Regulatory Amendment 6 to the Reef Fish Fishery Management Plan of Puerto Rico and the U.S. Virgin Islands: Triggering Accountability Measures in the Puerto Rico Exclusive Economic Zone

Including Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis



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Regulatory Amendment 6 to the Reef Fish Fishery Management Plan of Puerto Rico and the U.S. Virgin Islands: Triggering Accountability Measures in the Puerto Rico Exclusive Economic Zone

Proposed Action:

Responsible Agencies and Contact Persons:

Revise the trigger for implementing accountability measure-based fishing season reductions for Caribbean Fishery Management Council (Council)-managed reef fish stocks in the Puerto Rico exclusive economic zone.

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# Abbreviations and Acronyms Used

ABC	acceptable biological catch	MPA	marine protected area
ACL	annual catch limit	MSST	minimum stock size threshold
AM	accountability measure	MSY	maximum sustainable yield
APA	Administrative Procedures Act	NEPA	National Environmental Policy Act
CEA	Cumulative Effects Assessment	NMFS	National Marine Fisheries Service
CFMC	Caribbean Fishery Management Council	NOAA	National Oceanic and Atmospheric Administration
CZMA	Coastal Zone Management Act	OFL	overfishing limit
DNER	Department of Natural and	OMB	Office of Management and Budget
Environmental Resources of Pu Rico	Environmental Resources of Puerto Rico	OY	optimum yield
EA	environmental assessment	PRA	Paperwork Reduction Act
EEZ	exclusive economic zone	RFA	Regulatory Flexibility Act
EFH	essential fish habitat	RIR	Regulatory Impact Review
EIS	environmental impact statement	SSC	Scientific and Statistical Committee
ESA	Endangered Species Act	SEFSC	Southeast Fisheries Science Center
FEIS	final environmental impact statement	SEIS	supplemental environmental impact statement
FMP	fishery management plan	SFA	Sustainable Fisheries Act
HAPC	habitat area of particular concern	SERO	Southeast Regional Office
Magnus MMPA	on-Stevens Act Magnuson-Stevens Fishery Conservation and Management Act Marine Mammal Protection Act	USVI	United States Virgin Islands

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# Chapter 1. Introduction

# 1.1 What action is being proposed?

The Caribbean Fishery Management Council (Council) is considering revisions to the fishing regulations governing the implementation of accountability measure (AM)-based closures for stocks and stock complexes managed by sector under the Reef Fish Fishery Management Plan (FMP) of Puerto Rico and the U.S. Virgin Islands (USVI) (Reef Fish FMP), with the goal of ensuring, to the extent practicable, that optimum yield (OY) is achieved.

Both recreational and commercial fishers harvest fish from federal waters in the U.S. Caribbean; however, only federally managed reef fish stocks and stock complexes in the exclusive economic zone (EEZ) off of Puerto Rico are managed with sector-specific annual catch limits (ACL). Sector-specific data are not available for other federally managed stocks in the Puerto Rico EEZ (i.e., queen conch, spiny lobster). In the USVI, recreational sector harvest data are not available, so only commercial harvest data are used for management of stocks, including reef fish stocks, managed by the Council. The scope of the action considered in this regulatory amendment is therefore limited to reef fish stocks or stock complexes in the Puerto Rico EEZ, which are managed under the Reef Fish FMP.

Presently, reef fish harvest data for Puerto Rico for both the commercial and *Annual catch limit (ACL)* is the limit on the amount of a particular stock or stock complex that can be caught in a fishing year.

Accountability measure (AM) is a management control to prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur.

*Optimum yield (OY)* is the amount of harvest of a stock or stock complex that provides the greatest overall benefit to the U.S., particularly with respect to food production and recreational opportunities. Optimum yield takes into account the protection of marine ecosystems and is considered within the context of maximum sustainable yield from the fishery reduced by relevant economic, social, or ecological factors. Achieving OY is a primary goal of fisheries management.

recreational sectors are available. If total commercial or recreational landings (landings from territorial and federal waters combined) for a reef fish stock or stock complex (group of similar species managed together) exceed the applicable sectorspecific ACL, an AM is triggered and applied to that sector to reduce the length of the fishing season for that stock/complex in the following year. The length of the reduction reflects the extent to which the sector ACL was exceeded (50 CFR §622.12; CFMC 2011a, b). This AM-based reduction is applied even if the total ACL (i.e. the combined commercial and recreational ACL) (CFMC 2011a, b), was not exceeded. The application of the AM as currently formulated could translate into lost yield from that specific stock or stock complex, as the ACL (which is the annual value equal to OY for Council-managed stocks) was not taken. Herein, the Council considers various AM implementation alternatives for better ensuring OY is achieved while maintaining sector-specific AMs to prevent overfishing.

# 1.2 Who is proposing the action?

The Council proposes the action considered in this regulatory amendment to the Reef Fish FMP. The Council develops the amendment and submits it to the National Marine Fisheries Service (NMFS), who implements the actions in the amendment on behalf of the Secretary of Commerce (Secretary).

Through this document, NMFS and the Council evaluate potential alternative approaches to addressing the issue. The action in this regulatory amendment may result in changes to the management of the federal reef fish fishery in the U.S. Caribbean.

# 1.3 Where will the action have an effect?

The Council is responsible for managing fishery resources in federal waters of the U.S. Caribbean EEZ (Figure 1.3), which includes waters off of Puerto Rico and the USVI. Because sector-based management presently applies only to federally managed reef fish stocks and stock complexes in Puerto Rico, this action is specific to the Puerto Rico EEZ and only to Councilmanaged stocks included in the Reef Fish FMP. Puerto Rico EEZ waters are located 9 - 200 nautical miles (17 - 370 kilometers) from the coast of the island.



**Figure 1.3.** Jurisdictional boundaries in the U.S. Caribbean, including federal waters managed by the Caribbean Fishery Management Council, and state waters managed by the Commonwealth of Puerto Rico or the Territory of the U.S. Virgin Islands.

# 1.4 Why is the Council considering action?

The 2010 Caribbean ACL Amendment (CFMC 2011a) and the 2011 Caribbean ACL Amendment (CFMC 2011b) established ACLs and AMs for all Councilmanaged stocks and stock complexes in the U.S. Caribbean and for the recreational and commercial sectors of the reef fish fishery in the Puerto Rico EEZ. Presently, if either the recreational or commercial sector-specific ACL for a stock or stock complex is exceeded, and the overage is not determined to be the result of enhanced data collection and monitoring, an AM-based fishery closure is applied to that sector. However, it is possible that either the recreational or commercial sector may exceed its sectorspecific ACL and be subject to an AMbased closure, even though the total ACL, which is the annual value equal to OY (CFMC 2011a, b), for a stock or stock complex is not exceeded. In those instances, the OY (= total ACL) for that stock/complex was not achieved and the shortened fishing season could prevent the stock or stock complex from achieving OY in the year in which the AM closure is applied.

Achieving OY is a primary goal of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), as described in National Standard 1<sup>1</sup>. Thus, the Council is considering this action as a means to optimize the likelihood that OY will be achieved on a continuing basis while preventing overfishing, and, to the extent practicable, minimizing adverse socio-economic effects to fishers and fishing communities from the application of AMs.

## **Purpose for Action**

Revise how accountability measures (AMs) are triggered for the federal reef fish fishery in Puerto Rico, to increase the likelihood that optimum yield (OY) is achieved, while maintaining sector-specific accountability measures (AMs), and to minimize, to the extent practicable, adverse socio-economic effects of AM-based closures.

### **Need for Action**

Facilitate achieving OY on a continuing basis for fisheries in the U.S. Caribbean exclusive economic zone (EEZ) managed with sectorspecific annual catch limits (currently only federally managed reef fish stocks in the Puerto Rico EEZ), while preventing overfishing, and, to the extent practicable, minimizing adverse socio-economic effects to fishers and fishing communities, in accordance with the National Standards set forth in the Magnuson-Stevens Fishery Conservation and Management Act.

<sup>&</sup>lt;sup>1</sup>National Standard 1 (16 U.S. Code § 1851) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

# **1.5 Management History**

The history of federal management for Council-managed reef fish in the Puerto Rico EEZ can be found in the 2005 Caribbean Sustainable Fisheries Act (SFA) Amendment (CFMC 2005) and in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2012 a, b) and is incorporated herein by reference. Below is a summary of the most recent actions affecting reef fish.

#### 2005 Caribbean SFA Amendment (CFMC 2005)

The Comprehensive Amendment to the FMPs of the U.S. Caribbean to address required provisions of the Magnuson-Stevens Act (2005 Caribbean SFA Amendment) included a supplemental environmental impact statement (SEIS), regulatory impact review (RIR), and regulatory flexibility analysis (RFA) (CFMC 2005). Regulations were implemented in November 2005 (70 FR 62073) and accomplished the following:

- Redefined the stocks or stock complexes for the four FMPs;
- Established seasonal closures for select snapper (mutton, lane, black, blackfin, vermilion, and silk) and grouper (red, black, tiger, yellowfin, and yellowedge) stocks;
- Imposed gear restrictions and requirements;
- Established biological reference points and stock status criteria;

- Established rebuilding plans for overfished units: grouper unit (GU)1, GU2, GU4, and queen conch;
- Designated essential fish habitat and habitat areas of particular concern; and minimized adverse impacts on such habitat to the extent practicable.

#### 2010 Caribbean ACL Amendment (CFMC 2011a)

Amendment 5 to the Reef Fish FMP (i.e., 2010 Caribbean ACL Amendment; CFMC 2011a) became effective on January 30, 2012 (76 FR 82404), and accomplished the following:

- Amended the unit composition of the reef fish stocks or stock complexes;
- Revised management reference points (maximum sustainable yield [MSY], OY, overfishing limit [OFL], acceptable biological catch [ABC]) for snapper, grouper, parrotfish, and queen conch in the U.S. Caribbean;
- Established island-specific ACLs and AMs to manage harvesting activities on each island (Puerto Rico, St. Croix) or island group (St. Thomas/St. John) without unnecessarily impacting fishing activities on the other islands or island groups;
- Established separate ACLs for each of the commercial and recreational sectors for the Puerto Rico EEZ;
- Set management measures with specific emphasis on harvest prohibition for three relatively long-lived parrotfish species

(midnight, blue, and rainbow) that serve an essential ecological function;

- Established recreational bag limits for snappers, groupers, and parrotfishes;
- Provided guidelines for triggering and applying AMs;
- Established framework provisions for the Reef Fish FMP.

#### 2011 Caribbean ACL Amendment (CFMC 2011b)

Amendment 6 to the Reef Fish FMP (i.e., 2011 Caribbean ACL Amendment; CFMC 2011b) became effective on January 30, 2012 (76 FR 82414), and accomplished the following:

- Established ACLs and AMs for all reef fish species in the Reef Fish FMP that were not determined to be undergoing overfishing at the time;
- Allocated ACLs among island management areas;
- Established recreational bag limits for reef fish;
- Revised management reference points and status determination criteria for selected reef fish and aquarium trade reef fish species.

#### Comprehensive Amendment to the U.S. Caribbean FMPs: Application of AMs (AM Application Amendment), including EA, RFA, and RIR (CFMC 2016)

This constitutes Amendment 7 to the Reef Fish FMP. The AM Application Amendment revised language within the Reef Fish FMP to be consistent with language in the implementing regulations at 50 CFR Part 622 describing the application of AMs in the U.S. Caribbean EEZ. This change only revised language in the FMP to reflect current regulatory language and did not change the regulations. The final rule published in the *Federal Register* on May 11, 2016 (81 FR 29166), with an effective date of June 10, 2016.

Amendments to the U.S. Caribbean Reef Fish, Spiny Lobster, and Corals and Reef Associated Plants and Invertebrates FMPs: Timing of Accountability Measure-Based Closures (Timing of AM-Based Closures Amendment) (CFMC 2017)

This constitutes Amendment 8 to the Reef Fish FMP (CFMC 2017). The Timing of AM-Based Closures Amendment was approved on April 3, 2017, and will:

- Change the implementation date for AM-based closures for all stocks in the Reef Fish FMP as well as stocks in the Spiny Lobster and Corals and Reef Associated Plants and Invertebrates FMPs, from December 31<sup>st</sup> to September 30<sup>th</sup>;
- Require that the Council revisit the use of September 30<sup>th</sup> as the end date for AM-based closures no longer than two years from implementation of the amendment and no longer than every two years thereafter.

# 1.6 Annual Catch Limits and Accountability Measures for CouncilManaged Species

The Magnuson-Stevens Act, as revised in 2006, mandates certain conservation and management measures, including the establishment of ACLs and AMs for all stocks in the fisheries. For the U.S. Caribbean, the process of establishing ACLs for each stock or stock complex, and the ACLs themselves, are in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b). Those management measures were implemented in 2012.

To determine if a sector ACL has been exceeded, NMFS compares the average of the most recent three years of available landings to the sector ACL for each stock or stock complex. Because each year's landings data do not become available until the following year, and there is a substantial time lag between data availability and implementation of a closure rule, effecting an AM-based fishing season reduction in response to a sector ACL overage generally does not occur until two years following the most recent year of available landings.

The length of an AM-based season reduction for a sector is determined using an estimate of the monthly fishing rate during the closure period. The monthly fishing rate is estimated based on either the most recent year for which data are available or an average of recent available data. Once determined, this monthly fishing rate is used, in a stepwise fashion, to calculate the number of months (or fraction thereof) for which sector harvest of a stock or stock

complex must be prohibited in EEZ waters during the AM application year. For example, for an AM-based closure required in 2017, the length of that closure will be determined based on the sector's estimated monthly fishing rate for that stock or stock complex, based on recent available data. The degree to which the objective of the AM-based closure, which is to ensure the sector ACL is not again exceeded, is realized will depend on the degree to which actual fishing rate in 2017 is consistent with the estimated fishing rate used to determine the closure length. If the realized fishing rate is less than the estimated fishing rate, the sector ACL likely will not be met. If the realized fishing rate is more, the sector ACL may again be exceeded.

In the EEZ management areas of St. Thomas/St. John and St. Croix, ACLs were set using only commercial harvest data due to the absence of an operational data collection program for the recreational sector. If an ACL is exceeded for the commercial sector, the AM would be triggered for both the commercial and recreational sectors of the stock or stock complex. By contrast, in the EEZ management area surrounding Puerto Rico, both recreational and commercial harvest data are collected for Council-managed reef fish. This allowed for the establishment of separate ACLs and AMs for each federally managed reef fish stock or stock complex for the commercial and recreational fishing sectors (Table 1.6.1).

**Table 1.6.1.** Commercial, recreational and combined total annual catch limit values in pounds (lbs) for Council-managed reef fish stocks and stock complexes harvested in the Puerto Rico exclusive economic zone.

Stool/Complex <sup>1</sup>	Annual Catch Limit (lbs)					
Stock/Complex	Commercial	Recreational	Total			
Parrotfish	52,737	15,263	68,000			
Snapper Unit 1	284,685	95,526	380,211			
Snapper Unit 2	145,916	34,810	180,726			
Snapper Unit 3	345,775	83,158	428,933			
Snapper Unit 4	373,295	28,509	401,804			
Grouper	177,513	77,213	254,726			
Angelfish	8,984	4,492	13,476			
Boxfish	86,115	4,616	90,731			
Goatfishes	17,565	362	17,927			
Grunts	182,395	5,028	187,423			
Jacks	86,059	51,001	137,060			
Scups & Porgies	24,739	2,577	27,316			
Squirrelfish	16,663	3,891	20,554			
Surgeonfish	7,179	3,590	10,769			
Triggerfish & Filefish	58,475	21,929	80,404			
Wrasses	54,147	5,050	59,197			

<sup>1</sup>Spiny lobster, tilefishes, and aquarium trade species are also harvested in the Puerto Rico EEZ but these are not managed by sectors. Tilefishes and aquarium trade species have a U.S. Caribbean wide ACL.

Determining the ACL for reef fish stocks and stock complexes within the Puerto Rico EEZ was a stepwise process that is fully explained for snapper, grouper, and parrotfish in the 2010 Caribbean ACL Amendment (CFMC 2011a) and for all other reef fish stocks in the 2011 Caribbean ACL Amendment (2011b). Briefly, a proxy for MSY was determined based on mean or median landings during a defined period of time, which varied depending on the stock or stock complex being considered. The OFL, and in most cases the ABC, were then

equated to that MSY proxy. As a precautionary approach to managing reef fish resources, the Council applied a reduction or buffer to the OFL or the ABC to derive the ACLs for each sector. For all reef fish stocks, the total ACL was set equal to an annual value equal to OY.

Since the implementation of ACLs and AMs in 2012, several stock complexes have been subject to AM-based fishing season reductions (Table 1.6.2). Of those stock complexes, the combined recreational and commercial 2012-2014 landings did not exceed the total ACL for the Jacks or Snapper Unit 2 (SU2) complex (Table 1.6.3). Nevertheless, AM-based closures were applied to the Jacks recreational sector and to the SU2 commercial sector in 2016 even though landings from the other sector for each stock/complex were below that sector's assigned ACL. As a result, OY (=total ACL) was not achieved for either stock complex. The Council is concerned that, going forward, a continuation of the current approach likely will result in additional instances of failure to achieve OY on a continuing basis. To better ensure OY is achieved on a continuing basis for the federally managed reef fish fishery operating in federal waters around Puerto Rico, the Council is considering alternatives that would reduce the length of the sector's fishing season for a stock or stock complex only when the total ACL is exceeded, rather than when a sector ACL is exceeded (status quo). These proposed alternatives retain sector-specific AMs to ensure that overfishing is prevented, and do not alter the Council's obligation to revisit AMs under the National Standard guidelines. These action alternatives are presented and discussed in the following chapter.

**Table 1.6.2.** Accountability measure-based closures applied to fishing sectors in the Puerto Rico exclusive economic zone (EEZ) for Council-managed reef fish stocks and stock complexes since the implementation of accountability measures in 2012.

Stock/Complex	Fishing Sector	Length of AM Closure
Snonnon Unit 2 (guage and condinal snonnon)	Commercial	Sep 21 – Dec 31, 2013
Shapper Onit 2 (queen and cardinal shapper)	Commercial	Nov 26 – Dec 31, 2016
	Recreational	Oct 21 – Dec 31, 2013
Wrasses (hogfish, puddingwife, Spanish hogfish)	Commercial	Oct 20 – Dec 31, 2014
	Commercial	Nov 16 – Dec 31, 2016
Triggerfish and Filefish (ocean, queen, and sargassum triggerfish)	Commercial	Oct 16 – Dec 31, 2016
Parrotfish (princess, queen, redfin, redtail, stoplight, redband, and striped parrotfish)	Commercial	Dec 19 – 31, 2016
Jacks (blue runner, horse-eye, black, almaco, bar, yellow jack, and amberjack)	Recreational	Nov 4 – Dec 31, 2016

**Table 1.6.3.** Yield remaining in two Council-managed reef fish stock complexes in the Puerto Rico exclusive economic zone (EEZ) in recent fishing years (FY) after sector-specific annual catch limits were determined to have been exceeded (sector overages highlighted).

Stock Complex	Period for 3- Year	or 3- FY	ACL (lbs)		Landings (lbs)			Landings below OY	
complex	Average		Comm.	Rec.	Total	Comm.	Rec.	Total	(lbs)
Jacks	2012 - 2014	2016	86,059	51,001	137,060	41,435	62,537	103,972	33,088
Snapper Unit 2	2012 - 2014	2016	145,916	34,810	180,726	155,889	2,460	158,349	22,377

## **1.7 Stock Status Determination**

A stock or stock complex that is *undergoing* overfishing is subject to a level of fishing mortality (harvest) that jeopardizes the capacity of the stock to produce MSY on a continuing basis (NMFS 2016). As specified in the 2010 and 2011 Caribbean ACL Amendments, a Council-managed stock or stock complex is determined to be undergoing overfishing if the most recent year of available landings exceeded the applicable OFL, unless NMFS' Southeast Fisheries Science Center, in consultation with the Council and its Scientific and Statistical Committee, determines that the overage occurred because data collection/monitoring improved, rather than because landings actually increased (CFMC 2011a, b). Table 1.7.1 below lists OFLs for Council-managed reef fish stocks and stock complexes harvested in the Puerto Rico exclusive economic zone.

A stock is *overfished* when its biomass declines below the level at which the stock is able to produce its MSY on a continuing basis (NMFS 2016). A Council-managed

stock or stock complex is determined to be overfished when its stock size is less than the minimum stock size threshold (MSST); where MSST = biomass at  $MSY (B_{MSY})$  (1c); where c = the natural mortality rate (M) or 0.50, whichever is smaller (CFMC 2011a, b). When an estimate of  $B_{MSY}$  or proxy is not available, the overfished status is 'unknown'. Generally overfishing is the main cause for stock depletion, but other factors also negatively impact fish abundances and can lead to an overfished status, such as increased disease levels, highly variable population cycles, habitat degradation, and environmental changes such as climate, ocean acidification, and land based pollution (NMFS 2013a).

If the Secretary determines at any time that a stock or stock complex is subject to overfishing, the Secretary shall immediately notify the Council and request that action be taken to end overfishing. If the Secretary determines that a stock is overfished, the Council must implement a plan to rebuild it to the level that can support MSY (NMFS 2013a).
In the U.S. Caribbean, the goliath grouper, the Nassau grouper, and the queen conch are currently overfished (NMFS 2016).
Rebuilding plans for those overfished species were established in the 2005 SFA Amendment (CFMC 2005).
For the 2016 fishing year, based on 2014 landings, the Puerto Rico Triggerfish and Filefish complex and the Wrasses complex were determined to be undergoing overfishing (as reported in the 2016 4<sup>th</sup> Quarter Update on the NMFS Status of the U.S. Fisheries).

**Table 1.7.1.** Overfishing limit (OFL) values in pounds (lbs) assigned to the Puerto Rico exclusive economic zone (EEZ) for stocks and stock complexes in the Reef Fish Fishery Management Plan.

Stock/Complex	OFL (lbs)
Parrotfish	507,059 <sup>1</sup>
Snapper Total	$1,915,759^{1}$
Grouper	396,483 <sup>1</sup>
Angelfish	17,967
Boxfish	100,812
Goatfish	19,919
Grunts	208,249
Jacks	152,289
Scups & Porgies	30,351
Squirrelfish	22,837
Surgeonfish	14,358
Triggerfish & Filefish	89,337
Wrasses	65,774

<sup>1</sup> OFLs defined for the entire U.S. Caribbean Region.

# Chapter 2. Proposed Action and Alternatives

## 2.1 What is the Proposed Action?

**ACTION:** Revise the trigger for implementing accountability measure (AM)-based fishing season reductions for Caribbean Fishery Management Council (Council)-managed reef fish stocks in the Puerto Rico exclusive economic zone (EEZ), while retaining all other provisions governing implementation of AMs, as described in the 2010 and 2011 Caribbean Annual Catch Limit (ACL) Amendments (CFMC 2011a, b).

### 2.2 List of Alternatives

Alternative 1: No action. The AM for a stock or stock complex would be triggered for the recreational or commercial fishing sector, if that sector's applicable ACL for the stock/complex is exceeded.

**Alternative 2 (Preferred):** The AM for a stock or stock complex would be triggered for the recreational or commercial fishing sector, if that sector's applicable ACL for a stock/complex is exceeded and the total ACL (i.e., combined recreational and commercial ACLs) for that stock/complex is exceeded.

**Alternative 3**: The AM for a stock or stock complex would be triggered for the recreational or commercial fishing sector, if that sector's applicable ACL for the stock/complex is exceeded and the total ACL (i.e., combined recreational and commercial ACLs) for that stock/complex is exceeded. If the sector-specific ACL is exceeded, but the total ACL for the stock or stock complex is not exceeded, the AM would not be triggered except if, based on the most recent Status of U.S. Fisheries Report to Congress, the stock/complex is determined to be:

Sub-Alternative 3a. undergoing overfishing

Sub-Alternative 3b. overfished

### 2.2.1 Discussion of the Proposed Action and Alternatives

The alternatives proposed in this action only affect how an AM is triggered for federally managed reef fish stocks or stock complexes in Puerto Rico. Accountability measures would continue to be applied 1) on the basis of a three-year running average of landings, and 2) unless NOAA Fisheries Southeast Fisheries Science Center (in consultation with the Council and its Scientific and Statistical Committee [SSC]) determines the overage occurred because data collection/monitoring improved rather than because catches actually increased, as described in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b).

Alternative 1 is the No Action alternative. An AM would continue to be triggered for a Council-managed reef fish stock or stock complex in Puerto Rico EEZ waters following a determination that the sector-specific ACL for that stock/complex was exceeded. As discussed in Section 1.1, the AM would be triggered regardless of whether the total ACL was exceeded, a possible outcome when harvest from one sector exceeds its sector-specific ACL but the other sector harvests below its sector-specific ACL. As described in Section 1.4, there have been instances where the total ACL (= annual value of optimum yield [OY]) was not met for a stock or stock complex even though one of the two sectors exceeded its assigned ACL, and the Council is concerned that continuing to use the current approach may prevent these stocks/complexes from achieving OY on a continuing basis.

Alternative 1 is more conservative when compared to the other alternatives proposed, because it triggers a sector-specific AM for a stock or stock complex following a determination that there was an overage of the sector-specific ACL for that stock/complex. As a result, AM-based closures would be expected to be applied more often when compared to other alternatives, increasing the general positive biological/ecological and physical effects from the shortened fishing season due to AMs, such as reduced fishing mortality and reduced interactions with fishing gear and anchors with the bottom. However, a higher frequency of shortened fishing seasons would be expected to have increased short-term negative socio-economic effects on the fishing communities from the loss of fishing opportunities. These effects are fully discussed in Chapter 4.

**Preferred Alternative 2** proposes triggering the AM for a stock or stock complex only following a determination that both the sector-specific ACL and the total ACL were exceeded. If the total ACL was exceeded, then the AM would be applied to the sector (or sectors, if both exceeded their assigned ACL) that experienced the overage. The length of the AM-based fishing season reduction would continue to reflect the extent to which the ACL was exceeded for the sector that experienced the overage. Any required sector-specific AM-based closure would continue to be calculated and applied in the same manner as for **Alternative 1**. Additionally, in the event that a sector-specific ACL is exceeded more than once in four years, the Council would still be required to reevaluate its system of AMs and ACLs.

Under Preferred Alternative 2, AMs would be expected to be triggered less often than under Alternative 1, resulting in fewer AM-based closures. As a result, Preferred Alternative 2 would increase the likelihood that the total ACL (and therefore OY) would be harvested relative to Alternative 1, which could result in direct benefits to the associated fishing communities. For example, in 2016 the federal recreational season for Jacks closed early because the recreational sector exceeded its ACL by over 11,000 pounds (Table 1.6.3) based on 2012-2014 landings. Under **Preferred Alternative 2** this closure would not have occurred because the total ACL for Jacks was not exceeded. Allowing catch to exceed a sector ACL under Preferred Alternative 2, if the combined ACL is not exceeded, could negatively influence fishing behavior because of a perceived opportunity for fishermen to exceed the sector ACL without a penalty, resulting in an attempt to increase catch. However, this is not considered an issue, as discussed in Section 1.6, because AMs are applied post-season. There is little likelihood of influencing fishing behavior in this way due to the length of time between when fishing occurs and when AMs are applied. Whereas there is the increased possibility that the total ACL would be landed under Preferred Alternative 2 relative to Alternative 1, there is also the greater possibility of the total ACL being exceeded under **Preferred Alternative 2**. However, as discussed above, fishing behavior is not expected to be affected by this alternative, and the AM would be implemented following any exceedance in the ACL, so no long-term negative impacts to the stock would be expected.

Despite the potential for increased harvest under **Preferred Alternative 2** compared to **Alternative 1**, negative biological effects on stocks or stock complexes are not expected because the total ACL (which is the annual value equal to OY for Council-managed stocks) is set at a level that is considered to be sustainable for the stock. Although an increased frequency of AM-based closures may reduce fishing mortality, as would be the case for **Alternative 1**, **Preferred Alternative 2** is not expected to result in or increase the likelihood of overfishing, as fishing mortality at the level of the total ACL would not result in total harvest reaching or exceeding the overfishing limit (OFL). The likelihood of achieving OY would be expected to increase if the AMs were not triggered until the total ACL is met. By modifying the trigger for implementing AMs from the sector-specific ACL to the total ACL, **Preferred Alternative 2** would increase the likelihood that Council-managed reed fish stocks and stock complexes are harvested at OY while minimizing negative impacts to the fishing communities, both of which are less likely to occur if **Alternative 1** is selected. Effects from this and other alternatives proposed are fully discussed in Chapter 4.

Similar to **Preferred Alternative 2**, under **Alternative 3** the AM would be triggered if the total ACL for a stock or stock complex was exceeded, unless the stock/complex is determined to be either undergoing overfishing (**Sub-Alternative 3a**) or overfished (**Sub-Alternative 3b**), at which point the AM would be triggered if the sector-specific ACL was exceeded. In this way, **Alternative 3** would be more restrictive than **Preferred Alternative 2**, if the stock is determined to be undergoing overfishing or overfished, but less restrictive than **Alternative 1** (No Action), if

the stock is not determined to be undergoing overfishing or overfished. Compared to Alternative 1, economic benefits have the potential to be higher under Alternative 3 because there is increased potential for the total ACL being landed than under Alternative 1. Additionally, the Council can choose either or both Sub-Alternatives 3a and 3b. Of the three possible combinations under Alternative 3 (choosing both 3a and 3b, choosing 3a, or choosing 3b), choosing both sub-alternatives would trigger AM-based closures more often than choosing only one. Because a stock's status is more likely to be determined to be undergoing overfishing (Sub-Alternative 3a) than overfished (Sub-Alternative 3b), AMs would be expected to be triggered less often under Sub-Alternative 3b than under Sub-Alternative 3a. By selecting Alternative 3 (both sub-alternatives) or either Sub-Alternative 3a or Sub-Alternative 3b, the Council would increase conservation measures for a stock or stock complex that may be subject to a level of fishing mortality that jeopardizes its capacity to produce maximum sustainable yield (MSY) on a continuing basis. Being more conservative with a stock that is overfished or undergoing overfishing better protects the health of the stock, which can ultimately benefit fishermen and fishing communities.

Currently, three stocks are listed as overfished in the U.S. Caribbean, two of which are managed under the Reef Fish Fishery Management Plan (FMP) (i.e., Nassau and goliath grouper). At this time, harvest is prohibited for those overfished species, and the harvest prohibition functions as the AM in the EEZ (76 FR 82404); therefore, this action would not affect these species, unless harvest prohibitions are lifted. Overall, overfished status determinations for Council-managed reef fish stocks and stock complexes harvested in the Puerto Rico EEZ are not expected to be frequent, thus any additional positive biological effects from **Sub-Alternative 3b** should be infrequent. Though less frequent, overfished determinations require the Council to implement rebuilding plans for the stocks or stock complexes, which are generally in place for several years. During that period, **Sub-Alternative 3b** would trigger an AM-based closure for the overfished stock when a sector-specific ACL is exceeded, even if the total ACL was not exceeded, until such a time that the Secretary of Commerce considers the stock rebuilt.

Based on the NMFS Status of the U.S. Fisheries determinations as of December 31, 2016, the Triggerfish and Filefish complex and the Wrasses complex are determined to be undergoing overfishing in the Puerto Rico EEZ. If these stocks remain subject to overfishing, **Sub-Alternative 3a** would trigger an AM for these stocks whenever a sector ACL is exceeded, reducing the likelihood that overfishing would continue. However, if landings for the stock complex determined to be undergoing overfishing decrease to a level below its OFL in the following year, then **Sub-Alternative 3a** would trigger the AM only if the total ACL for the stock complex was exceeded.

In summary, under **Preferred Alternative 2** or **Alternative 3**, future AM-based closures of Council-managed Puerto Rico reef fish stocks or stock complexes would be triggered by the total ACL rather than the sector ACL. As AM closures would be expected to occur less frequently

under either **Preferred Alternative 2** or **Alternative 3**, or under either **Sub-Alternative 3a** or **Sub-Alternative 3b**, when compared to the **Alternative 1**, this proposed action would be expected to lessen the potential adverse socio-economic effects of the status quo AM-based closures in the Puerto Rico EEZ and increase the likelihood that OY is achieved on a continuing basis, while preventing overfishing.

# Chapter 3. Affected Environment

This regulatory amendment proposes changes to the manner in which accountability measures (AMs) are triggered for the Reef Fish Fishery Management Plan (FMP) of Puerto Rico and the U.S. Virgin Islands (USVI) (Reef Fish FMP). Stocks and stock complexes managed by the Caribbean Fishery Management Council (Council) in the Reef Fish FMP that are affected by the action include snappers, groupers, parrotfish, angelfish, boxfish, goatfish, grunts, jacks, scups and porgies, squirrelfish, surgeonfish, triggerfish and filefish, and wrasses in federal waters of Puerto Rico. This section provides the background for the proposed action effects, which will be evaluated in Chapter 4.

The physical, biological/ecological, economic, social, and administrative environments have been described in detail in the 2010 and 2011 Caribbean Annual Catch Limit (ACL) Amendments (CFMC 2011a, b) and associated environmental impact statements (EIS), and in the most recent Caribbean actions affecting reef fish including the Amendments to the U.S. Caribbean Reef Fish, Spiny Lobster, and Corals and Reef Associated Plants and Invertebrates FMPs: Timing of Accountability Measure (AM)-Based Closures (CFMC 2017). Information from these documents is incorporated herein by reference and is summarized below. These documents can be found on the National Marine Fisheries Service (NMFS) Sustainable Fisheries, <u>Caribbean Branch website</u>.

## 3.1 Physical Environment

The physical (including geology and climate) and habitat environments of the U.S. Caribbean were described in detail in the Generic Essential Fish Habitat (EFH) Amendment to the FMPs of the U.S. Caribbean, the EFH Final EIS (EFH-FEIS) (CFMC 1998, 2004) and the Five-year Review of EFH in the U.S. Caribbean, Vols.1 and 2 (CFMC 2011c). The most recent descriptions of the physical environment can be found in CFMC 2011a, CFMC 2011b, and CFMC 2017. These documents are incorporated herein by reference and are summarized below.

The U.S. Caribbean region is located in the eastern portion of the Caribbean archipelago, approximately 1,770 kilometers (km) (1,100 miles [mi]) east-southeast of Miami, Florida (Olcott 1999). The region is composed of the Commonwealth of Puerto Rico in the Greater Antilles and the Territory of the USVI in the Lesser Antilles island chains (Figure 3.1), both of which separate the Caribbean Sea from the western central Atlantic Ocean. The U.S. Caribbean exclusive economic zone (EEZ) covers an area of approximately 196,029 square kilometers (km<sup>2</sup>) (75,687 square miles [mi<sup>2</sup>]). Puerto Rico EEZ waters are located 9 - 200 nautical miles (17 - 370 kilometers) from the coast of the island and covers approximately 169,303 km<sup>2</sup> (65,368 mi<sup>2</sup>).

The island of Puerto Rico is almost rectangular in shape, approximately 177 by 56 km (110 by 35 mi), and is the smallest and the most eastern island of the Greater Antilles (CFMC 1998, Morelock et al. 2000). Its coast measures approximately 1,227 km (700 mi) in linear extent, including the adjacent inhabited islands of Vieques and Culebra as well as various other isolated islands without permanent populations including Mona and Desecheo. Puerto Rico is surrounded on three sides by deep ocean waters. The Mona Passage separates Puerto Rico from the Dominican Republic and Hispaniola to the west and is more than 1,000 m (3,300 ft) deep. The Puerto Rico Trench borders the northern coast and is 8,500 m (28,000 ft) deep, and to the south the sea bottom descends 5,000 m (16,400 ft) to the Venezuelan Basin of the Caribbean Sea. To the east, Puerto Rico shares the shallow-water shelf platform with St. Thomas and St. John, which extends east towards the British Virgin Islands.





#### Habitat Types

A description of the major habitat types in the U.S. Caribbean EEZ, along with information on their ecological functions and condition, can be obtained in Section 3.2 of the EFH-FEIS (CFMC 2004) and in Section 5.1.3 of the Caribbean Sustainable Fisheries Act (SFA) Amendment (CFMC 2005), which are incorporated herein by reference, and are summarized below.

The coastal marine environments of Puerto Rico are characterized by a wide variety of habitat types, with 21 distinct habitats delineated (Kendall et al. 2001). For a description of the major habitat types of Puerto Rico, see García-Sais et al. (2005). The EFH-FEIS (CFMC 2004) provides a summary of the percent distribution of all habitats included in the 5,009 km<sup>2</sup> (1,934 mi<sup>2</sup>) area of Puerto Rico falling within the 1-20 m (66 ft) depth contours. In Puerto Rico, 49 km<sup>2</sup> (19 mi<sup>2</sup>) of unconsolidated sediment, 721 km<sup>2</sup> (278 mi<sup>2</sup>) of submerged aquatic vegetation, 73 km<sup>2</sup> (28 mi<sup>2</sup>) of mangroves, and 756 km<sup>2</sup> (292 mi<sup>2</sup>) of coral reef and colonized hard bottom were mapped (CFMC 2013a).

#### Essential Fish Habitat (CFMC 2004; CFMC 2011c)

Essential fish habitat is defined in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S. C. 1802(10)). Specific categories of EFH identified in Puerto Rico, which are utilized by federally managed fish and invertebrate species, include both estuarine/inshore and marine/offshore areas. Specifically, estuarine/inshore EFH includes estuarine emergent and forested systems, and the estuarine water column. Additionally, marine/offshore EFH includes live/hard bottom habitats, coral and coral reefs, seagrass and algal plains, sand and shell substrate, and the marine water column. Essential fish habitat includes the spawning area in the water column above the adult habitat. Essential fish habitat utilized by fish and invertebrate species in this region includes coral reefs, live/hard bottom, and submerged aquatic vegetation. For a list of EFH for reef fish in Puerto Rico, please see CMFC 2005 and CFMC 2011c.

# 3.2 Biological and Ecological Environments

### 3.2.1 Description of the Species: Biology/Ecology

A complete description of the biology and ecology of all Council-managed species, including reef fish stocks and stock complexes addressed in this amendment (Table 3.2.1.1), can be found in the 2005 Caribbean SFA Amendment (CFMC 2005), the 2010 Caribbean ACL Amendment (CFMC 2011a), and the 2011 Caribbean ACL Amendment (CFMC 2011b), and is incorporated herein by reference.

#### Table 3.2.1.1. Reef fish stocks and stock complexes currently managed in the Puerto Rico EEZ.

#### **Reef Fish FMP Stocks and Stock Complexes**

#### <u>Angelfish</u>

Queen angelfish, *Holacanthus ciliaris;* Gray angelfish, *Pomacanthus arcuatus;* French angelfish, *Pomacanthus paru* 

#### <u>Boxfish</u>

Honeycomb cowfish, *Acanthostracion polygonius* (formerly Lactophrys polygonia); Scrawled cowfish, *Acanthostracion quadricornis* (formerly *Lactophrys quadricornis*); Trunkfish, *Lactophrys trigonus;* Spotted trunkfish, *Lactophrys bicaudalis;* Smooth trunkfish, *Lactophrys triqueter* 

#### <u>Goatfish</u>

Spotted goatfish, Pseudupeneus maculatus; Yellow goatfish, Mulloidichthys martinicus

#### Groupers

Nassau grouper, Epinephelus striatus, Goliath grouper, Epinephelus itajara, Red hind, Epinephelus guttatus, Coney Cephalopholis fulvus, Rock hind, Epinephelus adscensionis, Graysby, Cephalopolis cruentata, Black grouper Mycteroperca bonaci; Red grouper, Epinephelus morio, Tiger grouper, Mycteroperca tigris, Yellowfin grouper, Mycteroperca venenosa, Misty grouper, Epinephelus mystacinus, Yellowedge grouper, Epinephelus flavolimbatus

#### Grunts

White grunt, *Haemulon plumierii*; Margate, *Haemulon albu*; Tomtate, *Haemulon aurolineatum*; Bluestriped grunt, *Haemulon sciurus*; French grunt, *Haemulon flavolineatum*; Porkfish, *Anisotremus virginicus* 

#### Jacks

Blue runner, *Caranx crysos;* Horse-eye jack, *Caranx latus*; Black jack, *Caranx lugubris*; Almaco jack, *Seriola rivoliana*; Bar jack, *Caranx ruber*; Greater amberjack, *Seriola dumerili*; Yellow jack, *Caranx bartholomaei* 

#### Parrotfish

Blue parrotfish, *Scarus coeruleus*, Midnight parrotfish, *Scarus coelestinus*, Princess parrotfish, *Scarus taeniopterus*, Queen parrotfish, *Scarus vetula*, Rainbow parrotfish, *Scarus guacamaia*, Redfin parrotfish, *Sparisoma rubripinne*, Redtail parrotfish, *Sparisoma chrysopterum*, Stoplight parrotfish, *Sparisoma viride*, Redband parrotfish, *Sparisoma aurofrenatum*, Striped parrotfish, *Scarus iseri* 

Reef Fish FMP Stocks and Stock Complexes
Scups and Porgies Jolthead porgy, Calamus bajonado, Sea bream, Archosargus rhomboidalis, Sheepshead porgy, Calamus penna; Pluma, Calamus pennatula
<u>Snapper Unit 1</u> Black snapper, <i>Apsilus dentatus</i> ; blackfin snapper, <i>Lutjanus buccanella</i> ; Silk snapper, <i>Lutjanus vivanus</i> , Vermilion snapper <i>Rhomboplites aurorubens</i> , Wenchman, <i>Pristipomoides aquilonaris</i>
Snapper Unit 2 Cardinal snapper, Pristipomoides macrophthalmus, Queen snapper, Etelis oculatus
<u>Snapper Unit 3</u> Gray snapper, <i>Lutjanus griseus</i> , Lane snapper, <i>Lutjanus synagris</i> , Mutton snapper, <i>Lutjanus analis</i> , Dog snapper <i>Lutjanus jocu</i> , Schoolmaster , <i>Lutjanus apodus</i> , Mahogany snapper, <i>Lutjanus mahogoni</i>
<u>Snapper Unit 4</u> Yellowtail snapper, <i>Ocyurus chrysurus</i>
<u>Squirrelfish</u> Blackbar soldierfish, <u>Myripristis jacobus</u> , Bigeye, Priacanthus arenatus, Longspine squirrelfish, Holocentrus rufus; Squirrelfish, Holocentrus adscensionis
<u>Surgeonfish</u> Blue tang, <i>Acanthurus coeruleus</i> , Ocean surgeonfish, <i>Acanthurus bahianus;</i> Doctorfish, <i>Acanthurus chirurgus</i>
<u>Triggerfish and Filefish</u> Ocean triggerfish, <i>Canthidermis sufflamen;</i> Queen triggerfish, <i>Balistes vetula;</i> Sargassum triggerfish, <i>Xanthichthys ringens;</i> Black durgon, <i>Melichthys niger;</i> Scrawled filefish, <i>Aluterus scriptus;</i> Whitespotted filefish, <i>Cantherhines macrocerus</i>
Wrasses Hogfish, Lachnolaimus maximus; Puddingwife, Halichoeres radiates; Spanish hogfish, Bodianus rufus

#### **3.2.2 Protected Species**

Within the U.S. Caribbean, some species are protected under the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), or both, and critical habitat has been designated under the ESA. At least 17 species of whales and dolphins have been reported in or near U.S. waters in the northeastern Caribbean (Mignucci-Giannoni 1998). All 17 species are protected under the MMPA. Three of these species (i.e., sperm, sei, and fin whales) are also listed as endangered under the ESA<sup>2</sup>. In addition to these three ESA-listed marine mammals, 13 other species that are known to occur in the U.S. Caribbean are also protected under the ESA, including sea turtles (green North Atlantic distinct population segment [DPS], green South

<sup>&</sup>lt;sup>2</sup> Five distinct population segments (DPSs) of humpback whales are listed under the ESA; however, the West Indies DPS, which is the only DPS present in the U.S. Caribbean, is not listed as endangered or threatened (81 FR 62259).

Atlantic DPS, hawksbill, leatherback, and loggerhead Northwest Atlantic DPS), corals (elkhorn coral and staghorn coral [collectively "*Acropora*"], rough cactus coral, mountainous star coral, lobed star coral, boulder star coral, and pillar coral), Nassau grouper, and scalloped hammerhead shark (Central and Southwest Atlantic DPS). Designated critical habitat for green (North Atlantic DPS), hawksbill, and leatherback sea turtles and for *Acropora* corals, also occurs within the U.S. Caribbean.

The potential impacts from the continued authorization of fishing under the Reef Fish FMP on ESA-listed species and designated critical habitat have been considered in previous ESA Section 7 consultations. The reef fish fishery is known to adversely affect listed green, hawksbill, and leatherback sea turtles, corals, and *Acropora* designated habitat; the reef fish fishery may also adversely affect the scalloped hammerhead shark and the recently listed Nassau grouper. ESA-listed whales and Northwest Atlantic DPS loggerhead sea turtles are not likely to be adversely affected. A summary of recent consultations and their determinations is included in Appendix A.

Sea turtles are highly migratory, with individuals making migrations into nearshore waters as well as other areas of the North Atlantic Ocean, Gulf of Mexico, and the Caribbean Sea. Listed corals species have calcium carbonate skeletons, grow in colonies, and are reef-building animals that live in symbiosis with phytoplankton called zooxanthellae. The Nassau grouper is considered a reef fish, but it transitions through a series of ontogenetic shifts of both habitat and diet. The Timing of AM-Based Closures Amendment (CFMC 2017) included a brief summary on the life history, habitat, diet, growth patterns, and other species-specific information on all of these species. Information is also provided about the *Acropora* designated critical habitat.

The potential impacts from the continued authorization of fishing under the Reef Fish FMP on all marine mammal species are considered via NMFS annual categorization of all U.S. fisheries under the MMPA. Based on 2017 MMPA List of Fisheries, the reef fish fishery is classified as having a remote likelihood or no known serious injuries or mortalities. Information on the MMPA and MMPA List of Fisheries is included in Appendix A.

# **3.3 Description of the Fishery**

Comprehensive descriptions of the commercial and recreational sectors in the reef fish fishery of the U.S. Caribbean, and the Puerto Rico EEZ more specifically, are contained in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b), the AM Application Amendment (CFMC 2016), and in the Timing of AM-Based Closures Amendment (CFMC 2017) and are incorporated herein by reference. A summary is provided below.

The fisheries of the U.S. Caribbean region provide food, livelihoods, and income to residents and visitors alike. The region's fisheries (federal and state) can be divided into commercial,

recreational, and subsistence sectors. The region's commercial fishers pursue multiple species, commonly using multiple gear types. These fishers have been characterized as "artisanal"<sup>3</sup> because their commercial fishing vessels tend to be less than 45 feet (13.7 m) long, have small crews, yield small revenues, and their seafood processors are small-scale producers.

Fishing vessel permits are not required to commercially harvest any Council-managed reef fish stocks in federal waters of the U.S. Caribbean (CFMC 2013c). Also there are no federal licenses or permits required for the recreational harvest of reef fish stocks in the federal waters of the U.S. Caribbean. Since 2010, all anglers fishing recreationally in U.S. Caribbean federal waters are required to be registered through the <u>National Saltwater Angler Registry</u>. For more information about the permit requirements in federal and state waters, see Section 3.5 of this document.

A detailed description of the fishing gear and methods used in the U.S. Caribbean reef fish fishery is provided in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b), and is incorporated here by reference. Gear and methods used in the commercial sector of the reef fish fishery include hook-and-line, bottom lines, troll lines, rod and reel, longlines, SCUBA and skin diving, traps and pots, and nets (Matos-Caraballo and Agar 2008). Two of the most common gear types used in the U.S. Caribbean recreational sector are hook-and-line and SCUBA diving equipment (Griffith et al. 2007).

For more information regarding the Puerto Rican Reef Fish Fishery see Section 3.4 of this document and the Description of the Social and Cultural Environment in the AM Application Amendment (CFMC 2016).

# **3.4 Economic and Social Environments**

#### 3.4.1 Description of the Economic Environment

For a comprehensive description of the Caribbean commercial and recreational fishing industries, please see the Environmental Assessment for the Development of Island-Based FMPs in the U.S. Caribbean (CFMC 2014), as well as the 2010 Caribbean ACL Amendment (CFMC 2011a) and the 2011 Caribbean ACL Amendment (CFMC 2011b). The economic description information contained in these amendments is incorporated herein by reference. Fisheries not included in this amendment (such as spiny lobster and queen conch) and additional fisheries not managed by the Caribbean Council (such as highly migratory species) are included in the referenced narrative to provide context for the dependence on Council-managed stocks.

<sup>&</sup>lt;sup>3</sup> The National Oceanic and Atmospheric Administration (NOAA) Fisheries Glossary Revise Edition June 2006 defines artisanal fishery as a fishery based on traditional or small-scale gear and boats.

#### 3.4.1.1 Commercial Fisheries

The fishers who will be affected by this regulatory amendment are those who fish for Councilmanaged reef fish in the Puerto Rico EEZ. The number of active fishermen in Puerto Rico is estimated from a fishermen census periodically conducted by the Southeast Fisheries Science Center (SEFSC) with the most recent census conducted in 2008 (Matos-Caraballo and Agar 2008). These estimates place the number of active fishermen at between 1,000 and 1,200. However, the number of active fishermen has changed in recent years. In 2011-2012, the number of licensed fishermen greatly increased due to two possible factors: relaxation of tax form requirement and extension of beginner fishing license (see CFMC 2016 for a discussion about these factors). The Description of the Social and Cultural Environment (Section 3.4.2) contains a discussion of estimates of the number of fishermen in Puerto Rico and the reader is directed to this section for more information.

The tables below provide updated background information about the mix of stocks caught by fishermen in Puerto Rico and the economic benefits derived from those landings. The tables in this section (Table 3.4.1.1 to Table 3.4.1.9) show updated (2013-2015) annual and monthly trips, landings, prices and ex-vessel revenues (2015 dollars using CPI deflator) by ACL unit and gear group for Puerto Rico. The data presented come from individual trip reports. All reported landings are in pounds whole weight (lbs ww). Puerto Rico historical landings are expanded pounds and ex-vessel revenues for those expanded pounds estimates. Landings come from state and federal waters combined. When the data show that less than three vessels landed poundage for a particular category, the data are confidential and this is indicated in the table and explained in the notes at the bottom of the table.

#### <u>Trips</u>

The number of commercial trips, expanded landings (lbs), and estimated ex-vessel revenue associated with all landed stocks in Puerto Rico over the period 2013-2015 is provided in Table 3.4.1.1. The number of trips has not been expanded to account for any anticipated non-reporting or inaccurate reporting, because there is no agreed upon methodology to do so. The expanded landings (adjusted pounds) are an expansion of reported pounds that accounts for anticipated non-reporting or inaccurate reporting by commercial fishermen. These expanded pounds were used to establish the ACLs, and are used to measure landings against those ACLs. The estimates of ex-vessel revenue are based on the expanded pounds and reported ex-vessel prices. Estimated landings, ex-vessel revenues, and the reported number of trips should not be used to generate average performance measures per trip, as that calculation will not accurately reflect actual performance due to the fact that the number of trips has not be expanded. The reported number of trips is included to show possible trends in number of trips taken; however, based on data from 2013-2015 (Table 3.4.1.2), there is no discernable peak in the number of trips occurring at any particular time of year.

Year	Number of Reported Trips	Expanded Landings	Estimated Ex-Vessel Revenue
2013	65,258	1,891,308	\$6,762,763
2014	70,380	2,328,219	\$8,574,205
2015	71,159	2,367,280	\$9,061,387
Average	68,932	2,195,602	\$8,132,785

**Table 3.4.1.1.** Annual number of reported commercial trips, expanded landings (lbs ww) and estimated ex-vessel revenue (2015 dollars) for Puerto Rico, 2013-2015.

Source: Southeast Fisheries Science Center, Feb 2017.

**Table 3.4.1.2.** Number and percentage of all reported commercial trips per month for Puerto Rico, 2013-2015.

Month	2013	2014	2015	Average	Average (%)
January	5,209	5,899	6,295	5,801	8.4%
February	5,537	5,744	5,692	5,658	8.2%
March	5,692	6,684	6,378	6,251	9.1%
April	5,801	6,133	5,734	5,889	8.5%
May	5,769	6,492	6,283	6,181	9.0%
June	5,571	6,287	5,767	5,875	8.5%
July	6,042	6,545	6,263	6,283	9.1%
August	5,741	5,994	6,130	5,955	8.6%
September	5,720	5,673	6,255	5,883	8.5%
October	5,008	4,910	5,963	5,294	7.7%
November	4,903	5,082	5,505	5,163	7.5%
December	4,265	4,937	4,894	4,699	6.8%
Total	65,258	70,380	71,159	68,932	100.0%

Source: Southeast Fisheries Science Center, Feb 2017.

Table 3.4.1.3 contains the number of reported commercial trips by each stock or stock complex in the Reef Fish FMP, but for federal and territorial waters of Puerto Rico only. A fishing trip will typically have landings of multiple stocks or stock complexes, so this table counts individual trips for each stock/complex harvested on the trip. Consequently, the totals by stock or stock complex shown in Table 3.4.1.3 should not be summed because that would result in an overestimation of the number of actual trips taken by fishermen. Table 3.4.1.3 shows that species in the snapper units and triggerfish and filefish complex are caught on the most trips.

Stock/Complex	2013	2014	2015
Angelfish	0	0	3
Boxfish	2,560	2,813	2,814
Goatfish	434	564	552
Grunts	1,144	1,189	1,274
Jacks	1,506	1,739	1,981
Parrotfish	2,150	2,081	1,958
Porgies	1,215	1,265	1,311
Snapper Unit 1	3,598	4,751	4,507
Snapper Unit 2	1,567	2,440	2,489
Snapper Unit 3	6,302	6,461	6,753
Snapper Unit 4	3,574	4,260	4,140
Squirrelfish	582	623	632
Surgeonfish	0	6	10
Triggerfish and Filefish	3,595	3,809	4,005
Wrasses	3,479	3,355	3,155

**Table 3.4.1.3.** Number of reported commercial trips by each stock or stock complex in the ReefFish FMP for Puerto Rico, 2013-2015.

Source: Southeast Fisheries Science Center, Feb 2017.

#### Landings, Prices, and Revenue

Table 3.4.1.4 shows expanded annual landings (lbs ww) by ACL unit (stock/stock complex) and Table 3.4.1.5 shows average annual reported ex-vessel prices (2015 dollars) by ACL unit for Puerto Rico for 2013-2015. An average of approximately 975,000 pounds of reef fish were landed 2013-2015. The highest average landings occur in Snapper Unit 1 and Snapper Unit 4. These are also the highest valued species at an average of \$4.61/pound and \$5.09/pound for Snapper Unit 1 and Snapper Unit 2, respectively (Table 3.4.1.5).

**Table 3.4.1.4.** Expanded annual commercial landings (lbs ww) by each stock or stock complex in the Reef Fish FMP for Puerto Rico, 2013-2015.

Stock/Complex	2013	2014	2015	Average
Boxfish	35,537	38,643	41,506	38,562
Goatfish	5,952	7,387	7,142	6,827
Grunts	23,220	25,119	26,317	24,885
Jacks	32,684	41,027	49,752	41,154
Parrotfish	48,536	53,847	45,503	49,295
Porgies	18,338	18,016	16,911	17,755
Snapper Unit 1	138,336	215,463	203,752	185,850
Snapper Unit 2	108,552	174,460	180,729	154,580

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Stock/Complex	2013	2014	2015	Average
Snapper Unit 3	145,368	167,340	159,761	157,490
Snapper Unit 4	131,300	193,108	177,991	167,467
Squirrelfish	5,810	6,206	7,972	6,663
Angelfish, Surgeonfish	0	65	162	76
Triggerfish and Filefish	64,040	71,739	71,280	69,020
Wrasses	48,723	59,862	54,546	54,377
Total	806,396	1,072,282	1,043,324	974,001

Source: Southeast Fisheries Science Center, Feb 2017.

Note: Angelfish and were combined with Surgeonfish to avoid confidentiality issues.

Stock/Compley	2013	2014	2015	Average	1
stock or stock complex in th	e Reef Fish F	MP for Puerte	o Rico, 2013-	2015.	
Table 3.4.1.5. Average ann	ual reported c	commercial ex	k-vessel prices	s (2015 dollars) by	y each

Stock/Complex	2013	2014	2015	Average
Boxfish	\$2.24	\$2.30	\$2.40	\$2.32
Goatfish	\$2.54	\$2.55	\$2.59	\$2.56
Grunts	\$1.78	\$1.89	\$1.87	\$1.84
Jacks	\$1.91	\$1.88	\$1.86	\$1.88
Parrotfish	\$1.93	\$2.04	\$2.03	\$2.00
Porgies	\$1.91	\$1.96	\$1.99	\$1.95
Snapper Unit 1	\$4.40	\$4.69	\$4.75	\$4.61
Snapper Unit 2	\$4.91	\$5.22	\$5.15	\$5.09
Snapper Unit 3	\$2.74	\$2.77	\$2.91	\$2.81
Snapper Unit 4	\$2.88	\$2.94	\$3.07	\$2.96
Squirrelfish	\$1.70	\$1.76	\$1.77	\$1.75
Angelfish, Surgeonfish	\$0.00	\$1.30	\$4.16	\$1.82
Triggerfish and Filefish	\$1.60	\$1.68	\$1.63	\$1.64
Wrasses	\$3.27	\$3.39	\$3.39	\$3.35

Source: Southeast Fisheries Science Center, Feb 2017.

Note: Angelfish were combined with the Surgeonfish to avoid confidentiality issues.

Table 3.4.1.6 shows average monthly prices for all Puerto Rico stocks or stock complexes using the years 2013-2015. There is no indication, in general, that there is a trend of higher prices during one time of the year than another across all stocks or stock complexes. However, average prices indicate a relatively large price increase during April, when Holy Week often occurs. Table 3.4.1.7 shows annual commercial ex-vessel revenue (2015 dollars) by ACL units (stocks/stock complexes) in the Reef Fish FMP for 2013-2015. Reef Fish generated an average ex-vessel value of approximately \$3.3 million from 2013-2015 with Snapper Unit 1 and Snapper Unit 2 yielding the highest revenues.

Month	2013	2014	2015	Average
January	\$3.67	\$3.70	\$3.84	\$3.73
February	\$3.70	\$3.76	\$3.85	\$3.77
March	\$3.73	\$3.67	\$3.91	\$3.77
April	\$3.90	\$3.68	\$3.94	\$3.84
May	\$3.81	\$3.73	\$3.91	\$3.82
June	\$3.74	\$3.69	\$3.98	\$3.80
July	\$3.61	\$3.76	\$3.82	\$3.73
August	\$3.39	\$3.49	\$3.55	\$3.47
September	\$3.40	\$3.56	\$3.62	\$3.53
October	\$3.46	\$3.54	\$3.63	\$3.54
November	\$3.63	\$3.83	\$3.99	\$3.81
December	\$3.61	\$3.84	\$3.95	\$3.80

**Table 3.4.1.6.** Average monthly prices for all Puerto Rico stocks or stock complexes, 2013-2015 (2015 dollars).

Source: Southeast Fisheries Science Center, Feb 2017.

**Table 3.4.1.7.** Estimated annual commercial ex-vessel revenue (2015 dollars) by each stock or stock complex in the Reef Fish FMP for Puerto Rico, 2013-2015.

Stock/Complex	2013	2014	2015	Average
Boxfish	\$79,698	\$89,071	\$99,708	\$89,492
Goatfish	\$15,147	\$18,865	\$18,514	\$17,509
Grunts	\$41,226	\$47,488	\$49,152	\$45,956
Jacks	\$62,263	\$77,126	\$92,769	\$77,386
Parrotfish	\$93,618	\$109,944	\$92,567	\$98,710
Porgies	\$35,092	\$35,305	\$33,680	\$34,692
Snapper Unit 1	\$608,583	\$1,010,157	\$967,808	\$862,183
Snapper Unit 2	\$532,564	\$910,191	\$930,371	\$791,042
Snapper Unit 3	\$398,949	\$463,627	\$464,801	\$442,459
Snapper Unit 4	\$377,773	\$568,234	\$546,649	\$497,552
Squirrelfish	\$9,891	\$10,933	\$14,118	\$11,647
Angelfish, Surgeonfish	\$0	\$84	\$292	\$125
Triggerfish and Filefish	\$102,404	\$120,476	\$116,291	\$113,057
Wrasses	\$159,340	\$203,230	\$184,805	\$182,458
Total	\$2,516,548	\$3,664,731	\$3,611,525	\$3,264,268

Source: Southeast Fisheries Science Center, Feb 2017.

Note: Angelfish and Surgeonfish were combined to avoid confidentiality issues.

#### Gear Usage

Tables 3.4.1.8 and 3.4.1.9 show reef fish expanded landings and estimated ex-vessel revenue (2015 dollars), respectively, for Puerto Rico by gear type for 2013-2015. Bottom line, hand line, fish pot and spear fishing are the predominant gear types used to fish for reef fish. These are also the fishing gear that produce the highest ex-vessel revenues.

Gear Type	2013	2014	2015	Average
Beach Seine	11,612	16,221	27,969	18,601
Bottom Line	225,880	369,956	339,027	311,621
By Hand	0	99	568	334
Cast Net	174	362	399	312
Fish Pot	163,247	204,541	196,339	188,042
Gill Net	46,210	34,396	37,458	39,355
Hand Line	187,310	251,164	257,130	231,868
Lobster Pot	164	722	1,905	930
Long Line	18,425	18,286	18,148	18,286
Rod and Reel	5,730	14,564	19,123	13,139
SCUBA Diving	423	816	53	431
Skin Diving	8,756	6,104	5,013	6,624
Snare	273	7,198	5,216	4,229
Spearfishing	113,562	117,196	113,657	114,805
Trammel Net	24,203	29,018	19,935	24,385
Troll Line	425	1,637	1,384	1,149

**Table 3.4.1.8.** Expanded annual commercial landings (lbs ww) from reef fish by gear type for Puerto Rico, 2013-2015.

Source: Southeast Fisheries Science Center, Feb 2017.

**Table 3.4.1.9.** Estimated annual commercial ex-vessel revenue (2015 dollars) from reef fish by gear type for Puerto Rico, 2013-2015.

Gear Type	2013	2014	2015	Average
Beach Seine	\$25,835	\$32,714	\$63,356	\$40,635
Bottom Line	\$1,013,860	\$1,783,936	\$1,655,654	\$1,484,483
By Hand	\$0	\$298	\$1,689	\$662
Cast Net	\$320	\$786	\$728	\$611
Fish Pot	\$367,712	\$484,059	\$480,826	\$444,199
Gill Net	\$98,914	\$72,202	\$78,835	\$83,317
Hand Line	\$497,929	\$681,727	\$760,729	\$646,795
Lobster Pot	\$465	\$1,511	\$3,285	\$1,754
Long Line	\$57,094	\$59,756	\$58,210	\$58,353
Rod and Reel	\$16,369	\$44,283	\$59,831	\$40,161

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Gear Type	2013	2014	2015	Average
SCUBA Diving	\$1,332	\$2,415	\$158	\$1,301
Skin Diving	\$23,372	\$17,334	\$15,779	\$18,828
Snare	\$629	\$18,779	\$14,229	\$11,212
Spearfishing	\$278,801	\$301,512	\$283,095	\$287,803
Trammel Net	\$48,209	\$63,754	\$48,003	\$53,322
Troll Line	\$814	\$3,855	\$3,643	\$2,770

Source: Southeast Fisheries Science Center, Feb 2017.

#### 3.4.1.2 Recreational Fishery

This section presents information from the Marine Recreational Information Program (MRIP) from the National Oceanic and Atmospheric Administration (NOAA) <u>Office of Science and</u> <u>Technology website</u> accessed in February 2017.

Tables 3.4.1.10 to 3.4.1.13 show the number of fish caught, effort (trips) and participation in recreational fishing in Puerto Rico EEZ and territorial waters. In general, there has been an increase over the past three years in estimates of number of fish caught and released and fishery participants. Some of the most recent increases could result from the recent decrease in gas prices, making fishing excursions less expensive.

#### Catch and Harvest

Table 3.4.1.10 shows the number of fish caught and released through recreational fishing.

**Table 3.4.1.10.** Total recreationally caught and released numbers of fish in Puerto Rico, 2013-2015.

Year	Caught	Released
2013	497,203	101,692
2014	1,164,739	173,376
2015	612,419	345,404

Source: MRIP (http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/index)

#### Effort (Angler Trips)

Table 3.4.1.11 shows the total number of angler (recreational fishing) trips in Puerto Rico whereas Table 3.4.1.12 breaks down the number of angler trips by mode (shore, charter boat and private/rental boat).

Table 3.4.1.11.	Total angler trips in Puerto Rico.	2013-2015.

Year	Angler Trips
2013	510,262
2014	534,500
2015	667,561

Source: MRIP, Feb 2017 (http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/index)

Table 3.4.1.12.	Total angler trips by mode in Puerto Rico, 2013-2015.
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Year	Year Shore For-Hire Boa		Private/Rental Boat
2013	275,132	6,470	228,661
2014	275,636	Unavailable	258,864
2015	368,465	2,350	296,745

Source: MRIP, Feb 2017 (http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/index)

#### Participation

Table 3.4.1.13 shows individual participation in recreational fishing in Puerto Rico.

**Table 3.4.1.13.** Recreational fishing participation by region (individuals) in Puerto Rico, 2013-2015.

Year	<b>Coastal Resident of PR</b>	Non-Puerto Rico
2013	122,002	5,512
2014	Unavailable	Unavailable
2015	Unavailable	Unavailable

Source: Marine Recreational Information Program (MRIP), Feb 2017 (<u>http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/index</u>)

Economic Value, Expenditures, and Business Activity

There is no information at this time regarding the total economic value, expenditures, or business activity associated with recreational fishing in the U.S. Caribbean for Council-managed stocks.

### **3.4.2 Description of the Social Environment**

A summarized description of fishermen and fishing communities in Puerto Rico is included below. Landings by reef fish stock or stock complex are also provided, including recreational landings at the island level and commercial landings at the coast level, to provide the geographical distribution of landings in Puerto Rico. These data dovetail with island level data provided in Section 3.4.1 (Description of the Economic Environment) in this document, which includes commercial trips, landings, ex-vessel prices, and gear by ACL unit and total recreational landings and trips. However, data here are presented at the level of the human community when possible (such as in the summarized description), to meet the requirements of National Standard 8 of the Magnuson-Stevens Act, which requires the consideration of the importance of fishery resources to human communities when changes to fishing regulations are considered. However, landings data at the human community level are not available for Puerto Rico on a consistent basis.

Descriptions of the distribution of commercial fisheries landings by species and by Puerto Rican coastal community were prepared based on Department of Natural and Environmental Resources (DNER) trip ticket data from 1983 to 2008 and in conjunction with the census of active commercial fishermen conducted in 2008. These descriptions are included in Tonioli and Agar (2011), which is incorporated herein by reference. Descriptions of the social environment of the reef fish fishery are included in CFMC (2011a), CMFC (2011b), and CFMC (2013c) and are incorporated by reference. Detailed descriptions Puerto Rican fishing communities are included in Griffith et al. (2007) and are incorporated herein by reference. Additional narratives on the impacted fisheries, which can be used to supplement this section, are included in Section 3.3 (Description of the Fisheries) and Section 3.4.1 (Description of Economic Environment) of this document.

A description of the social environment including fishermen and fishing communities in Puerto Rico in relation to their involvement in the included fisheries was provided in the AM Application Amendment (CFMC 2016) and is incorporated herein by reference. Fisheries managed by other FMPs not included in this amendment (such as spiny lobster and queen conch) and additional fisheries not managed by the Caribbean Council (such as highly migratory species) are included in the referenced narrative to provide context on the dependence on Council-managed stocks. A summary of this referenced description is provided below.

The AM Application Amendment details fishing involvement in the fishing communities of Puerto Rico. The importance and cultural significance of Puerto Rican fishing traditions (i.e., celebration of Virgen del Carmen, Festival Del Pescao in Cabo Rojo during Lent, importance of fish to Catholics during Lent, and fish as food to tourists as well as local working people) is described. Descriptions of the three types of fishing (commercial, recreational, and subsistence) in Puerto Rico are provided as well as a discussion of fishing communities. Commercial: The commercial sector is responsible for the majority of landings, and is referred to as "artisanal," and most commercial fishing operations are multi-gear and multi-species with nearly two-thirds utilizing at least three gear types. As noted in the AM Application Amendment (CFMC 2016), determining the number of active commercial fishermen has proven difficult and counts or estimates of fishers which have been provided over the years have ranged from 868 active fishermen to 2500 fishermen. In 2011-2012, the number of licensed fishermen greatly increased due to two possible factors: relaxation of tax form requirement and extension of beginner fishing license (see CFMC 2016 for a discussion about these factors). Reef fish are the most important category of targeted commercial fish, followed by deep water snappers, but target species vary by coastal region. Top target species are described by region. Descriptions also include the top ten municipalities by commercial landings (Cabo Rojo, Lajas, Vieques, Aguadilla, Guánica, Fajardo, Naguabo, Rincón, Juana Díaz, and Ponce) and top species by municipality. A variety of species are important to each municipality and rarely did more than one or two species account for more than 10% of landings in a specific municipality. Since the description provided in the AM Application Amendment (CFMC 2016) was finalized, additional updates have been provided on the number of commercial fishers in Puerto Rico. DNER provided an updated total for the number of licensed fishermen in Puerto Rico. In 2015, there were 1074 licensed fishermen (http://www.elnuevodia.com, March 16, 2016).

<u>Recreational</u>: The recreational fishing sector in Puerto Rico was described with an estimated total of 127,517 participants that embarked on 510,262 fishing trips in 2013. The majority of recreational fishing occurs from the shore and private or rental boat and the majority of participants are coastal residents of Puerto Rico. Since the referenced description was finalized, updates have also been provided on the number of recreational angler trips, with 534,500 trips in 2014 and 667,561 trips in 2015 (Table 3.4.1.11).

<u>Subsistence</u>: Subsistence fishing includes people who primarily fish for foods for their households. It is primarily a working class activity in Puerto Rico, and subsistence fishermen may often be retired or unemployed. Subsistence fishermen target snapper-grouper species, pelagic species, and king mackerel.

<u>Fishing communities</u>: In Puerto Rico, fishing communities are place-based (provide key features such as fishing infrastructure and social interactions) and network-based, and over 38 place-based fishing communities have been identified.

#### 3.4.2.1 Commercial Fisheries

#### Commercial Landings

Tables 3.4.2.1 through 3.4.2.4 include annual commercial landings by ACL unit (stock/stock complex) and coast for Puerto Rico for 2012-2015. South coast and inland areas were combined because of confidentiality issues; however, the majority of landings, if not all, in that category can be attributed to the south coast.

Stock/Complex	East	North	South and Inland	West	Grand total
Boxfish	4,089	1,094	18,064	25,326	48,574
Goatfish	2,090	CONF	9,395	CONF	11,520
Groupers	10,627	10,504	14,837	30,899	66,867
Grunts	10,635	3,155	19,195	696	33,681
Jacks	12,302	18,703	15,603	3,929	50,537
Parrotfish	6,347	6,487	41,694	5,499	60,028
Porgies	6,666	379	24,622	1,232	32,899
Snapper Unit 1	20,762	70,143	14,846	98,199	203,949
Snapper Unit 2	8,531	35,232	11,052	129,789	184,604
Snapper Unit 3	23,867	13,425	137,012	42,944	217,249
Snapper Unit 4	39,020	65,313	78,043	26,015	208,390
Squirrelfish	1,133	3,006	4,258	367	8,764
Triggerfish and Filefish	7,117	8,321	37,726	23,568	76,731
Wrasses	20,165	2,085	28,222	17,829	68,300

**Table 3.4.2.1.** Commercial reef fish landings by stock or stock complex for Puerto Rico by coast, 2012.

Source: SEFSC Commercial Landings Data Set, January 27, 2017.

Note: South coast and inland areas were combined because of confidentiality issues. However, some confidential cells are included in the table and these cells are marked as "conf."

Stock/Complex	East	North	South and Inland	West	Grand Total
Boxfish	3,332	545	10,852	20,808	35,537
Goatfish	1,651	197	4,076	29	5,952
Groupers	9,926	4,113	7,832	29,069	50,940
Grunts	7,210	1,031	13,556	1,423	23,220
Jacks	7,646	8,141	8,185	8,712	32,684
Parrotfish	5,023	3,127	35,010	5,376	48,536
Porgies	4,048	165	12,952	1,172	18,338
Snapper Unit 1	11,686	37,309	13,648	75,693	138,336
Snapper Unit 2	9,750	13,549	8,895	76,358	108,552
Snapper Unit 3	17,154	8,613	79,374	40,226	145,368
Snapper Unit 4	36,913	27,343	42,121	24,923	131,300
Squirrelfish	1,206	1,237	3,127	240	5,810
Triggerfish and Filefish	6,367	2,906	27,746	27,021	64,040
Wrasses	14,129	873	19,202	14,519	48,723

**Table 3.4.2.2.** Commercial reef fish landings by stock or stock complex for Puerto Rico by coast, 2013.

Source: SEFSC Commercial Landings Data Set, January 27, 2017.

Note: South coast and inland areas were combined because of confidentiality issues.

**Table 3.4.2.3.** Commercial reef fish landings by stock or stock complex for Puerto Rico by coast, 2014.

Stock/Complex	East	North	South and Inland	West	Grand total
Boxfish	7,919	386	10,859	19,479	38,643
Goatfish	3,616	35	3,685	51	7,387
Groupers	21,310	7,208	6,999	27,570	63,088
Grunts	14,714	1,828	8,429	148	25,119
Jacks	11,594	13,135	7,158	9,140	41,027
Parrotfish	10,448	3,705	31,127	8,567	53,847
Porgies	7,792	377	8,661	1,185	18,016
Snapper Unit 1	42,379	63,961	11,620	97,502	215,463
Snapper Unit 2	15,695	6,831	7,552	144,382	174,460
Snapper Unit 3	33,692	13,296	82,494	37,859	167,340
Snapper Unit 4	82,883	40,275	43,592	26,358	193,108
Squirrelfish	1,727	1,561	2,685	232	6,206
Surgeonfish	65	0	0	0	65
Triggerfish and Filefish	12,533	4,292	29,653	25,261	71,739
Wrasses	29,090	779	17,397	12,595	59,862

Source: SEFSC Commercial Landings Data Set, January 27, 2017.

Note: South coast and inland areas were combined because of confidentiality issues.

Stock/Complex	East	North	South and Inland	West	Grand total
Angelfish	0	57	0	0	57
Boxfish	10,167	77	10,355	20,908	41,506
Goatfish	2,982	13	4,134	13	7,142
Groupers	29,341	6,355	8,978	30,824	75,498
Grunts	15,434	1,564	8,760	559	26,317
Jacks	11,594	16,888	9,071	12,200	49,752
Parrotfish	14,067	5,087	23,005	3,343	45,503
Porgies	6,682	568	8,550	1,111	16,911
Snapper Unit 1	33,229	63,707	12,123	94,694	203,752
Snapper Unit 2	6,661	9,533	10,259	154,274	180,729
Snapper Unit 3	30,336	13,180	76,613	39,632	159,761
Snapper Unit 4	83,258	40,994	38,266	15,473	177,991
Squirrelfish	1,652	2,116	4,152	52	7,972
Surgeonfish	106	0	0	0	106
Triggerfish and Filefish	16,479	3,610	24,762	26,429	71,280
Wrasses	29,045	770	13,744	10,987	54,546

**Table 3.4.2.4.** Commercial reef fish landings by stock or stock complex for Puerto Rico by coast, 2015.

Source: SEFSC Commercial Landings Data Set, January 27, 2017.

Note: South coast and inland areas were combined because of confidentiality issues.

#### 3.4.2.2 Recreational Fisheries

#### Recreational Landings

Table 3.4.2.5 includes annual recreational landings by ACL unit for Puerto Rico for 2012-2015.

Stock/Complex	2012	2013	2014	2015
Angelfish	0	379	0	0
Boxfish	1,582	1,304	986	7,696
Goatfish	110	0	0	195
Grouper	18,168	3,241	19,523	8,521
Grunts	3,366	716	2,731	997
Jacks	62,032	36,665	64,098	53,005
Nassau Grouper	956	0	6,717	0
Parrotfish	9,732	8,728	44,736	19,394
Porgies	2,968	156	5,611	0
Snapper Unit 1	44,092	35,795	24,935	24,509
Snapper Unit 2	3,924	0	0	794
Snapper Unit 3	43,322	49,457	60,181	75,159
Snapper Unit 4	16,363	5,045	9,416	28,144
Squirrelfish	330	0	388	1,298
Tilefish	237	384	0	3,770
Triggerfish & Filefish	14,250	2,198	39,887	27,577
Wrasses	4,062	3,268	39,874	1,495

**Table 3.4.2.5.** Recreational reef fish landings by stock or stock complex for Puerto Rico, 2012-2015.

Source: SEFSC Recreational Landings Data Set, December 8, 2016.

#### **3.4.3 Environmental Justice Considerations**

Executive Order 12898 requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the U.S. and its territories. This executive order is generally referred to as Environmental Justice (EJ).

<u>Minority populations</u>: The Hispanic origin group which is considered a minority in the continental U.S. is the majority ethnic group in Puerto Rico. In the year 2015, 17.1% of the population of the continental U.S. was comprised of residents that identified themselves as Hispanic or Latino; however, for the same year, 99% of the population of Puerto Rico identified as Hispanic or Latino (U.S. Census Bureau, 2011-2015 American Community Survey 5-Year

Estimates). The minority (minority is commonly interpreted for the U.S. as White, non-Hispanic) rate for Puerto Rico is substantially higher than that of the continental United States.

Low-income populations: Low-income populations in the U.S. Caribbean make up a much greater percentage of the general population than in the continental United States. The percentage of people below poverty included 45.5% of the population in Puerto Rico for the year 2015, significantly higher than that of the continental U.S. which included 15.5% of the population below poverty (U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates). This high poverty rate indicates that individuals in Puerto Rico are more likely to be vulnerable to and experience higher levels of effects when changes in fisheries management are made.

Because this proposed action is expected to impact fishermen in Puerto Rico, and information is not available in most cases to link these fishermen to the communities in which they reside, all communities in Puerto Rico have been examined using census data to see if they have poverty rates that exceed EJ thresholds.

The threshold for comparison that was used was 1.2 times the average of Puerto Rico such that, if the value for the community was greater than or equal to 1.2 times the average of the greater area, then the community was considered an area of potential EJ concern (EPA 1999).

As mentioned above, the poverty rate for Puerto Rico for the year 2015 was 45.5%. This value translates into an EJ poverty threshold of approximately 54.6%. The communities listed in Table 3.4.3.1 exceeded this poverty threshold and are the most likely to be vulnerable to EJ concerns.

Based on the information provided above, Puerto Rico has minority or economic profiles that include higher rates than that of the continental United States. The action in this proposed regulatory amendment is expected to lessen the potential adverse social effects of the status quo AM-based closures and therefore EJ issues are not expected to arise as a result. However, fishermen that are dependent on reef fish stocks or stock complexes could be positively impacted, particularly in regard to poverty. Food insecurity is a large issue in the U.S. Caribbean and these vulnerable low-income populations could be positively impacted because of their dependence on the fish they receive through fishing efforts and utilize as food to supplement their income.

Community	Percent of Population Below Poverty Level			
Adjuntas	61.7			
Barceloneta	55.9			
Barranquitas	61.2			
Ciales	59.5			
Comerío	60.0			
Corozal	56.6			
Guánica	61.0			
Guayanilla	56.0			
Isabela	55.9			
Jayuya	57.8			
Lajas	59.3			
Lares	58.3			
Las Marías	58.0			
Maricao	64.2			
Maunabo	55.9			
Morovis	55.2			
Orocovis	59.5			
Patillas	59.1			
Peñuelas	60.2			
Quebradillas	55.5			
Salinas	56.2			
San Sebastián	56.5			

**Table 3.4.3.1.** Puerto Rico communities which exceeded poverty threshold for year 2015.

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates.

The general participatory process used in the development of fishery management measures (e.g., public hearings and open Caribbean Council meetings) is expected to provide opportunity for meaningful involvement by potentially affected individuals to participate in the development process of this amendment and have their concerns factored into the decision process. In addition, the proposed action section of this amendment will be translated into Spanish to provide local populations with access to the information and the ability to participate in the development of this amendment.

## 3.5 Administrative Environment

### 3.5.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the 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 U.S. EEZ, an area extending from the seaward boundary of each coastal state to 200 nautical miles from shore, as well as authority over U.S. anadromous species and continental shelf resources that occur beyond the U.S. Caribbean EEZ.

In the 2005 Caribbean SFA Amendment (CFMC 2005), fishable habitat was defined as those waters less than or equal to 100 fathoms (fms) (600 ft; 183 m). The majority of fishing activity for Council-managed stocks occurs in that area, except for fishing for deep-water snappers, which primarily occurs in the EEZ at depths greater than 100 fms (600 ft; 183 m) (CFMC 2005). The total area of fishable habitat in the U.S. Caribbean (combined EEZ and Territorial waters) is estimated to be approximately 2,214.1 nm<sup>2</sup> (7,594 km<sup>2</sup>) (CFMC 2017). The fishable habitat within the EEZ is 304.7 nm<sup>2</sup> (1,045 km<sup>2</sup>), only 13.7% of the U.S. Caribbean total. Of that, 119.5 nm<sup>2</sup> (410 km<sup>2</sup>) or 5.4% occurs in the Puerto Rico EEZ with the vast majority of the fishable habitat located off the west coast (CFMC 2017).

Responsibility for federal fishery management decision-making in the U.S. is divided between the Secretary of Commerce and eight regional fishery management councils that represent the expertise and interests of constituent states/territories. 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 plans and amendments after ensuring management measures are consistent with the Magnuson-Stevens Act and with other applicable laws. In most cases, the Secretary has delegated this authority to NMFS.

The Caribbean Fishery Management Council consists of seven voting members: four public members appointed by the Secretary, one member from each of the fishery agencies of Puerto Rico and the USVI, and one member from NMFS. The Council is responsible for the majority of fishery resources in federal waters of the U.S. Caribbean (highly migratory species are managed by NMFS). These waters extend to 200 nautical miles offshore from the nine-mile seaward boundary of the Commonwealth of Puerto Rico.

Public interests are also involved in the fishery management process through participation on advisory panels and through Council meetings that are open to the public. In addition, the regulatory process to implement actions taken by the Council is done in accordance with the Administrative Procedure 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 that implement the management measures in the FMPs are enforced through actions of NOAA's Office of Law Enforcement, the U.S. Coast Guard, and various Puerto Rico commonwealth and USVI territory authorities. To better coordinate enforcement activities, federal, commonwealth and territorial enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. However, enforcement in the Caribbean region is severely underfunded. Because personnel and equipment are limited, compliance with federal regulations depends largely on voluntary compliance (Heinz Center 2000).

The Fishery Conservation Amendments of 1990 (P.L. 101-627) conferred management authority for Atlantic highly migratory species (HMS), including tunas, oceanic sharks, marlins, sailfishes, and swordfish, to the Secretary from the Fishery Management Councils. In 2012, Amendment 4 to the Consolidated Atlantic HMS FMP: Caribbean Fishery Management Measures, implemented in 2013, re-evaluated the management measures for commercial and recreational HMS fisheries operating in the U.S. Caribbean. This action had the purpose of improving permitting of and data collection from vessels operating in the U.S. Caribbean Region, enhance fishing opportunities, and improve profits for the fleet, and to provide improved capability to monitor and sustainably manage those fisheries. For additional information regarding the HMS management process and authority in the Caribbean, please refer to the FMP for Atlantic Tunas, Swordfish, and Sharks (HMS FMP) and <u>Amendment 4</u> to the 2006 Consolidated HMS FMP.

Recreational fishers in the EEZ are required to register in the National Saltwater Angler Registry. For information, please visit the <u>Marine Recreational Information Program</u> website.

### 3.5.2 Commonwealth Fishery Management

The Puerto Rico government has the authority to manage its state fisheries. The Estado Libre Asociado de Puerto Rico (i.e., Commonwealth of Puerto Rico) is a self-governing commonwealth in association with the United States. Residents born in Puerto Rico are citizens of the United States and they elect a Governor, two legislative chambers: the House of Representatives (51 seats) and the Senate (27 seats), and a Resident Commissioner, a non-voting member of the United States House of Representatives. Puerto Rico has jurisdiction over fisheries in waters extending up to nine nautical miles from shore. Those fisheries are managed by Puerto Rico's DNER. Section 19 of Article VI of the Constitution of the Commonwealth of Puerto Rico provides the foundation for the fishery rules and regulations. Puerto Rico Law 278 of 1998 establishes public policy regarding fisheries (CFMC 2017). Puerto Rico's DNER has a designated seat on the Council. The purpose of local government representation at the council level is to ensure local participation in federal fishery management decision-making. The state governments have the authority to manage their respective state fisheries. Each of the states exercises legislative and regulatory authority over their natural resources through discrete administrative units. Although each agency is the primary administrative body with respect to the states' natural resources, Puerto Rico cooperates with numerous state and federal regulatory agencies when managing marine resources.

Puerto Rico requires commercial fishing licenses, permits for some species, and reporting. Puerto Rico has license categories for full-time, part-time, beginner, and non-resident commercial fishers, ornamental fisheries, and owners of rental boats, including charter and party/head boats. Additional commercial permits are required for the harvest of spiny lobster, queen conch, common land crab, incidental catch, and sirajo goby (i.e., cetí) fisheries. Although Puerto Rico fishing regulations state that a license for all recreational fishermen 13 years and older (excluding fishermen on charter or head boats) is required, this requirement is not currently enforced (CFMC 2017).

Additional information regarding fishery management in territorial or federal waters can be found in Section 2.1 of the 2005 Caribbean SFA Amendment (CFMC 2005), and in the 2010 Caribbean ACL Amendment (CFMC 2011a). Additional information about commercial and recreational fisheries in Puerto Rico can be found in Sections 3.3 and 3.4.

## Chapter 4. Environmental Effects

Chapter 4 describes the effects to the physical, biological and ecological, economic, social, and administrative environments from the proposed action alternatives.

#### **Summary of Management Alternatives**

**ACTION:** Revise the trigger for implementing accountability measure (AM)-based closures for Councilmanaged reef fish stocks in the Puerto Rico exclusive economic zone (EEZ).

Alternative 1: No Action. The AM is triggered if a sector specific annual catch limit (ACL) is exceeded for a stock or stock complex.

Alternative 2 (Preferred): The AM is triggered if the total ACL is exceeded for a stock or stock complex.

Alternative 3 (Sub-Alternatives 3a - 3b): The AM is triggered if the total ACL is exceeded for a stock or stock complex unless the stock status is listed as undergoing overfishing (Sub-Alternative 3a) or overfished (Sub-Alternative 3b) at which point the AM is triggered if a sector specific ACL is exceeded for that stock or stock complex.

## 4.1 Direct and Indirect Effects on the Physical Environment

The physical environment is mostly impacted by the activities authorized by the Reef Fish Fishery Management Plan (FMP) of Puerto Rico and the U.S. Virgin Islands (USVI) (Reef Fish FMP) through interactions between fishing gear or vessel anchors and the sea floor. The proposed action would not modify the gear types used in this fishery and is not expected to increase gear interactions with the sea floor, nor is it expected to alter the frequency of anchoring, thus it would not be expected to have any direct physical effects on the environment. However, indirect effects on the physical environment are expected depending on the alternative, as described below. These effects depend on the degree to which the proposed action, by changing how AMs are triggered and thus applied, results in changes to the time spent in fishing activities (fishing effort) for a particular stock or stock complex in the federal reef fish fishery when compared to the regular fishing season (baseline).

The 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b), which established ACLs and AMs for stocks managed by the Caribbean Fishery Management Council (Council), evaluated the effects that the application of AMs have on the physical environment. As previously discussed in Chapter 1, AMs were designed to constrain harvest following an overage of the applicable stock or stock complex ACL, and the shortened fishing season would limit the number of days that fishers have access to that portion of the federal reef fish fishery. Fewer

fishing days generally correlates to fewer interactions between fishing gear and anchors with the bottom, which benefits the physical environment. However, this effect may not be apparent for trap gear in the U.S. Caribbean, because traps usually are not removed from the water during a closure. Additionally, any benefits to the physical environment from the application of AMs would be reduced if fishers frequent the same areas to fish for co-occurring stocks or increase their harvest rates to achieve the sector-specific ACL during the reduced season.

**Under Alternative 1**, the AM would continue to be triggered when the National Marine Fisheries Service (NMFS) determines that a sector-specific ACL for a stock or stock complex was exceeded. This alternative would result in a higher frequency of AM-based closures, when compared to **Preferred Alternative 2** and **Alternative 3**, resulting in potentially less negative effects on the physical environment due to human/habitat interactions.

**Preferred Alternative 2** proposes to trigger an AM when NMFS determines that the total ACL for a stock or stock complex was exceeded. Under this alternative, AM-based closures would be expected to occur less frequently when compared to **Alternatives 1** and **3**, resulting in more fishing days available to harvest a stock or stock complex relative to either of the other alternatives. Thus, the negative effects from fishing activities and gear/anchor interactions with the sea floor could be greater under **Preferred Alternative 2**. Whenever an AM is triggered under **Preferred Alternative 2**, general positive physical effects from AMs would be similar to those from **Alternative 1** discussed above.

Under Alternative 3, if the affected stock/complex is not undergoing overfishing or overfished, an AM would be triggered if the total ACL for the stock or stock complex was exceeded as in **Preferred Alternative 2**, in which case negative physical effects would be expected to be the same as those discussed above for **Preferred Alternative 2**. However, if the affected stock is determined to be undergoing overfishing (**Sub-Alternative 3a**) or overfished (**Sub-Alternative 3b**), an overage of the stock's sector-specific ACL would trigger the AM and the effects on the physical environment would be expected to be similar to those expected from **Alternative 1**.

In summary, **Alternative 1** is expected to result in the greatest potential for positive benefits to the physical environment; whereas, **Preferred Alternative 2** is expected to result in the least potential for positive physical benefits. Effects of **Sub-Alternatives 3a** and **3b** effects would be equal to either **Alternative 1** or **Preferred Alternative 2**, depending on the status of the stock.

## 4.2 Direct and Indirect Effects on the Biological and Ecological Environments

**Preferred Alternative 2** and **Alternative 3** proposed to modify how AMs are triggered in the Puerto Rico management area. These alternatives would not change the total or sector ACLs for stocks or stock complexes, but could alter the amount of fish harvested by changing the frequency with which AMs are triggered. However, harvest under all the alternatives is not expected to exceed the total ACL, which is set at a level that is sustainable for each stock or stock complex. Therefore, this action is not expected to have any negative biological or ecological effects on the environment.

Indirect biological and ecological effects related to the application of AMs were previously described in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b) and in the Timing of AM-Based Closures Amendment (CFMC 2017). Those are incorporated herein by reference and summarized as follows. In general, the implementation of AMs was expected to result in positive indirect biological and ecological effects by reducing fishing effort on stocks, resulting in a more natural size distribution of individuals and an increase in the abundance of individuals in the population. An additional positive indirect effect expected from a shortened fishing season due to AMs for all Council-managed stocks was a reduction in the incidental catch of other co-occurring stocks. Another expected indirect effect, although negative, was the potential increase in regulatory discards resulting from bycatch of stocks caught during a closure while fishers continue to harvest legally available stocks.

Under Alternative 1, the AM would continue to be triggered when a sector-specific ACL is exceeded. This alternative would result in a higher frequency of AM-based closures, when compared to **Preferred Alternative 2** and **Alternative 3**, resulting in greater positive biological and ecological effects for a stock or stock complex through the reduced fishing effort on that stock/complex. For example, by removing fishing mortality through a harvest closure, more fish would potentially remain in the population and be available to reproduce and to perform critical functions within their ecosystems. Triggering AMs when the lower, sector-specific ACL is exceeded (as opposed to the higher, total ACL acting as a trigger in **Preferred Alternative 2**) provides Alternative 1 with a built-in biological buffer that could aid in protecting the maximum sustainable yield (MSY) of a stock or stock complex from natural phenomena that can negatively impact fish abundances such as increased disease levels or habitat degradation. However, those positive effects could be somewhat offset by a potential increase in regulatory discards caught during the closure. The increased frequency of AMs triggered expected under Alternative 1 would also decrease the likelihood that optimum yield (OY) is achieved for a stock or stock complex, which opposes a primary goal of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

**Preferred Alternative 2** proposes to trigger an AM when the total ACL for a stock or stock complex is exceeded, with the AM applied to the sector(s) that exceeded the sector-specific ACL. This alternative would result in fewer AMs triggered and applied when compared to Alternatives 1 and 3. As described in Section 1.6, the ACL was derived from the acceptable biological catch for a stock or stock complex, a benchmark reflecting the biological capacity of the stock to support fishing mortality. Because **Preferred Alternative 2** triggers AMs only after the total ACL is exceeded, it increases the likelihood of achieving OY on a continuing basis, where OY is defined in terms of the amount of fish which will provide the greatest overall benefit to the Nation. Despite the potential for increased harvest under **Preferred Alternative 2** compared to Alternative 1, negative biological effects on stocks or stock complexes are not expected because the total ACL is set at a level that is considered to be sustainable for the stock. Although an increased frequency of AM-based closures may reduce fishing mortality, as would be the case for Alternative 1, Preferred Alternative 2 is not expected to result in or increase the likelihood of overfishing, as fishing mortality at the level of the total ACL would not result in total harvest reaching or exceeding the overfishing limit (OFL). Because there is an increased possibility that the total ACL would be landed under **Preferred Alternative 2** relative to Alternative 1, there is also the greater possibility of the total ACL being exceeded under **Preferred Alternative 2**. However, the AM would be implemented following any exceedance in the ACL and no long-term negative impacts to the stock would be expected.

Under Alternative 3, the AM would be triggered if the total ACL for a stock or stock complex was exceeded, unless the stock/complex is determined to be either undergoing overfishing (Sub-Alternative 3a) or overfished (Sub-Alternative 3b), at which point the AM would be triggered if the sector-specific ACL was exceeded. Stocks or stock complexes that are determined to be undergoing overfishing or overfished are already considered to be stressed, and triggering the AM when the sector-specific ACL is exceeded would provide an extra level of protection to the biological and ecological functions provided by the affected stock/complex. Additionally, choosing both Sub-Alternatives 3a and 3b would ensure that level of protection is applied to all stocks that are determined to be subject to some level of overfishing. If the affected stock is neither undergoing overfishing nor overfished, any biological effects would be similar to those discussed above for **Preferred Alternative 2**. Overfishing status determinations would be expected to occur more often than overfished status determinations, thus **Sub-Alternative 3a** would offer more biological benefits than **Sub-Alternative 3b**, because AM-based closures would most likely be applied more often. Sub-Alternative 3b would be expected to trigger fewer AMs than Alternative 1 and Sub-Alternative 3a, but trigger more than Preferred Alternative 2. However, because overfished determinations are usually in place for several years, Sub-Alternative 3b would be expected to trigger more frequent AMs for an overfished stock or stock complex if harvest was not prohibited during the rebuilding plan, thus providing more conservative management of the stock/complex and more benefits to the biological and ecological environments.

In summary, **Alternative 1** and **Sub-Alternatives 3a** and **3b** (if the stocks are undergoing overfishing or overfished, respectively), are expected to result in the greatest potential for increased biological/ecological benefits from the application of AMs. **Preferred Alternative 2** has the greatest potential for negative biological/ecological effects when compared to **Alternatives 1** and **3** (if the stock is determined to be undergoing overfishing or overfished) from AMs being triggered less frequently, but has the greatest likelihood of achieving OY on a continuing basis, while preventing overfishing.

## 4.3 Direct and Indirect Effects on the Economic Environment

In examining the economic effects of the proposed action, optimally, we attempt to measure changes in the welfare of the commercial fishery in the form of profits. However, since we do not have cost and earnings data, at this time, we are unable to estimate profits and instead rely on ex-vessel revenues as a proxy. For the recreational fishery, we typically examine changes in the aggregate willingness to pay in order to estimate welfare changes. Without estimates of the aggregate willingness to pay for recreational harvest, we rely on ex-vessel revenues in the analysis below. We admit that this approach is sub-optimal.

The proposed action would modify how AMs are triggered for Council-managed reef fish stocks or stock complexes harvested from the Puerto Rico EEZ. This action would not change the total or sector ACLs for stocks or stock complexes. However, the proposed action would change how often AMs are triggered. The economic effects from the establishment and implementation of AMs were discussed in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b) and are incorporated herein by reference. Under Alternative 1, current AMs result in positive indirect long-term economic effects by constraining fisheries to their ACLs and preventing overages of stocks or stock complexes. Whereas harvest may increase under Preferred Alternative 2 and Alternative 3, because AMs would be triggered less often and there would be fewer associated closures, regulatory discards would be expected to decrease. The less frequently AMs are triggered, the greater the likelihood that fishers will harvest the total ACL and achieve higher ex-vessel revenues, resulting in positive economic effects. Harvest under all the alternatives is not expected to exceed the total ACL and, therefore, this action is not expected to have any direct negative economic effects resulting from AM-based closures. However, **Preferred Alternative 2** and **Alternative 3** are expected to have positive economic effects in the form of increased ex-vessel values.

Under **Alternative 1**, the AM is triggered following a determination that one or both sectors reached their sector ACL. Under this current scenario, there is the potential for a portion of the total ACL to be forgone. This is expected to result in loss of economic benefits in the form of forgone ex-vessel revenues relative to what could have otherwise been achieved through capture of the entire ACL. For example, if the three-year average of commercial landings for a stock

exceeded the commercial ACL, the federal commercial fishing season for that stock would be closed early, even if combined recreational and commercial landings did not exceed the stock ACL over the previous three year period. The early closure of the federal commercial season could result in the loss of commercial landings and their associated ex-vessel revenues, unless commercial fishermen are able to offset any losses by either shifting effort to other stocks or into Puerto Rico state waters.

As demonstrated above, despite a sector's early closure resulting from that sector's ACL overage, combined recreational and commercial landings could be less than the total ACL. If so, a portion of the total ACL, and the economic benefits associated with those unrealized landings, are forgone. Such losses may have occurred in 2016, when the federal recreational season for Jacks experienced an AM-based closure. The three-year (2012-2014) average of recreational landings for Jacks (62,537 lbs) exceeded its recreational ACL (51,001 lbs), resulting in application of an AM-based season reduction of 58 days in 2016. Combined 2012-2014 average recreational and commercial landings of Jacks (103,972 lbs), however, were less than the total ACL (137,972 lbs). The early closure of the recreational sector in 2016 potentially resulted in 33,088 lbs of foregone harvest due to the closure. If the price per pound is used to estimate the value of Jacks to anglers, the economic loss to anglers could have been as high as \$62,205. Furthermore, economic losses are expected to continue to occur in future years assuming similar fishing rates and environmental conditions, under **Alternative 1**.

Similarly, in 2016, a 36-day AM-based closure was implemented for the commercial fishing season for Snapper Unit 2 (SU2) because the three-year (2012-2014) average of SU2 commercial landings (155,889 lbs) exceeded its commercial ACL (145,916 lbs). However, the combined 2012-2014 average recreational and commercial landings of SU2 (158,349 lbs) were less than the total SU2 ACL (180,726 lbs). Assuming similar harvest rates for each sector in 2016, the early closure of the commercial season in 2016 may have forgone the remaining of 22,377 lbs of the SU2 total ACL. Using the average annual ex-vessel price per pound paid for SU2 fish (2013-2015), losses of dockside revenue could have been as high as \$113,899 (in 2015 dollars). Again, economic losses are expected to re-occur in the future assuming similar fishing rates and environmental conditions.

Under **Preferred Alternative 2**, an AM for a sector that experienced an overage would not be triggered unless the total ACL was also exceeded. If **Preferred Alternative 2** had been in place in 2016, there would *not* have been an early closure of the recreational season for Jacks or commercial season for SU2 that year, because neither the combined average 2012-2014 landings of Jacks nor SU2 exceeded their total ACLs. **Preferred Alternative 2** would likely result in greater overall economic benefits than those that result under **Alternative 1** because the commercial and recreational sectors would have a greater possibility of capturing the entire ACL for a stock or stock complex. The reader should note, however, that the total ACL may not be landed due to factors other than AM-based closures (i.e., bad weather, market conditions, etc.).

Whereas there is the increased possibility that the total ACL would be landed under **Preferred Alternative 2** relative to **Alternative 1**, there is also the greater possibility of the total ACL being exceeded under **Preferred Alternative 2**. However, because the AM would be implemented following any exceedance in the ACL, no long-term negative impacts to the biological stock, and therefore no long-term negative economic impacts, are expected.

Under **Sub-Alternative 3a**, the AM for the sector with the overage would not be triggered unless the total ACL was also exceeded (as is also the case under **Preferred Alternative 2**) or a sector ACL was exceeded *and* the stock/complex of concern was determined to be undergoing overfishing. In this way, **Sub-Alternative 3a** is more restrictive than **Preferred Alternative 2** but less restrictive than **Alternative 1**. Compared to **Alternative 1**, economic benefits have the potential to be higher under **Sub-Alternative 3a** because there is the greater possibility of the total ACL being landed than under **Alternative 1** (if the stock is not determined to be undergoing overfishing or overfished) and this could result in greater annual ex-vessel revenues than those under **Alternative 1**.

**Sub-Alternative 3b** stipulates that an AM would not be triggered unless the total ACL was exceeded or a sector ACL was exceeded *and* the stock/complex is overfished. Similar to **Sub-Alternative 3a**, **Sub-Alternative 3b** is more restrictive than **Preferred Alternative 2** but less restrictive than **Alternative 1**. **Sub-Alternative 3b** has the potential to result in higher economic benefits than **Alternative 1** (if the stock is not determined to be undergoing overfishing or overfished).

The Council can choose either or both **Sub-Alternatives 3a** and **3b**. If either (or both) **Sub-Alternatives 3a** and/or **3b** are chosen and no species are undergoing overfishing or overfished, any economic effects would be similar to those for **Preferred Alternative 2**. Economically, **Sub-Alternatives 3a** and **3b** could potentially result in higher ex-vessel revenues than **Alternative 1** but less than **Preferred Alternative 2**. **Sub-Alternatives 3a** and **3b** each offer an increased probability of more closures over **Preferred Alternative 3b**. Choosing both **Sub-Alternatives 3a** and **3b**, offers greater chances of closures than each alone.

With regards to economic benefits, **Preferred Alternative 2** is expected to result in the greatest potential for increased economic benefits due to increased possibility of capturing the entire ACL; whereas, **Alternative 1** is expected to result in the lowest landings and smallest associated economic benefits, as long as fishers don't increase effort and harvest all of the ACL in the shortened season. **Sub-Alternative 3a** and **3b** fall in between **Alternative 1** and **Preferred Alternative 2** with **Sub-Alternative 3b** likely to result in greater economic benefits that **Sub-Alternative 3b** is less likely to result in closures than **Sub-Alternative 3a**.

## 4.4 Direct and Indirect Effects on the Social Environment

Effects from fishery management changes on the social environment are difficult to analyze due to complex human-environment interactions and a lack of quantitative data about those interactions. Generally, social effects can be categorized according to changes in: human behavior (what people do), social relationships (how people interact with one another), and human-environment interactions (how people interact with other components of their environment, including enforcement agents and fishery managers). It is generally accepted that a positive correlation exists between economic effects and social effects. Thus, in Section 4.3 (Economic Effects), alternatives predicting positive or negative economic effects are expected to have correlating positive or negative social effects.

Under **Preferred Alternative 2** or **Alternative 3**, future AM-based closures of Council-managed Puerto Rico reef fish stocks or stock complexes would be triggered by an overage of the total ACL rather than an overage of the sector ACL, unless the stock is designated as undergoing overfishing or overfished (**Sub-Alternatives 3a** and **3b**, respectively). As AM closures would be expected to occur less frequently, the proposed action is expected to lessen the potential adverse social effects of the status quo (**Alternative 1**) closures that would result from the trigger and application of sector-specific AMs for Council-managed reef fish stocks in the Puerto Rico management area.

The need for and extent of future closures is unknown. However, examples of federally managed Puerto Rico reef fish stock complexes which had AMs applied include SU2 (commercial sector in 2013 and 2016), Wrasses (recreational sector in 2013 and commercial sector in 2014, and 2016), Triggerfish and Filefish (commercial sector in 2016), Parrotfish (commercial sector in 2016), and Jacks (recreational sector in 2016) are shown in Table 1.6.2.

Alternative 1 (No Action) would retain the current recreational or commercial sector-based trigger for the implementation of AM-based closures for reef fish stocks or stock complexes in the Puerto Rico EEZ. An AM for the particular sector would continue to be triggered if the sector's ACL was exceeded and an AM-based closure would be implemented for that sector. Under Alternative 1, even though one sector exceeded their allowable catch and an AM-based closure is implemented for that sector, pounds of yield can remain unfished if the other sector did not catch their ACL and the total ACL was not met. Estimates of unharvested yield resulting from the AM-based closure of one sector under Alternative 1 are shown in Table 1.6.3.

As an example of how the recreational sector could be impacted under **Alternative 1**, the Jacks recreational sector was closed for 58 days in 2016 (November 4-December 31, Table 1.6.2) and based on 2012-2014 landings and assuming a similar harvest rate for each sector in 2016, it's possible that 33,088 pounds of yield were forgone in 2016 (Table 1.6.3). It's possible that the AM-based closures under **Alternative 1** resulted in a loss of fishing opportunity for the

recreational sector in 2016, because an additional 33,088 pounds of the total ACL could have been harvested by private recreational anglers or fishing guides could utilize this catch for their customers.

As an example of how the commercial sector could be impacted under **Alternative 1**, the SU2 commercial sector was closed for 36 days in 2016 (November 26-December 31, Table 1.6.2) because average 2012-2014 commercial SU2 landings exceeded the assigned sector ACL. However, based on 2012-2014 landings and assuming a similar harvest rather for each sector in 2016, it's possible that the recreational sector did not harvest its full ACL in 2016 and thus possible that 22,377 pounds of yield were forgone for the year (Table 1.6.3). The AM-based closures under **Alternative 1** are anticipated to result in a loss of fishing opportunity for the commercial sector because an additional 22,377 of the total ACL could be harvested, which equates to possible earnings (see Section 4.3) and the resulting social benefits. In addition, in the year after an AM-based closure, a similar amount of yield or increased yield could be forgone under **Alternative 1**, if sector fishing rates remain constant and the AM continues to be triggered by a sector ACL overage.

Under **Preferred Alternative 2**, the AM would only be triggered for either sector (recreational or commercial) if that sector's ACL and the total (combined recreational and commercial) ACL were exceeded. As a result, **Preferred Alternative 2** would increase the likelihood that the total ACL would be harvested relative to **Alternative 1**. Increased fishing opportunities and the possibility of fishing to the stock's capability could result in direct benefits to fishermen, fishing guides, and associated fishing communities.

Conversely, allowing catch to exceed a sector ACL under **Preferred Alternative 2**, if the combined ACL is not exceeded, could influence fishing behavior in a negative manner because of a perceived opportunity for fishermen to exceed the sector ACL without a penalty. This could lead to an attempt to increase catch, even during times in which there may not be a forgone yield. However, AMs are applied post-season, usually two years later than the most recent year of available landings. Therefore, there is little likelihood of influencing fishing behavior in this way because of the length of time between when fishing occurs and when AMs are applied.

Under Alternative 3, the AM would be triggered for either sector if its ACL and the total ACL were exceeded as in **Preferred Alternative 2**; however, if the total ACL was not exceeded, then the AM would still be triggered if the sector ACL was exceeded and the stock or stock complex is undergoing overfishing (**Sub-Alternative 3a**), or is overfished (**Sub-Alternative 3b**) according to the most recent Status of the U.S. Fisheries Report to Congress. Being more conservative with a stock that is overfished or undergoing overfishing better protects the health of the stock, which can ultimately benefit fishermen and fishing communities. Similar to **Preferred Alternative 2**, **Sub-Alternatives 3a** and **3b** would allow for more opportunities to fish when compared to **Alternative 1**, unless the stock or stock complex is undergoing

overfishing or is overfished, respectively. These opportunities could result in direct benefits to fishermen, fishing guides, and fishing communities. As with **Preferred Alternative 2**, **Sub-Alternatives 3a** and **3b** could influence fishing behavior in a negative manner because of a perceived opportunity for fishermen to exceed the sector ACL without a penalty, which could lead to an attempt to increase catch even during times in which there may not be a forgone yield. However, there is little likelihood of influencing fishing behavior in this way because AMs are usually applied two years later than the most recent year of available landings.

As described in Section 4.3, **Sub-Alternatives 3a** and **3b** are each more restrictive when selected alone and are even more restrictive when selected together regarding additional allowable catch and opportunities for catch than **Preferred Alternative 2**, and **Alternative 1** is the most restrictive.

## 4.5 Direct and Indirect Effects on the Administrative Environment

Alternative 1 (No Action) would not require additional rulemaking and would therefore have no additional effects on the administrative environment. However, Alternative 1 would continue to have a moderate administrative burden for NMFS law enforcement because it is more likely to trigger AMs and to require a greater amount of enforcement resources than **Preferred** Alternative 2 and Alternative 3. Preferred Alternative 2 and Alternative 3 would both have direct administrative effects because they require rulemaking to modify the trigger for AMs for those stocks or stock complexes managed in the Reef Fish FMP by commercial and recreational sectors. A temporary rule to implement an AM-based closure would still be published by the agency as necessary under all alternatives. Although under **Preferred Alternative 2**, AMs may not be triggered as often as in Alternative 1 or Alternative 3, thus reducing the administrative burden from the temporary rule process. Determining the status of the stocks pertinent to **Sub-**Alternatives 3a and 3b would not require any additional administrative effort as those determinations are assigned as part of an established process and reported in the annual Status of U.S. Fisheries Report to Congress pursuant to the Magnuson-Stevens Act. Administrative effects for NMFS law enforcement with Sub-Alternatives 3a or 3b would be slightly less than Alternative 1 and least with **Preferred Alternative 2**.

## 4.6 Cumulative Effects Assessment

The National Environmental Policy Act (NEPA) requires federal agencies to assess not only the indirect and direct impacts associated with regulatory actions, but also the cumulative impacts associated with those actions. NEPA defines a cumulative impact as the impact on the environment which results from the incremental impact of the action when added to other past,

present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Federal waters within the Puerto Rico management area and the fishing communities of Puerto Rico that are dependent on fishing for reef fish would be affected by this action. Federal waters in the U.S. Caribbean extend from the nine-nautical mile seaward boundary of the Commonwealth of Puerto Rico, out to 200 nautical miles offshore (Figure 3.1). This area is within the Council's jurisdiction.

#### Past, Present, and Reasonably Foreseeable Future Actions Impacting the Affected Area

The Cumulative Effects Assessments (CEAs) included in each of the Environmental Impact Statements (EISs) for the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b) analyzed cumulative effects from the Reef Fish FMP related to management of reef fish in the U.S. Caribbean EEZ. Both of those CEAs described baseline economic and social conditions for fishing communities in Puerto Rico. The CEAs described the effects of the implementation of ACLs, AMs, and the selection of revised management reference points for federally managed reef fish and other Council-managed species, and how those actions would serve to restore and stabilize natural trophic and competitive relationships, rebuild species abundances, re-establish natural sex ratios, contribute to the long-term health of the ecosystem, and reinvigorate sustainable fisheries while minimizing to the extent practicable negative socio-economic impacts. The analyses of cumulative effects listed in each of the 2010 and 2011 Caribbean ACL Amendment EISs are still considered to be accurate and useful at the present time and are incorporated herein by reference. Both CEAs discussed that, although ACLs and AMs are intended to prevent or greatly reduce the risk of overfishing and are expected to have positive biological benefits, they may also impose more restrictive catch levels on fisheries resulting in negative social and economic impacts over the short-term. However, to the extent that ACLs and AMs prevent overfishing and assist in rebuilding overfished stocks, they should have positive long-term benefits to both the biological and socio-economic environments.

The CEA in the recently approved Amendments to the Reef Fish, Spiny Lobster, and Corals and Reef Associated Plants and Invertebrates FMPs: Timing of AM-Based Closures (CFMC 2017) discussed the implications of changing the end date for AM-based closures from December 31<sup>st</sup> to September 30<sup>th</sup> with the closure period extending backward toward the beginning of the year for the number of days necessary to achieve the required reduction in landings. The CEA revealed no significant beneficial or adverse cumulative effects on the physical or biological/ecological environments but identified positive effects on the social and economic environments by minimizing adverse socio-economic effects from the application of AMs. The CEA also considered the analyses of cumulative effects listed in each of the 2010 and 2011 Caribbean ACL Amendments/EISs, mentioned above. The CEA of this amendment is still considered to be accurate and useful at the present time.

Additional past actions affecting Council-managed reef fish stocks are summarized in the management history section of this document (Section 1.5). The Council is currently developing an action that would directly affect Council-managed reef fish stocks in Puerto Rico, as well as in the USVI, and that is the development of island-based FMPs for the U.S. Caribbean. Those island-based FMPs could affect the way the reef fish fishery is managed in the U.S. Caribbean by allowing management to be more tailored to each island management area. Among other actions, the island-based FMPs would add/remove stocks to be managed and revise management reference points and ACLs for the managed stocks within each island management area. How the action proposed in this regulatory amendment would be affected by the development of island-based FMPs is currently unknown.

The action proposed in this regulatory amendment would only affect Council-managed stocks and stock complexes in the Reef Fish FMP that are managed with sector-specific ACLs, currently only applicable in the Puerto Rico EEZ. Preferred Alternative 2 and Alternative 3 (if the stock is not determined to be undergoing overfishing or overfished) would trigger an AM for a stock/complex when the total ACL, rather than the sector-specific ACL, is exceeded, and would be expected to minimize the potential adverse socio-economic effects of status quo AMbased fishery closures and increase the likelihood that OY is achieved on a continuing basis. Additionally, each sector would continue to be constrained to its sector-specific ACL and an AM would be triggered when the total ACL for a stock or stock complex was exceeded, thereby preventing overfishing. Although the socio-economic environment would be expected to experience short-term adverse effects from an applied AM, the long-term social and economic effects would be expected to be positive through healthier fish stocks. None of the proposed alternatives are expected to have significant beneficial or adverse cumulative effects on the physical or biological/ecological environments, as harvest would continue to be constrained to the total ACL, which is set at a harvest level that is sustainable for a stock or stock complex. By considering a stock's overfishing/overfished status, proposed Alternative 3 may provide increased benefits to fishermen and fishing communities through healthier fish stocks. None of these alternatives would contribute any cumulative effects that had not previously been considered when AMs were established and implemented, and no significant, cumulative adverse effects on the biological/ecological and socio-economic environments are expected from the proposed action.

By shifting the AM-based closure implementation date earlier in the year, the Timing of AMs Amendment (CFMC 2017) is expected to minimize the adverse socio-economic effects of AMbased closures on fishers and fishing communities in the U.S. Caribbean region. **Preferred Alternative 2** would further minimize those effects in the Puerto Rico management area through fewer implemented AM-based fishing season closures; thus providing increased fishing opportunities for commercial and recreational fishers.

#### Consideration of Climate Change and Other Non-Fishery Related Issues

Stresses affecting fishery and protected resources and the human communities that depend on those resources include natural events, habitat quality, human population growth, and anthropogenic threats (e.g., habitat loss and degradation, pollution, water quality, overharvest, climate change). Other factors directly affecting human communities include high fuel costs, increased seafood imports, restricted access to traditional fishing grounds, and regional economies. Increased seafood imports are significant relative to market competition, where a surplus of fish products can flood the market and lower ex-vessel prices. After market channels are lost to imported seafood products, it may be hard for fishery participants to regain those channels for their locally harvested product (WPFMC 2009). Effects on the regional economy, for example the closure of the Hovensa Petroleum Refinery Plant of St. Croix in 2012, which left more than 1,200 people without work, may increase community dependence on local fisheries as their main source of income and food.

Environmental changes resulting from natural variations in climate patterns and from anthropogenic impacts (e.g., ocean acidification) can also affect fishery populations, protected resources, and the people and communities that depend on those resources. Recent information has begun to shed light on how global climate change will affect, and is already affecting, reef fish resources. Climate change can affect ocean heat capacity, sea surface temperatures, sea level rise, and coastal flooding, which in turn can affect marine ecosystems through by altering migration and breeding patterns, weakening nutrient transport, and impeding coral reef formation (U.S. Environmental Protection Agency 2016). Any of these could affect the local or regional seafood output and thus the local economy (Carter et al. 2014). Potential vulnerabilities for coastal zones include increased shoreline erosion leading to alteration of the coastline, loss of coastal wetlands, and changes in the profiles of fish and other marine life populations (Lorde et al. 2013). Additionally, changes in ocean temperatures have been linked to shifting fish stock distributions and abundances in many marine ecosystems, and these impacts are expected to increase in the future (NMFS 2014). In the U.S. Caribbean region, the major ecosystem concerns are: 1) threats to coral reef ecosystems - coral bleaching, disease, and ocean acidification; 2) threats to habitat from sea level rise - loss of essential fish habitat; and 3) climate induced changes to species phenology and distribution (Osgood 2008).

Coral reefs and their resources provide habitats that are essential to the growth, development, and survival of managed reef fish. Those habitats are susceptible to climate changes and anthropogenic impacts such as ocean acidification, which is when excess carbon dioxide ( $CO_2$ ) is dissolved into the ocean and converted to corrosive carbonic acid (Madin 2010). The dissolved  $CO_2$  also supplies carbon that when combined with calcium already dissolved in seawater, provides calcium carbonate ( $CaCO_3$ ), the main ingredient for shells (Madin 2010). The net responses of organisms to rising  $CO_2$  concentration will vary depending on often opposing sensitivities to changing seawater pH, carbonate concentration, and carbonate saturation state,

and to elevated oceanic total inorganic carbon and gaseous CO<sub>2</sub> (Cooley and Doney 2009). Additionally, the combination of increasing water temperature and ocean acidity could directly affect reef fish by decreasing growth rates (Bignami et al. 2013), influencing reproductive performance (Miller et al. 2015), or by altering behavioral cues of larval fish (Castro et al. 2017). Long-term region-wide declines in Caribbean coral reefs have been documented (Gardner et al. 2003) but long-term consequences of those declines on reef fish communities are unknown.

Climate variability is also a factor that needs to be considered when addressing climate effects, and in the reasonably foreseeable future it may be far more influential than unidirectional climate change. For example, inter-annual or El Niño scale changes in the ocean environment may result in changes in the distribution patterns of migratory fishes and can affect reproduction and recruitment in other species (National Oceanic and Atmospheric Administration PFEL Climate Variability and Marine Fisheries<sup>4</sup> n.d.). Additionally, cyclical water temperature patterns may result in relatively short-term (i.e., decadal) decreases in water temperature despite the evident long-term pattern of temperature increase. Such decadal-scale events may be far more influential with respect to fishery management regulations such as those included in this amendment than are long-term climate change events, because these decadal-scale events operate on the time frame of the fishery management action.

Extreme weather events in the Caribbean, such as hurricanes and storms, in combination with poor land-use planning and deficient ecosystem management and restoration, can be a source of additional pressure to marine ecosystems and to stocks affected by the proposed action. Moreover, climate change impacts appear to be more substantial or at least more noticeable so far, as distance increases from the equator. Thus, impacts of climate change may be less measurable in the Caribbean than in the higher latitudes, although impacts could be greater in the tropics due to organisms being less well adapted to temperature fluctuations (i.e., more stenothermic). Nevertheless, when the potential effects of the proposed action in this amendment are considered within the context of climate change, the interactive effects are considered to be insignificant relative to other impacts of the proposed action.

In general, specific levels of impacts resulting from climate change, climate variation, and ocean acidification cannot be quantified at this time, nor is the exact timeframe known in which these impacts will occur. However, projections based on the Intergovernmental Panel on Climate Change's (IPCC) Special Report on Emissions Scenarios (SRES) give a reduction in average global surface ocean pH of between 0.14 and 0.35 units during the 21st century (Climate Change 2007).

The action proposed in this amendment is not expected to increase or decrease the potential impacts of climate change and ocean acidification on fishery resources and other protected

<sup>&</sup>lt;sup>4</sup> <u>http://www.pfeg.noaa.gov/research/climatemarine/cmffish/cmffishery.html</u>

resources. Other anthropogenic impacts to reef fish in the affected area may be more pressing than long-term climate change or even decadal-scale climate variability. Continued monitoring of the effects of climate change, climate variability, and ocean acidification should be a priority of national and local programs. For more information about climate impacts in U.S. marine living resources concerning NMFS, see Osgood (2008). For additional information about climate change in the Caribbean and Southeast region, please see Chapter 17 of the Third National Climate Assessment: *Climate Change Impacts in the United States*; http://nca2014.globalchange.gov/report/regions/southeast, (Carter et al. 2014).

#### Monitoring and Mitigation

The effects of the proposed action are, and will be continue to be, monitored through collection of fisheries-dependent and fisheries-independent data by NMFS and the Puerto Rico government. In Puerto Rico, commercial and recreational landings data are collected by the Department of Natural and Environmental Resources. Additional information of the effects of this action will be obtained through stock assessments and stock assessment updates (when available), life history studies, economic and social analyses, and other scientific observations, as applicable, and by direct communication with affected constituents.

## 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) provides a comprehensive review of the level and incidence of impacts associated with a regulatory action; 2) provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives which could be used to solve the problem; and 3) ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way.

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

## 5.2 **Problems and Objectives**

The purpose and need, issues, problems, and objectives of these actions are presented in Section 1.4.

## **5.3 Description of the Fishery**

A description of the fishery is contained in Chapter 3 and incorporated here by reference.

## **5.4 Effects of Management Measures**

Because of the lack of sufficient data and the inability to reasonably forecast future annual catch limit (ACL) sector overages and associated accountability measure (AM)-based closures of federal reef fish fisheries in Puerto Rico, it is not feasible to provide quantitative estimates of the potential expected economic effects of the proposed action. As a result, the following discussion is a qualitative assessment of the expected economic effects of the action.

## **Action**

The Action revises the trigger for implementing AM-based fishing season reductions for the federal reef fish fishery in Puerto Rico. Under current regulations, an AM is triggered for either the recreational or commercial sector after NMFS determines that the sector exceeded its assigned ACL. However, despite a sector-specific ACL overage, combined recreational and commercial landings could be less than the total ACL. If so, a portion of the total ACL would not be harvested, and there would be a reduction in landings and associated economic benefits. For example, in 2016, the commercial fishing season for Snapper Unit 2 (SU2) was subject to an AM-based closure based on the 2012-2014 average of SU2 commercial landings (155,889 lbs) exceeding the SU2 commercial ACL (145,916 lbs), even though the combined recreational and commercial landings of SU2 (158,349 lbs) were less than the total SU2 ACL (180,726 lbs). As a result, up to 22,377 lbs of the SU2 total ACL were projected to be foregone in 2016 due to the AM-based closure. Using the most recent available average annual ex-vessel price per pound paid for SU2 fish (2013-2015), the resultant 2016 loss of dockside revenue could have been as high as \$113,899 (in 2015 dollars). Under **Alternative 1**, economic losses are expected to continue to occur in future years assuming similar fishing rates and environmental conditions.

Under **Preferred Alternative 2**, the AM for a stock or stock complex would be triggered for the recreational or commercial fishing sector only if that sector's applicable ACL was exceeded and the total ACL (i.e., combined recreational and commercial ACLs) for that stock/complex was also exceeded. This is expected to result in a decrease in AM-based closures being triggered compared to **Alternative 1** (No Action). Therefore, **Preferred Alternative 2** would be expected to result in increased revenues and profits due to increased opportunities for harvesting the entire ACL. Although it is not feasible to quantitatively estimate the economic benefits of the preferred action due to a lack of cost and earnings data for the commercial sector and a lack of information about the aggregate willingness to pay for the recreational sector, as well as an inability to estimate other factors that influence how much of the ACL would be caught each year, indications are that economic benefits would be positive given the increase in fishing opportunities compared to the **Alternative 1** (No action).

## 5.5 Public and Private Costs of Regulation

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 action include, but are not limited to, the Caribbean Fishery Management Council costs of document preparation, meetings, and other costs; NMFS administration costs of document preparation, meetings, and review, and annual law enforcement costs. The estimated public and private cost of this proposed regulation is \$100,000 to \$150,000. This estimate does not include potential changes in annual law enforcement costs, for which estimates are not available.

## **5.6 Determination of Significant Regulatory Action**

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is expected to: 1) result in an annual effect of \$100 million or more or adversely effect 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, and the fact that the combined average annual revenue for the affected entities is less than \$15 million, 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 Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration. The RFA does not contain any decision criteria; instead, the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of the alternatives contained in the fishery management plan (FMP) or amendment (including framework management measures and other regulatory actions) and to ensure that the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct a regulatory flexibility analysis for each proposed rule. The regulatory flexibility analysis is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. The following regulatory flexibility analysis was conducted to determine if the proposed rule would have a significant economic impact on a substantial number of small entities or not.

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

The primary purpose and need, issues, problems, and objectives of the proposed action are presented in Section 1.2 and are incorporated herein by reference. In summary, this action revises how accountability measures (AMs) are triggered for the federal reef fish fishery in Puerto Rico, to increase the likelihood that optimum yield (OY) is achieved and to minimize, to the extent practicable, adverse socio-economic effects of AM-based closures in accordance with the National Standards set forth in the Magnuson-Stevens Fishery Conservation and Management Act.

Regulatory Amendment 6 to the Reef Fish FMP Triggering AMs in the Puerto Rico EEZ Chapter 7. List of Preparers

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

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

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

The rule concerns recreational and commercial fishing for reef fish managed by the Caribbean Fishery Management Council in federal waters of the U.S. Caribbean off of Puerto Rico. Anglers (recreational fishers) are not considered small entities as that term is defined in 5 U.S.C. 601(6), whether fishing from for-hire, private or leased vessels. Therefore, estimates of the number of anglers directly affected by the rule and the impacts on them are not assessed here.

The rule would directly apply to businesses that operate in the commercial fishing industry (NAICS 11411) and harvest reef fish in federal waters off Puerto Rico. Any person who commercially harvests reef fish and lands them in Puerto Rico must have a commercial fishing license issued by the government of Puerto Rico. That commercial fishing license divides commercial fishermen into captains and helpers. This analysis assumes each captain represents a unique business. In 2008, approximately 74% of licensed commercial fishermen were captains and the remaining 26% helpers. In 2015, there were 1,074 licensed fishermen; and this analysis presumes those percentages apply to the 2015 figure. Consequently, it is estimated that there are 795 captains representing 795 commercial fishing businesses in Puerto Rico.

A business in the commercial fishing industry (NAICS code 11411) is a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates) and its combined annual receipts that are no more than \$11 million for all of its affiliated operations worldwide. From 2013 through 2015, the annual average of dockside revenue from all landings in Puerto Rico was approximately \$8.1 million. Divided equally across 795 commercial fishing businesses, the average business would have had approximately \$10 thousand in annual receipts. NMFS therefore concludes that all of the above 795 commercial fishing businesses are small businesses.

It is unknown how many of these small businesses commercially harvest reef fish from the Puerto Rico EEZ; hence, it is estimated here that up to 795 small businesses may commercially harvest reef fish in the Puerto Rico EEZ and may be directly affected by the rule.

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# 6.5 Description of and economic impacts of compliance requirements of the proposed rule

The action would not impose additional reporting or record-keeping requirements on small businesses.

This action would revise the trigger for implementing accountability measures (AM) for Council-managed reef fish stocks and stock complexes in the Puerto Rico exclusive economic zone (EEZ). Currently, if commercial landings of reef fish of a federally managed reef fish stock or stock complex exceed the commercial annual catch limit (ACL) for that stock/complex, the length of the following year's federal fishing season for that stock/complex is reduced by the amount necessary to ensure commercial landings do not exceed that commercial ACL again, even if the stock ACL is not exceeded by combined recreational and commercial landings. There have been reduced federal commercial seasons even when combined landings did not exceed the stock ACL. In 2016, for example, the length of the commercial fishing season for Snapper Unit 2 (queen and cardinal snapper) in the Puerto Rico EEZ was reduced by 36 days (approximately 10%) because the annual average (2014-2014) of commercial landings (155,889 lbs ww) exceeded the commercial ACL (145,916 lbs ww). However, the annual average (2012-2014) of combined recreational and commercial landings of Snapper Unit 2 (158,349 lbs ww) was less than the stock ACL for Snapper Unit 2 (180,726 lbs ww). The annual average of combined recreational and commercial landings of Snapper Unit 2 could have increased by as much as 22,377 lbs ww before the stock ACL for Snapper Unit 2 was exceeded.

The reduced federal commercial fishing season for Snapper Unit 2 in 2016 would not have occurred under **Preferred Alternative 2**. Under **Preferred Alternative 2**, the length of the federal commercial season would be reduced only if both the annual average of commercial landings for a stock/complex exceeded the commercial ACL for that stock/complex and the annual average of combined commercial and recreational landings of that stock/complex exceeded its stock ACL.

**Preferred Alternative 2** would benefit small commercial fishing businesses by reducing the adverse economic impact, if any, caused by a reduction in the length of the federal commercial season required by the status quo AM. The actual adverse impact caused by a reduction in the length of a federal commercial fishing season, however, is dependent on the extent that commercial fishing for a stock/complex occurs in federal waters and on commercial fishing businesses' abilities to change intensity of effort in anticipation of a possible reduced season in federal waters. For example, if **Preferred Alternative 2** had been in place in 2016, the length of the federal commercial season for Snapper Unit 2 would not have been reduced by 36 days. The combined commercial and recreational sectors could have collectively landed up to 22,377 more

lbs of Snapper Unit 2, before reaching the stock ACL. If the federal commercial season had not closed early, if the small commercial fishing businesses had landed all of that additional 22,377 lbs of Snapper Unit 2, and if all of those additional landings were of Snapper Unit 2 caught in the EEZ, these small businesses' combined dockside revenues would have increased by \$113,899 (2015 \$). When divided across 795 small businesses, that would have been a maximum a benefit of an additional 28 lbs of Snapper Unit 2 landed that year by each small business and with a dockside value of \$143. However, that figure is no more than a theoretical upper bound because there is insufficient harvest and effort information to produce estimates of either the extent to which commercial landings of reef fish (including Snapper Unit 2) derive from fish caught in the EEZ or the number of small businesses that harvest reef fish (including Snapper Unit 2) from the Puerto Rico EEZ.

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

**Preferred Alternative 2** could have a beneficial economic impact on small commercial fishing businesses that harvest reef fish in federal waters off Puerto Rico. The magnitude of that impact is dependent on the extent that commercial landings of reef fish derive from federal waters, commercial fishermen's abilities to change intensity of effort in anticipation of a possible reduced season in federal waters, and the number of small fishing businesses that harvest reef fish in the Puerto Rico EEZ. That information is not available. However, it was estimated that if the 2016 Snapper Unit 2 commercial season had not closed early and if all additional landings of Snapper Unit 2 were from the commercial sector and from federal waters, each small business could have landed an additional 28 lbs of Snapper Unit 2 with a dockside value of \$143 that year. For a small commercial fishing business that has average annual dockside revenue of \$10,000, that would represent a 1.43% increase in annual revenue. From that and the above, it is concluded that the rule would not have a significant economic impact on a substantial number of small entities under the RFA, 5 U.S.C. 601 et seq; however, small businesses are encouraged to comment on this conclusion.

Chapter 7. List of Preparers

## Chapter 7. List of Preparers

Name	Agency	Title		
Sarah Stephenson	NMFS/SF	IPT Co-Lead / Fishery Biologist		
Kate Quigley	CFMC	IPT Co-Lead / Economist		
María del Mar López	NMFS/SF	Fishery Biologist / Division NEPA Specialist		
Bill Arnold	NMFS/SF	Caribbean Branch Chief / Fishery Biologist		
Graciela García-Moliner	CFMC	Fishery Biologist		
Christina Package-Ward	NMFS/SF	Anthropologist		
Denise Johnson	NMFS/SF	Economist		
Stephen Holliman	NMFS/SF	Economist		
Jennifer Lee	NMFS/PR	Fishery Biologist		
Michael Larkin	NMFS/SF	Data Analyst		
Meaghan Bryan	NMFS/SEFSC	Fishery Biologist		
Shannon Cass-Calay	NMFS/SEFSC	Chief, Gulf and Caribbean Species Branch/Fishery Biologist		
Iris Lowery	NOAA/GC	Attorney		
Scott Sandorf	NMFS/SF	Technical Writer		
Brent Stoffle	NMFS/SEFSC	Anthropologist		
Cynthia Meyer	NMFS/SF	Fishery Biologist		
Jeff Radonski	NMFS/OLE	Assistant Special Agent in Charge		

Table 7.1.	List of Interdisci	plinary Plan	Team (I	PT) Members
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CFMC = Caribbean Fishery Management Council, GC = General Counsel, HC = Habitat Conservation Division, NEPA = National Environmental Policy Act, NMFS = National Marine Fisheries Service, NOAA = National Oceanic and Atmospheric Administration, OLE= Office of Law Enforcement, PR = Protected Resources Division, SERO = Southeast Regional Office, SER = Southeast Region, SF = Sustainable Fisheries Division, SEFSC = Southeast Fisheries Science Center
## Chapter 8. List of Agencies, Organizations, and Persons Consulted

**Responsible Agencies** 

Caribbean Fishery Management Council 270 Muñoz Rivera Ave., Suite 401 San Juan, Puerto Rico 00918-1903 (787) 766-5926 (Telephone) (787) 766-6239 (Fax) http://www.caribbeanfmc.com/

National Marine Fisheries Service (NMFS), Southeast Region 263 13<sup>th</sup> Avenue South St. Petersburg, Florida 33701 (727) 824-5301 (Telephone) (727) 824-5320 (Fax) http://sero.nmfs.noaa.gov/

#### List of Agencies, Organizations, and Persons Consulted

Department of Commerce Office of General Counsel National Marine Fisheries Service Office of General Counsel National Marine Fisheries Service Office of General Counsel Southeast Region National Marine Fisheries Service Southeast Regional Office National Marine Fisheries Service Southeast Fisheries Science Center National Marine Fisheries Service Headquarters Office National Marine Fisheries Service Office of Law Enforcement Southeast Division United States Coast Guard United States Department of the Interior U.S. Virgin Islands Department of Planning and Natural Resources Puerto Rico Department of Natural and Environmental Resources Puerto Rico Planning Board

### Chapter 9. References

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## Appendix A. Other Applicable Law

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

#### Administrative Procedure Act (APA)

All federal rulemaking is governed under the provisions of the APA (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, 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 APA also establishes a generally applicable 30-day delay period from the time a final rule is published until it takes effect.

#### Coastal Zone Management Act (CZMA)

The CZMA of 1972 (16 U.S.C. 1451 et seq.) encourages state and federal cooperation in the development of plans that manage the use of natural coastal habitats, as well as the fish and wildlife those habitats support. When proposing an action determined to directly affect coastal resources managed under an approved coastal zone management program, NMFS is required to provide the relevant State agency with a determination that the proposed action is consistent with the enforceable policies of the approved program to the maximum extent practicable at least 90 days before taking final action. NMFS may presume State agency concurrence if the State agency's response is not received within 60 days from receipt of the agency's consistency determination and supporting information as required by 15 C.F.R. §930.41(a).

#### **Data Quality Act**

The Data Quality Act (Public Law 106-443), which took effect October 1, 2002, requires the government for the first time 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 (OMB) 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

Appendix A. Other Applicable Law

issue agency-specific standards to: 1) Ensure information quality and develop a predissemination review process; 2) establish administrative mechanisms allowing affected persons to seek and obtain correction of information; and 3) report periodically to OMB on the number and nature of complaints received.

Scientific information and data are key components of fishery management plans (FMPs) and amendments and the use of best available information is the second national standard under the Magnuson-Stevens Act. To be consistent with the Act, FMPs and amendments must be based on the best scientific 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.

#### **Endangered Species Act (ESA)**

The ESA of 1973 (16 U.S.C. Section 1531 et seq.) requires federal agencies to ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or the habitat designated as critical to their survival and recovery. The ESA requires NMFS to consult with the appropriate administrative agency (itself for most marine species, and the U.S. Fish and Wildlife Service for all remaining species) when proposing an action that may affect threatened or endangered species or critical habitat. Consultations are necessary to determine the potential impacts of the proposed action. They are concluded informally when proposed actions may affect but are "not likely to adversely affect" threatened or endangered species or designated critical habitat. Formal consultations, resulting in a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" threatened or endangered species or designated critical habitat.

In 2011, NMFS completed its most recent biological opinion evaluating the impacts of the continuing authorization of the reef fish fishery (NMFS 2011) on ESA-listed species. An October 4, 2011, Caribbean reef fish fishery biological opinion entitled: "Continued Authorization of Reef Fish Fishing Managed under the Reef FMP of Puerto Rico and the U.S. Virgin Islands (USVI)" evaluated the effects of the continued authorization of the U.S. Caribbean reef fish fishery on ESA-listed species. The opinion concluded that the continued authorization of the U.S. Caribbean reef fish fishery was not likely to jeopardize the continued existence of green, hawksbill, or leatherback sea turtles, or elkhorn or staghorn corals, or destroy or adversely modify *Acropora* critical habitat. The opinion also concluded that the continued authorization of the U.S. Caribbean reef fish fishery is not likely to adversely affect listed whales or Northwest Atlantic loggerhead sea turtles, or the critical habitat for green, hawksbill or leatherback sea turtles.

On September 26, 2014, NMFS requested reinitiation of ESA Section 7 consultation on the continued authorization of fishing under the Reef Fish FMP as well as the Spiny Lobster FMP because five new coral species had been listed under the ESA (Mycetophyllia ferox, Dendrogyra cylindrus, Orbicella annularis, O. faveolata, and O. franksi) that may be affected by the identified actions. Since the initial reinitiation request, NMFS has published two additional final listing rules. On April 6, 2016, NMFS and the U.S. Fish and Wildlife Service published a final rule (81 FR 20057) removing the range-wide and breeding population ESA listings of the green sea turtle, and in their place, listing eight Distinct Population Segments (DPSs) as threatened and three DPSs as endangered, effective May 6, 2016. Two of the green sea turtle DPSs, the North Atlantic DPS and the South Atlantic DPS, occur in the Caribbean and are listed as threatened, and may be affected by the reef fish fishery. In addition, a final rule was published in the Federal Register on June 29, 2016 (81 FR 42268), to list the Nassau grouper as threatened. Nassau grouper are also found in the Caribbean and may be affected by the subject fishery. NMFS has expanded the scope of the consultation already underway to evaluate potential effects of the reef fish fishery on these species and expects to complete a biological opinion by the end of July 2017. In memoranda dated October 24, 2016 and March 31, 2017, NMFS determined that allowing the continued authorization of fishing managed by the Reef Fish FMP, based on NMFS analysis on the five newly-listed coral species, two new green sea turtle DPSs, and Nassau grouper, during the reinitiation period, will not violate Section 7(a)(2) or 7(d) of the ESA. NMFS is evaluating potential effects of the action proposed on all listed species and will complete any required Section 7 analysis prior to promulgation of a final rule for this amendment.

#### Marine Mammal Protection Act (MMPA)

The 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. It also prohibits 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 otters, polar bears, manatees, and dugongs.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. The MMPA requires a commercial fishery to be placed in one of three categories, based on the relative frequency of incidental serious injuries and mortalities of marine mammals. Category I designates fisheries with frequent serious injuries and mortalities incidental to commercial fishing; Category II designates fisheries with occasional serious injuries and mortalities; Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities. To legally fish in a Category I and/or II fishery, a fisherman must obtain a marine mammal authorization certificate by registering with the Marine Mammal Authorization

Program (50 CFR 229.4) and accommodate an observer if requested (50 CFR 229.7(c)) and they must comply with any applicable take reduction plans.

NMFS has determined that fishing activities conducted under this amendment will have no adverse impact on marine mammals. The NMFS List of Fisheries for 2017 classifies all Caribbean reef fish fisheries as Category III fisheries (82 FR 3655), meaning annual mortality and serious injury of marine mammals in these fisheries is less than or equal to one percent of the potential biological removal level.

#### **Paperwork Reduction Act**

The Paperwork Reduction Act (PRA) of 1995 (44 U.S.C. 3501 et seq.) regulates the collection of public information by federal agencies to ensure that the public is not overburdened with information requests, that the federal government's information collection procedures are efficient, and that federal agencies adhere to appropriate rules governing the confidentiality of such information. The PRA requires NMFS to obtain approval from the Office of Management and Budget before requesting most types of fishery information from the public. This action does not contain a collection-of-information requirement for purposes of the PRA.

#### **Small Business Act**

The Small Business Act of 1953, as amended, Section 8(a), 15 U.S.C. 634(b)(6), 636(j), 637(a) and (d); Public Laws 95-507 and 99-661, Section 1207; and Public Laws 100-656 and 101-37 are administered by the Small Business Administration. The objectives of the act are to foster business ownership by individuals who are both socially and economically disadvantaged; and to promote the competitive viability of such firms by providing business development assistance including, but not limited to, management and technical assistance, access to capital and other forms of financial assistance, business training and counseling, and access to sole source and limited competition federal contract opportunities, to help the firms to achieve competitive viability. Because most businesses associated with fishing are considered small businesses, NMFS, in implementing regulations, must assess how those regulations will affect small businesses.

#### Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) Provisions

The Magnuson-Stevens Act includes EFH requirements, and as such, each existing, and any new FMPs must describe and identify EFH for the fishery, minimize to the extent practicable adverse effects on that EFH caused by fishing, and identify other actions to encourage the conservation and enhancement of that EFH.

The areas affected by the proposed action have been identified as EFH for queen conch, spiny lobster, corals, and reef fish. As specified in the Magnuson-Stevens Act, EFH consultation is

required for federal actions which may adversely affect EFH. Any required consultation requirements will be completed prior to implementation of the regulatory amendment.

#### National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.) requires federal agencies to consider the environmental and social consequences of proposed major actions, as well as alternatives to those actions, and to provide this information for public consideration and comment before selecting a final course of action. This document contains an Environmental Assessment to satisfy the NEPA requirements. The Purpose and Need can be found in Section 1.4, Alternatives are found in Chapter 2, the Environmental Consequences are found in Chapter 4, the List of Preparers is in Chapter 7, and a list of the agencies/people consulted is found in Chapter 8.

#### **Regulatory Flexibility Act (RFA)**

The purpose of the Regulatory Flexibility Act (RFA 1980, 5 U.S.C. 601 et seq.) is to ensure that federal agencies consider the economic impact of their regulatory proposals on small entities, analyze effective alternatives that minimize the economic impacts on small entities, and make their analyses available for public comment. The RFA does not seek preferential treatment for small entities, require agencies to adopt regulations that impose the least burden on small entities, or mandate exemptions for small entities. Rather, it requires agencies to examine public policy issues using an analytical process that identifies, among other things, barriers to small business competitiveness and seeks a level playing field for small entities, not an unfair advantage.

After an agency determines that the RFA applies, it must decide whether to conduct a full regulatory flexibility analysis (Initial Regulatory Flexibility Analysis [IRFA] and Final Regulatory Flexibility Analysis [FRFA]) or to certify that the proposed rule will not "have a significant economic impact on a substantial number of small entities." To make this determination, the agency conducts a threshold analysis, which has the following 5 parts: 1) description of small entities regulated by the proposed action, which includes the SBA size standard(s), or those approved by the Office of Advocacy, for purposes of the analysis and size variations among these small entities; 2) descriptions and estimates of the economic impacts of compliance requirements on the small entities, which include reporting and recordkeeping burdens and variations of impacts among size groupings of small entities; 3) criteria used to determine if the economic impact is significant or not; 4) criteria used to determine if the number of small entities that experience a significant economic impact is substantial or not; and 5) descriptions of assumptions and uncertainties, including data used in the analysis. If the threshold analysis indicates that there will not be a significant economic impact on a substantial number of small entities, the agency can so certify.

#### **Executive Orders**

#### E.O. 12630: Takings

The Executive Order on Government Actions and Interference with Constitutionally Protected Property Rights, which became effective March 18, 1988, requires that 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 Takings Implication Assessment is necessary for this amendment.

#### E.O. 12866: Regulatory Planning and Review

Executive Order 12866, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NMFS prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that either implement a new fishery management plan or significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society associated with proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act analysis.

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

This Executive Order mandates that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. See Section 3.4.3 for Environmental Justice considerations as they relate to this regulatory amendment.

#### E.O. 12962: Recreational Fisheries

This Executive Order requires federal agencies, in cooperation with States and Tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods including, but not limited to, developing joint partnerships; promoting the restoration of recreational fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic

conservation and restoration endeavors; and evaluating the effects of federally funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and documenting those effects.

Additionally, it establishes a seven-member National Recreational Fisheries Coordination Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The Council also is responsible for developing, in cooperation with federal agencies, States and Tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda. Finally, the Order requires NMFS and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

#### E.O. 13089: Coral Reef Protection

The Executive Order on Coral Reef Protection (June 11, 1998) requires federal agencies whose actions may affect U.S. coral reef ecosystems to identify those actions, utilize their programs and authorities to protect and enhance the conditions of such ecosystems; and, to the extent permitted by law, ensure that actions they authorize, fund or carry out not degrade the condition of that ecosystem. By definition, a U.S. coral reef ecosystem means those species, habitats, and other national resources associated with coral reefs in all maritime areas and zones subject to the jurisdiction or control of the United States (e.g., federal, state, territorial, or commonwealth waters).

The action in this amendment will have no direct impacts on coral reefs. Regulations are already in place to limit or reduce impacts to coral reef habitat in the U.S. Caribbean EEZ. In addition, NMFS approved and implemented the 2010 Caribbean Annual Catch Limit (ACL) Amendment, which established ACLs and accountability measures for species within the Reef Fish FMP. These actions aim to prevent overfishing of coral reef resources, which contain species that play important roles on coral reef ecosystems of the U.S. Caribbean.

#### E.O. 13132: Federalism

The Executive Order on Federalism requires agencies, when 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 international, State, Tribal, and local entities. No Federalism issues have been identified relative to the action proposed in this regulatory amendment. Therefore, consultation with state officials under Executive Order 13132 is not necessary.

#### E.O. 13112: Invasive Species

This Executive Order requires agencies to use their authority to prevent introduction of invasive species, respond to and control invasions in a cost effective and environmentally sound manner, and to provide for restoration of native species and habitat conditions in ecosystems that have been invaded. Further, agencies shall not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless a determination is made that the benefits of such actions clearly outweigh the potential harm; and that all feasible and prudent measures to minimize the risk of harm will be taken in conjunction with the actions. The action undertaken in this amendment will not introduce, authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of non-indigenous species in the U.S. Caribbean have resulted in the introduction or spread of non-indigenous species and the proposed action does not contain or promote any activities associated with the introduction or spread of non-indigenous species, such as ballast water uptake and discharge.

#### E.O. 13158: Marine Protected Areas (MPAs)

Executive Order 13158 (May 26, 2000) requires federal agencies to consider whether their proposed action(s) will affect any area of the marine environment that has been reserved by Federal, State, territorial, Tribal, or local laws or regulations to provide lasting protection for part or all of the natural or cultural resource within the protected area. This action is not expected to affect any MPA in federal waters of the U.S. Caribbean.