on the Social Environment

The social effects of this proposed action would be expected, in general, to change in direction and magnitude with the expected change in economic effects discussed in Section 4.1.3. Direct impacts on the social environment resulting from the proposed action will relate to the change in the amount of quota available for harvest compared to the current quota. Generally, assuming the biological needs of the resource remain protected, short and long-term social benefits would be expected to increase if the quota is increased and decrease if the quota is decreased.

The proposed alternatives would increase both the red snapper commercial and recreational quotas. The proposed increases are the result of a new stock assessment and represent the allowable harvest that would be expected to meet recovery goals and satisfy the biological needs of the stock. Therefore, the proposed quotas would not be expected to jeopardize the long-term health of the resource or associated long-term stream of social or economic benefits. As a result, the proposed quota increases would be expected to allow both short and long-term increases in social benefits. For the recreational sector, these benefits would be expected to arise from the increased pleasure, as a result of either or both the increased total quantity of available fish that can be harvested or a resultant longer open season, recreational anglers derive from harvesting red snapper. Communities and businesses associated with the recreational sector would be expected to receive increased social benefits as a result of potentially increased recreational activity and expenditures flowing to these communities and businesses. For the commercial sector, these benefits would arise from increased revenue and profits, and the increased stability to families and businesses that such increases would be expected to engender. Allowing quota increases, when biologically appropriate, would also be expected to increase confidence in and support of the fishery management process.

With these expectations as a foundation, the ranking of the proposed alternatives would be expected to follow the ranking provided in Section 4.1.3 based on the expected economic effects. **Alternative 2** would be expected to result in the most social benefits, followed by **Alternative 3**, **Preferred Alternative 4**, **Alternative 5**, **Alternative 6**, and **Alternative 1**. The same caveats discussed in Section 4.1.3 with respect to potential stock effects and stability would also be expected to apply to the ranking of the alternatives based on expected social effects. Specifically, the greater the likelihood the red snapper ABC or the yield at $F_{Rebuild}$ will be exceeded as a result of a proposed quota, the greater the likelihood that some reduction in short-term social benefits will occur even though the proposed quota may only be in effect for one year (long-term benefits should not be affected because the proposed quotas would only be expected to apply to the 2013 fishing season). From this perspective, the higher the proposed quota, the greater the likelihood either of these thresholds will be exceeded. With respect to stability, in addition to the social effects that flow from higher (or lower) economic benefits, widely different annual quotas may precipitate confusion and dissatisfaction with the management process. The spike in the red snapper 2013 ABC and subsequent decline in 2014 and 2015 (see Table 2.1.1) may be difficult for many fishermen and the public to understand for a rebuilding resource. The normal expectation under rebuilding may be a constant or increasing allowable harvest and declining harvests may be viewed as illogical. This could result in diminished participation in essential, but voluntary, data collection programs, public-management dialogue, and other information sharing aspects of the management process. This could, in turn, lead to less

informed management decisions, with associated reduced social and economic benefits. The greater the spike in quota, and subsequent declines, the more likely such behavior may occur. Reducing the spike, as part of a process to implement more stable quotas over subsequent years, may reduce these adverse effects.

4.1.5 Effects on the Administrative Environment

None of the alternatives should result in any significant direct or indirect effects to the administrative environment relative to the recreational sector, because the type of regulations needed to manage the red snapper component of the reef fish fishery would remain unchanged regardless of the commercial and recreational quotas. NMFS law enforcement, in cooperation with state agencies, would continue to monitor regulatory compliance with existing regulations and NMFS would continue to monitor both recreational and commercial landings to determine if landings are meeting or exceeding specified quota levels.

The commercial sector for red snapper is managed through an IFQ program. At the beginning of each year, annual allocation is distributed to IFQ shareholders. Any time the quota is increased during the year, additional allocation must be calculated and distributed to shareholder accounts. Therefore **Alternatives 2-6** would impose the same burden on the administrative environment, which would be greater than **Alternative 1**.

4.2 Action 2. Set the timing for a supplemental recreational fishing season for red snapper in the Gulf of Mexico for 2013.

Alternative 1. No action. NMFS has the authority to re-open a previously closed sector, and will determine if quota is available to re-open the red snapper recreational season for 2013.

Preferred Alternative 2. NMFS will re-open the red snapper recreational season for 2013, contingent upon there being unused quota available. The additional season would begin on the date in **Option a** or **b** and continue on consecutive days until NMFS projects the quota will be met.

Option a. September 1, or as soon as possible thereafter.

Preferred Option b. October 1.

Alternative 3. NMFS will re-open the red snapper recreational season for 2013, contingent upon there being unused quota available. The additional season would begin on the date in **Option a** or **b** and continue for a series of weekends until NMFS projects the quota will be met.

Option a. September 1, or as soon as possible thereafter.

Option b. October 1.

4.2.1 Effects on the Physical Environment

Direct and indirect effects on the physical environment when fishing for red snapper have been discussed in detail in Amendment 22 to the FMP (GMFMC 2004a) and Amendment 27 to the FMP (GMFMC 2007). These impacts are summarized in Section 4.1.1.

As discussed in Section 2, under **Alternative 1** the Regional Administrator (RA) would decide whether and when to re-open the red snapper recreational season, assuming that additional quota is available. Therefore, if the season is re-opened, the effects under **Alternative 1** would be the same as **Preferred Alternative 2**. If the season is not re-opened, **Alternative 1** would not be expected to result in additional impacts to the physical environment because no additional fishing would take place.

Preferred Alternative 2 could provide the greatest probability of impacts to the physical environment because it allows for more fishing days than **Alternative 3**. Even so, given effort is greater on weekends than during weekdays, the overall effort to harvest the quota may be similar between the two options, and thus would result in similar impacts. Several habitat areas of particular concern, marine sanctuaries, and marine reserves already exist in the Gulf where red snapper occur, providing additional protection to habitat and reducing impacts to the physical environment.

Option a and **Preferred Option b** for opening dates in **Preferred Alternative 2** and **Alternative 3** would not be expected to alter the manner in which the fishery is conducted nor the amount of fishing harvested, unless the later date does not allow the entire quota to be harvested. In this case, **Preferred Option b** could result in fewer negative impacts than **Option a**. However, analysis shows that even the highest quota set in Action 1 is expected to be harvested regardless of the alternative or option chosen in Action 2.

4.2.2 Effects on the Biological/Ecological Environment

The timing of the supplemental recreational season likely would not influence the impacts of the quota increase. The main recreational fishing season for red snapper has been during the summer. Catch rates would be expected to be less during the fall; however, reliable data for fall catch rates are not available. In 2010, NMFS re-opened the recreational red snapper season October 1 – November 22 for weekends only (Friday-Sunday) because the Deepwater Horizon MC252 oil spill prevented fishing in much of the northern Gulf and the red snapper recreational quota was not reached. This resulted in eight consecutive weekends of fishing. Total landings for the year were 34% less than the quota, indicating catch rates were less than predicted by NMFS for that time period. These lesser catch rates may have been because less fishing occurs in the fall normally or because the oil spill was still impacting fishing. If low catch rates are a result of changes in fishing behavior in the fall (due to weather, children in school, other activities occurring, etc.), the additional quota available through this action may not all be harvested before the end of 2013. Therefore, the stock could benefit from lower fishing mortality, which could help rebuild the stock more quickly.

With **Alternative 1**, if NMFS chooses to re-open the season, this alternative would be expected to have the same effects of the biological and ecological environment as **Preferred Alternative 2**. The only difference is that the re-opening date would be selected by NMFS rather than the Council, and would be based on the length of time needed to complete the implementation process. This is the most likely scenario if there is available unused quota. However, if the available quota is extremely small, which is possible if there is a large quota overrun during the June season, NMFS could decide not to re-open the season, which would allow the unused quota

to contribute to a faster rebuilding or increased quotas in later years. Under this scenario, **Alternative 1** would provide the least adverse biological and ecological impacts to the red snapper stock because harvest would be restricted to the originally established 28-day season. However, because not re-opening is likely only if there is little or no unused quota, any such benefits would be minor.

Both **Preferred Alternative 2** and **Alternative 3** and their options would result in different numbers of days that ultimately are projected to result in the same amount of catch. Therefore, **Preferred Alternative 2** and **Alternative 3** would be expected to have the same level of impacts on the biological environment. These impacts are expected to be minor because all alternatives are expected to allow the stock to recover by 2032, resulting in positive effects to the stock and maintaining consistency with the rebuilding plan

Options a and **b** for opening dates in **Preferred Alternative 2** and **Alternative 3** would not be expected to alter the manner in which the fishery is conducted nor the amount of fishing harvested, unless the later date does not allow the entire quota to be harvested. In this case, **Preferred Option b** could result in fewer negative impacts than **Option a**. However, analysis shows that even the highest quota set in Action 1 is expected to be harvested regardless of the alternative or option chosen in Action 2.

4.2.3 Effects on the Economic Environment

Action 2 would only apply to the recreational harvest of red snapper. As a result, assuming the recreational harvest is restricted to the recreational quota, i.e., no recreational quota overages adversely affect the resource necessitating reduction of the total allowable red snapper harvest, the expected economic benefits of the proposed red snapper commercial quota changes discussed in Section 4.1.3 would be unaffected by any of the alternatives proposed for Action 2. The following discussion, therefore, only addresses the potential economic effects of the proposed alternatives for Action 2 on the recreational sector.

The economic benefits expected to accrue to the recreational sector discussed in Section 4.1.3 would be received if the fishermen, and associated industry, are allowed to harvest the associated increase in quota regardless of when such harvest occurs. The 2013 red snapper recreational season closed June 29. If the recreational sector did not exceed their current allocation, 4.145 mp, during the regular season (June 1-28), the economic benefits expected to accrue to the recreational sector discussed in Section 4.1.3 could only be received if action is taken to re-open the season. If the red snapper harvest during the regular season exceeded the allocation, the proportional benefits associated with this overage would have already been received (though as a result of inadequate quota monitoring and not as a result of this proposed amendment), thereby reducing the amount of harvest, and associated benefits available for a re-opened season. In light of the overages in recent years, despite the use of improved harvest projection methods and subsequent shortening of the regular season, it is possible that the entire amount of increased recreational quota that would result from the proposed quota alternatives may have already been harvested during the regular open season. If this occurs, and the season is not re-opened, the economic benefits discussed in Section 4.1.3 would still have been received and not been

reduced or otherwise affected other than as discussed in the following paragraphs with respect to timing of benefits, distribution of benefits, etc.

The economic benefits under **Alternative 1** would be expected to be identical to those under **Preferred Alternative 2** if the RA re-opens the season. If the RA chooses not to re-open the season, then these benefits would not be received. However, this scenario is likely only if there is little or no unused quota available. In this case, there would be little or no re-opening under **Preferred Alternative 2** and **Alternative 3** as well, so any adverse impacts on the economic environment under **Alternative 1** associated with no subsequent re-opening would be minor relative to the expected economic effects under **Preferred Alternative 2** and **Alternative 3**.

Preferred Alternative 2 and **Alternative 3** would re-open the recreational red snapper season if there is quota available, allow an increase in the number of red snapper fishing trips and the harvest of some portion or all of the remaining red snapper recreational quota, and allow the economic benefits associated with these activities to be received.

For the purpose of the assessment of the potential differences between **Alternative 1** and **Preferred Alternative 2** versus **Alternative 3**, it is assumed that there are no harvest overruns during the June season and the full amount of the quota increase is available for a re-opened season. Under this assumption, the resultant re-openings that would occur under each alternative are equivalent in terms of the amount of red snapper harvested and the number of increased individual angler trips that would be taken. The estimated economic effects provided in Section 4.1.3 are based on this assumption. Additionally, it is assumed that any re-opening would be fixed, i.e., a specific re-opening period would be announced and no subsequent extension or modification of this period would occur (for example, as a result of adverse weather interruptions) because of the time constraints of the regulatory process. In essence, this assessment assumes that both alternatives (and **Alternative 1** if the RA exercises his authority to re-open the season) would result in complete harvest of the recreational quota and an equal number of red snapper target trips. As discussed in Section 2.2, although **Preferred Alternative 2** (and **Alternative 1** if re-opening occurs) and **Alternative 3** are projected to result in different season lengths (totals of days open; more days under a consecutive-day opening than under weekends-only re-opening), this difference is due to the higher level of daily effort on weekend days (Friday through Sunday, plus holidays) than on week days (Monday through Thursday) and not due to a difference in the total number of trips that would harvest red snapper.

Comparison of the expected economic effects of the alternative season re-openings, without consideration of the options, involves examination of the likelihood that both alternatives would be expected to result in the same amount of recreational effort and harvest, and consideration of how the distribution of the benefits accruing to effort and harvest may vary between the alternatives. Essentially, these considerations equate to an examination of whether the alternatives affect the likelihood that the benefits discussed in Section 4.1.3 will be realized and whether the benefits may be under- or over-stated because average benefits may vary according to the day of the week on which a trip occurs (i.e., do weekday fishermen value their fishing trip differently, or have different expenditure patterns, than weekend fishermen).

With respect to the likelihood that all alternatives would be expected to result in the same harvest and effort, a definitive determination on this issue cannot be made with available data. A consecutive-day re-opening (**Alternative 1** or **Preferred Alternative 2**) may reduce the likelihood that external factors, such as bad weather, will reduce total fishing opportunities unless the re-opening is for no longer than 3 days, e.g., a single weekend. If the adverse event happens early in the season, the next day, or day after, etc., would be available for re-scheduling the trip, subject to personal constraints. Under **Alternative 3**, the next opportunity would be the next weekend (assuming the affected weekend is not the final weekend of the re-opening), which may be a less viable option for many anglers, particularly tourists. However, if a significant adverse event occurs, such as a hurricane or tropical storm which may disrupt fishing for an extended period of time, a consecutive-day re-opening may reduce the opportunity for recovery from the event and fishing at a later date. For example, under a consecutive-day re-opening scenario, the loss of the last week of the period as a result of a tropical storm or other adverse event would not allow recovery of the “lost” red snapper fishing opportunities without additional action (additional re-opening). Under a weekends-only scenario, because of the “systematic downtime” built into the season (no harvest allowed Monday-Thursday), some trips may be able to be re-scheduled to subsequent weekends if the disruption occurs early enough within the re-opening. As a result, from this perspective, it could be argued that the weekend approach, **Alternative 3**, is more flexible than the week-day approach and, as such, would be expected to generate greater economic benefits than **Alternative 1** and **Preferred Alternative 2**. However, the ability to harvest red snapper any day of the week is, overall, a more flexible option than being limited to only harvesting red snapper on weekends. As a result, **Alternative 1** and **Preferred Alternative 2** would be more flexible from this perspective. It is likely that some external disruption will occur in 2013 during the re-opening. When a disruption will occur and what flexibility anglers will have to reschedule trips is unknown (i.e., will the disruption occur during the beginning or middle of the re-opening allowing trips to be made up later during the re-opening, or will the disruption occur at the end of the re-opening, resulting in a net loss of trips), so a definitive determination of which approach would result in the best economic outcome cannot be provided.

With respect to the distribution of benefits, the issue is whether weekend anglers value the ability to harvest red snapper more than week-day anglers. If weekend anglers value the ability to harvest red snapper more than week-day anglers, **Alternative 3** would be expected to result in greater economic benefits than **Alternative 1** or **Preferred Alternative 2**. Conversely, **Alternative 1** or **Preferred Alternative 2** would be expected to result in greater economic benefits if week-day anglers value the ability to harvest red snapper as much or more than weekend anglers. Similar considerations arise with respect to expenditure patterns and the importance of these expenditures to the appropriate fishing businesses. It would not be unreasonable to expect, however, that, in many locations, it is harder to attract fishing business on weekdays than on weekends. This suggests that the possibility of increased weekday traffic may have greater economic value to the associated businesses. Between the two continuous opening alternatives (**Alternative 1** and **Preferred Alternative 2**), **Preferred Alternative 2** may provide more advance notice of a specific re-opening date. This may allow anglers, and businesses, a better opportunity to plan for the re-opening and result in more economic benefits than **Alternative 1**. Although both angler valuation and expenditure patterns are important considerations, it is unknown whether any difference exists between weekend and week-day

anglers. As a result, it cannot be determined with available information which of the proposed alternatives, other than **Alternative 1**, which would result in forgone economic benefits if quota is available but the RA does not exercise his authority to re-open the season, would be expected to result in more economic benefits.

Comparison of the options under each alternative involves duplication of these considerations. Specifically, would re-opening the season earlier (**Option a**) be expected to affect the likelihood that the quota will be harvested and, assuming that which anglers harvest the fish will vary with when the season is open, would this (who harvests the fish) be expected to change the economic benefits? With respect to the first question, although it is logical that re-opening the season one month later (**Preferred Option b**) may reduce the likelihood of that the total quota may be harvested, as discussed in Section 2.2, the quota is expected to be harvested under all of the proposed alternative/option scenarios. With respect to the second question, similar to the discussion in the previous paragraph, available information does not support a determination that anglers, or supporting businesses, who would be expected to harvest the red snapper quota under a September re-opening value red snapper fishing differently than those who would be expected to harvest the quota under an October re-opening. **Alternative 1** may result in the earliest re-opening, but with less advance notice of the re-opening date than under either **Preferred Alternative 2** or **Alternative 3**. Even if there are economic benefits to re-opening the season earlier than would occur under **Preferred Alternative 2** or **Alternative 3**, these benefits may be offset by the economic benefits associated with the improved planning opportunity that **Preferred Alternative 2** and **Alternative 3** may allow.

In summary, the economic effects of the proposed changes in the red snapper recreational quota are expected to be unaffected by which season re-opening is adopted. Available data do not support a determination that the likelihood of harvesting the quota will be affected by the alternatives considered. If a harvest overrun occurs during the June season, the available quota and number of additional fishing days will be reduced appropriately under all of the proposed alternatives. Assuming the season is re-opened and the quota harvested, the proposed alternative re-openings would only be expected to result in distributional effects, i.e., affect which anglers and businesses receive the associated economic benefits, and not affect the amount of economic benefits received. The re-opening would only occur during a period during which red snapper recreational harvest has not been allowed since 2007, except in 2010. As a result, no businesses would be expected to be dependent on red snapper trips during this period. Demand for red snapper trips may, in fact, conflict with trips that normally would occur during this period, but target other species. Alternatively, as discussed in Section 4.1.3, a substantial portion of the increased red snapper quota may be harvested on trips already scheduled for other species or fishing in general (trips with no target intent). It is logical to expect that the proposed increase in the recreational quota may be more important to the businesses that normally harvest red snapper during June and July and which may have been adversely affected by the short ‘regular’ 2013 season (June 1-28). However, it cannot be determined whether the opportunity for these businesses to recover any business losses they may have incurred as a result of the short regular season would be affected by the proposed alternative re-openings (i.e., would these businesses benefit more under a continuous or weekend-only re-opening, or benefit more under a September or an October re-opening). However, it might be argued that the sooner red snapper harvest can resume, as would occur under a September re-opening, the quicker lost business can be

recouped. Absent this information, this assessment concludes that, unless the RA chooses not to re-open the recreational sector under **Alternative 1**, the effects of each alternative would be expected to be equal. If the RA chooses not to re-open the season under **Alternative 1**, then **Alternative 1** would provide fewer economic benefits than **Preferred Alternative 2** or **Alternative 3**. However, assuming a decision to not re-open the season under **Alternative 1** is likely only if there is little or no available quota after the June season, the difference in economic benefits between **Alternative 1**, **Preferred Alternative 2**, or **Alternative 3** would be minor.

4.2.4 Effects on the Social Environment

The intent of **Action 2** is to maximize the social and economic benefits of harvesting the recreational quota. The implicit expectation is that these benefits would be maximized by a combination of both allowing the full quota to be harvested (by re-opening the season) and by making the quota available to fishermen, and associated businesses, who place the greatest value on the resource. From the perspective of harvesting the full quota, as discussed in Section 4.2.3, other than under **Alternative 1** in the scenario of there being little or no unused quota available,, the red snapper recreational quota would be expected to be harvested under all of the alternative res-openings and options. Beyond this conclusion, for the purpose of this assessment, it is simply emphasized that individuals would be expected to fish when and where they do based on personal circumstances and preferences. Some fishermen have greater flexibility to fish than others beyond the constraints imposed by weather or other considerations (such as the availability of for-hire services). Some fishermen are retired and have the option to fish any day of the week. Some fishermen work during the week, while others work weekends. Issues of coordination with friends and family may arise for some fishermen. Even where time conflicts do not exist, some fishermen may prefer the less congested conditions of week-day fishing over weekend fishing. In summary, social effects arise that go beyond the issue of simply allowing red snapper trips (and associated harvest) to occur. These factors, however, cannot be quantitatively evaluated with available data and incorporated in an assessment of the expected social effects of the proposed alternatives. As a result, the expected social effects of the proposed alternatives, similar to the expected economic effects, cannot be distinguished as different. Therefore, assuming that all of the alternatives, including options, result in the same number of red snapper recreational trips and red snapper harvest, it cannot be determined which alternative would be more flexible and produce the most satisfaction and social benefits to recreational anglers. By extension, this conclusion also applies to affected fishing businesses and communities. Although distributional effects would be expected, similar to the discussion of the expected economic effects, this assessment concludes that the total social benefits of both alternatives would be expected to be equal.

One additional consideration is noted. As discussed in Section 4.2.3, if the total red snapper quota is increased, the commercial sector will receive an increase in quota regardless of what occurs with respect to a re-opening of the recreational season. If the total red snapper quota is increased, the recreational sector will also receive the appropriate increase in quota. However, whether the increase in recreational quota results in a re-opening of the season, or how long a re-opening will last, will depend on the amount of red snapper recreational harvest that occurred during the June season. It is possible that a significant portion of the proposed increase in the red snapper recreational quota is harvested during the June season. If this occurs, a re-opening of the

recreational season may not be possible, or may only be of short duration. If the recreational season is not re-opened, or is only re-opened for a short time, this may be perceived by some to be unfair compared to circumstances for the commercial sector. These perceptions, however, and as previously discussed in Section 4.2.3, may be unjustified or misdirected. Any increase in red snapper recreational harvest above the current quota during the June season would be accompanied by increased economic and social benefits. As a result, the respective benefits that may otherwise have been expected to accrue to a re-opened season would have already been received during the June season. Thus, only the timing and distribution of the associated benefits would be affected and not the total benefits received. As a result, the focus of any perceptions of unfairness should, perhaps, more appropriately be directed to any redistribution of benefits within the recreational sector and not to a comparison with circumstances in the commercial sector. Nevertheless, regardless of justification or direction of comparison, a reduction in the re-opening of the red snapper recreational season may result in perceptions of unfairness by some fishermen and associated businesses and communities.

4.2.5 Effects on the Administrative Environment

Alternative 1 would increase the burden on NMFS by requiring the RA to decide whether and when to re-open the recreational season rather than the Council. On the other hand, if the fishing season is closed until the beginning of the 2014 fishing season, NMFS would not need to take action to re-open the season, or subsequently have to make further projections regarding the level of harvest for the 2013 calendar year. **Preferred Alternative 2** would require NMFS to announce the re-opening of the recreational sector and continue monitoring the recreational catch. **Alternative 3** would be expected to have the largest effect. The repeated weekday closures and open weekends would require additional enforcement monitoring by NMFS Office of Law Enforcement and their state partners. Neither **Option a** or **Preferred Option b** under **Alternatives 2** and **3** would be expected to create different impacts on the administrative environment.

4.3 Cumulative Effects Analysis

The cumulative effects from the red snapper rebuilding plan have been analyzed in Reef Fish Amendment 22 (GMFMC 2004a) and Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2007), and cumulative effects to the reef fish fishery have been analyzed in Reef Fish Amendments 30A (GMFMC 2008a), 30B (GMFMC 2008b) and 31 (GMFMC 2009), and are incorporated here by reference. A summary of these effects is included below.

The effects of setting the quota in Action 1 are similar to those described in the February 2010 Regulatory Amendment (GMFMC 2010), and are most closely aligned with the effects from the revisions to the red snapper rebuilding plan in Amendment 27 to the FMP (GMFMC 2007). This analysis found the effects on the biophysical and socioeconomic environments would be positive because they would ultimately restore and maintain the stock 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 socioeconomic environment associated with red snapper fishing have occurred under the rebuilding plan and are likely to continue due to the

need to limit directed harvest and reduce bycatch mortality, and therefore limit fishing levels. In particular, the recreational season is still limited to only a small portion of the year. These negative impacts can be minimized by selecting measures that would provide the least disruption to the red snapper component of the reef fish fishery while maintaining quotas consistent with the rebuilding plan. All of the proposed alternatives in each action allow the red snapper stock to be rebuilt within the rebuilding plan timeframe. The determination of the quota for 2013 depends on the desire to increase allowable catch while maintaining a stable fishery. For this reason, the highest quota possible is not automatically the most beneficial to the socioeconomic environment. Setting the quota lower than the ABC could result in fewer negative impacts to both fishermen and the stock.

Re-opening the recreational sector would have overall positive impacts to the socioeconomic environment, regardless of the time selected in Action 2. Increasing operating costs and the down-turn in the national economy have reduced business for for-hire vessel owners and support industries for private anglers (bait shops, etc.). Any additional opportunity for red snapper fishing should improve this situation. Because the quotas set in Action 1 would not jeopardize the rebuilding plan for red snapper, the recreational sector could be re-opened without significant adverse impacts to the stock.

The Council is considering several actions affecting the red snapper component of the reef fish fishery. These actions include reallocation between the commercial and recreational sectors and delegation of recreational management measures to the Gulf states. The cumulative impacts of these actions cannot be foreseen at this time, but will be addressed fully in the environmental analyses for these amendments.

The cumulative effects from the Deepwater Horizon MC252 oil spill may not be known for several years. If there was a reduction in spawning success in 2010, the impacts may begin to manifest themselves in 2013, when the fish that would have been spawned in 2010 would become large enough to enter the adult spawning population and be caught by red snapper fishers. The impacts would result in reduced fishing success and reduced spawning potential. In fact, the most recent stock assessment showed recruitment for the entire stock has decreased during the last two years and was low even though spawning stock abundance has been increasing. In a study conducted during the summer of 2011, University of South Florida researchers found more unhealthy fish in the area of the 2010 oil spill compared to other areas. Although some scientists have suggested that these incidences of sick fish may be related to the spill, others have pointed out that there is no baseline from which to judge the prevalence of sick fish, and no connection has been determined. Studies are continuing to check whether the sick fish suffer from immune system and fertility problems (Tampa Bay Times 2012).

Some of the likely past, present, and future impacts of global climate change induced by human activities 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. The United Nations Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007) contains a compilation of scientific information on climate change and is incorporated here by reference

http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml). 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 the Generic ACL/AM amendment (GMFMC 2011a) and Amendment 32 to the FMP (GMFMC 2011c).

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 are collected through NMFS's Head Boat Survey, the Texas Marine Recreational Fishing Survey, and the Marine Recreational Information Program.

CHAPTER 5. REGULATORY IMPACT REVIEW

5.1 Introduction

The National Marine Fisheries Service (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 proposed or final regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that 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 the proposed regulations are a "significant regulatory action" under the criteria provided in Executive Order (E.O.) 12866 and provides some information that may be used in conducting an analysis of impacts on small business entities pursuant to the Regulatory Flexibility Act. This RIR analyzes the impacts that the proposed management alternatives in this framework action would be expected to have on the red snapper component of the Gulf of Mexico reef fish fishery.

5.2 Problems and Objectives

The problems and objectives addressed by this proposed framework action are discussed in Section 1.2.

5.3 Description of Fisheries

A description of the red snapper component of the Gulf of Mexico reef fish fishery is provided in Section 3.3.

5.4 Impacts of Management Measures

A detailed discussion of the expected economic effects of each action and alternative in this proposed amendment is provided in Chapter 4.

This proposed amendment would increase the 2013 red snapper commercial quota by 1.295 million lb, round weight, and the 2013 red snapper recreational quota by 1.245 million lb, round weight. The proposed increase in the commercial quota would be expected to result in an increase in gross revenue (ex-vessel revenue minus the 3-percent cost recovery fee) for commercial vessels that harvest red snapper of approximately \$4.81 million (2011 dollars). The proposed increase in the recreational quota would be expected to result in an increase in net operating revenue (gross revenue minus operating costs except for labor) for for-hire businesses of approximately \$3.361 million (2011 dollars) for charterboats and approximately \$3.765 million for headboats. The proposed increase in the recreational quota would also be expected to

result in an increase in consumer surplus (the amount of money that an angler would be willing to pay for a fishing trip in excess of the cost of the trip) to recreational anglers of approximately \$11.62 million (2011 dollars).

5.5 Public and Private Costs of Regulations

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 amendment include:

Council costs of document preparation, meetings, public hearings, and information dissemination.....	\$30,000
NMFS administrative costs of document preparation, meetings and review	\$20,000
TOTAL	\$50,000

The Council and federal costs of document preparation are based on staff time, travel, printing, and any other relevant items where funds were expended directly for this specific action. There are no permit requirements proposed in this regulatory amendment. Although additional enforcement scrutiny of the recreational harvest of red snapper may occur as a result of the proposed re-opening, under a fixed enforcement budget, any additional enforcement activity would require a redirection of current resources rather than an expenditure of new funds.

5.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a “significant regulatory action” if it is likely 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. Based on the information provided above, this action has been determined to not be economically significant for the purposes of E.O. 12866.

CHAPTER 6. REGULATORY FLEXIBILITY ACT ANALYSIS

6.1 Introduction

The purpose of the Regulatory Act Analysis (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of 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 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 various alternatives contained in the fishery management plan (FMP) or amendment (including framework management measures and other regulatory actions) and to ensure the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

The RFA requires agencies to conduct a Regulatory Flexibility Act Analysis (RFAA) for each proposed rule. The RFAA 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. An RFAA is conducted to primarily determine whether the proposed action would have a “significant economic impact on a substantial number of small entities.” The RFAA 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) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; 4) a 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 requirements of the report or record; 5) an identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the proposed rule; 6) a description and estimate of the expected economic impacts on small entities; and 7) an explanation of the criteria used to evaluate whether the rule would impose “significant economic impacts”.

6.2 Statement of the need for, objective of, and legal basis for the proposed action

The problems and objective of this proposed action are provided in Chapter 1. In summary, the objective of this proposed rule is to set 2013 quotas for the commercial and recreational harvest of red snapper in the Gulf of Mexico (Gulf) that are consistent with the red snapper rebuilding plan in order to achieve optimal yield. The Magnuson-Stevens Fishery Conservation and Management Act provides the statutory basis for this proposed action.

6.3 Description and estimate of the number of small entities to which the proposed action would apply

This rule, if implemented, would be expected to directly affect commercial and for-hire vessels that harvest red snapper. In addition to needing red snapper individual fishing quota allocation, a commercial reef fish permit is required to harvest red snapper in the Gulf Exclusive Economic Zone (EEZ) in excess of the bag limit and to sell red snapper. An estimated 888 vessels possess a valid (non-expired) or renewable commercial reef fish permit. A renewable permit is an expired permit that may not be actively fished, but is renewable for up to 1 year after permit expiration. However, over the period 2007-2011, an average of only 333 vessels per year recorded commercial red snapper harvests. As a result, for the purpose of this assessment, the number of potentially affected commercial vessels is estimated to range from 333-888. The average commercial vessel in the Gulf reef fish fishery is estimated to earn approximately \$50,000 (2011 dollars) in gross annual revenue, while the average vessel with red snapper landings is estimated to earn approximately \$96,000.

A federal reef fish for-hire vessel permit is required for for-hire vessels to harvest red snapper in the Gulf EEZ. On June 24, 2013, 1,353 vessels had a valid or renewable reef fish for-hire permit. The for-hire fleet is comprised of charterboats, which charge a fee on a vessel basis, and headboats, which charge a fee on an individual angler (head) basis. Although the for-hire permit application collects information on the primary method of operation, the resultant permit itself does not identify the permitted vessel as either a headboat or a charter vessel, operation as either a headboat or charter vessel is not restricted by the permitting regulations, and vessels may operate in both capacities. However, only federally permitted headboats are required to submit harvest and effort information to the National Marine Fisheries Service (NMFS) Southeast Region Headboat Survey (SRHS). Participation in the SRHS is based on determination by the Southeast Fisheries Science Center that the vessel primarily operates as a headboat. Seventy vessels were registered in the SHRS as of March 1, 2013. As a result, 1,283 of the vessels with a valid or renewable reef fish for-hire permit are expected to operate as charterboats. The average charterboat is estimated to earn approximately \$80,000 (2011 dollars) in gross annual revenue and the average headboat is estimated to earn approximately \$242,000.

NMFS has not identified any other small entities that would be expected to be directly affected by this proposed action.

The Small Business Administration has established size criteria for all major industry sectors in the U.S., including fish harvesters. A business involved in fish harvesting is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of \$19.0 million (NAICS code 114111, finfish fishing) for all its affiliated operations worldwide. The revenue threshold for a business involved in the for-hire fishing industry is \$7.0 million (NAICS code 487210, fishing boat charter operation). All commercial and for-hire vessels expected to be directly affected by this proposed rule are believed to be small business entities.

6.4 Description of the projected reporting, record-keeping and other compliance requirements of the proposed action, 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

This proposed action would not establish any new reporting, record-keeping, or other compliance requirements.

6.5 Identification of all relevant federal rules, which may duplicate, overlap or conflict with the proposed action

No duplicative, overlapping, or conflicting federal rules have been identified.

6.6 Significance of economic impacts on a substantial number of small entities

Substantial number criterion

This proposed action would be expected to directly affect an estimated 333 vessels that have a valid or renewable reef fish commercial permit and 1,353 vessels that possess a valid or renewable reef fish for-hire permit. The number of commercial vessels that would be expected to be directly affected represents over 37% of the fleet, and the number of for-hire vessels that would be expected to be directly affected represents the entire for-hire fleet. As a result, this proposed action is determined to meet the substantial number criterion.

Significant economic impacts

The outcome of “significant economic impact” can be ascertained by examining two factors: disproportionality and profitability.

Disproportionality: Do the regulations place a substantial number of small entities at a significant competitive disadvantage to large entities?

All entities expected to be directly affected by the measures in this proposed action are determined for the purpose of this analysis to be small business entities, so the issue of disproportionality does not arise in the present case.

Profitability: Do the regulations significantly reduce profits for a substantial number of small entities?

This proposed action would increase the 2013 red snapper commercial quota by 1.295 million lb (587,402 kg), round weight, and the 2013 red snapper recreational quota by 1.245 million lb (564,723 kg), round weight. The proposed increase in the commercial quota would be expected to result in an increase in gross revenue (ex-vessel revenue minus the 3-percent cost recovery fee) for commercial vessels that harvest red snapper of approximately \$4.81 million (2011 dollars), or approximately \$5,417-\$14,444 per vessel ($\$4.81 \text{ million} / 888 \text{ vessels} = \$5,417 \text{ per vessel}$; $\$4.81 / 333 \text{ vessels} = \$14,444 \text{ per vessel}$). The expected range in the increase in gross revenue per vessel would be equal to approximately 10.8 percent ($\$5,417 / \$50,000$) and 15.1 percent ($\$14,444 / \$96,000$) increases in the average annual revenue per vessel, respectively.

The proposed increase in the recreational quota would be expected to result in an increase in net operating revenue (gross revenue minus operating costs except for labor) for for-hire businesses of approximately \$3.361 million (2011 dollars) for charterboats and approximately \$3.765 million for headboats. The projected increase in net operating revenue for charterboats would be equal to approximately \$2,600 per vessel ($\$3.361 \text{ million} / 1,283 \text{ vessels}$), or approximately 3.3 percent ($\$2,600 / \$80,000$) of average annual revenue per vessel. For headboats, the projected increase in net operating revenue would be equal to approximately \$53,800 per vessel ($\$3.765 \text{ million} / 70 \text{ vessels}$), or approximately 22.2 percent ($\$53,800 / \$242,000$) of average annual revenue per vessel.

6.7 Description of the significant alternatives to the proposed action and discussion of how the alternatives attempt to minimize economic impacts on small entities

This proposed action, if adopted, would not be expected to have a significant adverse economic effect on a substantial number of small entities. As a result, the issue of significant alternatives to reduce the adverse economic effects is not relevant.

CHAPTER 7. LIST OF PREPARERS AND AGENCIES CONSULTED

LIST OF PREPARERS

Name	Expertise	Responsibility	Agency
Susan Gerhart	Biologist	Document development, background, and effects analysis	SERO
Stephen Holiman, Ph.D.	Economist	Socio-economic analyses, RIR, and RFAA	SERO
Steven Atran	Biologist	Review	GMFMC
Shepherd Grimes	Attorney	Legal compliance and review	NOAA GC
Steve Branstetter, Ph.D.	Biologist	Review	SERO
Noah Silverman	Natural Resource Management Specialist	NEPA compliance	SERO
Peter Hood	Biologist	Affected environment	SERO
Carrie Simmons	Biologist	Review	GMFMC

SERO = National Marine Fisheries Service Southeast Regional Office, GMFMC = Gulf of Mexico Fishery Management Council, GC = General Counsel.

LIST OF AGENCIES CONSULTED

Gulf of Mexico Fishery Management Council
 National Marine Fisheries Service
 - Southeast Fisheries Science Center
 - Southeast Regional Office
 NOAA General Counsel
 U.S. Coast Guard
 Environmental Protection Agency

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APPENDIX A. OTHER APPLICABLE LAW

The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.) provides the authority for management of stocks included in fishery management plans in federal waters of the exclusive economic zone. However, 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 include the Endangered Species Act (Section 4.2), E.O. 12866 (Regulatory Planning and Review, Chapter 5) and E.O. 12898 (Environmental Justice, Chapter 3). Other applicable laws are summarized below.

Administrative Procedures Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (5 U.S.C. Subchapter II), which establishes a “notice and comment” procedure to enable public participation in the rulemaking process. Under the Act, the 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 Act 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 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 framework action 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 (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 FMPs, amendments, and framework actions and the use of best available information is the second national standard under the Magnuson-Stevens Fishery Conservation and Management Act. To be consistent with the Act, FMPs, amendments, and framework actions 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 for FMPs and amendments, 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.

Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (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 Act requires NMFS to obtain approval from the Office of Management and Budget before requesting most types of fishing activity information from the public. None of the alternatives in this amendment are expected to create additional paperwork burdens.

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 fishing activities, and studies of pinniped-fishing activity interactions.

Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries that places all U.S. commercial fishing activities into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishing activity. The categorization of a fishing activity in the List of Fisheries determines whether participants in that fishing activity may be required to comply with certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. The primary gears used in the Gulf of Mexico reef fish fishery are classified in the updated 2012 MMPA List of Fisheries as Category III fishery (74 FR 73912). This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from the fishery is less than or equal to one percent of the potential biological removal.

Executive Orders (E.O.)

E.O. 12630: Takings

The E.O. 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 action.

E.O. 12962: Recreational Fisheries

This E.O. 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 (NRFCC) 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 NRFCC 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. 13132: Federalism

The E.O. 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.

APPENDIX B. 2013 RECREATIONAL RED SNAPPER SEASON ANALYSIS

**Estimated 2013 Season Lengths for a Fall Reopening of the
Gulf of Mexico Red Snapper Recreational Season
NOAA Fisheries Service
Southeast Regional Office
St. Petersburg, FL
July 9, 2013
SERO-LAPP-2013-05**

Introduction

In May 2013, the Gulf of Mexico Fishery Management Council's (Gulf Council) Scientific and Statistical Committee (SSC) reviewed and approved the red snapper benchmark stock assessment. The SSC recommended a 13.5 million pound (mp) acceptable biological catch (ABC) level for 2013, which represents a 5 mp increase from the current ABC (8.42 mp). At their June meeting, the Gulf Council discussed setting the total quota for red snapper, which is functionally equivalent to the annual catch limit (ACL), between 10.0 and 12.1 mp. Based on a 51% commercial: 49% recreational allocation, the recreational quota would be set at 4.9 to 5.929 mp. The current quota is 4.145 mp. In July, the Gulf Council will hold a special one-day meeting to set the quota and fall season start date for red snapper. The purpose of this analysis is to determine when the new quota will be met in 2013 based on proposed quota increases and a fall season reopening (September 1 or October 1). Landings data through June will be available by mid-August allowing managers to compare actual landings estimates against projections. Adjustments to the fall season end date will be necessary at that time.

Methods

Methods for projecting when the quota will be met are the same as those described in the addendum to SERO (2013). Federal season landings per day and average weights were projected based on historical data for the eastern and western Gulf. Landings from state waters were also estimated based on historical landings and effort reported from state waters and from 2013 Louisiana quota monitoring data to account for landings occurring in state waters when the federal season is closed. Based on SERO (2013), the federal season length was projected to be 28 days (Jun 1-Jun 28) without Texas, Florida, and Louisiana adopting consistent regulations, and 34 days (Jun 1-Jul 4) if all states did adopt consistent regulations. This analysis assumes the previous analysis exactly predicted when the 4.145 mp recreational quota would be met. If, however, landings were less or more than previous projections, then season lengths predicted herein would be longer or shorter.

Previous projections estimated landings per day (in numbers) during summer when tourism is high and weather tends to be better than fall. Because the Gulf Council is proposing to reopen in September or October, landings per day are not expected to be as high as summer due to lower tourism, more severe weather, and children returning to school. Because the season has not

been open in fall since 2010, and prior to then not since 2007, it is difficult to predict fall landings per day. A meta-analysis was conducted to determine the proportional relationship between fall landings per day and peak summer landings per day. Headboat data were also evaluated to determine the proportional relationship between fall weekend only (Fri-Sun) landings per day and peak summer landings per day, because the Gulf Council is also considering opening only on weekends in fall. Although differences in average weight may also occur in fall compared to summer, no attempt was made to predict differences in average weight. Average weights were assumed to be 7.49 pounds whole weight (lbs ww) in the eastern Gulf and 8.20 lbs ww in the western Gulf (SERO 2013).

Data used for the meta-analysis included: (1) 2011 and 2012 Marine Recreational Information Program (MRIP) federal and/or state waters fishing effort during wave 5 vs. average fishing effort during Waves 3-4; (2) 2011 and 2012 September-October headboat angler days versus June-July headboat angler days; (3) 2010 Texas headboat October-November weekend landings vs. June-July weekend and/or weekday landings; and (4) 2005-2007 wave 5 landings per day during September-October versus landings per day during May-August.

Headboats are the only mode within the recreational sector that includes daily trip-level reporting. To examine fall weekend-only versus peak summer landings per day, Texas headboat weekend landings per day during October-November 2010 and Gulf-wide headboat weekend landings per day during September-October 2007 were compared to June-July landings per day during the same respective year.

Based on the meta-analysis, ratio scalars were developed and used to estimate fall landings per day (including and excluding weekends only) relative to summer. Sensitivity runs were also performed to determine how sensitive season lengths were to various landings estimates per day. The estimated fall landings per day were used to predict when the increased quotas would be met. It was assumed that all states would adopt consistent state water seasons when the fall federal season was open. If landings due to inconsistent regulations were previously estimated to come from state waters during the fall reopening (i.e., September – Texas and Louisiana; October – Texas) then those landings were replaced by the revised fall federal season landings per day.

Given that most landings are estimated in two month waves, limited information (headboat only) was available to determine if landings per day varied by month. Therefore, analyses of season length assumed landings per day were the same in September and October. Similarly, based on the meta-analysis there was no clear difference in landings per day by region (eastern vs. western Gulf) so a Gulf-wide scalar was used to estimate landing per day during fall 2013.

Results

SERO (2013) predicted federal season landings of 12,360 fish per day in the eastern Gulf and 3,536 fish per day in the western Gulf during summer. At an average weight of 7.49 lbs ww, 92,587 lbs of fish were estimated to be landed per summer day in the eastern Gulf. At an average weight of 8.20 lbs ww, 29,012 lbs of fish were estimate to be landed per summer day in

the western Gulf. Gulf-wide federal season landings per summer day were estimated to be 15,896 fish equaling 121,599 lbs.

Meta-analysis of historical fishing and landings data indicated effort during wave 5 (Sept-Oct) was 26-45% of fishing effort during summer (Table 1). Similarly, evaluation of historical landings revealed landings per day were 35-60% of landings per day during summer (Table 1). Headboat weekend landings per day in fall 2007 and 2010 were 60-66% of peak summer landings per day during 2007 and 2010.

Based on the results of the meta-analysis, continuous season lengths during fall were estimated using an average scaler of 50% relative to summer landings per day (=60,800 lbs/day). Sensitivity runs were performed using scalers of 40% and 60% (48,640-72,959 lbs/day). For weekend only fishing seasons, a scaler of 65% was used relative to summer landings per day (=79,039 lbs/day). Sensitivity runs were also performed using 55% and 75% scalers (66,880-91,199 lbs/day).

Season lengths are summarized in Tables 2 and 3. Increasing the quota to 4.9 mp would result in a continuous fishing season of 13 days (range: 11-16 days) and a weekends only season of 10 days (range: 9-12 days). Increasing the quota to 5.39 mp would result in a continuous fishing season of 21 days (range: 18-27 days) and a weekends only season of 16 days (range: 14-19 days). Increasing the quota to 5.635 mp would result in a continuous fishing season of 25 days (range: 21-32 days) and a weekends only season of 19 days (range: 17-23 days). Increasing the quota to 5.929 mp would result in a continuous fishing season of 30 days (range: 25-38 days) and a weekends only season of 23 days (range: 20-28 days).

Discussion

There is considerable uncertainty in estimating the length of a fall red snapper season given the season has only been open in fall once out of the last six years. Evaluation of historical data revealed that landings per day were much less in fall (~50-65%) than during summer. However, given the dynamic changes in how the fishery has operated since the rebuilding plan was revised in 2007, historical comparisons between fall and summer catch rates may not be representative of current conditions. If in fact landings per day continue to be lower in fall than during summer, the number of days the red snapper season could remain open would be longer. The longest seasons predicted by this analysis were based on higher quotas and assuming a continuous fishing season. Weekend only seasons were shorter because landings per day were estimated to be higher on weekends compared to weekdays.

Season lengths presented herein are contingent on previous projections (SERO 2013) accurately estimating the length of the fishing season under a 4.145 mp quota. Given inconsistent regulations and historical overages of the quota, there is potential that the summer season length (Jun 1-Jun 28) was too long and may result in a quota overage. Similarly, given the short duration of the season, it may have been too short and the quota might not have been met. If landings during summer are greater than the current 4.145 mp quota, then season lengths presented herein will be overestimated. If landings during summer are less than the current

4.145 mp quota, then average weights and/or landings per day have been overestimated, and season lengths presented herein would be underestimated.

References

SERO. 2013. Gulf-wide and State-specific Projected 2013 Red Snapper Federal Season Closure Dates. SERO-LAPP-2013-02. NMFS, Southeast Regional Office, St. Petersburg, Florida. 16 pp + addendum.

Table 1. Meta-analysis results comparing recreational fishing effort or landings per day for red snapper in fall relative to summer.

Scenario	Year	Data Source	Region	Method	Ratio
1	2011	MRIP EEZ + State effort	LA-wFL	Wave 5 effort vs Wave 3/4 avg	0.43
2	2012	MRIP EEZ + State effort	LA-wFL	Wave 5 effort vs Wave 3/4 avg	0.45
3	2012	MRIP EEZ effort	LA-wFL	Wave 5 effort vs Wave 3/4 avg	0.30
4	2011	MRIP EEZ effort	LA-wFL	Wave 5 effort vs Wave 3/4 avg	0.31
5	2011	SE Headboat Survey	LA-TX	Sept/Oct angler days vs. Jun/Jul	0.26
6	2012	SE Headboat Survey	LA-TX	Sept/Oct angler days vs. Jun/Jul	0.26
7	2011	SE Headboat Survey	MS-wFL	Sept/Oct angler days vs. Jun/Jul	0.30
8	2012	SE Headboat Survey	MS-wFL	Sept/Oct angler days vs. Jun/Jul	0.32
9	2010	SE Headboat Survey	TX	Oct/Nov wkend landings/day vs. Jun/Jul wkend landings/day	0.48
10	2010	SE Headboat Survey	TX	Oct/Nov wkend landings/day vs. Jun/Jul wkend&weekday landings/day	0.60
11	2005	SEFSC ACL landings	LA-TX	Wave 5 landings/day vs. Wave 3/4 avg landings/day	0.42
12	2006	SEFSC ACL landings	LA-TX	Wave 5 landings/day vs. Wave 3/4 avg landings/day	0.40
13	2007	SEFSC ACL landings	LA-TX	Wave 5 landings/day vs. Wave 3/4 avg landings/day	0.39
14	2005	SEFSC ACL landings	MS-wFL	Wave 5 landings/day vs. Wave 3/4 avg landings/day	0.43
15	2006	SEFSC ACL landings	MS-wFL	Wave 5 landings/day vs. Wave 3/4 avg landings/day	0.35
16	2007	SEFSC ACL landings	MS-wFL	Wave 5 landings/day vs. Wave 3/4 avg landings/day	0.44

Table 2. Projected continuous and weekend-only fall recreational season lengths beginning September 1, 2013, based on various red snapper quota increases

Alternative	Quota	Quota Increase	Season Type	Fall Landings/Day Relative to Summer	Days Open After Sept 1	Season Dates
1	4.145 mp	0 mp	Continuous	n/a	0	n/a
			Weekends (Fri-Sun)	n/a	0	n/a
2	5.929 mp	1.784 mp	Continuous	40%	38	Sept 1-Oct 8
				50%	30	Sept 1-Sept 30
				60%	25	Sept 1-Sept 25
			Weekends (Fri-Sun)	55%	28	Sept 1-2, 6-8, 13-15, 20-22, 27-29; Oct 4-6, 11-13, 18-20, 25-27; Nov 1-2
				65%	23	Sept 1-2, 6-8, 13-15, 20-22, 27-29; Oct 4-6, 11-13, 18-20
				75%	20	Sept 1-2, 6-8, 13-15, 20-22, 27-29; Oct 4-6, 11-13
3	5.635 mp	1.490 mp	Continuous	40%	32	Sept 1-Oct 2
				50%	25	Sept 1-Sept 25
				60%	21	Sept 1-Sept 21
			Weekends (Fri-Sun)	55%	23	Sept 1-2, 6-8, 13-15, 20-22, 27-29; Oct 4-6, 11-13, 18-20
				65%	19	Sept 1-2, 6-8, 13-15, 20-22, 27-29; Oct 4-6, 11-12
				75%	17	Sept 1-2, 6-8, 13-15, 20-22, 27-29; Oct 4-6
4	5.390 mp	1.245 mp	Continuous	40%	27	Sept 1-Sept 27
				50%	21	Sept 1-Sept 21
				60%	18	Sept 1-Sept 18
			Weekends (Fri-Sun)	55%	19	Sept 1-2, 6-8, 13-15, 20-22, 27-29; Oct 4-6, 11-12
				65%	16	Sept 1-2, 6-8, 13-15, 20-22, 27-29; Oct 4-5
				75%	14	Sept 1-2, 6-8, 13-15, 20-22, 27-29
4	4.900 mp	0.755 mp	Continuous	40%	16	Sept 1-Sept 16
				50%	13	Sept 1-Sept 13
				60%	11	Sept 1-Sept 11
			Weekends (Fri-Sun)	55%	12	Sept 1-2, 6-8, 13-15, 20-22, 27
				65%	10	Sept 1-2, 6-8, 13-15, 20-21
				75%	9	Sept 1-2, 6-8, 13-15, 20

Table 3. Projected continuous and weekend-only fall recreational season lengths beginning October 1, 2013, based on various red snapper quota increases

Alternative	Quota	Quota Increase	Season Type	Fall Landings/Day Relative to Summer	Days Open After Oct 1	Season Dates
1	4.145 mp	0 mp	Continuous	n/a	0	n/a
			Weekends (Fri-Sun)	n/a	0	n/a
2	5.929 mp	1.784 mp	Continuous	40%	38	Oct 1-Nov 8
				50%	30	Oct 1-Oct 30
				60%	25	Oct 1-Oct 25
			Weekends (Fri-Sun)	55%	28	Oct 4-6, 11-13, 18-20, 25-27; Nov 1-3, 8-10, 15-17, 22-24, 29-30; Dec 1, 6
				65%	23	Oct 4-6, 11-13, 18-20, 25-27; Nov 1-3, 8-10, 15-17, 22-23
				75%	20	Oct 4-6, 11-13, 18-20, 25-27; Nov 1-3, 8-10, 15-16
3	5.635 mp	1.490 mp	Continuous	40%	32	Oct 1-Nov 2
				50%	25	Oct 1-Oct 25
				60%	21	Oct 1-Oct 21
			Weekends (Fri-Sun)	55%	23	Oct 4-6, 11-13, 18-20, 25-27, Nov 1-3, 8-10, 15-17, 22-23
				65%	19	Oct 4-6, 11-13, 18-20, 25-27; Nov 1-3, 8-10, 15
				75%	17	Oct 4-6, 11-13, 18-20, 25-27, Nov 1-3, 8-9
4	5.390 mp	1.245 mp	Continuous	40%	27	Oct 1-Oct 27
				50%	21	Oct 1-Oct 21
				60%	18	Oct 1-Oct 18
			Weekends (Fri-Sun)	55%	19	Oct 4-6, 11-13, 18-20, 25-27, Nov 1-3, 8-10, 15
				65%	16	Oct 4-6, 11-13, 18-20, 25-27; Nov 1-3, 8
				75%	14	Oct 4-6, 11-13, 18-20, 25-27, Nov 1-2
4	4.900 mp	0.755 mp	Continuous	40%	16	Oct 1-Oct 16
				50%	13	Oct 1-Oct 13
				60%	11	Oct 1-Oct 11
			Weekends (Fri-Sun)	55%	12	Oct 4-6, 11-13, 18-20, 25-27
				65%	10	Oct 4-6, 11-13, 18-20, 25
				75%	9	Oct 4-6, 11-13, 18-20

APPENDIX C. 2013-2015 PROJECTIONS

Requested 2013-2015 Projections for Gulf of Mexico Red Snapper (revised)
NOAA Fisheries Service
Southeast Fisheries Science Center
Miami, FL
July 15, 2013

Introduction

On June 18, 2013, the Southeast Fisheries Science Center (SEFSC) presented the results of the Gulf of Mexico red snapper assessment to the Gulf of Mexico Fishery Management Council (GMFMC). The 2013 benchmark assessment of Gulf of Mexico red snapper concluded that the stock is overfished but is no longer undergoing overfishing. The benchmark assessment also provided ABC recommendations for Gulf of Mexico red snapper for 2013-2032. The projected ABC yield streams for 2013-2032 were characterized by a large increase in yield for 2013 relative to landings in recent years followed by a declining level of yield each year from 2014 to 2017 before resuming an upward trend (Figure 1). This pattern in the projected yield stream is largely due to the recent predicted recruitment patterns of the stock. Currently, a number of strong year-classes are moving through the fishery and supporting the increase in stock abundance predicted by the assessment model. However, the assessment model is predicting below average recruitment for 2010 and 2011. As the strong year-classes become fished out and are replaced by these weaker year-classes beginning in 2014, the ABC will decrease until the weak 2010 and 2011 year-classes exit the fishery. This pattern of a large spike in landings in 2013 followed by subsequent reductions in landings in 2014 and 2015 caused concern among some members of the GMFMC. In response they requested additional ABC yield projections for 2014 and 2015 for a set of constant catch limits for 2013 and 2014. These projections were produced by the SEFSC in response to that request.

Methods

Projections were run for Gulf of Mexico red snapper for 2013-2032 following the methods outlined in the assessment report (SEDAR 31). Projections were run for three model configurations to account for uncertainty in the natural mortality rate. Projections were run assuming that selectivity patterns, retention patterns, and discard mortality were the same as the three most recent years (2009-2011). The projections assumed a 51:49 split in yield allocation between the commercial and recreational sectors, respectively. The catch allocation among fleets within the commercial and recreational sectors reflects the average distribution of landings among fleets during 2008-2012. For the six bycatch fleets used in the assessment model (commercial closed season East and West, recreational closed season East and West, and shrimp bycatch fishery East and West), removals for 2012 were assumed to be equal to removals in 2011. In addition, exploitation rates for the six bycatch fleets for 2013-2032 were assumed to be equal to 2011 levels.

Projections were run at two fishing mortality rate scenarios: $F_{\text{SPR}26\%}$ and F_{REBUILD} . The F_{MSY} proxy for Gulf of Mexico red snapper is $F_{\text{SPR}26\%}$. For Gulf of Mexico red snapper, F_{REBUILD} is defined as the fishing mortality rate that achieves a spawning stock biomass associated with an SPR of 26% by 2032. To calculate the OFL, projections were run at $F_{\text{SPR}26\%}$. To calculate the ABC, projections were run at F_{REBUILD} . Uncertainty in projections was estimated using a bootstrap approach outlined in the assessment report (SEDAR 2013). The projections from the bootstrap runs were used to create probability distribution

functions (PDF) for the development of management advice, including the overfishing limit (OFL) and acceptable biological catch (ABC). The three model configurations chosen by the GMFMC Scientific and Statistical Committee (SSC) were combined into a single PDF using a weighted average where the base model received 50% of the weight and the high and low natural mortality scenarios received 25% each. The OFL was calculated from the combined PDF of the three model configurations projected forward at $F_{SPR26\%}$ (Table 1). Based upon the SSC Tier 1 ABC control rule a P^* value of 0.427 was applied to the PDF of yields at $F_{REBUILD}$ to determine the ABC (Table 1).

The GMFMC requested additional yield projections for 2013-2015 under a range of scenarios that constrained harvest below the recommended ABC for 2013. These alternative yield scenarios were designed to investigate the potential for forgoing yield in 2013 in order to avoid the reductions in quota projected by the assessment model in subsequent years. The Council requested the following catch limit alternatives:

- a. 8.46 mp (status quo)
- b. 10.0 mp
- c. 11.0 mp
- d. 11.5 mp
- e. 12.1 mp

For each of the above catch levels, the Council requested analysis under two scenarios. Based on the $F_{SPR26\%}$ proxy and the PDF used by the SSC:

1. If the catch is held at that level for 2013, what would be the ABC catch levels in 2014 and 2015 under a constant $F_{REBUILD}$ scenario beginning in 2014?
2. If the catch is held at that level for 2013 and 2014, what would be the ABC catch levels in 2015 under a constant $F_{REBUILD}$ scenario beginning in 2015?

Results

The alternative projections requested by the GMFMC are presented in Tables 2 and 3. Under every scenario the catch is fixed at a level below the SSC recommended ABC for 2013. For some of the scenarios the catch is fixed at a level below the recommended ABC for both 2013 and 2014. For some of the alternative scenarios in 2014, and all in 2015, the projected yields exceed the ABC recommended by the GMFMC SSC. All of the alternative scenarios examined are projected to achieve the rebuilding target with a similar probability of exceeding the OFL as the ABC recommended by the SSC.

References

SEDAR 2013. SEDAR 31 – Gulf of Mexico Red Snapper Stock Assessment Report. SEDAR, North Charleston SC. 1103 pp.

Tables

Table 1. Red snapper OFL and ABC projections in pounds whole weight, using the PDF constructed from a weighted average of the base run, high M, and low M runs.

Year	OFL	ABC
2013	15,700,000	13,500,000
2014	13,300,000	11,900,000
2015	11,600,000	10,600,000
2016	10,700,000	9,800,000
2017	10,500,000	9,700,000
2018	10,700,000	9,800,000
2019	10,800,000	9,900,000
2020	10,900,000	10,100,000
2021	11,100,000	10,200,000
2022	11,100,000	10,300,000

Table 2. Recent landings and projected OFL (millions of lbs) for 10 alternative yield scenarios requested by the Gulf of Mexico Fishery Management Council. Shaded values represent fixed catches.

Year	Landings	OFL	Scenario									
			a1	a2	b1	b2	c1	c2	d1	d2	e1	e2
2008	5.89	-	-	-	-	-	-	-	-	-	-	-
2009	6.65	-	-	-	-	-	-	-	-	-	-	-
2010	5.42	-	-	-	-	-	-	-	-	-	-	-
2011	6.91	-	-	-	-	-	-	-	-	-	-	-
2012	7.93	-	-	-	-	-	-	-	-	-	-	-
2013	-	15.70	15.70	15.70	15.70	15.70	15.70	15.70	15.70	15.70	15.70	15.70
2014	-	13.30	15.10	15.10	14.70	14.70	14.40	14.40	14.30	14.30	14.10	14.10
2015	-	11.60	12.80	14.10	12.50	13.50	12.40	13.00	12.30	12.70	12.20	12.40

Table 3. Recent landings and projected ABC (millions of lbs) for 10 alternative yield scenarios requested by the Gulf of Mexico Fishery Management Council. Shaded values represent fixed catches.

Year	Scenario											
	Landings	ABC	a1	a2	b1	b2	c1	c2	d1	d2	e1	e2
2008	5.89	-	-	-	-	-	-	-	-	-	-	-
2009	6.65	-	-	-	-	-	-	-	-	-	-	-
2010	5.42	-	-	-	-	-	-	-	-	-	-	-
2011	6.91	-	-	-	-	-	-	-	-	-	-	-
2012	7.93	-	-	-	-	-	-	-	-	-	-	-
2013	-	13.50	8.46	8.46	10.00	10.00	11.00	11.00	11.50	11.50	12.10	12.10
2014	-	11.90	13.40	8.46	13.00	10.00	12.80	11.00	12.70	11.50	12.50	12.10
2015	-	10.60	11.60	12.70	11.40	12.00	11.20	11.50	11.10	11.30	11.00	11.00

Figures

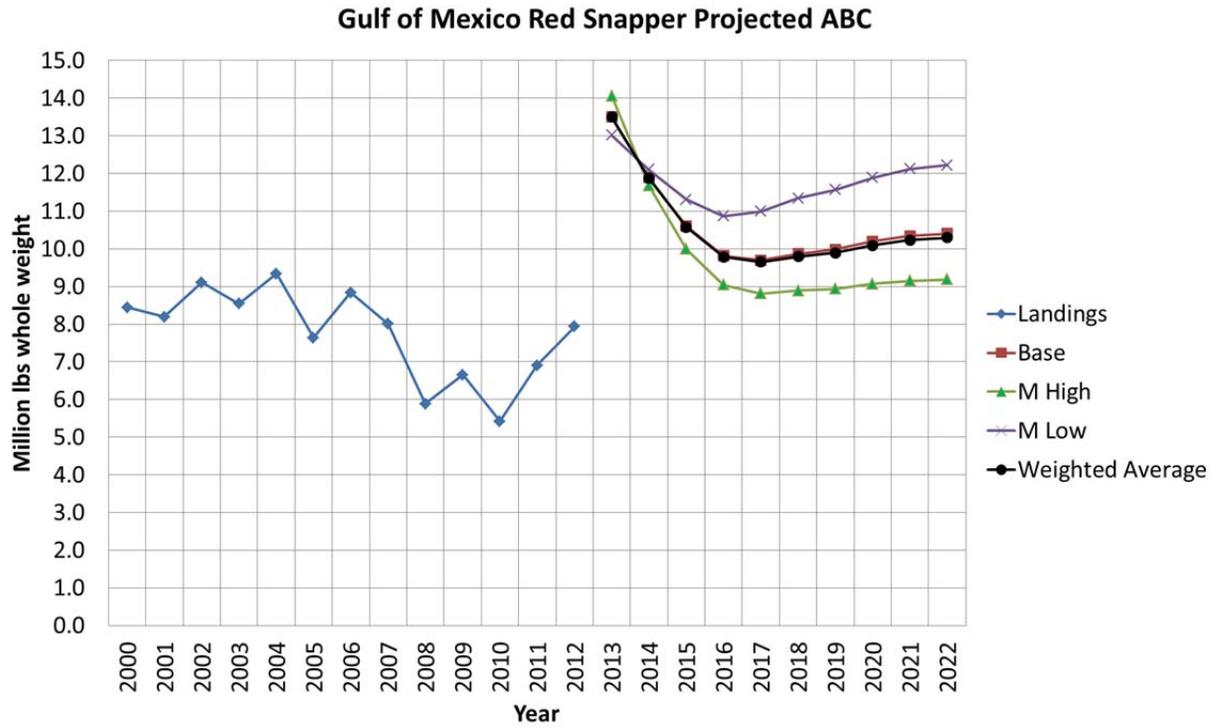


Figure 1. Historical landings from 2000-2012 and projected ABC yield streams under scenarios of the base run, High M, Low M, and weighted average of PDFs. The weighted average of PDFs