

Comprehensive Amendment to the U.S. Caribbean Fishery Management Plans



Annual Catch Limit Control Rule



**Including Draft Environmental Assessment,
Regulatory Impact Review, and
Initial Regulatory Flexibility Act Analysis**



DRAFT - July 2014

Comprehensive Amendment to the U.S. Caribbean Fishery Management Plans: Annual Catch Limit Control Rule

Amendment 7 to the Fishery Management Plan for the Reef Fish Fishery of Puerto Rico and the U.S. Virgin Islands

Amendment 6 to the Fishery Management Plan for the Spiny Lobster of Puerto Rico and the U.S. Virgin Islands

Amendment 5 to the Fishery Management Plan for the Corals and Reef Associated Plants and Invertebrates of Puerto Rico and the U.S. Virgin Islands

Amendment 4 to the Fishery Management Plan for the Queen Conch Resources of Puerto Rico and the U.S. Virgin Islands

Proposed action:

Adjust the buffer applied to the overfishing limit or to the acceptable biological catch to derive the annual catch limit of Caribbean Fishery Management Council species to reflect changes in their overfishing status.

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Abbreviations and Acronyms Used

ABC	allowable biological catch	MMPA	Marine Mammal Protection Act
ACL	annual catch limit	MPA	marine protected area
APA	Administrative Procedures Act	MSY	maximum sustainable yield
CEA	cumulative effects assessment	NEPA	National Environmental Policy Act
CEQ	Council on Environmental Quality	NMFS	National Marine Fisheries Service
CFMC	Caribbean Fishery Management Council; Council	NOAA	National Oceanic and Atmospheric Administration
CZMA	Coastal Zone Management Act	OFL	overfishing limit
DNER	Department of Natural and Environmental Resources of Puerto Rico	OMB	Office of Management and Budget
DPNR	Department of Planning and Natural Resources of the USVI	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
ESA	Endangered Species Act	SSC	Scientific and Statistical Committee
FEIS	final environmental impact statement	SFA	Sustainable Fisheries Act
FMP	fishery management plan	SEFSC	Southeast Fisheries Science Center
FMU	fishery management unit	SERO	Southeast Regional Office
GU	Grouper Unit	SU	Snapper Unit
HAPC	habitat area of particular concern	USVI	United States Virgin Islands

Magnuson-Stevens Act

Magnuson-Stevens Fishery Conservation and Management Act

Table of Contents

Abbreviations and Acronyms Used	III
List of Tables	VI
List of Figures	XI
Table of Contents for the Environmental Assessment.....	XII
Fishery Impact Statement	XIII
Chapter 1. Introduction	1
1.1 What Actions are Being Proposed?	1
1.2 Who is Proposing the Action?	2
1.3 Where is the Project Located?	2
1.4 Why is the Council Considering Action?	3
Purpose for Action	5
Need for Action.....	5
1.5 Management History.....	6
1.5.1 Management History Relative to Management Reference Points, Stock Status, and Annual Catch Limits	6
1.5.2 Recent Council Actions	7
1.6 Current Management Reference Points or Proxies for Council Managed Species	9
Chapter 2. Proposed Action and Alternatives.....	19
2.1 What is the Proposed Action?.....	19
2.2 List of Alternatives	19
(Cont.) 2.2 List of Alternatives	20
2.2.1 Discussion of the Alternatives	20
2.1.1.1 Analyses on the Effects of the Proposed Alternatives	25
2.2.2 Current Status of Stocks and Changes to Current Annual Catch Limits Proposed by the Annual Catch Limit Control Rule.....	49
2.2.3 Annual Process that Would be Used to Apply the Annual Catch Limit Control Rule under Alternative 2 or Preferred Alternative 3	52
Chapter 3. Affected Environment	53
3.1 Physical/ Habitat Environment	54
3.2 Biological and Ecological Environment	58

3.2.1 Description of the Species: Biology/Ecology	58
3.2.2 Overview of Status Determinations for Stocks (Overfished, Overfishing, and Unknown Status).....	60
3.2.2.1 Status of the Stocks: Southeast Data Assessment and Review (SEDAR) and NMFS Status of U.S. Fisheries Annual Report to Congress	62
3.2.3 Protected Species	68
3.3 Description of the Fisheries	73
3.4 Economic and Social Environment.....	75
3.4.1 Economic Environment	75
3.4.1.1 Economic Description of the Puerto Rico and U.S. Virgin Islands Commercial and Recreational Sector Fishing Industries.....	75
3.4.2 Description of the Social and Cultural Environment.....	94
3.4.3. Environmental Justice Considerations.....	105
3.5 Administrative Environment.....	108
3.5.1 Federal Fishery Management.....	108
3.5.2 Territory and Commonwealth Fishery Management.....	110
Chapter 4. Environmental Effects.....	112
4.1 Management Measures for the Proposed Action: Annual Catch Limit Control Rule	112
4.1.1 Direct and Indirect Effects on the Physical Environment.....	112
4.1.2 Direct and Indirect Effects on the Biological and Ecological Environment.....	117
4.1.3 Direct and Indirect Effects on the Economic Environment	123
4.1.4 Direct and Indirect Effects on the Social Environment	132
4.1.5 Direct and Indirect Effects on the Administrative Environment	140
4.2 Cumulative Effects Assessment.....	142
Chapter 5. Regulatory Impact Review.....	155
5.1 Introduction.....	155
5.2 Problems and Objectives.....	155
5.3 Methodology and Framework for Analysis	155
5.4 Description of the Fishery.....	155
5.5 Economic Impacts of Management Measures	156
5.5.1 Caribbean-Wide Impact	157
5.5.2 Puerto Rico.....	158

5.5.3 St. Croix	166
5.5.5 Total economic impact.....	171
5.6 Private and Public Costs	171
5.7 Determination of Significant Action.....	171
Chapter 6. Regulatory Flexibility Act Analysis.....	173
6.1 Introduction.....	173
6.2 Statement of need for, objectives of, and legal basis for the proposed rule	173
6.3 Identification of federal rules which may duplicate, overlap or conflict with the proposed rule	174
6.4 Description and estimate of the number of small entities to which the proposed rule will apply.....	174
6.5 Description of compliance requirements of the proposed rule	174
6.6 Substantial number of small entities criterion	174
6.7 Economic impact	175
6.8 Description of significant alternatives	175
Chapter 7. List of Preparers	176
Chapter 8. List of Agencies, Organizations and Persons Consulted.....	177
Chapter 9. References	178
Appendices.....	189
Appendix A. Other Applicable Law	189
Appendix B. Summary of Regulations in Federal, U.S. Virgin Islands, and Puerto Rico Waters.....	198

List of Tables

Table 1.6.1. Overfishing limits for FMUs addressed in the 2010 Caribbean ACL Amendment.	12
Table 1.6.2. Overfishing limits for FMUs addressed in the 2011 Caribbean ACL Amendment. Source: CFMC 2011b. Values are in pounds of whole weight.....	15
Table 1.6.3. Management reference points or proxies for all Council managed species	16
Table 2.2.1.1.1. Puerto Rico commercial and recreational landings in pounds of whole weight for the most recent years (2008-2012) and Caribbean-Wide OFL for 2010 FMUs. The OFLs for	

Puerto Rico are monitored by combining commercial and recreational landings. Landings include harvest from both federal and state waters.....	26
Table 2.2.1.1.2. St. Croix and St. Thomas/St. John commercial landings in pounds of whole weight for the most recent five years (2008-2012) and Caribbean-Wide OFL for 2010 FMUs. .	27
Table 2.2.1.1.3. Puerto Rico commercial and recreational landings in pounds of whole weight for the most recent years of available information (2008-2011 Commercial sector, 2008-2012 Recreational sector) and individual OFLs for 2011 FMUs.	28
Table 2.2.1.1.4. St. Croix and St. Thomas/St. John commercial landings in pounds of whole weight for the most recent five years of available information (2008-2012) and individual OFLs for 2011 FMUs. Landings include harvest from both federal and state waters.	29
Table 2.2.1.1.5. Caribbean-wide landings in pounds of whole weight for the most recent five years of available information for the tilefish and aquarium trade species FMUs and corresponding Caribbean-wide OFL.....	29
Table 2.2.1.1.6. 2010 and 2011 FMUs that exceeded their OFLs based on annual landings for the past 5 years (2008 to 2012).	30
Table 2.2.1.1.7. Current ACLs (Alternative 1) and new ACLs for 2010 FMUs per island/island region and sector under Alternative 2 and Preferred Alternative 3 (including Sub-alternatives 3a and 3d) if stocks are determined to be ‘subject to overfishing’	32
Table 2.2.1.1.8. Current ACLs (Alternative 1) and new ACLs for 2011 FMUs per island/island region and sector under proposed Alternative 2 and Preferred Alternative 3 (including Sub-alternatives 3b, 3c, and 3e) if stocks are determined to be ‘subject to overfishing’	33
Table 2.2.1.1.9. Current ACLs (Alternative 1) and new ACLs for 2010 FMUs per island region and sector under Alternative 2 and Preferred Alternative 3 (including Sub-alternatives 3a and 3d) if stocks are determined not to be subject to overfishing.	36
Table 2.2.1.1.10. Current ACLs (Alternative 1) and new ACLs for 2011 FMUs per island region and sector under Alternative 2 and Preferred Alternative 3 (including Sub-alternatives 3b, 3c, and 3e) if stocks are determined to be ‘not subject to overfishing’ or status ‘unknown’ .	38
Table 2.2.1.1.11. Stocks addressed in the 2010 Caribbean ACL Amendment (2010 FMUs) that exceeded their ACL under Alternative 1 and the number of pounds by which the ACL was exceeded.....	41
Table 2.2.1.1.12. Stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs) that exceeded their ACL under Alternative 1 and the number of pounds by which the ACL was exceeded.....	41
Table 2.2.1.1.13. Stocks addressed in the 2010 Caribbean ACL Amendment (2010 FMUs) that exceeded their ACL in Alternative 2 under a ‘subject to overfishing’ status scenario, and the number of pounds by which the ACL was exceeded.....	43

Table 2.2.1.1.14. Stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs) that exceeded their ACLs in Alternative 2 under a ‘subject to overfishing’ status scenario, and the number of pounds by which the ACL was exceeded.....	44
Table 2.2.1.1.15. Stocks addressed in the 2010 Caribbean ACL Amendment (2010 FMUs) that exceeded their ACLs in Alternative 2 under a ‘not subject to overfishing’ or ‘unknown’ status scenario, and the number of pounds by which the ACL was exceeded.....	46
Table 2.2.1.1.16. Stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs) that exceeded their ACLs in Alternative 2 under a ‘not subject to overfishing’ or ‘unknown’ status scenario, and the number of pounds by which the ACL was exceeded.....	47
Table 3.2.1.1. Species included in the Reef Fish, Coral, Spiny Lobster, and Queen Conch FMPs.	58
Table 3.2.2.1. Comparison of ‘subject to overfishing’ stock status classification for all U.S. Caribbean managed FMUs among the NMFS Status of U.S. Fisheries 2011 Annual Report, the NMFS Status of U.S. Fisheries 2012 Annual Report, and the 2014 1 st Quarter Update report on the NMFS Status of U.S. Fisheries.	65
Table 3.2.2.2. Comparison of ‘overfished’ stock status classification for Council managed stocks/stocks complexes among the NMFS Status of U.S. Fisheries 2011 Annual Report, NMFS Status of U.S. Fisheries 2012 Annual Report, and the 2014 1 st Quarter Update on the NMFS Status of U.S. Fisheries.	67
Table 3.4.1.1.1. Annual Number of Commercial Trips, Landings (whole pounds), and Ex-Vessel Revenue (real 2013 U.S. Dollars) for Puerto Rico, 2008-2012.....	76
Table 3.4.1.1.2. Monthly Number of Commercial Trips for Puerto Rico, 2008-2012.....	76
Table 3.4.1.1.3. Number of Commercial Trips by Species Group/Complex for Puerto Rico, 2008-2012.....	77
Table 3.4.1.1.4. Annual Commercial Landings (whole pounds) by Species Group/Complex for Puerto Rico, 2008-2012.....	78
Table 3.4.1.1.5. Annual Commercial Ex-Vessel Revenue (real 2013 U.S. Dollars) by Species Group/Complex for Puerto Rico, 2008-2012.....	79
Table 3.4.1.1.6. Monthly Commercial Landings (whole pounds) for Puerto Rico, 2008-2012..	80
Table 3.4.1.1.7. Monthly Commercial Ex-Vessel Revenue for Puerto Rico (real 2013 weighted U.S. dollars), 2008-2012.....	81
Table 3.4.1.1.8. Annual Commercial Landings (whole pounds) by Gear Type for Puerto Rico, 2008-2012.....	82
Table 3.4.1.1.9. Annual Commercial Ex-Vessel Revenue (real 2013 U.S. dollars) by Gear Type for Puerto Rico, 2008-2012.....	82

Table 3.4.1.1.10. Number of Commercial Trips Reporting Landings by Species Group/Complex in St. Thomas/St. John, 2008-2012.....	84
Table 3.4.1.1.11. Annual Commercial Landings (whole pounds) by Species Group/Complex in St. Thomas/St. John, 2008-1012.....	85
Table 3.4.1.1.12. Annual Commercial Revenue (real 2013 U.S. dollars) by Species Group/Complex in St. Thomas/St. John, 2008-2012.....	85
Table 3.4.1.1.13. Annual Number of Commercial Vessels Landing Various Ranges of Pounds in St. Thomas/St. John, 2008-2012.....	86
Table 3.4.1.1.14. Annual Commercial Landings (whole pounds) by Gear Type in St. Thomas/St. John, 2008-2012.....	87
Table 3.4.1.1.15. Annual Commercial Ex-Vessel Revenue (real 2013 U.S. dollars) by Gear Type in St. Thomas/St. John, 2008-2012.....	87
Table 3.4.1.1.16. Annual Number of Commercial Trips Reporting Landings for Each Species Group/Complex in St. Croix, 2008-2012.....	88
Table 3.4.1.1.17. Annual Commercial Landings (whole pounds) by Species Group/Complex in St. Croix, 2008-2012.....	89
Table 3.4.1.1.18. Annual Commercial Ex-Vessel Revenue (real 2013 U.S. Dollars) by Species Group/Complex in St. Croix, 2008-2012.....	90
Table 3.4.1.1.19. Annual Number of Commercial Vessels Landing Various Pound Ranges in St. Croix, 2008-2012.....	91
Table 3.4.1.1.20. Annual Commercial Landings (whole pounds) by Gear Type in St. Croix, 2008-2012.....	91
Table 3.4.1.1.21. Annual Commercial Ex-Vessel Revenue (real 2013 U.S. dollars) by Gear Type in St. Croix, 2008-2012.....	92
Table 3.4.1.1.22. Total Recreationally Harvested and Released Numbers of Fish in Puerto Rico, 2008-2012.....	93
Table 3.4.1.1.23. Total Recreational Angler Trips in Puerto Rico, 2008-2012.....	93
Table 3.4.1.1.24. Total Recreational Angler Trips by Mode in Puerto Rico, 2008-2012.....	93
Table 3.4.1.1.25. Recreational Participation by Region (individuals) in Puerto Rico, 2008-2012.....	94
Table 3.4.2.1. Target species by coastal region.....	97
Table 3.4.2.2. Three most important species by municipality, 1999-2003.....	97
Table 3.4.2.3. Relative importance of categories of fish, mollusks, and crustaceans to St. Croix interviewed licensed commercial fishers.....	102

Table 3.4.2.4. Relative importance of categories of fish, mollusks, and crustaceans to St. Thomas/St. John interviewed licensed commercial fishers	104
Table 3.4.3.1. Puerto Rico communities which exceeded poverty threshold for year 2010	106
Table 3.4.3.2. U.S. Virgin Islands communities which exceeded poverty threshold for year 2010.	107
Table 4.1.3.1. Maximum potential change in annual commercial ex-vessel revenue and the direction of economic effects for the recreational and subsistence sectors under Alternative 2, Preferred Alternative 3, and Preferred Sub-alternatives 3a-3e assuming the ‘subject to overfishing status scenario’	126
Table 4.1.3.2. Maximum potential annual change in commercial ex-vessel revenue and the direction of economic effects for the recreational and subsistence sectors under Alternative 2, Preferred Alternative 3, including Sub-alternatives 3a-3e assuming the ‘not subject to overfishing’ status scenario.....	129
Table 5.5.1. Fishery management units by preferred alternative or sub-alternative.....	156
Table 5.5.1.1. Comparison of status quo (Alternative 1) ACL and Preferred Sub-alternative 3e ACL for the Aquarium Trade Species FMU. Values are in pounds of whole weight (lbs ww).	157
Table 5.5.1.2. Comparison of status quo (Alternative 1) ACL and Preferred Alternative 3 ACL for Tilefish FMU.....	157
Table 5.5.2.1. Comparison of status quo (Alternative 1) and Preferred Alternative 3 commercial ACLs for 14 FMUs.	158
Table 5.5.2.2 Comparison of current Puerto Rico commercial ACLs (Alternative 1) and annual commercial landings potentially affected by Preferred Alternative 3	159
Table 5.5.2.3. Expected status and increase in annual landings of grouper and Snapper Units 1- 4 FMUs by weight and value due to Preferred Alternative 3 (NSO: Not subject to overfishing).	160
Table 5.5.2.4. Expected status and decrease in annual commercial landings of boxfish, goatfishes, grunts, jacks, scups & porgies, spiny lobster, squirrelfish, triggerfish & filefish, and wrasses by weight and value due to Preferred Alternative 3	161
Table 5.5.2.5. Comparison of status quo (Alternative 1) and Preferred Alternative 3 recreational ACLs for 14 FMUs	163
Table 5.5.2.6. Comparison of current Puerto Rico recreational ACLs (Alternative 1) and annual recreational landings potentially affected by Preferred Alternative 3	163
Table 5.5.2.7. Expected status and increase in annual recreational landings of grouper and Snapper Units 1 through 4 by weight and value due to Preferred Alternative 3	164

Table 5.5.2.8. Expected status and decrease in annual landings of various FMUs by weight in the short-run due to Preferred Alternative 3	165
Table 5.5.3.1. Comparison of status quo (Alternative 1) and Preferred Alternative 3 ACLs for 11 FMUs of St. Croix.....	166
Table 5.5.3.2. Comparison of current St. Croix ACLs (Alternative 1) and annual landings potentially affected by Preferred Alternative 3	167
Table 5.5.3.3. Expected status and decreases in landings, pounds whole weight and 2013 \$... 168	
Table 5.5.4.1. Comparison of status quo (Alternative 1) and Preferred Alternative 3 ACLs for 11 FMUs of St. Thomas/St. John.....	169
Table 5.5.4.2. Comparison of current St. Thomas/St. John ACLs (Alternative 1) and annual landings of FMUs potentially affected by Preferred Alternative 3	169
Table 5.5.4.3. Expected status and short-run effects of Preferred Alternative 3 in St. Thomas /St. John.....	170

List of Figures

Figure 1.3.1. Jurisdictional boundaries of the Caribbean Fishery Management Council.....	2
Figure 3.1.1. Boundaries of the U.S. Caribbean EEZ, Puerto Rico waters, and USVI waters....	54
Figure 3.1.2. Shared platform between the east coast of Puerto Rico and St. Thomas/St. John.	56
Figure 3.2.3.1 A. Designated Critical Habitat Areas 2 and 3 for Elkhorn and Staghorn Corals.	71
Figure 3.2.3.1 B. Designated Critical Habitat Area 4 for Elkhorn and Staghorn Corals.....	72
Figure 3.4.1.1.1. Monthly Number of Commercial Trips for Puerto Rico, 2008-2012.....	77
Figure 3.4.1.1.2. Monthly Commercial Landings (whole pounds) for Puerto Rico, 2008-2012.	80
Figure 3.4.1.1.3. Monthly Commercial Ex-Vessel Revenue (real 2013 weighted U.S. dollars) for Puerto Rico, 2008-2012.	81
Figure 3.4.1.1.4. Annual Number of Active Commercial Vessels in St. Thomas/St. John, 2008-2012.....	83
Figure 3.4.1.1.5. Annual Number of Commercial Active Vessels in St. Croix, 2008-2012.	88
Figure 3.4.2.1. Map of Puerto Rico with census designated places.....	95
Figure 3.4.2.2. Map of St. Croix with census designated places.	100
Figure 3.4.2.3. Map of St. Thomas and St. John with census designated places.....	103
Figure 4.2.1. Long-term water temperature variability in waters of the northeastern United States	148

Table of Contents for the Environmental Assessment

Purpose and Need	5
Alternatives	19
Affected Environment.....	53
Environmental Effects	112
List of Preparers	176
List of Agencies and Persons Consulted.....	177

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Fishery Impact Statement

The Magnuson-Stevens Fishery Conservation and Management Act requires a Fishery Impact Statement (FIS) be prepared for all amendments to fishery management plans (FMPs). The FIS contains an assessment of the likely biological and socio-economic effects of the conservation and management measures on:

- 1) fishery participants and their communities;
- 2) participants in the fisheries conducted in adjacent areas under the authority of another Council; and
- 3) the safety of human life at sea.

The National Marine Fisheries Service (NMFS), in collaboration with the Caribbean Fishery Management Council (Council), has developed this Comprehensive Amendment to the U.S. Caribbean FMPs to establish an “Annual Catch Limit (ACL) Control Rule”. This rule would adjust the current buffer reduction applied to the overfishing limit (OFL) or to the acceptable biological catch (ABC) (if specified) to derive the ACL for species managed by the Council in the exclusive economic zone (EEZ) of Puerto Rico, St. Croix, and St. Thomas/St. John. The control rule proposed would apply a specific buffer reduction based on the current overfishing status of the fishery management unit (FMU) as determined by NMFS. Establishing this control rule would provide the Council and NMFS the flexibility to respond quickly to changes in the fishery.

Overall, modifying the buffer reduction applied to derive the ACL based on the

overfishing status is not expected to cause or contribute direct or indirect significant effects on the biological, physical, socio-economic, and administrative environments. This is because, based on the history of landings and analyses provided in this document, changes in overfishing status are expected to be infrequent.

Assessment of the Biological Effects

The proposed action would affect all Council-managed fisheries in the U.S. Caribbean EEZ; however, it is not expected to substantially modify fishing activities in federal waters.

Modifying how management reference points are specified, such as the relationship between the OFL or ABC, and the ACL, is not expected to cause direct biological or ecological effects. The proposed adjustments to the ACL as a result of this action may have indirect effects on the biological and ecological environment and the magnitude of those effects would depend on how much the resulting new ACLs limit or increase the catch of the FMUs in any given year and subsequent years (if applicable). The degree of the indirect biological/ecological effects would depend on 1) how often the overfishing status of a stock changes through time and thus triggers the application of the control rule that would result in changes to the ACL, 2) how much the current ACL would change under a new overfishing status, and 3) how much landings would change because of a change to the ACL.

Under the Council's **Preferred Alternative 3**, if in a particular year, based on the most recent annual landings data, the status of an FMU is determined to be 'subject to overfishing' from a previous 'not subject to overfishing' or 'unknown' status, a buffer reduction of 15% would be applied to the OFL or the ABC to derive a new ACL for the following year. The resulting reduction in the ACL for that FMU (approximately 5% reduction) would be expected to indirectly benefit the biological and ecological environment relative to the status quo by reducing fishing effort for the FMU and thus reducing its fishing mortality. In the long term, a more restrictive ACL would contribute to preventing future overfishing. In the short term, depending on harvest patterns, a more restrictive or conservative ACL may increase the possibility of triggering accountability measure closures, when compared to a less restrictive ACL, further ensuring that the ACL (and therefore the OFL) is not again exceeded by shortening the season. Indirect effects to the biological and ecological environment would also depend on the degree to which fishermen compensate for the fishing opportunities lost in a particular fishery by increase fishing effort for other species.

Conversely, under **Preferred Alternative 3**, if in a particular year, based on the most recent annual landings data, the status of an FMU is determined to 'not be subject to overfishing' or its status is 'unknown' from a previous 'subject to overfishing' status, then a smaller buffer of 10% would be applied to the OFL or ABC to derive the new ACL. When compared to a more restrictive ACL, the larger ACL resulting

from a reduced buffer (from 15% to 10%) could make the affected species more vulnerable to overfishing, which could negatively impact the stock relative to the status quo and ultimately, negatively impact fishermen in the long run. However, previous analyses have indicated that a 10% reduction from the OFL (or ABC) is adequate to ensure overfishing will not occur on a continuing basis. Other potentially negative indirect effects related to increased fishing include effects on the reef's ecological balance (e.g., cascade effects, predator-prey interactions) and biodiversity (ecological interactions). Increasing harvest opportunities could also increase the potential for habitat interactions (e.g., direct physical effects) if that change in effort is more than the current average annual effort for that particular fishery. Overall, long-term biological and ecological effects of these increases are not expected to be significant, as the feedback mechanism proposed here provides automatic and compensatory response.

Under **Preferred Sub-alternatives 3a** through **3e**, the relationships between the OFL or ABC and the ACL would remain as status quo for parrotfish, surgeonfish, angelfish, queen conch, and aquarium trade species per island/island region and sector. There would be no added biological or ecological impacts related to fishing for these species.

In general, the Council and NMFS expect the net biological and ecological impacts of implementing the ACL control rule to be positive, as the control rule would allow for an improved and quicker response to

elimination of overfishing while reducing harvest in a similarly rapid manner if overfishing is identified. These outcomes provide beneficial results to the FMU and, potentially, to the larger biological/ecological environment.

Assessment of the Social Effects

Commercial, recreational and subsistence fishermen and fishing communities are dependent on the species/species complexes included in this comprehensive amendment (snappers, groupers, spiny lobster, boxfish, goatfish, grunts, wrasses, jacks, scups and porgies, squirrelfish, triggerfish and filefish, tilefish, angelfish, surgeonfish, parrotfish, queen conch, and aquarium trade species). Generally, if the ACL of a particular FMU is increased through action resulting from **Preferred Alternative 3**, fishermen would experience positive impacts via the opportunity to increase their catch. If the ACL is decreased in response, due to the identification of overfishing on that FMU, then although fishermen will likely experience negative effects from a decrease in available catch, the biological environment will benefit from the reduction in catch and resultant reduction in or elimination of overfishing.

Adjusting the buffer reductions based on an updated overfishing status for the FMUs for the included species, as proposed by **Preferred Alternative 3**, could be expected to positively impact fishermen and fishing communities in the long-term in an indirect manner. These impacts would be based on the increased ability of fisheries managers to respond to changes in the current status of the fishery through regulations. If the status

of an FMU changes to ‘subject to overfishing’ from ‘not subject to overfishing’ or ‘unknown’, the result would be an automatic mechanism to adjust the ACL to reflect the updated status of the fishery. This could lead to a decrease in the degree of overfishing or the elimination of overfishing altogether, which could result in positive impacts to fishermen in the long-term resulting from an increase in the health of the stock. However, short-term impacts to fishermen and fishing communities may be negative if ACLs are decreased, as this would increase the buffer for a particular FMU and thereby lower the ACL for that unit. Conversely, if an FMU is no longer subject to overfishing, resulting in a reduced buffer and an increased ACL, then fishermen could experience direct positive impacts in both the short- and long-term from an increased sustainable harvest level.

Assessment of Economic Effects

The action proposed in this amendment would economically benefit commercial, recreational, and subsistence fishermen by increasing ACLs and, potentially, landings of an affected FMU when the status of that FMU is determined to have changed from ‘undergoing overfishing’ to ‘unknown’ or ‘not undergoing overfishing’. Actual benefits, however, will depend on current levels of landings relative to the ACL. When a change in status from ‘unknown’ or ‘not undergoing overfishing’ to ‘undergoing overfishing’ is made, fishers will have reduced short-term opportunities to economically benefit from the stocks subject to overfishing. The actual economic impacts of reduced ACLs in the short run, however, would be dependent on the extent

of fishing for these species in federal waters versus state waters, and abilities to increase harvest of substitute species. In the long run, it is expected that economic benefits from these species would improve with improved management and resultant long-term sustainability of the unit.

Assessment of Effects on Safety at Sea

The action contained in this amendment would not significantly change current fishing operations; therefore it is not expected to affect safety at sea.

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Chapter 1. Introduction

1.1 What Actions are Being Proposed?

Fishery managers propose an action to adjust the current buffer reduction applied to the overfishing limit (OFL), or to the acceptable biological catch (ABC) (if specified), to derive the annual catch limit (ACL) for species managed by the Caribbean Fishery Management Council (Council) in Puerto Rico, St. Croix, and St. Thomas/St. John. The buffer reduction proposed to be applied to any of these management reference points would depend on the overfishing status of each Fishery Management Unit (FMU) as determined by the National Marine Fisheries Service (NMFS).

The 2010 Caribbean ACL Amendment (CFMC 2011a) and the 2011 Caribbean ACL Amendment (2011b) established ACLs for all species managed by the Council. Annual catch limits for managed stocks or stock complexes (i.e., multiple species are grouped into stock complexes) were derived from buffer reductions to the OFLs or ABCs to account for scientific and management uncertainty. The Council considered the overfishing status of stocks at the time of preparation of these amendments when determining how much uncertainty (percent reduction) should be applied to the OFL or the ABC (if specified) to derive the ACL for each FMU and for each sector's (commercial or recreational) access to their portion of the ACL.



Since the completion of these amendments, the overfishing status of several of these FMUs has changed, and it is anticipated that future changes in overfishing status will occur. However, the ACLs have not changed in response to changes in overfishing status because there is presently no mechanism in place to do so.

The Council requested that when the overfishing status of an FMU changes, the buffer reduction should be changed accordingly. The action considered in this amendment would provide for a process that would implement ACL revisions in response to changes in overfishing status. This action would allow the Council and NMFS to expedite the process of adjusting the ACLs rather than doing it on a case by case basis, and to be more responsive to changing situations.

This action would amend the U.S. Caribbean Fishery Management Plans (FMPs) for the Reef Fish Resources, Corals and Reef Associated Plants and Invertebrates, Spiny Lobster, and Queen Conch.

1.2 Who is Proposing the Action?

The Caribbean Fishery Management Council is proposing the action. The Council develops the plan amendments and submits them to NMFS who ultimately approves, disapproves, or partially approves the actions in the amendment on behalf of the Secretary of Commerce, and implements the regulations.

Caribbean Fishery Management Council

- Responsible for conservation and management of U.S. Caribbean fish stocks.
- Consists of seven voting members:
 - Four voting members appointed by the Secretary of Commerce
 - One voting member appointed by each of the Governors of Puerto Rico and the U.S. Virgin Islands
 - The Regional Administrator of NMFS for the Southeast Region
- Manages the area from 3 to 200 nautical miles (nm) off the coasts of the U.S. Virgin Islands, and 9 to 200 nm off the coast of Puerto Rico.
- Develops fishery management plans and recommends regulations to NMFS and the Secretary of Commerce for implementation.

1.3 Where is the Project Located?

Fishery resources in federal waters of the U.S. Caribbean are presently managed by the Council under four FMPs: Reef Fish, Queen Conch, Spiny Lobster, and Coral. Federal waters in the U.S. Caribbean are located in the 3 - 200 nautical mile (nm) (6 - 370 kilometers [km]) U.S. exclusive economic zone (EEZ) off the USVI, and in the 9 - 200 nm (17 - 370 km) EEZ off the Commonwealth of Puerto Rico (Fig. 1.3.1).

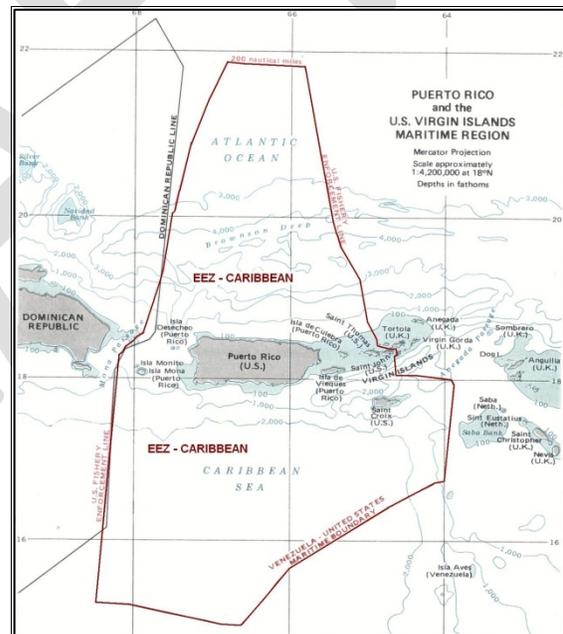


Figure 1.3.1. Jurisdictional boundaries of the Caribbean Fishery Management Council.



1.4 Why is the Council Considering Action?

The 2010 Caribbean ACL Amendment, implemented in 2012 (FR 76 82404), established management reference points and ACLs for the snapper, grouper, parrotfish, and queen conch FMUs (i.e., 2010 FMUs¹). At the time of preparation of the 2010 Caribbean ACL Amendment, some of the species in these FMUs were determined to be ‘subject to overfishing’ (NMFS 2011 Annual Report to Congress on the Status of U.S. Fisheries, http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/archive/2011/2011_sos_report.pdf [NMFS 2012]). That overfishing status was a consideration in applying a 15% reduction to the OFL or the ABC to derive the corresponding ACL for most of the FMUs and sectors within the units.

Annual catch limits for the remainder of the Council-managed species in the U.S. Caribbean were established in the 2011 Caribbean ACL Amendment, which was also implemented in 2012 (FR 76 82414). For the majority of the FMUs addressed in the 2011 Caribbean ACL Amendment (i.e., 2011 FMUs²), the ACL for each FMU and sector within the unit was determined based on a 10% reduction to the OFL or ABC that responded, in part, to their current status as ‘not subject to overfishing’ (NMFS 2012).

In both amendments, the Council also specified other buffers (different than 10% or 15%) to the OFL or ABC to derive the ACLs for units such as parrotfish, queen conch, surgeonfish, angelfish, and aquarium trade species. These buffers were not solely based on overfishing status. Buffers were based on factors including the ecological importance of the species (species that perform an essential ecological function [e.g., herbivores such as parrotfish which help maintain the algal population in optimal balance]), management under a partial harvest prohibition, or uncertainty in harvest patterns, for example.

Since the completion of these amendments, the status of several of these FMUs has changed, and it is anticipated that future changes in overfishing status will occur. In particular, most of the species previously determined to be ‘subject to overfishing’ are currently no longer classified as so, although the 15% reduction continues to be applied. As such, fishers do not have the opportunity to harvest at higher sustainable levels, resulting in unnecessary economic loss.

To respond to this situation, the Council requested a modification to the regulations to ensure that, when the overfishing status of a stock changes, the buffer reduction applied to the appropriate management reference point to determine the ACL should be changed accordingly.

¹ From this point forward, species/species complexes addressed in the 2010 Caribbean ACL Amendment will be referred to as “2010 FMUs”.

² From this point forward species/species complexes addressed in the 2011 Caribbean ACL Amendment will be referred to as “2011 FMUs”.

Annual Catch Limit Control Rule

This comprehensive amendment proposes to establish an “Annual Catch Limit Control Rule” to modify the buffer reduction applied to the OFL or ABC (if specified) to derive an ACL to reflect a change in overfishing status of the FMU. If implemented, the ACL Control Rule would apply a pre-determined buffer reduction based on the current overfishing status of the FMU as determined by NMFS.

Establishing this mechanism would 1) provide a **new, straightforward**, and more **responsive** approach to considering reductions from reference points to account for attributes of the fishery, and 2) would also **simplify** the process of adjusting the ACLs if the status of an FMU changes, rather than making such adjustments on a case by case basis through a lengthier plan amendment process.

A **Control Rule** is a policy for establishing a limit or target fishing level that is based on the best available scientific information and is established by fishery managers in consultation with fishery scientists. Control rules should be designed so that management actions become more conservative as biomass estimates, or other proxies, for a stock or stock complex decline and as science and management uncertainty increases.

(Source: 50 CFR 600.310 - National Standard 1—Optimum Yield)

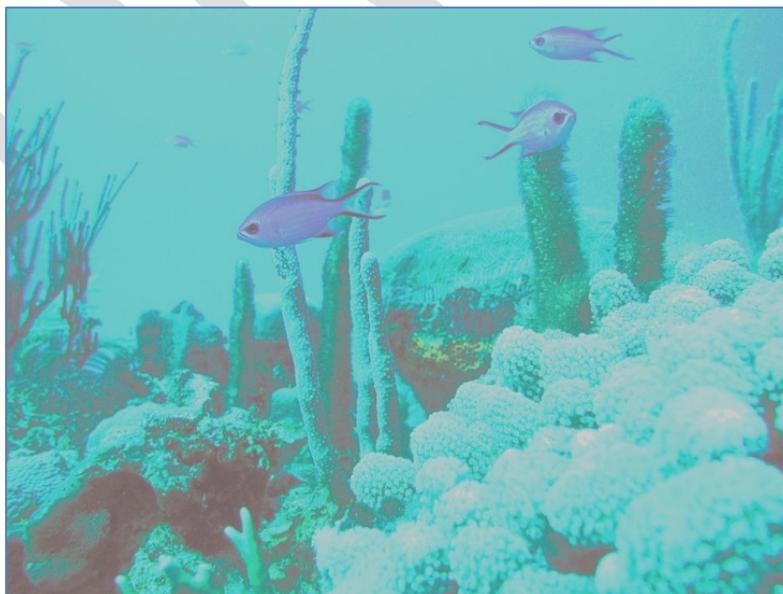


Photo credit: NOAA NCCOS/UNCW – T. Battista

Purpose for Action

The purpose of this action is to establish a control rule to modify the buffer reduction that is applied to the overfishing limit (OFL) or the acceptable biological catch (ABC) to derive an annual catch limit (ACL) in response to changes in the overfishing status of any fishery management unit (FMU) managed by the Caribbean Fishery Management Council. The control rule would apply a specific buffer reduction based on the current status of the FMU as determined by the National Marine Fisheries Service (NMFS). Establishing this control rule would provide the Council and NMFS the flexibility to respond quickly to a change in the overfishing status of an FMU.

Need for Action

There is a need to establish a mechanism that describes the relationship between overfishing status and the reduction buffer applied to the OFL (or ABC) used to determine the ACL. The proposed mechanism would adjust the buffer reduction as appropriate to reflect a change in classification of the FMUs. This amendment will provide for a new and straightforward process that will allow for ACL revisions based on OFL status. This process will be examined annually in terms of the overfishing determination.

The ACL for most FMUs in the 2010 Caribbean ACL Amendment was determined based on a 15% reduction to the OFL or the ABC. This buffer was applied as a precautionary approach reflecting both the combined management and scientific uncertainty inherent in the data, and the many changes that have taken place in the management of Caribbean FMUs since 2005. At the time, some of the species in the FMUs were classified as ‘subject to overfishing’, and that overfishing status was a consideration in applying the 15% reduction. In contrast, for most of the FMUs included in the 2011 Caribbean ACL Amendment, the ACL was determined based on a 10% reduction to the assigned reference point (OFL or ABC) that responded (in part) to their status as not subject to overfishing. Since the completion of these amendments, the status of several of these FMUs has changed because of implemented management measures, and it is anticipated that future changes in overfishing status will occur. The Council requested that when the status of a FMU changes, the buffer reduction should be changed accordingly.

1.5 Management History

1.5.1 Management History Relative to Management Reference Points, Stock Status, and Annual Catch Limits

The history of federal management until 2011 for managed species in the U.S. Caribbean Reef Fish, Queen Conch, Coral, and Spiny Lobster FMPs can be found in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b) and is incorporated herein by reference. These amendments were implemented in 2012. The Caribbean Council's actions that pertain to the discussion of reference points, stock status, and ACLs are summarized below.

- Established rebuilding schedules and strategies to end overfishing and rebuild overfished stocks. The amendment established rebuilding plans for overfished units: grouper unit (GU)1, GU2, GU4, and queen conch;
- Designated essential fish habitat (EFH) and habitat areas of particular concern (HAPCs); and minimized adverse impacts on such habitat to the extent practicable.

2005 Caribbean Sustainable Fisheries Act (SFA) Amendment (CFMC 2005)

The Comprehensive Amendment to the FMPs of the U.S. Caribbean to address required provisions of the Magnuson-Stevens Fishery Conservation and Management 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). The amendment accomplished the following:

- Redefined the FMUs for the four FMPs;
- Established seasonal closures;
- Imposed gear restrictions and requirements;
- Established biological reference points and stock status criteria;

2010 Caribbean ACL Amendment (CFMC 2011a)

Amendment 2 to the FMP for the Queen Conch Fishery of Puerto Rico and the U.S. Virgin Islands and Amendment 5 to the Reef Fish FMP of Puerto Rico and the U.S. Virgin Islands (2010 Caribbean ACL Amendment), including EIS, RIR, and RFA (CFMC 2011a) became effective on January 30, 2012 (76 FR 82404) and accomplished the following:

- Amended the unit composition in the Reef Fish FMUs;
- Revised management reference points (maximum sustainable yield, optimum yield, OFL, ABC) for snapper, grouper, parrotfish, and queen conch in the U.S. Caribbean;
- Established island-specific ACLs and accountability measures (AMs) in response to harvesting activities on a

single island (Puerto Rico, St. Croix) or island group (St. Thomas/St. John) while minimizing the effects of 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 management area, an area where landings data are available for both the commercial and recreational sectors;
- Set management measures with specific emphasis on harvest prohibition for three parrotfish species (midnight, blue, rainbow) that serve an essential ecological function and that are relatively long-lived;
- Established recreational bag limits for snappers, groupers, and parrotfishes.
- Provided guidelines for triggering AMs and applying those AMs;
- Established framework provisions separately for the Reef Fish and Queen Conch FMPs.

2011 Caribbean ACL Amendment (CFMC 2011b)

Amendment 6 to the Reef Fish FMP, Amendment 5 to the FMP for the Spiny Lobster Fishery, Amendment 3 to the FMP for the Queen Conch Resources, and Amendment 3 to the Coral FMP of Puerto Rico and the U.S. Virgin Islands (2011 Caribbean ACL Amendment), including EIS, Biological Assessment, RIR, RFA, and Social Impact Assessment (CFMC 2011b) became effective on January 29, 2012 (76 FR 82414) and accomplished the following:

- Established ACLs and AMs for reef fish and spiny lobster, and for aquarium trade species in the Reef Fish and Coral FMPs that were not determined to be undergoing overfishing.
- Allocated ACLs among island management areas;
- Established recreational bag limits for reef fish and spiny lobster;
- Removed eight conch species from the Queen Conch FMP;
- Established framework procedures for the Spiny Lobster FMP and modified framework measures for the Coral FMP;
- Revised management reference points and status determination criteria for selected reef fish, spiny lobster, and aquarium trade species.

1.5.2 Recent Council Actions

Caribbean actions implemented in 2013 affected the Coral, Queen Conch, and Reef Fish FMPs. Updated management histories for these FMPs can be found in: Amendment 4 to the Coral FMP (CFMC 2013a), Regulatory Amendment 2 to the Queen Conch FMP (CFMC 2013b), and Regulatory Amendment 4 to the Reef Fish FMP (CFMC 2013c), respectively. The new management measures in these amendments are summarized below. To date, there are no new actions affecting the Spiny Lobster FMP. A complete list of current management measures for U.S. Caribbean managed species can be found in Appendix B.

CORALS AND REEF ASSOCIATED PLANTS AND INVERTEBRATES

Amendment 4 to the Coral FMP of Puerto Rico and the USVI (CFMC 2013a)

Amendment 4 removed seagrass species from the Coral FMP. The final rule implementing this amendment published in the *Federal Register* on June 4, 2013 (78 FR 33255), with an effective date of July 5, 2013. In this amendment, the Council determined that federal management of seagrass species was unnecessary because there is no known harvest of seagrasses, and these species occur predominantly in Puerto Rico commonwealth and USVI territorial waters. In addition, seagrasses are designated as EFH and HAPCs in all of the Council FMPs, and would continue to be protected by these designations.

QUEEN CONCH

Regulatory Amendment 2 to the Queen Conch FMP of Puerto Rico and the USVI (CFMC 2013b).

This regulatory amendment modified the commercial trip limit for the harvest of queen conch in U.S. Caribbean federal waters to be compatible with the trip limit in USVI territorial waters. The final rule published in the *Federal Register* on September 12, 2013 (78 FR 56171), with an effective date of October 15, 2013. Regulatory Amendment 2 modified the commercial trip limit in federal waters from

150 queen conch per licensed commercial fisher per day to 200 queen conch per vessel per day. The recreational bag limit for the harvest of queen conch in the U.S. EEZ remained the same.

REEF FISH

Regulatory Amendment 4 to the Reef Fish FMP of Puerto Rico and the USVI (Regulatory Amendment 4) (CFMC 2013c).

Regulatory Amendment 4 established minimum size limits for parrotfish harvest in federal waters off St. Croix, USVI. It did not establish minimum size limits in federal waters off Puerto Rico and St. Thomas/St. John. The final rule published in the *Federal Register* on July 30, 2013 (78 FR 45894), with an effective date of August 29, 2013. Measures in Regulatory Amendment 4 included:

- A commercial and recreational minimum size limit of 8 inches fork length for redband parrotfish (*Sparisoma aurofrenatum*).
- A commercial and recreational minimum size limit of 9 inches fork length for all other allowable parrotfish species: redfin parrotfish (*Sparisoma rubripinne*), redtail parrotfish (*S. chrysopterym*), stoplight parrotfish (*S. viride*), princess parrotfish (*Scarus taeniopterus*), queen parrotfish (*Scarus vetula*), and striped parrotfish (*Scarus iserti*).

1.6 Current Management Reference Points or Proxies for Council Managed Species

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires that FMPs specify a number of reference points for managed fish stocks.

Management Reference Points

- **Optimum Yield (OY)** – The amount or yield that provides the greatest overall benefit to the Nation, taking into account food production, recreational opportunities, and the protection of marine ecosystems.
- **Maximum Sustainable Yield (MSY)** – The greatest amount or yield that can be sustainably harvested under prevailing environmental conditions.
- **Overfishing Threshold** – The maximum rate of fishing a stock can withstand (i.e., the maximum fishing mortality threshold) or maximum yield a stock can produce (OFL), annually, while still providing MSY on a continuing basis.
- **Overfished Threshold** (i.e., minimum stock size threshold) – The biomass level below which a stock would not be capable of producing MSY.
- **Acceptable Biological Catch (ABC)** – A level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty.

In 2007, the Magnuson-Stevens Act added new requirements to end and prevent

overfishing through the use of ACLs and AMs with the purpose of addressing management uncertainty.

- **Annual Catch Limit (ACL)** – The annual level to which catch is limited in order to prevent overfishing from occurring. Exceeding the ACL may result in application of accountability measures.
- **Accountability Measures (AMs)** – Management controls to prevent ACLs, including sector-specific ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur.

Together, these parameters are intended to provide the means to measure the status and performance of fisheries relative to established goals.

The National Standard 1 (NS1) guidelines direct regional Fishery Management Councils to adopt other measures of productive capacity as reasonable proxies when direct estimation of MSY and other key parameters is not possible (CFMC 2011a, b). The Magnuson-Stevens Act places several key constraints on what can be considered reasonable options. The OY must be less than or equal to the MSY. The ACL and OY should generally be reduced from the OFL and MSY, respectively, to effectively prevent overfishing. The ACL must be less than or equal to the ABC level recommended by a Council's Scientific and Statistical Committee (SSC) or other

established peer-review process, and the ABC recommendation must be less than or equal to the OFL (CFMC 2011a).

As discussed in Section 1.5.1, the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b) redefined and/or established management reference points or proxies for all Council-managed species/species complexes and also set ACLs and AMs. The processes used to establish management reference points are summarized below.

Species affected by this amendment include species in the Reef Fish, Coral, Queen Conch, and Spiny Lobster FMPs. Species in these FMPs are managed as stocks or stock complexes in single FMUs (e.g., Angelfish FMU, Snapper Unit 2 FMU, Queen Conch FMU).

Management of stocks addressed in the 2010 Caribbean ACL Amendment (2010 FMUs)

Stocks addressed in this amendment included FMUs that at the time were experiencing overfishing³. The 2010 Caribbean ACL Amendment (CFMC 2011a) redefined management reference points or proxies for snappers, groupers, parrotfish, and queen conch based on the longest time series of landings predating the 2005 Caribbean SFA Amendment (CFMC 2005), landings data that were considered to be

³ A single species in an FMP may have multiple stocks, and each stock may be reported separately. Multiple species may be grouped into stock complexes, and the status of the stock complex is reported as a single unit (NMFS 2013b). In this and following sections the terms FMU and stock/stock complexes may be used interchangeably.

consistently reliable within each of the island groups (Puerto Rico, St. Croix, St. Thomas/St. John) and sectors (commercial, recreational) to which each time series applied. The 2010 Caribbean ACL Amendment also established ACLs and specified AMs for these FMUs. Most of these stocks/stock complexes were determined to be ‘subject to overfishing’ at the time of preparation of this amendment.

Before the establishment of the 2010 Caribbean ACL Amendment, estimates of reference points or proxies were at a smaller scale/finer resolution for some groups (i.e., for species or units within the snapper and grouper complexes). In the 2010 Caribbean ACL Amendment, reference points were redefined for aggregate groups rather than for individual species or units within complexes (except snapper in Puerto Rico). This approach was taken because U.S. Caribbean fishermen report large numbers of unclassified species making it difficult and impractical to monitor fishery performance at the species or unit level⁴. This approach is supported by the NS1 guidelines in situations where data do not support stock-specific monitoring, management, and assessment.

⁴ In theory, defining management reference points at the finest resolution possible could be considered an ideal approach to monitoring fishery performance. Aggregate reference points would make it more difficult for fishery scientists and managers to monitor the status of individual species or units. For Council managed stocks that are subject to overfishing and/or overfished, regulations have been implemented to end overfishing and rebuild those stocks; however the response of individual species to those regulations may become less apparent because reference points are redefined at the aggregate level. Although it is a worthwhile goal to manage at the level of the individual species, in practice this is difficult for many U.S. Caribbean species due to data limitations (CFMC 2011a).

Based on the availability of species-specific data for snapper in Puerto Rico and on the relatively small proportion of unclassified landings within the snapper category, the Council decided to define unit-specific reference points for snapper in Puerto Rico. That was not possible in the USVI. However, newer reporting forms in both Puerto Rico and the USVI include specific species and represent a step toward management at the individual species level. Increased reporting to that level is a goal of ongoing efforts by the local governments, and NMFS in cooperation with the commercial fishers of the U.S. Caribbean (NMFS 2012a). National Standard 1 directs the use of species-specific data when available. Nevertheless, the Council can implement species-specific regulations regardless of whether reference points are defined at the individual or aggregate level.

For 2010 FMUs (snapper, grouper, parrotfish, and queen conch), the MSY proxies for the Puerto Rico commercial sector, queen conch commercial and recreational sector combined, and for St. Croix were estimated by using average annual commercial landings during 1999-2005. For St. Thomas/St. John, the MSY proxy was estimated by using average landings from 2000 through 2005. The

MSY proxy for Puerto Rico's recreational sector was estimated by using average recreational catch from the Marine Recreational Fisheries Statistics Survey during 2000-2005. Overfishing limits for 2010 FMUs for each island/sector were estimated by setting them equal to the MSY proxies. Although for purposes of overfishing status determinations, the OFLs for all 2010 stocks/stock complexes were defined at the level of the entire U.S. Caribbean region (Puerto Rico, St. Croix, and St. Thomas/St. John combined). These Caribbean-wide OFLs for 2010 FMUs were set equal to the sum of all the individual OFLs for each unit for all three island groups (Table 1.6.1). Bycatch mortality was not explicitly incorporated into the OFL estimates.

For Council-managed stocks/stock complexes addressed in both the 2010 and 2011 Caribbean ACL Amendments, the MSY represents the maximum yield a species or unit can sustainably provide in the long term, while the OFL estimates the amount of annual catch above which overfishing is occurring. The annual OFL values established in the 2010 and 2011 Caribbean ACL Amendments would remain constant at the MSY level until stock biomass can be estimated.

Table 1.6.1. Overfishing limits for FMUs addressed in the 2010 Caribbean ACL Amendment. Source: CFMC (2011a). Values are in pounds of whole weight.

FMU	Individual OFL				Caribbean-Wide OFL	
	Puerto Rico		St. Croix	St. Thomas/St. John		
	Sectors					
	Commercial	Recreational				
Queen Conch	403,349	N/A	107,720	1,649	512,718	
Snapper	<i>SU 1</i>	334,923	112,384	121,113	157,382	1,915,759
	<i>SU 2</i>	171,666	40,953			
	<i>SU 3</i>	406,794	97,833			
	<i>SU 4</i>	439,171	33,540			
	<i>Total</i>	1,352,554	284,710			
Grouper	208,839	90,839	35,806	60,999	396,483	
Parrotfish	127,980	N/A	293,219	48,818	507,059	

¹ The Parrotfish OFL for Puerto Rico is only commercial. Allocations were made from the ABC.

Annual catches would be evaluated relative to the Caribbean wide OFLs to determine whether overfishing is or is not occurring. This approach is consistent with the NS1 guidelines, which provide fishery managers the flexibility to determine if overfishing occurs based on either fishing mortality rates or actual annual catch. Scientists (in consultation with managers) evaluate the cause of the reported catch increase prior to making a determination that a species or unit has exceeded its OFL. Overfishing is occurring if scientists (in consultation with managers) determine that the reported increase in landings represents an actual increase in landings or just improved data collection and monitoring (CFMC 2011a).

At the time of the preparation of the 2010 Caribbean ACL Amendment, the following stocks were determined to be ‘subject to overfishing’ (as reported in the [2011 2nd Quarter Update on the NMFS Status of U.S. Fisheries](#)):

- queen conch
- parrotfish
- Grouper Unit 1 (Nassau grouper)
- Snapper Unit 1 (silk, black, blackfin, vermilion), and
- Grouper Unit 4 (yellowfin, red, tiger, yellowedge⁵, and misty)

See Section 3.2.2 for overfishing and overfished definitions, an overview of the stock status determination process, and for the current status of managed species.

In the 2010 Caribbean ACL Amendment, the Council considered the overfishing status of stocks when determining how much uncertainty (percent reduction) should be applied to the OFL or the ABC (if specified) to derive the ACLs. The OY for all 2010 FMUs was set equal to the ACL.

⁵ In the 2010 Caribbean ACL Amendment, yellowedge and misty groupers were placed in a newly created FMU: Grouper Unit 5; and black grouper was added to Grouper Unit 4.

For snapper and grouper for all islands/island groups and sectors (Puerto Rico commercial and recreational), the ACL was determined by applying an uncertainty reduction of 15% to the individual OFLs (i.e., $OY=ACL= OFL \times [0.85]$). This precautionary approach was taken because of both the combined management and scientific uncertainty inherent in the data, and the many changes that have taken place in Council-managed fisheries since 2005.

The Council's SSC only derived ABC estimates for parrotfish (all island regions) and queen conch (for St. Croix, which is the only area in federal waters where fishing for queen conch is currently allowed). An uncertainty reduction was not applied to the SSC's recommendation for queen conch; thus the ACL for St. Croix was set equal to the 50,000 pound ABC. Annual catch limits for queen conch in Puerto Rico and St. Thomas/St. John were set at zero, because harvest was and continues to be prohibited in those areas. For parrotfish (all island regions and commercial and recreational sectors of Puerto Rico), the ACL was determined by applying an uncertainty reduction of 15% to the ABC recommended by the SSC, for the same reasons discussed earlier for snapper and grouper (i.e., $OY=ACL= ABC \times [0.85]$). Landings of parrotfish species are far more substantial in St. Croix than in Puerto Rico and St. Thomas/St. John. For this reason, the parrotfish ACL in the St. Croix management area was further reduced to address uncertain effects of that harvest on essential settlement substrate for threatened Acroporid corals. This additional reduction to the parrotfish ACL in St. Croix consisted

of a 5.8822% (15,000 pounds) reduction to the preliminary 255,000 pounds ACL in order to attain a final ACL of 240,000 pounds (CFMC 2011a).

Annual catch limits for GU1 (Nassau grouper) and GU2 (goliath grouper) were set as zero for these units because harvest was and continues to be prohibited in federal waters. Finally, the 2010 Caribbean ACL Amendment established harvest prohibitions for midnight, blue, and rainbow parrotfish and thus set the ACLs for these species at zero.

Management of stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs)

The 2011 Caribbean ACL Amendment (CFMC 2011b) addressed the remainder of Council managed species, such as spiny lobster, triggerfish, and jacks (see Table 3.2.1.1 for a complete list of the species included in these FMUs). These FMUs were identified at that time as not being subject to overfishing. Management reference points or proxies for these FMUs were established or redefined based on the longest year sequence of reliable landings data. The 2011 Caribbean ACL Amendment also established ACLs and AMs for these FMUs.

Estimates of reference points or proxies for stocks addressed in the 2011 Caribbean ACL Amendment were also redefined for aggregate groups rather than for individual species or units within complexes. For most of the 2011 FMUs, the MSY proxies for the Puerto Rico commercial sector were

estimated by using the median of annual commercial landings during 1988-2009. The MSY proxies for Puerto Rico’s recreational sector were estimated by using the median annual recreational landings from MRFSS during 2000-2009. For spiny lobster in Puerto Rico, the single MSY proxy equates to the median of annual landings calculated using commercial landings data from 1988 through 2009. Due to commercial landings data limitations, the MSY proxies for the Puerto Rico surgeonfish and angelfish FMUs (commercial and recreational sectors) were based on the maximum single year of Puerto Rico recreational landings multiplied by three. That same approach was used to calculate the MSY proxy for the Tilefish FMU, which is a Caribbean-wide FMU. The Aquarium trade species FMU is also a Caribbean-wide FMU, and its MSY was based on median annual commercial and recreational Puerto Rico landings from 1988 through 2009 due to similar landings data limitations. For all 2011 FMUs in St. Croix, the MSY proxy was estimated by using mean annual landings from 1999 through 2008. For all St. Thomas/St. John FMUs, the MSY proxy was estimated by using mean annual landings from 2000 through 2008.

The 2011 Caribbean ACL Amendment defined OFLs for stocks/stock complexes by island/island region (i.e. Puerto Rico, St. Croix, St. Thomas/St. John) (Table 1.6.2). For the Puerto Rico FMUs included in the 2011 Caribbean ACL Amendment, the OFLs were set equal to the MSY adjusted with the “Only Reliable Catch” (ORCS) method. The ORCS method was not

available for the 2010 FMUs and therefore not used for those groups, nor was it used to estimate these values for USVI FMUs included in the 2011 Caribbean ACL Amendment. Thus, OFLs for USVI FMUs, as well as for the Caribbean-wide aquarium trade species FMU, were set equal to the MSY proxy only. Bycatch mortality was not explicitly incorporated into the OFL estimates. For more information about ORCS please see CFMC (2011b).

Contrary to the approach used for 2010 FMUs (i.e., annual catches evaluated relative to the Caribbean-wide OFL for the FMU), for overfishing status determination purposes, annual catches would be evaluated relative to the individual island/island region OFLs for each FMU to determine whether overfishing is occurring.

None of the stocks/stock complexes addressed in the 2011 Caribbean ACL Amendment were identified as ‘subject to overfishing’ at the time of the preparation of that amendment. In fact, 2011 FMUs were determined to be of status ‘unknown’, as reported in the [2011 2nd Quarter Update on the NMFS Status of U.S. Fisheries](#). A stock/stock complex is classified as ‘unknown’ when the data in a stock assessment (or equivalent) is insufficient to provide a conclusion about the overfishing and/or overfished status. Since then, continuing monitoring of annual catches for these stocks have not indicated overages from their respective OFLs, and the status of each has changed to ‘not subject to overfishing’. See Section 3.2.2 for overfishing and overfished definitions and current status of managed species.

Table 1.6.2. Overfishing limits for FMUs addressed in the 2011 Caribbean ACL Amendment.
Source: CFMC 2011b. Values are in pounds of whole weight.

FMU	Individual OFL				FMU	Caribbean-Wide OFL
	Puerto Rico		St. Croix	St. Thomas/ St. John		
	Sectors					
Commercial	Recreational					
Angelfish	11,978	5,989	406	10,529	Tilefish Aquarium Trade Sps.	16,269 10,873
Boxfish	95,683	5,129	9,370	30,978		
Goatfishes	19,517	402	4,184	356		
Grunts	202,662	5,587	40,979	41,797		
Jacks	95,621	56,668	17,210	58,785		
Scups & Porgies	27,488	2,863	5,153	24,243		
Spiny Lobster	364,355	--	119,230	115,777		
Squirrelfish	18,514	4,323	134	4,712		
Surgeonfish	9,572	4,786	44,804	38,999		
Triggerfish & Filefish	64,972	24,365	27,755	82,719		
Wrasses	60,163	5,611	8	650		

The ABC for each of the 2011 FMUs was set equal to the OFL. Similar to 2010 FMUs, the OY was set equal to the ACL. Annual catch limits for most of the 2011 FMUs in Puerto Rico, St. Croix, and St. Thomas/St. John, as well as for the Caribbean-wide tilefish FMU, were derived from a 10% reduction to the ABC (i.e., $OY=ACL=ABC \times [0.90]$). The ACL for the spiny lobster FMU in Puerto Rico was set as a single value for the combined commercial and recreational sectors. For all of these FMUs, based on the histories of landings for Puerto Rico and the USVI, the Council decided that applying a 10% uncertainty to the ABC would reduce the risk of exceeding the OFL if the ACL is exceeded. Reducing the likelihood of exceeding the ACL reduces the risk that AMs will be implemented (see discussion on AMs below). If AMs are applied, the result would be a reduction in the length of a fishing season to ensure that the ACL is not

exceeded again, which would also ensure that the OFL is not exceeded and overfishing is not a continuing problem (CFMC 2011b).

Exceptions to the application of the 10% buffer were the surgeonfish and angelfish FMUs in Puerto Rico, St. Croix, and St. Thomas/St. John. These FMUs had 25% buffer reductions applied to their ABCs to account for the important role these species play in coral reefs as herbivores and spongivores, respectively. The ACL for the Caribbean-wide Aquarium trade species FMU was also derived from a 25% buffer reduction to the ABC to account for uncertainty in landings and harvest patterns in federal waters.

Table 1.6.3 summarizes how these reference points or proxies were established for all managed species in both amendments (CFMC 2011a, b).

Table 1.6.3. Management reference points or proxies for all Council managed species (CFMC 2011a, 2011b)

Reference Point or Proxy	Island/Island Group: species/species complex	Definitions of Reference Points or Proxies
Snapper, Grouper, Parrotfish and Queen Conch FMUs (CFMC 2011a)		
MSY	Puerto Rico: snapper, grouper, parrotfish	MSY proxy = Commercial: average annual landings from 1999-2005 Recreational: average annual catch from MRFSS during 2000-2005
	Puerto Rico: queen conch	MSY proxy = average annual commercial landings from 1999-2005
	St. Croix (STX) and St. Thomas/St. John (STT/STJ): snapper, grouper, parrotfish, and queen conch	MSY proxy = average annual commercial landings from: 1999-2005 for St. Croix 2000-2005 for St. Thomas/St. John
OFL¹	All FMUs for Puerto Rico, STT/STJ, and STX	OFL = MSY proxy ; overfishing occurs when annual landings exceed the OFL, unless NMFS' Southeast Fisheries Science Center (in consultation with the Council and its SSC) determines the overage occurred because data collection/monitoring improved, rather than because catches actually increased.
ABC	Parrotfish	ABC = Puerto Rico = 80,000 pounds (lbs) St. Croix = 300,000 lbs St. Thomas/St. John = 50,000 lbs
	Queen Conch	ABC = 50,000 lbs for St. Croix = 0 lbs for St. Thomas/St. John = 0 lbs for Puerto Rico
	Snapper and grouper (Puerto Rico, STT/STJ, and STX)	ABC = OFL
OY and ACL	Snapper and grouper (Puerto Rico, STT/STJ, and STX)	OY = ACL = [OFL x (0.85)]
	Parrotfish (Puerto Rico, STT/STJ, and STX)	OY = ACL = [ABC specified by SSC x (0.85)] St. Croix: an additional 5.8822% reduction
	Grouper Units 1 (Nassau) and 2 (goliath), midnight parrotfish, blue parrotfish, rainbow parrotfish (All island areas)	OY = ACL = 0
	Queen conch	St. Croix: OY = ACL = ABC specified by SSC Puerto Rico and STT/STJ: OY = ACL = 0
Angelfish, Boxfish, Goatfish, Grunts, Wrasses, Jacks, Scups and Porgies, Squirrelfish, Surgeonfish, Triggerfish and Filefish, Spiny Lobster, Tilefish, Aquarium Trade FMUs (CFMC 2011b)		
MSY	Puerto Rico: grunts, goatfishes, squirrelfish, scups & porgies, jacks, triggerfish & filefish, boxfish, and wrasses FMUs	MSY proxy = Median annual landings from: Commercial: 1988-2009 Recreational: 2000-2009
	Puerto Rico: spiny lobster FMU	MSY proxy = Median annual landings from 1988-2009
	Puerto Rico: surgeonfish, angelfish, and tilefish FMUs (Caribbean wide)	MSY proxy = Maximum of a single year of recreational landings x 3.
	St. Croix and St. Thomas/St. John: grunts, goatfishes, squirrelfish, scups & porgies, jacks, triggerfish & filefish, boxfish, wrasses, angelfish, and surgeonfish, and spiny lobster FMUs	MSY proxy = Mean annual landings from: 1999-2008 for St. Croix 2000-2008 for St. Thomas/St. John
	Aquarium trade species FMU (Caribbean wide)	MSY proxy = median annual landings from years 1988-2009 obtained from Puerto Rico commercial and recreational landings.
OFL²	Puerto Rico (all FMUs)	OFL = MSY proxy adjusted using the ORCS ³ scalar; overfishing occurs when annual landings exceed the OFL, unless NOAA Fisheries' Southeast Fisheries Science Center (in consultation with the Council and its SSC) determines the overage occurred because data collection/monitoring improved, rather than because landings actually increased.
	USVI (all FMUs); aquarium trade FMU (all island areas)	OFL = MSY proxy ; overfishing occurs when annual landings exceed the OFL, unless NOAA Fisheries' Southeast Fisheries Science Center (in consultation with the Caribbean Fishery Management Council and its SSC) determines the overage occurred because data collection/monitoring improved, rather than because landings actually increased.
ABC	All FMUs, for Puerto Rico, STT/STJ, and STX	ABC= OFL
OY and ACL	Grunts, goatfishes, squirrelfish, scups & porgies, jacks, triggerfish & filefish, boxfish, wrasses, spiny lobster FMUs (PR, STT/STJ, and STX), and tilefish FMU (Caribbean wide)	OY = ACL = [ABC x (0.90)]
	Surgeonfish and angelfish FMUs (PR, STT/STJ, and STX); aquarium trade FMU (Caribbean wide)	OY = ACL = [ABC x (0.75)]

¹OFLs defined for the entire Caribbean Region. ²OFLs defined per island/island group. ³ORCS methodology can be found in CFMC (2011b)

Accountability Measures

Accountability measures apply to all species except queen conch, prohibited corals, and species with harvest moratoria (e.g., goliath and Nassau grouper). Accountability measures require the NMFS' Assistant Administrator to reduce the length of the fishing season if it has been determined that prior year(s) landings exceeded the ACL for that FMU. For purposes of ACL monitoring, a multi-year average of landings is used. The fishing season would be shortened in the year following an overage determination by the amount necessary to constrain landings to the ACL. If NMFS determines the ACL for a particular species or species group has been exceeded based upon a pre-defined average of landings, scientists (in consultation with managers) evaluate the cause of the reported catch increase prior to making a determination that a FMU has exceeded its assigned ACL. Specifically, they would consider whether the reported increase represents an actual increase in landings or just improved data collection and monitoring. The intent of this definition is to eliminate any incentive for fishermen to under-report or misreport catches to avoid exceeding ACLs and triggering associated AMs.

To determine ACL overages in the USVI and Puerto Rico (including sector-specific overages) that would apply in the 2013 fishing year for 2010 FMUs, the average of the annual landings from 2010 and 2011 were compared to the corresponding ACL for a particular unit. For 2011 FMU, the most recent landings available corresponded to the year 2011 and thus those landings were compared to the corresponding ACL.

NMFS determined that several ACLs were exceeded based on 2011 landings and/or the average of 2010 and 2011 landings, which triggered AMs to reduce the length of the fishing seasons in the 2013 fishing year by the amounts necessary to ensure landings did not again exceed the ACLs. In 2013, the commercial sector of SU2 in Puerto Rico, the recreational sector of wrasses in Puerto Rico, triggerfish and filefish (commercial and recreational) in St. Croix, spiny lobster (commercial and recreational) in St. Croix, and groupers (commercial and recreational) in St. Thomas/St. John had AM-based closures (FR 78 18247).

To monitor the ACLs and determine if AMs need to be applied for any unit in 2014, NMFS conducted the following analysis. For USVI 2010 FMUs the annual average of landings from 2010, 2011, and 2012 was compared against the corresponding ACL. For USVI 2011 FMUs, the average of landings from 2011 and 2012 was compared against the corresponding ACL. None of the USVI FMUs exceeded their corresponding ACL, and AMs will not be triggered in the USVI for the 2014 fishing year. To monitor the commercial and the recreational ACLs in Puerto Rico and determine if AMs need to be applied for any unit in 2014, NMFS conducted the following analysis. For 2010 FMUs the annual average of landings from 2010, 2011, and 2012 was compared with the corresponding ACL. Commercial SU2 in PR was found to have exceeded their ACL, but there will be no shortening of the season due to reduced rates of harvest and a resultant prediction that the ACL will not again be exceeded. The commercial ACL for wrasses was exceeded based on the

average of 2010-2012 annual landings. However, NMFS determined that increased landings reported for this FMU were due to increased reporting resulting from a change

in a reporting requirement recently implemented by Puerto Rico. Therefore, AMs will not be applied for this unit in 2014.

DRAFT

Chapter 2. Proposed Action and Alternatives

2.1 What is the Proposed Action?

ACTION: Establish a control rule to adjust the buffer reduction applied to the overfishing limit (OFL) or to the acceptable biological catch (ABC) used to derive the annual catch limit (ACL) to reflect a change in overfishing status of the stock.

2.2 List of Alternatives

Alternative 1: No Action. Do not establish a control rule to adjust the buffer reduction applied to the OFL or the ABC to determine the ACL for all fishery management units (FMUs) for which harvest is allowed. The buffer reductions to the OFL or the ABC would continue to be those defined in the 2010 and 2011 Caribbean ACL Amendments.

Alternative 2: For all FMUs for which harvest is allowed (or where applicable), establish an ACL Control Rule where $ACL = [OFL \text{ (or ABC)} \times (0.85)]$ for FMUs determined to be subject to overfishing, and where $ACL = [OFL \text{ (or ABC)} \times (0.90)]$ for FMUs determined not to be subject to overfishing in a specific year.

Preferred Alternative 3: Establish an ACL Control Rule where $ACL = [OFL \text{ (or ABC)} \times (0.85)]$ for FMUs determined to be subject to overfishing, and where $ACL = [OFL \text{ (or ABC)} \times (0.90)]$ for FMUs determined not to be subject to overfishing in a specific year. The ACL control rule would apply to FMUs for which harvest is allowed, with the exception of the following FMUs, for which buffer reductions to the OFL or ABC specified in the 2010 and/or 2011 Caribbean ACL amendment would continue to be applied to derive the ACL:

Preferred Sub-alternative 3a. Parrotfish FMU – As defined in the 2010 Caribbean ACL Amendment, $ACL = [ABC \times (0.85)]$. An additional 5.8822% reduction to the ACL of the parrotfish FMU would continue to be applied in the St. Croix management area to further reduce harvest from this direct fishery in recognition of the ecological role of parrotfish as herbivores.

Preferred Sub-alternative 3b. Surgeonfish FMU – As defined in the 2011 Caribbean ACL Amendment, $ACL = [ABC \times (0.75)]$ to reflect the ecological role of surgeonfish as herbivores in coral reefs.

(Cont.) 2.2 List of Alternatives

Preferred Sub-alternative 3c. Angelfish FMU – As defined in the 2011 Caribbean ACL Amendment, $ACL = [ABC \times (0.75)]$ to reflect the ecological role of angelfish as spongivores in coral reefs.

Preferred Sub-alternative 3d. Queen conch FMU – As defined in the 2010 Caribbean ACL Amendment, for St. Croix, $ACL = ABC$ specified by the Caribbean Fishery Management Council’s Scientific and Statistical Committee. For Puerto Rico and St. Thomas/St. John, $ACL = 0$.

Preferred Sub-alternative 3e. Aquarium trade species FMU – As defined in the 2011 Caribbean ACL Amendment, $ACL = [ABC \times (0.75)]$ for aquarium trade species in the Corals and Reef Associated Plants and Invertebrates Fishery Management Plan (FMP) and in the Reef Fish FMP.

2.2.1 Discussion of the Alternatives

This action would develop a control rule to adjust the ACL for U.S. Caribbean FMUs based on the current overfishing status of the FMU⁶ as determined by the National Marine Fisheries Service (NMFS). Establishing this control rule would provide the Council and NMFS the flexibility to respond in a more timely manner to changes in the fishery.

The ACL Control Rule proposes to change the buffer reduction applied to the OFL or to the ABC (if specified) to derive the ACL for each FMU and sector within the unit. The buffer reduction applied would depend on the overfishing status of the FMU. Overfishing is determined to be occurring if the annual landings exceed the assigned OFL, unless NMFS’ Southeast Fisheries Science Center (SEFSC), in consultation with the Caribbean Fishery Management Council (Council) and its Scientific and Statistical Committee (SSC), determines that the overage occurred because data collection/monitoring improved, rather than because landings actually increased.

The control rule would not take into account the overfished status of a stock because overfished stocks are managed through rebuilding plans designed to achieve a stock abundance consistent

⁶ In the following sections the terms fishery management unit (FMU) and stock may be used interchangeably.

with supporting the maximum sustainable yield (MSY) on a continuing basis. Overfished species were addressed in the 2005 Sustainable Fisheries Act (SFA) (CFMC 2005), where management measures such as season and area closures to protect spawning aggregations were established to rebuild the stocks. Those measures were meant to address overfished status in the long-term and were factored in during the development of the 2010 and 2011 Caribbean ACL Amendments. The control rule proposed in this amendment will continue to ensure that overfishing does not occur in the short-term, thereby maintaining steady progress toward the long-term goal of rebuilding overfished stocks while preventing other stocks from becoming overfished.

Alternative 1 is the no action alternative and would not establish an ACL control rule, thus would retain the current buffer reductions to the OFL or ABC used to determine the ACL for each FMU and sector within the unit as established in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b). The current buffers are not adjustable; they remain constant despite changes in overfishing status. These buffer reductions were selected by the Council after having been evaluated against several other buffer alternatives (NMFS 2011a, b). The buffers chosen were the ones that the Council considered would provide the best balance between maximizing harvest while preventing overfishing. As discussed in Chapter 1, most of the units addressed in the 2010 Caribbean ACL Amendment (2010 FMUs) were determined to be ‘subject to overfishing’ at the time of preparation of that amendment and their ACLs were set at 85% of the OFL or ABC (i.e., a 15% buffer was applied). This precautionary approach was taken because of both the combined management and scientific uncertainty inherent in the data, and the many changes that have taken place in the U.S. Caribbean since 2005. Stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs) were not identified as being subject to overfishing, and for most of them the ACL was set at 90% of the ABC (i.e., a 10% buffer applied). For these 2011 FMUs, for example, based on the history of landings for both Puerto Rico and the USVI, the Council determined that applying a 10% uncertainty reduction to the ABC would reduce the risk of exceeding the ACL and, by extension, the OFL. Reducing the likelihood of exceeding the ACL reduces the risk of applying accountability measures (AMs). Accountability measures would reduce the fishing season to ensure that the ACL is not exceeded again, which would ensure the OFL is not exceeded and overfishing is not a continuing problem (CFMC 2011b). Also, as discussed in Section 1.6, the ACL for some of the 2010 and 2011 FMUs, such as parrotfish, queen conch, surgeonfish, angelfish, and aquarium trade species⁷, was derived from different buffer reductions to the OFL or the ABC.

⁷ In the 2010 Caribbean ACL amendment, the queen conch ACL was set equal to the ABC recommended by the SSC with no reduction applied, a management measure that also supports the queen conch rebuilding plan. The parrotfish FMU for each island region was set at 85% of the SSC’s recommended ABC for each island; however, an additional reduction was applied to the St. Croix ACL to account for the important contributions of parrotfish to the health and vibrancy of Caribbean coral reefs. For the 2011 stocks surgeonfish and angelfish, the ACL was set at 75% of the ABC due to the ecological role of these species as herbivores and spongivores in the coral reef, respectively. Finally, the Caribbean-wide ACL for the aquarium trade species FMU was also derived from a 25% reduction to the ABC to account for uncertainty in the landings data and harvest patterns of this group in federal waters.

Since the completion of the 2010 and 2011 Caribbean ACL Amendments, the status of several of the FMUs has changed, particularly for the 2010 units, and some FMUs previously classified as ‘subject to overfishing’ are now no longer classified as ‘subject to overfishing’ (as of the 2012 Annual Report to Congress on the Status of U.S. Fisheries [NMFS 2013a]). If no action (**Alternative 1**) is taken and the control rule is not implemented, the Council would not have a mechanism in place to respond quickly to changes in overfishing status when they occur.

Under **Alternative 1**, the buffer that is applied to derive an ACL remains constant regardless of changes in the overfishing status. For example, if an FMU is no longer ‘subject to overfishing’ but the buffer that is applied to derive the ACL remains at a more restrictive level, catches would be excessively constrained. This restriction could result in lost yield, which may have economic repercussions for fishermen, as well as other biological and social impacts. Consequently, the ACL may be unnecessarily low for an FMU that is not subject to overfishing and landings and long-term economic and social net benefits that derive from those landings could be lower than the net benefits under **Alternative 2** or **3**. On the contrary, if an FMU becomes ‘subject to overfishing’ but the status quo buffer that corresponds to that FMU is not adjusted to be more conservative, this could create a risk of exceeding the ACL and, by extension, the OFL, even though the stock may in fact already be suffering from overharvest. With **Alternative 1** there would be greater risks of landings exceeding the OFL and continuous overfishing than with either **Alternative 2** or **Preferred Alternative 3**. Continuous overfishing of a stock decreases its biomass and increases the likelihood of the stock becoming overfished. Under **Alternative 1**, if the Council decides to address changes in overfishing status for managed species, they would have to do so through the lengthier full plan amendment process, limiting the Council’s ability to implement regulatory changes in a timely manner.

Alternative 2 would establish a control rule to modify the buffer reduction that is applied to the OFL or the ABC (if defined) to derive an ACL in response to changes in the overfishing status of any U.S. Caribbean FMU. The ACL Control rule proposed in **Alternative 2** would apply to all FMUs for which harvest is allowed, with no exceptions. The ACL Control Rule would adjust the buffer reduction for an FMU based on the current overfishing status of the FMU as determined by NMFS (see Section 3.2.2 for a discussion about the process to determine the overfishing status of a stock). The ACL Control Rule would specify that, if in a particular year, based on the most recent available landings, an FMU is determined to be ‘not subject to overfishing’, a 10% buffer reduction would be applied to the OFL or the ABC (if defined) to derive the ACL for the next year for that particular unit or sector within the unit. This 10% buffer reduction will also apply if the status of an FMU is classified as ‘unknown’. Under **Alternative 2**, the ACL Control Rule would also specify that if in a particular year, based on the most recent available landings, an FMU is determined to be ‘subject to overfishing’, a 15% buffer reduction would be applied to the OFL or the ABC (if defined) to derive the ACL for the next year for that particular unit or sector within the unit.

Because **Alternative 2** would apply the control rule to all managed species for which harvest is allowed, it would not support the special buffers that currently apply for the parrotfish, queen conch, surgeonfish, angelfish, and aquarium trade species FMUs. As discussed in Section 1.6 and summarized in the footnote on page 21, these special buffers for parrotfish, queen conch, surgeonfish, angelfish, and aquarium trade species were established by the Council in the 2010 and the 2011 Caribbean ACL Amendments for various management considerations. These buffers were based on factors such as ecological importance of the species, species that are currently managed under a partial harvest prohibition, or species for which harvest patterns are unknown, and therefore were not based solely on overfishing status. In addition, for the queen conch, the ACL was set equal to the ABC, and that ABC was set as an annual allowance by the Council's SSC, with no reduction applied. **Alternative 2** would change the current relationship between the OFL or ABC and the ACL for all of these units for each region and sector (if applicable). Consequently, **Alternative 2** would result in immediate ACL increases for angelfish, surgeonfish, and aquarium trade species regardless of their overfishing status. **Alternative 2** would also result in an increase to the parrotfish ACL for all island/island regions if those units are determined to be 'not subject to overfishing'. In contrast, **Alternative 2** will result in an immediate decrease to the ACL for queen conch in St. Croix regardless of overfishing status. **Alternative 2** could increase the risk of overfishing for angelfish, surgeonfish, and aquarium trade species. These outcomes could increase the risks of reduced long-term social and economic benefits from these resources. **Alternative 2** could also unnecessarily reduce landings of queen conch and long-term social and economic benefits that derive from those landings.

Similar to **Alternative 2**, **Preferred Alternative 3** would also establish an ACL Control Rule that would change the buffer applied to the OFL or the ABC (if specified) to derive the ACL for each FMU and sector within the unit based on changes in overfishing status. Although the ACL Control Rule proposed in **Preferred Alternative 3** would similarly apply to FMUs for which harvest is allowed, it would also ensure the parrotfish, surgeonfish, angelfish, aquarium trade species, and queen conch FMUs would be exempted from the control rule, depending on the specific sub-alternative(s) chosen. **Preferred Sub-alternatives 3a-3e** would retain the established buffers and ACLs for these five FMUs, whereas **Alternative 2** would not. For any of these units, and for the sectors within the unit, the buffers and ACLs specified in the 2010 and 2011 Caribbean ACL Amendments, would remain valid (status quo). Buffer reductions or values established for these FMUs in the 2010 and 2011 Caribbean ACL Amendments support the lowest catch level that the Council considered necessary to prevent overfishing while achieving the optimum yield. Hence, **Alternative 2** and **Preferred Alternative 3** would have the same biological, ecological, economic, and social impacts to the boxfish, goatfish, grouper, grunts, wrasses, jacks, scups & porgies, snapper, squirrelfish, triggerfish & filefish, and spiny lobster FMUs. Also, **Alternative 1** and **Preferred Sub-alternatives 3a** through **3e** would have the same impacts on the angelfish, parrotfish, queen conch, surgeonfish, and aquarium trade FMUs, respectively. **Preferred Sub-alternatives 3a** through **3e** are discussed below.

Preferred Sub-Alternative 3a would retain the buffer reduction, and thus the ACL established in the 2010 Caribbean ACL Amendment, for the parrotfish FMU in each island region and sector. The buffer reduction applied to the ABC to derive the ACL considered the ecological role of parrotfish as herbivores in the coral reef and their contribution to maintain *Acropora* critical habitat at an optimum balance. As discussed in Section 1.6, the 2010 Caribbean ACL Amendment defined the parrotfish FMU for each island region at 85% of the SSC's recommended ABC for each island. In addition, the parrotfish ACL for the St. Croix management area was reduced by an additional 5.8822% as a precautionary management measure based on local harvest patterns and to account for the important contributions of parrotfish to the health and vibrancy of Caribbean coral reefs. Although the parrotfish FMU is not considered to be 'subject to overfishing' any longer (since [2012 4th Quarter Update on the NMFS Status of U.S Fisheries](#)), and continues to be classified as such in the most recent update on the status of the stocks corresponding to the [2014 1st Quarter Update on the NMFS Status of U.S Fisheries](#)), this sub-alternative would support the management measures established for parrotfish.

Preferred Sub-Alternatives 3b and **3c** would retain the buffers applied in the 2011 Caribbean ACL Amendment for the surgeonfish and angelfish FMUs, respectively. For these FMUs, a 25% reduction was applied to the ABC to derive the ACL because of the important ecological role these species play in coral reef ecosystems. Surgeonfish, like parrotfish, contribute important algal grazing services and thus serves an important role in maintaining critical habitat for Acroporid corals. Angelfish serve as an important spongivore in coral reefs, and with herbivores, contribute to maintain the ecological integrity of Caribbean coral reefs.

Preferred Sub-alternative 3d provides for the queen conch FMU to be exempt from the ACL Control Rule, and thus would retain the ACL established in the 2010 Caribbean ACL Amendment for this species. In the 2010 Caribbean ACL amendment, the queen conch ACL for St. Croix was set equal to the 50,000-pound ABC recommended by the Council's SSC with no reduction applied, a management measure that also supports the queen conch rebuilding plan. Annual catch limits for St. Thomas/St. John and Puerto Rico were and are currently set at zero because the harvest of queen conch in federal waters around those islands has been prohibited since the Caribbean SFA Amendment in 2005 (CFMC 2005). Although queen conch is not undergoing overfishing any longer (since the [2012 4th Quarter Update on the NMFS Status of U.S. Fisheries](#) (i.e. Status of the Stocks), and continues to be classified as such in the most recent stock status quarterly update corresponding to the [2014 1st Quarter Update on the NMFS Status of U.S. Fisheries](#)), it is still considered to be overfished, and continues to be rebuilt under a 15-year rebuilding plan that ends in 2020. **Preferred Sub-alternative 3d** would support the above management measures established for the queen conch.

Preferred Sub-alternative 3e would exempt the aquarium trade species FMU from the application of the ACL Control Rule. This FMU contains species in both the Reef Fish FMP and the Coral FMP. The ACL for this FMU is Caribbean-wide and was established in the 2011 Caribbean ACL Amendment. The buffer reduction applied to the ABC to derive the ACL was based on uncertainty in the landings data and harvest patterns of this group in federal waters, as most of the harvest of aquarium trade species takes place in state waters. The ACL for aquarium trade species was derived by reducing the ABC by 25%. **Preferred Sub-alternative 3e** would retain the values set for aquarium trade species FMU in the 2011 Caribbean ACL Amendment, and thus would support current management measures.

In summary, adjusting the buffer reductions applied to management reference points in response to changes in the health of the target species (**Alternative 2** and **Preferred Alternative 3**) could result in positive or negative biological/ecological, social, and economic impacts to fishers and to the affected stocks depending on the direction of the change. For example, a reduced buffer could benefit fishers by allowing for a slightly larger ACL, although a larger ACL could also make the species more vulnerable to overfishing, which could negatively impact the stock and in the long run, reduce net economic and social benefits to the fishers who depend on that stock. However, the extent of the effects would depend on 1) how often the overfishing status of a stock changes through time and thus triggers the application of the control rule that would result in changes to the ACL, 2) if there is a change in overfishing status, then how much the ACL would change relative to the current ACL, and 3) how much landings would change because of a change to the ACL. The next sub-section explores the frequency of changes in the overfishing status based on historical landings and then explores potential changes to the current ACLs under the different alternatives proposed. Lastly, we analyze the effects of **Alternative 2** and **Preferred Alternative 3** on the ACLs for and potential landings of the stocks that recently experienced changes in overfishing status.

2.1.1.1 Analyses on the Effects of the Proposed Alternatives

A. Comparison between the Overfishing Limit and Historical Landings for Council-Managed Species.

Overfishing is determined to be occurring if annual landings exceed the corresponding OFL, unless NMFS' SEFSC, in consultation with the Council and its SSC, determines that the overage occurred because data collection/monitoring improved, rather than because landings actually increased (CFMC 2011a, b). The following analysis explores, based on historical landings for the most recent five years, how often the overfishing status of a stock would be expected to change through time and thus trigger the application of the control rule that would result in a change to the ACL.

Landings from the most recent five years are used as a proxy for future landings (Tables 2.2.1.1.1 - 2.2.1.1.5). These landings are composed of combined harvest from federal and Puerto Rico commonwealth or USVI territorial waters. The annual landings for all FMUs per island/island group and sector, except for 2012 Puerto Rico commercial, were provided from the SEFSC in October of 2013. Puerto Rico commercial landings for 2012 were provided from the SEFSC in April 2014. These landings represent the most complete Caribbean landings at this time. Caribbean-wide OFLs for stocks addressed in the 2010 Caribbean ACL Amendment (i.e., 2010 FMUs) and annual landings for these FMUs from 2008 through 2012 are provided in Tables 2.2.1.1.1 and 2.1.1.2. For each of these FMUs, the OFL was calculated by island/island region and the individual OFLs were then summed to derive the Caribbean-wide OFL presented in Tables 2.2.1.1.1 and 2.2.1.1.2 (*Individual OFLs for 2010 FMUs are listed in Table 1.6.1 in Section 1.6). For 2010 FMUs, the Caribbean-wide OFLs are used to make overfishing status determinations.

Overfishing limits for stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs) per island/island region and sector along with landings for the recent five years are provided in Tables 2.2.1.1.3 through 2.2.1.1.5. The annual landings were examined to see if OFLs were exceeded. Table 2.2.1.1.6 provides a summary of the FMUs with annual landings that exceeded their OFLs and the year(s) landings exceeded the OFLs.

2010 Fishery Management Units

Stocks addressed in the 2010 Caribbean ACL Amendment (2010 FMUs) have individual OFLs per island/island group and in Puerto Rico by sector, that were combined to obtain a Caribbean-wide OFL for each stock/stock complex. For overfishing status determination purposes, Puerto Rico commercial and recreational landings are combined and compared to the Caribbean-Wide OFL. None of the 2010 FMUs in either Puerto Rico, St. Croix or St. Thomas/St. John had landings in the last five years that exceeded the corresponding Caribbean-wide OFL (Tables 2.2.1.1.1 - 2.2.1.1.2).

Table 2.2.1.1.1. Puerto Rico commercial and recreational landings in pounds of whole weight for the most recent years (2008-2012) and Caribbean-Wide OFL for 2010 FMUs. The OFLs for Puerto Rico are monitored by combining commercial and recreational landings. Landings include harvest from both federal and state waters.

FMU	Puerto Rico Landings										Caribbean -Wide OFL ²
	2008		2009		2010		2011		2012		
	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec	
Queen Conch¹	242,041	--	273,309	--	273,459	--	235,759	--	367,543	--	512,718

<i>SU 1</i>	352,975	123,831	369,179	47,995	276,528	42,068	149,268	33,760	167,167	36,456	1,915,759
<i>SU 2</i>	261,998	62,761	239,977	4,542	384,877	10,169	218,854	0	142,760	7,379	
<i>SU 3</i>	175,321	73,852	148,127	39,344	174,108	35,193	167,303	20,874	171,836	41,070	
<i>SU 4</i>	365,868	20,202	222,698	17,015	215,404	10,147	151,284	9,343	182,284	17,249	
Grouper	87,738	114,763	87,135	31,635	92,162	21,506	59,715	7,800	67,979	18,677	396,483
Parrotfish	90,450	48,129	54,555	49,613	43,909	10,498	38,154	10,280	46,569	9,452	507,059

¹ Queen conch landings data is provided only for informational purposes as harvest of queen conch is prohibited in Puerto Rico federal waters. Recreational landings data for queen conch is not collected, therefore is not available.

² Caribbean-wide OFLs combine the individual OFLs from all islands/island regions and both the Puerto Rico recreational and commercial sectors.

Table 2.2.1.1.2. St. Croix and St. Thomas/St. John commercial landings in pounds of whole weight for the most recent five years (2008-2012) and Caribbean-Wide OFL for 2010 FMUs. Landings include harvest from both federal and state waters.

FMU	St. Croix (STX) and St. Thomas/St. John (STT/STJ) Landings										Caribbean-Wide OFL ²
	2008		2009		2010		2011		2012		
	STX	STT/STJ	STX	STT/STJ	STX	STT/STJ	STX	STT/STJ	STX	STT/STJ	
Queen Conch	123,681	857	71,557	1,329	81,917	1,577	53,210	1,930	36,771	592	512,718
Snapper	112,389	145,187	96,393	143,615	92,354	121,186	84,463	76,259	64,262	53,624	1,915,759
Grouper	29,585	56,910	34,650	68,602	29,117	60,806	30,800	53,170	29,853	41,184	396,483
Parrotfish	354,997	39,613	316,094	33,049	162,623	34,010	154,531	23,289	118,798	17,224	507,059

¹ Queen conch landings data is provided only for informational purposes as harvest of queen conch is prohibited in St. Thomas/St. John federal waters.

² Caribbean-wide OFLs combine the individual OFLs from all islands/island regions and both the recreational and commercial sectors.

2011 Fishery Management Units

The stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs) have OFLs for each specific island region (Puerto Rico, St. Croix, and St. Thomas/St. Johns), except for tilefish and aquarium trade species which have Caribbean-wide OFLs. Tables 2.2.1.1.3 through 2.2.1.1.5 show the reported landings for all 2011 FMUs for Puerto Rico, St. Croix, and St. Thomas/St. John and for Caribbean-wide tilefish and aquarium trade species from 2008 through 2012 and the corresponding OFL. For overfishing status determination purposes, Puerto Rico commercial and recreational landings are combined and compared to the corresponding total OFL. There were numerous 2011 FMUs that had recent annual landings that exceeded their corresponding OFL

(Table 2.2.1.1.6). For Puerto Rico, high landings of wrasses in 2012 were attributed to increased reporting resulting from modifications to the reporting requirements from the Puerto Rico Department of Natural and Environmental Resources. Although reported landings for USVI's angelfish, squirrelfish, and wrasses in 2011 and 2012 exceeded the corresponding OFL, high landings were attributed to enhanced reporting resulting from modifications to the reporting forms that started in 2011.

Table 2.2.1.1.3. Puerto Rico commercial and recreational landings in pounds of whole weight for the most recent years of available information (2008-2011 Commercial sector, 2008-2012 Recreational sector) and individual OFLs for 2011 FMUs. Landings include harvest from both federal and state waters.

FMU	Puerto Rico Landings											
	2008		2009		2010		2011		2012		OFL	
	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec.
Angelfish	0	0	0	265	0	0	0	167	0	0	11,978	5,989
Boxfish	51,397	5,454	58,979	2,721	57,310	326	40,326	2,474	38,911	1,401	95,683	5,129
Goatfishes	5,215	0	9,656	717	6,459	0	6,812	280	9,656	139	19,517	402
Grunts	69,575	5,976	84,537	5,261	65,601	1,556	39,954	2,109	34,075	3,603	202,662	5,587
Jacks	104,498	48,788	88,385	49,962	67,589	26,669	35,528	31,469	47,111	57,668	95,621	56,668
Scups & Porgies	28,328	1,861	23,539	196	15,693	576	19,655	1,812	29,061	1,653	27,488	2,863
Spiny Lobster¹	329,227	--	322,992	--	289,609	--	274,318	--	211,865	--	364,355	--
Squirrelfish	19,430	15,460	10,385	1,107	8,405	840	6,732	754	6,919	370	18,514	4,323
Surgeonfish	0	122	0	60	0	0	0	0	0	0	9,572	4,786
Triggerfish & Filefish	55,361	62,525	47,194	17,721	45,650	6,168	50,714	1,970	41,835	13,005	64,972	24,365
Wrasses²	54,980	26,404	67,187	11,737	59,427	10,122	53,623	5,539	69,647	3,237	60,163	5,611

¹ Recreational landings for spiny lobster are not monitored, therefore are not available.

² Puerto Rico increased landings of wrasses in 2012 were attributed to increased reporting resulting from modifications to the reporting requirements from the Puerto Rico Department of Natural and Environmental Resources (PRDNER) in order for commercial fishermen to keep the fishing license active.

Table 2.2.1.1.4. St. Croix and St. Thomas/St. John commercial landings in pounds of whole weight for the most recent five years of available information (2008-2012) and individual OFLs for 2011 FMUs. Landings include harvest from both federal and state waters.

FMU	St. Croix (STX) and St. Thomas/St. John (STT/STJ) Landings											
	2008		2009		2010		2011		2012		OFL	
	STX	STT/ STJ	STX	STT/ STJ	STX	STT/ STJ	STX	STT/ STJ	STX	STT/ STJ	STX	STT/ STJ
Angelfish	63	8,365	99	9,077	815	10,586	8,510	18,337	14,253	16,047	406	10,529
Boxfish	8,268	33,008	7,418	30,323	4,302	25,813	5,335	15,757	1,819	12,288	9,370	30,978
Goatfishes	1,775	74	2,678	94	541	52	712	17	529	1	4,184	356
Grunts	39,836	39,144	46,789	36,557	32,514	38,407	34,418	25,402	24,761	16,102	40,979	41,797
Jacks	8,715	56,197	11,881	68,478	12,358	46,043	10,341	35,049	8,355	45,523	17,210	58,785
Scups & Porgies	5,694	22,287	4,249	21,603	5,189	20,387	2,698	8,498	146	144	5,153	24,243
Spiny Lobster	148,003	110,465	149,908	115,762	139,685	114,577	109,751	84,302	86,917	83,138	119,230	115,777
Squirrelfish ¹	77	3,792	32	3,045	7	2,366	2,768	6,510	3,834	9,805	134	4,712
Surgeonfish ¹	38,127	37,407	37,274	31,718	29,645	31,927	32,187	19,294	21,231	15,078	44,804	38,999
Triggerfish & Filefish	32,698	84,131	38,735	79,469	30,711	79,555	26,464	57,067	22,644	45,989	27,755	82,719
Wrasses ¹	0	685	0	1,359	0	2,517	49	1,959	24	1,823	8	650

¹ St. Croix and St. Thomas/St. John increased landings of angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms that started in 2011.

Table 2.2.1.1.5. Caribbean-wide landings in pounds of whole weight for the most recent five years of available information for the tilefish and aquarium trade species FMUs and corresponding Caribbean-wide OFL.

Caribbean-Wide Landings						
FMU	2008	2009	2010	2011	2012	OFL
Tilefish	0	0	2,591	122	231	16,269
Aquarium Trade Species	1,057	1,199	1,224	1,499	1,469	10,873

All of the FMUs listed in Table 2.2.1.6 below that had annual landings exceed their OFL between 2008 and 2010 were classified as status ‘unknown’ at the Caribbean-wide level in previous Status of the U.S. Fisheries reports until the 2012 4th Quarter Update. In that last quarter 2012 update, the status of those units was changed to ‘not subject to overfishing’, except for angelfish, squirrelfish, and wrasses which remained classified as status ‘unknown’.

The OFLs for Puerto Rico are monitored by combining commercial and recreational landings. In 2012, only two 2011 FMUs from Puerto Rico, scups and porgies and wrasses, exceeded their combined commercial and recreational OFLs. At least for wrasses, the increased landings were attributed to increased reporting. A determination regarding scups and porgies is still pending.

Table 2.2.1.1.6. 2010 and 2011 FMUs that exceeded their OFLs based on annual landings for the past 5 years (2008 to 2012). Landings include harvest from both federal and state waters.

Island/Island Region	Sector	Fishery Management Unit(s)	Year(s) Landings Exceeded OFL
Puerto Rico ¹	Commercial	Jacks, Porgies, and Squirrelfish	2008
Puerto Rico	Commercial	Wrasses	2009, 2012 ²
Puerto Rico	Commercial	Scups & Porgies	2012
Puerto Rico	Recreational	Boxfish, Grunts, Squirrelfish, and Trigger & Filefish	2008
Puerto Rico	Recreational	Goatfish	2009
Puerto Rico	Recreational	Jacks	2012
Puerto Rico	Recreational	Wrasses	2008, 2009, and 2010
St. Croix	Commercial	Angelfish ¹	2010, 2011, and 2012
St. Croix	Commercial	Grunts	2009
St. Croix	Commercial	Porgies	2008 and 2010
St. Croix	Commercial	Spiny Lobster and Triggerfish & Filefish	2008, 2009, and 2010
St. Croix	Commercial	Squirrelfish ³ and Wrasses ³	2011 and 2012
St. Thomas/St. John	Commercial	Boxfish and Trigger & Filefish	2008
St. Thomas/St. John	Commercial	Jacks	2009
St. Thomas/St. John	Commercial	Squirrelfish ¹	2011 and 2012
St. Thomas/St. John	Commercial	Angelfish ¹	2010, 2011, and 2012
St. Thomas/St. John	Commercial	Wrasse ¹	2008 to 2012

¹ For overfishing status determination purposes for Puerto Rico, the commercial and recreational landings are combined and compared against the combined (commercial and recreational) OFL.

² Puerto Rico increased landings of wrasses in 2012 were attributed to increased reporting resulting from modifications to the reporting requirements from the PRDNER in order for commercial fishermen to keep the fishing license active.

³ St. Croix and St. Thomas/St. John increased landings of angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms that started in 2011.

B. Comparison of ACLs under the proposed alternatives including different status scenarios under Alternative 2 and Preferred Alternative 3 for each Council-managed FMU

The following analysis compares the ACLs in **Alternative 2** and **Preferred Alternative 3** under the different overfishing status scenarios for stocks addressed in the 2010 Caribbean ACL Amendment (2010 FMUs) and species/species complexes addressed in the 2011 Caribbean ACL Amendment (2011 FMUs).

‘Subject to overfishing’ Status

2010 Fishery Management Units

Alternative 2

The application of a 15% buffer reduction to the OFL or the ABC of an FMU in **Alternative 2** under a ‘subject to overfishing’ scenario would not change the current ACL of most 2010 FMUs, except for queen conch, because the current ACL (**Alternative 1**) for these units was already derived from a 15% buffer reduction to the ABC or the OFL. The application of the 15% buffer reduction to the queen conch ABC will reduce the ACL in St. Croix by 7,500 pounds (Table 2.2.1.1.7).

Preferred Alternative 3 and Preferred Sub-alternatives 3a and 3d

The resulting ACLs from the ACL Control Rule as proposed in **Preferred Alternative 3** would be the same as in **Alternative 2** for all managed species for which harvest is allowed, except for those FMUs in **Preferred Sub-alternatives 3a** through **3e**. Under the ‘subject to overfishing’ status, the ACLs for parrotfish and queen conch, (**Preferred Sub-alternatives 3a** and **3d**) would remain as status quo (similar to **Alternative 1**) (Table 2.2.1.1.7).

Table 2.2.1.1.7. Current ACLs (**Alternative 1**) and new ACLs for 2010 FMUs per island/island region and sector under **Alternative 2** and **Preferred Alternative 3** (including **Sub-alternatives 3a and 3d**) if stocks are determined to be ‘subject to overfishing’. Current ACLs are based on a 15% reduction (0.85 buffer) to the OFL or ABC, except for queen conch, which had no reduction applied to its ABC. New ACLs resulting from **Alternative 2** and **Preferred Alternative 3** (except for **Preferred Sub-alternatives 3a and 3d**) would be based on a 15% reduction (0.85 buffer) to the OFL or ABC (if determined). All values are in pounds of whole weight.

Puerto Rico	Alternative 1		Alternative 2				Preferred Alternative 3			
	Current ACLs (Alt. 1)		ACLs if Subject to Overfishing under Alt. 2 (0.85 reduction)		Difference between Alt. 1 (status quo) and Alt. 2		ACLs if Subject to Overfishing under Alt. 3 (0.85 reduction), and Sub-alt. 3a-3e		Difference between Alt. 1 (status quo) and Alt. 3	
	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
Snapper Unit 1	284,685	95,526	284,685	95,526	No change		284,685	95,526	No change	
Snapper Unit 2	145,916	34,810	145,916	34,810	No change		145,916	34,810	No change	
Snapper Unit 3	345,775	83,158	345,775	83,158	No change		345,775	83,158	No change	
Snapper Unit 4	373,295	28,509	373,295	28,509	No change		373,295	28,509	No change	
Grouper	177,513	77,213	177,513	77,213	No change		177,513	77,213	No change	
Parrotfish	52,737	15,263	52,737	15,263	No change		Sub-alt. 3a:			
							52,737	15,263	No change	
Queen Conch ¹	0	0	0	0	No change		Sub-alt. 3d:			
							0	0	No change	
St. Croix	Alternative 1		Alternative 2		Preferred Alternative 3					
	Current ACLs (Alt. 1)		ACLs if Subject to Overfishing under Alt. 2 (0.85 reduction)		Difference between Alt. 1 (status quo) and Alt. 2		ACLs if Subject to Overfishing under Alt. 3 (0.85 reduction), and Sub-alt. 3a-3e		Difference between Alt. 1 (status quo) and Alt. 3	
Snapper	102,946		102,946		No change		102,946		No change	
Grouper	30,435		30,435		No change		30,435		No change	
Parrotfish ^{1,2}	240,000		240,000		No change		Sub-alt. 3a:			
							240,000		No change	
Queen conch	50,000		42,500		- 7,500		Sub-alt 3d:			
							50,000		No change	
St. Thomas/St. John										
Snapper	133,775		133,775		No change		133,775		No change	
Grouper	51,849		51,849		No change		51,849		No change	
Parrotfish ^{1,2}	42,500		42,500		No change		Sub-alt. 3a:			
							42,500		No change	
Queen Conch ¹	0		0		No change		Sub-alt 3d:			
							0		No change	

¹ Reductions, if any, were made from ABC.

² The St. Croix Parrotfish ACL is further reduced by 5.8822% as specified in the 2010 Caribbean ACL Amendment.

2011 Fishery Management Units

Alternative 2

A ‘subject to overfishing scenario’ under **Alternative 2** would reduce the current ACL for most 2011 FMUs (Table 2.2.1.1.8) because the current ACLs (**Alternative 1**) for most of these units were based on a 10% reduction to the ABC and the new buffer will reduce the ABC by 15%. For the angelfish and the surgeonfish FMUs for each island/island region and sector, and for the aquarium trade species FMU at the Caribbean-wide level, **Alternative 2** would translate into an increase in their allowed harvest under a ‘subject to overfishing’ scenario because the current (**Alternative 1**) ACLs for these units were previously based on a 25% reduction to the ABC.

Preferred Alternative 3 and Sub-alternatives 3b, 3c, and 3e

Under a ‘subject to overfishing’ status, the resulting ACLs from the ACL Control Rule as proposed in **Preferred Alternative 3** would be the same as in **Alternative 2** for all managed species for which harvest is allowed, except for those units in **Preferred Sub-alternatives 3b, 3c, and 3e**. Under the ‘subject to overfishing’ status, the ACLs for surgeonfish, angelfish, and aquarium trade species FMUs (**Preferred Sub-alternatives 3b, 3c, and 3e**, respectively) would remain as status quo (**Alternative 1**).

Table 2.2.1.1.8. Current ACLs (**Alternative 1**) and new ACLs for 2011 FMUs per island/island region and sector under proposed **Alternative 2** and **Preferred Alternative 3** (including **Sub-alternatives 3b, 3c, and 3e**) if stocks are determined to be ‘subject to overfishing’. Current ACLs are based on a 10% reduction (0.90 buffer) to the ABC, except for angelfish, surgeonfish, and aquarium trade species, which had a 25% (0.75 buffer) reduction applied to the ABC. New ACLs for all except the units included in **Sub-alternatives 3b, 3c, and 3e**, would be based on a 15% reduction (0.85 buffer) to the ABC. All values are in pounds of whole weight. Table A shows values for Puerto Rico, Table B shows values for the USVI, and Table C shows values for Caribbean-wide FMUs.

A. Puerto Rico

Puerto Rico	Alternative 1		Alternative 2				Preferred Alternative 3			
	Current ACLs (Alt. 1)		ACLs if Subject to Overfishing under Alt. 2 (0.85 reduction)		Difference between Alt. 1 (status quo) and Alt. 2		ACLs if Subject to Overfishing under Alt. 3 (0.85 reduction), and Sub-alt. 3a-3e		Difference between Alt. 1 (status quo) and Alt. 3	
	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
Boxfish	86,115	4,616	81,331	4,360	-4,784	-256	81,331	4,360	-4,784	-256
Goatfish	17,565	362	16,589	342	-976	-20	16,589	342	-976	-20

Grunts	182,396	5,028	172,263	4,749	-10,133	-279	172,263	4,749	-10,133	-279
Wrasses	54,147	5,050	51,139	4,769	-3,008	-281	51,139	4,769	-3,008	-281
Jacks	86,059	51,001	81,278	48,168	-4,781	-2,833	81,278	48,168	-4,781	-2,833
Scups & Porgies	24,739	2,577	23,365	2,434	-1,374	-143	23,365	2,434	-1,374	-143
Squirrelfish	16,663	3,891	15,737	3,675	-926	-216	15,737	3,675	-926	-216
Triggerfish & Filefish	58,475	21,929	55,226	20,710	-3,249	-1,219	55,226	20,710	-3,249	-1,219
Spiny Lobster ¹	327,920		309,702		-18,218		309,702		-18,218	
Angelfish	8,984	4,492	10,181	5,091	1,197	599	Sub-alt. 3c			
							8,984	4,492	No change	
Surgeonfish	7,179	3,590	8,136	4,068	957	478	Sub-alt. 3b			
							7,179	3,590	No change	

¹ Commercial and recreational ACL is a single value for Spiny lobster in Puerto Rico

B. St. Croix and St. Thomas/St. John, USVI

St. Croix	Alternative 1	Alternative 2		Preferred Alternative 3	
	Current ACLs (Alt. 1)	ACLs if Subject to Overfishing under Alt. 2 (0.85 reduction)	Difference between Alt. 1 (status quo) and Alt. 2	ACLs if Subject to Overfishing under Alt. 3 (0.85 reduction), and Sub-alt. 3a-3e	Difference between Alt. 1 (status quo) and Alt. 3
Boxfish	8,433	7,965	-468	7,965	-468
Goatfish	3,766	3,556	-210	3,556	-210
Grunts	36,881	34,832	-2,049	34,832	-2,049
Wrasses	7	7	0	7	0
Jacks	15,489	14,629	-860	14,629	-860
Scups & Porgies	4,638	4,380	-258	4,380	-258
Squirrelfish	121	114	-7	114	-7
Triggerfish & Filefish	24,980	23,592	-1,388	23,592	-1,388
Spiny Lobster	107,307	101,346	-5,961	101,346	-5,961
Angelfish	305	345	40	Sub-alt. 3c	
				305	No change
Surgeonfish	33,603	38,083	4,480	Sub-alt. 3b	
				33,603	No change
St. Thomas/St. John					
Boxfish	27,880	26,331	-1,549	26,331	-1,549
Goatfish	320	303	-17	303	-17
Grunts	37,617	35,527	-2,090	35,527	-2,090
Wrasses	585	553	-32	553	-32
Jacks	52,907	49,967	-2,940	49,967	-2,940
Scups & Porgies	21,819	20,607	-1,212	20,607	-1,212
Squirrelfish	4,241	4,005	-236	4,005	-236
Triggerfish & Filefish	74,447	70,311	-4,136	70,311	-4,136
Spiny Lobster	104,199	98,410	-5,789	98,410	-5,789

Angelfish	7,897	8,950	1,053	Sub-alt. 3c	
				7,897	No change
Surgeonfish	29,249	33,149	3,900	Sub-alt. 3b	
				29,249	No change

C. Caribbean-wide

Caribbean Wide	Current ACLs (Alt. 1)	ACLs if Subject to Overfishing under Alt. 2 (0.85 reduction)	Difference between Alt. 1 (status quo) and Alt. 2	ACLs if Subject to Overfishing under Alt. 3 (0.85 reduction), and Sub-alt. 3a-3e	Difference between Alt. 1 (status quo) and Alt. 3
Tilefish	14,642	13,829	- 813	13,829	- 813
Aquarium Trade Sps.	8,155	9,242	1,087	Sub-alt. 3e	
				8,155	No change

‘Not Subject to Overfishing’ and ‘Unknown’ Status

2010 Fishery Management Units

Alternative 2

A ‘not subject to overfishing’ or ‘unknown’ status scenario under **Alternative 2** would change the current ACL for all 2010 FMUs. **Alternative 2** would increase the allowed harvest for parrotfish, snapper, and grouper in Puerto Rico (commercial and recreational), St. Croix, and St. Thomas/St. John because the current ACL (**Alternative 1**) for these units was derived from a 15% buffer reduction applied to the OFL or the ABC (if specified). A ‘not subject to overfishing’ or ‘unknown’ status would change that 15% reduction to a 10% reduction. A ‘not subject to overfishing’ status under **Alternative 2**, would reduce the ACL of queen conch in St. Croix by 5,000 pounds because the current ACL (**Alternative 1**) (established in the 2010 Caribbean ACL Amendment) was established based on no reduction being applied to the ABC set by the Council’s SSC (Table 2.2.1.1.9). **Alternative 2** would keep the ACL for queen conch in both Puerto Rico and in St. Thomas/St. John at its status quo which is zero because fishing for queen conch is prohibited in federal waters off those two island areas.

Preferred Alternative 3 and Preferred Sub-alternatives 3a and 3d

The resulting ACLs from the ACL Control Rule as proposed in **Preferred Alternative 3** would be the same as in **Alternative 2** for all 2010 FMUs for which harvest is allowed, except for parrotfish and queen conch (**Preferred Sub-alternatives 3a and d**, respectively). Under a ‘not subject to overfishing’ or an ‘unknown’ status, the ACLs for parrotfish and queen conch (**Preferred Sub-alternatives 3a and 3d**) would remain as status quo (**Alternative 1**) (Table 2.2.1.1.9).

Table 2.2.1.1.9. Current ACLs (**Alternative 1**) and new ACLs for 2010 FMUs per island region and sector under **Alternative 2** and **Preferred Alternative 3** (including **Sub-alternatives 3a** and **3d**) if stocks are determined not to be subject to overfishing. Current ACLs are based on 15% reduction (0.85 buffer) to the OFL or ABC (parrotfish). Queen conch had no reduction applied. New ACLs for most units would be based on a 10% reduction (0.90 buffer) to the OFL or ABC (if specified), except for units in **Sub-alternatives 3a** and **3d**. All values are in pounds of whole weight. Table A shows values for Puerto Rico, Table B shows values for St. Croix, and Table C shows values for St. Thomas/St. John.

Table A.

Puerto Rico	Alternative 1		Alternative 2				Preferred Alternative 3			
	Current ACLs (Alt. 1)		ACLs if Not Subject to Overfishing under Alt. 2 (0.90 reduction)		Difference between Alt. 1 (status quo) and Alt. 2		ACLs if Not Subject to Overfishing under Alt. 3 (0.90 reduction), and Sub-alt. 3a-3e		Difference between Alt. 1 (status quo) and Alt. 3	
	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
Snapper Unit 1	284,685	95,526	301,431	101,146	16,746	5,620	301,431	101,146	16,746	5,620
Snapper Unit 2	145,916	34,810	154,499	36,858	8,583	2,048	154,499	36,858	8,583	2,048
Snapper Unit 3	345,775	83,158	366,115	88,050	20,340	4,892	366,115	88,050	20,340	4,892
Snapper Unit 4	373,295	28,509	395,254	30,186	21,959	1,677	395,254	30,186	21,959	1,677
Groupers	177,513	77,213	187,955	81,755	10,442	4,542	187,955	81,755	10,442	4,542
Parrotfish ¹	52,737	15,263	55,836	16,164	3,099	901	Sub-alt. 3a:			
							52,737	15,263	No change	
Queen Conch	0	0	0	0	0	0	Sub-alt 3d:			
							0	0	No change	

Table B.

St. Croix	Alternative 1		Alternative 2		Preferred Alternative 3	
	Current ACLs (Alt. 1)		ACLs if Not Subject to Overfishing under Alt. 2 (0.90 reduction)		ACLs if Not Subject to Overfishing under Alt. 3 (0.90 reduction), and Sub-alt. 3a-3e	
			Difference between Alt. 1 (status quo) and Alt. 2		Difference between Alt. 1 (status quo) and Alt. 3	
Snapper	102,946	109,002	6,056	109,002	6,056	
Groupers	30,435	32,225	1,790	32,225	1,790	
Parrotfish ^{1,2}	240,000	254,118	14,118	Sub-Alt. 3a		
				240,000	No change	
Queen conch ¹	50,000	45,000	- 5,000	Sub-Alt 3d		
				50,000	No change	

Table C.

St. Thomas/ St. John	Alternative 1	Alternative 2		Preferred Alternative 3	
	Current ACLs (Alt. 1)	ACLs if Not Subject to Overfishing under Alt. 2 (0.90 reduction)	Difference between Alt. 1 (status quo) and Alt. 2	ACLs if Not Subject to Overfishing under Alt. 3 (0.90 reduction), and Sub-alts. 3a-3e	Difference between Alt. 1 (status quo) and Alt. 3
Snapper	133,775	141,644	7,869	141,644	7,869
Grouper	51,849	54,899	3,050	54,899	3,050
Parrotfish ¹	42,500	45,000	2,500	Sub-alt. 3a	
				42,500	No change
Queen Conch	0	0	0	Sub-alt. 3d	
				0	No change

¹ Buffer reductions, if any, were made from ABC.

² The St. Croix Parrotfish ACL is further reduced by 5.8822% as specified in the 2010 Caribbean ACL Amendment.

2011 Fishery Management Units

Alternative 2

For 2011 FMUs, a ‘not subject to overfishing’ or ‘unknown’ scenario under **Alternative 2** would not change the current ACLs for most of these units, except for surgeonfish, angelfish, and aquarium trade species, because the ACLs for most 2011 FMUs were already derived from a 10% buffer reduction to the ABC in the 2011 Caribbean ACL Amendment (Table 2.2.1.1.10).

For the angelfish and the surgeonfish FMUs for each island/island region and sector, as well as for the aquarium trade species FMU at the Caribbean-wide level, **Alternative 2** would translate into an increase in the allowed harvest under either the ‘not subject to overfishing’ or ‘unknown’ status scenarios.

Preferred Alternative 3 and Preferred Sub-alternatives 3b, 3c, and 3e

The resulting ACLs from the ACL Control Rule as proposed in **Preferred Alternative 3** would be the same as in **Alternative 2** for all 2011 FMUs, except for the surgeonfish, angelfish, and aquarium trade species FMUs (**Preferred Sub-alternatives 3b, 3c, and 3e**, respectively). Under either the ‘not subject to overfishing’ or ‘unknown’ status scenarios, the ACLs for surgeonfish, angelfish, and aquarium trade species will remain as status quo (**Alternative 1**) (Table 2.2.1.1.10).

Table 2.2.1.1.10. Current ACLs (**Alternative 1**) and new ACLs for 2011 FMUs per island region and sector under **Alternative 2** and **Preferred Alternative 3** (including **Sub-alternatives 3b, 3c, and 3e**) if stocks are determined to be ‘not subject to overfishing’ or status ‘unknown’. Current ACLs are based on a 10% reduction (0.90 buffer) to the ABC, except for angelfish, surgeonfish, and aquarium trade species units, which had a 25% (0.75 buffer) reduction applied to the ABC. New ACLs would be based on a 10% reduction (0.90 buffer) to the ABC for all except **Preferred Sub-alternatives 3b, 3c, and 3e**. All values are in pounds of whole weight. Table A shows Puerto Rico values, Table B shows USVI values, and Table C shows Caribbean-wide values.

Table A.

Puerto Rico	Alternative 1		Alternative 2				Preferred Alternative 3			
	Current ACLs (Alt. 1)		ACLs if Not Subject to Overfishing under Alt. 2 (0.90 reduction)		Difference between Alt. 1 (status quo) and Alt. 2		ACLs if Not Subject to Overfishing under Alt. 3 (0.90 reduction), and Sub-alt. 3a-3e		Difference between Alt. 1 (status quo) and Alt. 3	
	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
Boxfish	86,115	4,616	86,115	4,616	No change		86,115	4,616	No change	
Goatfish	17,565	362	17,565	362	No change		17,565	362	No change	
Grunts	182,396	5,028	182,396	5,028	No change		182,396	5,028	No change	
Wrasses	54,147	5,050	54,147	5,050	No change		54,147	5,050	No change	
Jacks	86,059	51,001	86,059	51,001	No change		86,059	51,001	No change	
Scups & Porgies	24,739	2,577	24,739	2,577	No change		24,739	2,577	No change	
Squirrelfish	16,663	3,891	16,663	3,891	No change		16,663	3,891	No change	
Triggerfish & Filefish	58,475	21,929	58,475	21,929	No change		58,475	21,929	No change	
Spiny Lobster ¹	327,920		327,920		No change		327,920		No change	
Angelfish	8,984	4,492	10,780	5,390	1,796	898	Sub-alt 3c:			
							8,984	4,492	No change	
Surgeonfish	7,179	3,590	8,615	4,307	1,436	717	Sub-alt 3b:			
							7,179	3,590	No change	

¹ Commercial and recreational ACL is a single value for Spiny lobster in Puerto Rico

Table B.

St. Croix	Alternative 1	Alternative 2		Preferred Alternative 3	
	Current ACLs (Alt. 1)	ACLs if Not Subject to Overfishing under Alt. 2 (0.90 reduction)	Difference between Alt. 1 (status quo) and Alt. 2	ACLs if Not Subject to Overfishing under Alt. 3 (0.90 reduction), and Sub-alt. 3a-3e	Difference between Alt. 1 (status quo) and Alt. 3
Boxfish	8,433	8,433	No change	8,433	No change
Goatfish	3,766	3,766	No change	3,766	No change
Grunts	36,881	36,881	No change	36,881	No change
Wrasses	7	7	No change	7	No change
Jacks	15,489	15,489	No change	15,489	No change
Scups & Porgies	4,638	4,638	No change	4,638	No change
Squirrelfish	121	121	No change	121	No change
Triggerfish & Filefish	24,980	24,980	No change	24,980	No change
Spiny Lobster	107,307	107,307	No change	107,307	No change
Angelfish	305	365	60	Sub-alt 3c:	
				305	No change
Surgeonfish	33,603	40,324	6,721	Sub-alt 3b:	
				33,603	No change
St. Thomas/St. John					
Boxfish	27,880	27,880	No change	27,880	No change
Goatfish	320	320	No change	320	No change
Grunts	37,617	37,617	No change	37,617	No change
Wrasses	585	585	No change	585	No change
Jacks	52,907	52,907	No change	52,907	No change
Scups & Porgies	21,819	21,819	No change	21,819	No change
Squirrelfish	4,241	4,241	No change	4,241	No change
Triggerfish & Filefish	74,447	74,447	No change	74,447	No change
Spiny Lobster	104,199	104,199	No change	104,199	No change
Angelfish	7,897	9,476	1,579	Sub-alt 3c:	
				7,897	No change
Surgeonfish	29,249	35,099	5,850	Sub-alt 3b:	
				29,249	No change

Table C.

Caribbean Wide	Alternative 1	Alternative 2		Preferred Alternative 3	
	Current ACLs (Alt. 1)	ACLs if Not Subject to Overfishing under Alt. 2 (0.90 reduction)	Difference between Alt. 1 (status quo) and Alt. 2	ACLs if Not Subject to Overfishing under Alt. 3 (0.90 reduction), and Sub-alts. 3a-3e	Difference between Alt. 1 (status quo) and Alt. 3
Tilefish	14,642	14,642	No change	14,642	No change
Aquarium Trade Sps.	8,155	9,786	1,631	Sub-alt. 3e:	
				8,155	No change

C. Comparison between Recent Landings and the ACLs in Alternatives 1, 2 and Preferred Alternative 2, including Preferred Sub-alternatives 3a through 3e.

Alternative 1

The impact of **Alternative 1** was analyzed by comparing recent annual landings to the ACLs. Annual Caribbean landings have potential to change due to late reporting. Therefore, an annual landings summary can change because of the time the landings were extracted. To be consistent with past regulations, we used the same landings datasets previously used to determine the 2013 and 2014 AM-based closures in the U.S. Caribbean exclusive economic zone. There are two different landings datasets, one used for the 2013 AM-based closures, and one used for the 2014 AM-based closures. The landings extraction provided by the SEFSC in January 2013 was used to determine the 2013 AM-based closures (SERO-LAPP-2013-01). The landings extraction provided by the SEFSC on October 2013 was used to determine the 2014 AM-based closures (SERO-LAPP-2013-09) with the addition of a landings extraction provided by the SEFSC in April 2014 to obtain Puerto Rico 2012 commercial landings, which were not available in the October 2013 dataset.

As discussed in Section 1.6, Caribbean ACLs are monitored using a three-year running average to determine ACL overages for a particular year. However, 2010 FMUs are governed by the three-year running average beginning in 2010, and 2011 FMUs are governed by the three-year running average beginning in 2011. Note that, because only one or two years of data were available for developing landings estimates in the first two years of this process, less than three years of data were used to conduct ACL comparisons for identifying potential 2013 fishing season closures (2010 and 2011 FMUs) and 2014 fishing season closures (2011 FMUs only). Thus, the ACLs stated in **Alternative 1** (current ACLs, Table 2.2.1.1.7) for 2010 FMUs were compared against an average of 2010-2011 annual landings generated from the January 2013 dataset, and against an average of 2010-2012 annual landings generated from the October 2013 dataset (as stated previously, the Puerto Rico commercial landings for 2012 were generated from

an April 2014 dataset, as these were not previously available) (Table 2.2.1.1.11). The ACLs stated in **Alternative 1** for the 2011 FMUs (current ACLs, Table 2.2.1.1.8) were compared against 2011 annual landings generated from the January 2013 dataset, and against an average of 2011-2012 annual landings generated from the October 2013 dataset (as stated previously, Puerto Rico commercial landings for 2012 were generated from an April 2014 dataset, as they were not previously available) (Table 2.2.1.1.12). Landings for queen conch in Puerto Rico and St. Thomas/St. John were not included in this analysis because federal harvest of queen conch continues to be prohibited in these island/island regions.

Table 2.2.1.1.11. Stocks addressed in the 2010 Caribbean ACL Amendment (2010 FMUs) that exceeded their ACL under **Alternative 1** and the number of pounds by which the ACL was exceeded. The ACLs were compared against an average of 2010-2011 annual landings generated from the January 2013 dataset for application to the 2013 management year, and an average of 2010-2012 annual landings generated from the October 2013 dataset (and from the April 2014 dataset only for Puerto Rico 2012 commercial landings) for application to the 2014 management year. Values are in pounds of whole weight.

Island/Island Region	Sector	FMU	Year(s) Landings Exceeded ACL	Pounds Over
Puerto Rico	Commercial	Snapper Unit 2	2010-2011 Average	132,063
Puerto Rico	Commercial	Snapper Unit 2	2011-2012 Average	102,914
St. Croix	Commercial	Queen Conch	2010-2011 Average	17,530
St. Croix	Commercial	Queen Conch	2010-2012 Average	7,299
St. Thomas/St. John	Commercial	Grouper	2010-2011 Average	4,984

Table 2.2.1.1.12. Stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs) that exceeded their ACL under **Alternative 1** and the number of pounds by which the ACL was exceeded. The ACLs were compared against 2011 annual landings generated from the January 2013 dataset for application to the 2013 management year, and an average of 2011-2012 annual landings generated from the October 2013 dataset (and from the April 2014 dataset only for Puerto Rico 2012 commercial landings) for application to the 2014 management year. Values are in pounds of whole weight.

Region	Sector	FMU	Year(s) Landings Exceeded ACL	Pounds Over
Puerto Rico	Recreational	Wrasses	2011	489
Puerto Rico	Commercial	Wrasses ¹	2011-2012 Average	7,488
St. Croix	Commercial	Angelfish ²	2011	8,196
St. Croix	Commercial	Angelfish ²	2011-2012 Average	11,077

St. Croix	Commercial	Squirrelfish ²	2011-2012 Average	3,180
St. Croix	Commercial	Wrasses ²	2011-2012 Average	30
St. Croix	Commercial	Spiny Lobster	2011	2,401
St. Croix	Commercial	Squirrelfish ²	2011	2,647
St. Croix	Commercial	Triggerfish & Filefish	2011	1,473
St. Croix	Commercial	Wrasses ²	2011	42
St. Thomas/St. John	Commercial	Angelfish ²	2011	10,436
St. Thomas/St. John	Commercial	Angelfish ²	2011-2012 Average	9,295
St. Thomas/St. John	Commercial	Squirrelfish ²	2011	2,257
St. Thomas/St. John	Commercial	Squirrelfish ²	2011-2012 Average	3,917
St. Thomas/St. John	Commercial	Wrasses ²	2011	1,374
St. Thomas/St. John	Commercial	Wrasses ²	2011-2012 Average	1,306

¹ The ACL overage for Puerto Rico commercial wrasses in 2012 was attributed to increased reporting resulting from modifications to the reporting requirements from the PRDNER in order for commercial fishermen to keep the fishing license active.

² The ACL overage for U. S. Virgin Islands angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms that started in 2011.

Based on the information presented in Tables 2.2.1.1.11 and 2.2.1.1.12, the 2010 FMUs of Snapper Unit 2 (SU2) (commercial) in Puerto Rico, queen conch in St. Croix, and Grouper in St. Thomas/St. John exceeded their current (**Alternative 1**) ACLs when compared to the 2010-2011 average. Accountability measures were applied for those units during 2013, except for queen conch for which a separate state-federal quota closure is applied when the ACL is reached. Puerto Rico commercial SU2 also exceeded the ACL when compared to the 2010-2012 average of landings, triggering an AM-based fishing season reduction for this group. NMFS' Southeast Regional Office uses the fishing rate derived from the most recent year of data to determine the length of the required season reduction for units that have been identified as having exceeded their ACL. Based on the fishing rate for the most recent year of data for Puerto Rico commercial SU2 (in this case the 2012 fishing rate), there will be no shortening of the 2014 harvest season for this unit in Puerto Rico. When ACLs were compared to the 2010-2012 average of landings, queen conch also exceeded the ACL, but as noted above these AMs do not apply to queen conch.

For 2011 FMUs, Puerto Rico wrasses (recreational only), St. Croix angelfish, spiny lobster, squirrelfish, triggerfish and filefish, and wrasses, and St. Thomas/St. John angelfish, squirrelfish, and wrasses exceeded their corresponding ACL when compared against landings for those units for the year 2011 (Table 2.2.1.1.12). St. Croix and St. Thomas/St. John increased landings of angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms initiated in 2011. Therefore no AMs were applied to these groups. Accountability measures were implemented for the rest of these groups in 2013 (i.e., Puerto Rico recreational wrasses, St. Croix triggerfish and filefish, St. Croix spiny lobster, and St. Thomas/St. John groupers).

When ACLs were compared to the 2011-2012 average of landings, the angelfish, squirrelfish, and wrasses FMUs in St. Croix and in St. Thomas/St. John exceeded their corresponding ACL under **Alternative 1** (current ACL). However, as determined for the year 2011 (Table 2.2.1.1.12), St. Croix and St. Thomas/St. John high landings of angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms initiated in 2011. Therefore no AMs would be applied to these groups in 2014. When ACLs were compared to the 2011-2012 average of landings, the Puerto Rico commercial wrasses FMU exceeded its corresponding ACL under **Alternative 1**. However, Puerto Rico increased landings of wrasses in 2012 were attributed to increased reporting resulting from modifications to the reporting requirements from the Puerto Rico Department of Natural and Environmental Resources in order for commercial fishermen to keep the fishing license active, therefore, no AMs would be applied to this group in 2014.

Alternative 2

Landings were compared to the ACLs using the same method as in **Alternative 1** above. However, the analysis for **Alternative 2** provides ACLs for two alternative scenarios. Scenario 1 uses the ACLs resulting from applying the 15% buffer reduction to the OFL or ABC if the FMUs were determined to be ‘subject to overfishing’ (ACLs are provided in Tables 2.2.1.7 and 2.2.1.8). Scenario 2 uses the ACLs resulting from applying the 10% buffer reduction to the OFL or ABC if the stock status was determined to be ‘not subject to overfishing’ or ‘unknown’ (Tables 2.2.1.9 and 2.2.1.10).

If the FMU is determined to be ‘subject to overfishing’ under Alternative 2

Table 2.2.1.1.13 provides the results for stocks addressed in the 2010 Caribbean ACL Amendment (2010 FMUs) and Table 2.2.1.1.14 provides the results for stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs).

Table 2.2.1.1.13. Stocks addressed in the 2010 Caribbean ACL Amendment (2010 FMUs) that exceeded their ACL in **Alternative 2** under a ‘subject to overfishing’ status scenario, and the number of pounds by which the ACL was exceeded. The ACLs were compared against an average of 2010-2011 annual landings generated from the January 2013 dataset for application to the 2013 management year, and an average of 2010-2012 annual landings generated from the October 2013 dataset (and from the April 2014 dataset only for Puerto Rico 2012 commercial landings) for application to the 2014 management year. Values are in pounds of whole weight.

Region	Sector	FMU	Year(s) Landings Exceeded ACL	Pounds Over
Puerto Rico	Commercial	Snapper Unit 2	2010-2011 Average	132,063
Puerto Rico	Commercial	Snapper Unit 2	2010-2012 Average	102,914

Region	Sector	FMU	Year(s) Landings Exceeded ACL	Pounds Over
St. Croix	Commercial	Queen Conch	2010-2011 Average	25,030
St. Croix	Commercial	Queen Conch	2010-2012 Average	14,799
St. Thomas/St. John	Commercial	Grouper	2010-2011 Average	4,984

Table 2.2.1.1.14. Stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs) that exceeded their ACLs in **Alternative 2** under a ‘subject to overfishing’ status scenario, and the number of pounds by which the ACL was exceeded. The ACLs were compared against 2011 annual landings generated from the January 2013 dataset for application to the 2013 management year, and an average of 2011-2012 annual landings generated from the October 2013 dataset (and from the April 2014 dataset only for Puerto Rico 2012 commercial landings) for application to the 2014 management year. Values are in pounds of whole weight.

Island/ Island Region	Sector	FMU	Year(s) Landings Exceeded ACL	Pounds Over
Puerto Rico	Commercial	Wrasses	2011	2,484
Puerto Rico	Commercial	Wrasses	2011-2012 Average	10,496
Puerto Rico	Recreational	Wrasses	2011	770
Puerto Rico	Commercial	Scups & Porgies	2011-2012 Average	993
St. Croix	Commercial	Angelfish ¹	2011	8,156
St. Croix	Commercial	Angelfish	2011-2012 Average	11,036
St. Croix	Commercial	Spiny Lobster	2011	8,363
St. Croix	Commercial	Squirrelfish ¹	2011	2,654
St. Croix	Commercial	Squirrelfish	2011-2012 Average	3,187
St. Croix	Commercial	Triggerfish & Filefish	2011	2,861
St. Croix	Commercial	Triggerfish & Filefish	2011-2012 Average	962
St. Croix	Commercial	Wrasses ¹	2011	42
St. Croix	Commercial	Wrasses	2011-2012 Average	30
St. Thomas/St. John	Commercial	Angelfish ¹	2011	9,383
St. Thomas/St. John	Commercial	Angelfish	2011-2012 Average	8,242
St. Thomas/St. John	Commercial	Squirrelfish ¹	2011	2,493
St. Thomas/St. John	Commercial	Squirrelfish	2011-2012 Average	4,152
St. Thomas/St. John	Commercial	Wrasses ¹	2011	1,407
St. Thomas/St. John	Commercial	Wrasses	2011-2012 Average	1,339

¹ St. Croix and St. Thomas/St. John increased landings of angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms that started in 2011.

Based on the information presented in Tables 2.2.1.1.13 and 2.2.1.1.14, when compared to the 2010-2011 average of landings, the same 2010 FMUs that exceeded the ACL for these years under **Alternative 1** would have also exceeded the ACL under a ‘subject to overfishing’ scenario in **Alternative 2** (i.e., Snapper Unit 2 [SU2] in Puerto Rico, queen conch in St. Croix, and Grouper in St. Thomas/St. John). Under this scenario, AMs would need to be applied to those units, except for queen conch as discussed above. This result is expected because these units were previously determined to be ‘subject to overfishing’ (2010 Caribbean ACL Amendment) and the buffer applied to derive the current ACL for SU2 and grouper for all islands and sectors is the same as what would be applied under a ‘subject to overfishing’ scenario in **Alternative 2**. For the queen conch, although no buffer reduction was applied to derive the ACL under **Alternative 1**, the ACL was still exceeded and thus applying a buffer reduction to derive the new ACL in **Alternative 2** would cause the ACL to be exceeded as well. Queen conch in St. Croix also exceeded the ACL when compared against 2010-2012 landings, but AMs do not apply for this species. As expected, Puerto Rico commercial SU2 would have also exceeded the ACL under **Alternative 2**, thus AMs would need to be applied to this unit under this ‘subject to overfishing’ scenario.

For 2011 FMUs, when the resulting ACLs under a ‘subject to overfishing’ scenario in **Alternative 2** are compared against 2011 landings, the same units that exceeded the ACL under **Alternative 1** (i.e., Puerto Rico wrasses [recreational], St. Croix angelfish, spiny lobster, squirrelfish, triggerfish and filefish, and wrasses, and St. Thomas/St. John angelfish, squirrelfish, and wrasses), in addition to the wrasses FMU in the Puerto Rico commercial sector, would have exceeded their corresponding ACL. For most of these units, the number of pounds exceeded based on the **Alternative 2** scenario would be slightly higher than what was exceeded based on **Alternative 1** because of the difference in the buffer reductions applied to the OFL or the ABC (15% vs 10%, respectively). The difference in the pounds exceeded for the angelfish FMU is actually less than in **Alternative 1** because the buffer reduction that would be applied under **Alternative 2** (15%) is less than the one applied in **Alternative 1** (25%). Similar to **Alternative 1**, St. Croix and St. Thomas/St. John ACL overages for angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms that started in 2011. Therefore no AMs would need to be applied to these groups. In theory, AMs would have to be applied for the rest of these groups unless ACL overages were also determined to be due to enhanced reporting.

When ACLs were compared to the 2011-2012 average of landings, the same units that exceeded the ACL under **Alternative 1** would have also exceeded the ACL in **Alternative 2** under a ‘subject to overfishing’ status scenario (i.e., angelfish, squirrelfish, and wrasses FMUs in St. Croix and in St. Thomas/St. John, commercial wrasses FMU in Puerto Rico), but with the addition of the triggerfish and filefish FMU in St. Croix and the commercial scups and porgies FMU in Puerto Rico. As discussed above in the comparison with 2011 landings, the number of pounds by which the ACL was exceeded under the **Alternative 2** scenario would be slightly

higher for most of these units than the ACL overage identified under **Alternative 1**. Again, the difference in the pounds exceeded for the angelfish FMU under the **Alternative 2** scenario would be slightly less than in **Alternative 1**. St. Croix and St. Thomas/St. John ACL overages for angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms initiated in 2011, thus no AMs would need to be applied to these groups in 2014. For the Puerto Rico commercial wrasses, ACL overages in 2012 were attributed to increased reporting resulting from modifications to the reporting requirements, thus no AMs would need to be applied for this unit in 2014. For the triggerfish and filefish FMU in St. Croix and for the commercial scups and porgies FMU in Puerto Rico, the new ACL that would result from **Alternative 2** under a ‘subject to overfishing’ scenario would have been exceeded and AMs would need to be applied for these units in 2014 unless landings were determined to be due to enhanced reporting.

If the FMU is determined ‘not to be subject to overfishing’ or ‘unknown’ under Alternative 2

Table 2.2.1.1.15 provides the results for 2010 FMUs and Table 2.2.1.1.16 provides the results for 2011 FMUs.

Table 2.2.1.1.15. Stocks addressed in the 2010 Caribbean ACL Amendment (2010 FMUs) that exceeded their ACLs in **Alternative 2** under a ‘not subject to overfishing’ or ‘unknown’ status scenario, and the number of pounds by which the ACL was exceeded. The ACLs were compared against an average of 2010-2011 annual landings generated from the January 2013 dataset for application to the 2013 management year, and an average of 2010-2012 generated from the October 2013 dataset (and from the April 2014 dataset only for Puerto Rico 2012 commercial landings) for application to the 2014 management year. Values are in pounds of whole weight.

Island/ Island Region	Sector	FMU	Year(s) Landings Exceeded ACL	Pounds Over
Puerto Rico	Commercial	Snapper Unit 2	2010-2011 Average	123,480
Puerto Rico	Commercial	Snapper Unit 2	2010-2012 Average	94,331
St. Croix	Commercial	Queen Conch	2010-2011 Average	22,530
St. Croix	Commercial	Queen Conch	2010-2012 Average	12,299
St. Thomas/St. John	Commercial	Grouper	2010-2011 Average	1,934

Table 2.2.1.1.16. Stocks addressed in the 2011 Caribbean ACL Amendment (2011 FMUs) that exceeded their ACLs in **Alternative 2** under a ‘not subject to overfishing’ or ‘unknown’ status scenario, and the number of pounds by which the ACL was exceeded. The ACLs were compared against 2011 annual landings generated from the January 2013 dataset for application to the 2013 management year, and an average of 2011-2012 annual landings generated from the October 2013 dataset (and from the April 2014 dataset only for Puerto Rico 2012 commercial landings) for application to the 2014 management year. Values are in pounds of whole weight.

Island/Island Region	Sector	FMU	Year(s) Landings Exceeded ACL	Pounds Over
Puerto Rico	Recreational	Wrasses	2011	489
Puerto Rico	Commercial	Wrasses ¹	2011-2012 Average	7,488
St. Croix	Commercial	Angelfish ²	2011	8,136
St. Croix	Commercial	Angelfish ²	2011-2012 Average	11,016
St. Croix	Commercial	Spiny Lobster	2011	2,401
St. Croix	Commercial	Squirrelfish ²	2011	2,647
St. Croix	Commercial	Squirrelfish ²	2011-2012 Average	3,180
St. Croix	Commercial	Triggerfish & Filefish	2011	1,474
St. Croix	Commercial	Wrasses ²	2011	42
St. Croix	Commercial	Wrasses ²	2011-2012 Average	30
St. Thomas/St. John	Commercial	Angelfish ²	2011	8,857
St. Thomas/St. John	Commercial	Angelfish ²	2011-2012 Average	7,716
St. Thomas/St. John	Commercial	Squirrelfish ²	2011	2,257
St. Thomas/St. John	Commercial	Squirrelfish ²	2011-2012 Average	3,917
St. Thomas/St. John	Commercial	Wrasses ²	2011	1,374
St. Thomas/St. John	Commercial	Wrasses ²	2011-2012 Average	1,306

¹ Puerto Rico increased landings of commercial wrasses in 2012 were attributed to increased reporting resulting from modifications to the reporting requirements from the PRDNER in order for commercial fishermen to keep the fishing license active.

² U. S. Virgin Islands increased landings of angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms that started in 2011.

When the new ACLs for 2010 FMUs resulting from **Alternative 2** under a ‘not subject to overfishing’ or ‘unknown’ scenario are compared to an average of 2010-2011 annual landings, the same units that exceeded the ACL under a ‘subject to overfishing’ scenario in **Alternative 2** and **Alternative 1** would have also exceeded the ACL for those years (i.e., SU2 in Puerto Rico, queen conch in St. Croix, and grouper in St. Thomas/St. John). For commercial SU2 in Puerto Rico and grouper in St. Thomas/St. John, the number of pounds exceeded in **Alternative 2** under a ‘not subject to overfishing’ status would be slightly less than what was exceeded under **Alternative 2** under a ‘subject to overfishing’ scenario and under **Alternative 1**. For the queen conch, although no buffer reduction was applied to derive the ACL under **Alternative 1**, the

ACL was still exceeded and thus applying a buffer reduction to derive the new ACL in **Alternative 2** would cause the ACL to be exceeded as well. Therefore, under this scenario, AMs would have to be applied for commercial SU2 in Puerto Rico and grouper in St. Thomas/St. John, although not for queen conch as explained above.

Fishery management units that exceeded the ACL when compared against 2010-2012 landings were the queen conch FMU in St. Croix and commercial SU2 in Puerto Rico. For commercial SU2 in Puerto Rico the number of pounds exceeded in **Alternative 2** under a ‘not subject to overfishing’ status would be slightly less than what was exceeded under **Alternative 2** under a ‘subject to overfishing’ scenario and under **Alternative 1**. Accountability measures would also need to be applied to this unit under this potential ‘not subject to overfishing’ scenario.

When the new ACLs for 2011 FMUs resulting from **Alternative 2** under a ‘not subject to overfishing’ or status ‘unknown’ scenario are compared to 2011 landings, the same units that exceeded the ACL in **Alternative 1** would have also exceeded their corresponding ACL (i.e., Puerto Rico wrasses [recreational], St. Croix angelfish, spiny lobster, squirrelfish, triggerfish and filefish, and wrasses, and St. Thomas/St. John angelfish, squirrelfish, and wrasses). For most of these units, the number of pounds exceeded under this scenario in **Alternative 2** would be similar to the pounds exceeded in **Alternative 1**. This is because these units were previously determined to not be subject to overfishing and the buffer reduction applied to derive the current ACL (**Alternative 1**) for all the units (islands and sectors) shown in Table 2.2.1.1.16, except for angelfish, is the same that would be applied in **Alternative 2** under this scenario (i.e. 10%). The number of pounds exceeded for the angelfish FMU is slightly less than the pounds exceeded in **Alternative 2** under a ‘subject to overfishing’ scenario and in **Alternative 1** because the buffer reduction that would be applied under a ‘not subject to overfishing’ status in **Alternative 2** (10%) is less conservative than the one applied in **Alternative 2** under the ‘subject to overfishing’ status (15%) and under **Alternative 1** (25%). Similar to **Alternative 1** and **Alternative 2** under a ‘subject to overfishing’ status, St. Croix and St. Thomas/St. John increased landings of angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms that started in 2011. Therefore, no AMs would need to be applied to these groups. In theory, AMs would have to be applied for the rest of the groups (i.e., wrasses Puerto Rico recreational sector, triggerfish and filefish St. Croix, spiny lobster St. Croix, and groupers St. Thomas/St. John) unless high landings are also determined to be due to enhanced reporting.

When ACLs for 2011 FMUs were compared to the 2011-2012 average of landings, the same units that exceeded the ACL under **Alternative 1** would have also exceeded the ACL in **Alternative 2** under a ‘not subject to overfishing’ status scenario (i.e., angelfish, squirrelfish, and wrasses FMUs in St. Croix and in St. Thomas/St. John, and Puerto Rico commercial wrasses). For the squirrelfish and wrasses FMUs in both St. Croix and St. Thomas/St. John, and the Puerto Rico commercial wrasses, the number of pounds exceeded in **Alternative 2** under this scenario

would be similar to the pounds exceeded during the same average of years in **Alternative 1**. As discussed above, this is because the current ACL for these units (**Alternative 1**) for all islands and sectors was also derived from a 10% reduction to the ABC. Also as discussed above for 2011 landings, the number of pounds exceeded for the angelfish FMU would be slightly less than the pounds exceeded in **Alternative 2** under a ‘subject to overfishing’ scenario and in **Alternative 1**. As discussed for **Alternative 1**, St. Croix and St. Thomas/St. John increased landings of angelfish, squirrelfish, and wrasses were attributed to enhanced reporting resulting from modifications to the reporting forms that started in 2011 and no AMs would need to be triggered for these units. Puerto Rico increased landings for the wrasses commercial sector in 2012 have been attributed to increased reporting resulting from modifications to the reporting requirements for commercial fishermen in Puerto Rico. Therefore, no AMs would need to be applied to these units in 2014 under this ‘not subject to overfishing’ scenario.

Preferred Alternative 3

The results of the analysis conducted for **Preferred Alternative 3** are similar to the results obtained for **Alternative 2** under both ‘subject to overfishing’ and ‘not subject to overfishing’ or ‘unknown’ scenarios as shown in Tables 2.2.1.1.13 - 2.2.1.1.16, and discussed above, except for parrotfish (**Preferred Sub-alternative 3a**), surgeonfish (**Preferred Sub-alternative 3b**), angelfish (**Preferred Sub-alternative 3c**), queen conch (**Preferred Sub-alternative 3d**), and aquarium trade species (**Preferred Sub-alternative 3e**) FMUs. For these units per island/island region and sector, the results of the analysis would be similar to the results obtained for these units in the analysis of **Alternative 1** (Tables 2.2.1.1.11 and 2.2.1.1.12), as these sub-alternatives provide for these units to be exempted from the application of the control rule.

2.2.2 Current Status of Stocks and Changes to Current Annual Catch Limits Proposed by the Annual Catch Limit Control Rule

Changes in overfishing status have been identified for all 2010 stocks/stock complexes since the preparation of the 2010 Caribbean ACL Amendment. The overfishing status for Grouper Unit (GU) 1, GU2, GU4, for Snapper Unit (SU) 1, for parrotfish, and for queen conch went from ‘subject to overfishing’ to ‘not subject to overfishing’ in the [2012 4th Quarter Update on the NMFS Status of the U.S. Fisheries](#), and continues to be classified as such in the most recent update ([2014 1st Quarter Update on the NMFS Status of U.S. Fisheries](#)). Grouper Unit 3, GU5, SU2, SU3, and SU4 were reclassified from ‘unknown’ to ‘not subject to overfishing’, and continue under this classification. In the 2010 Caribbean ACL Amendment, these FMUs had their ACL set at 85% of the OFL (or ABC).

If the Council selects **Alternative 2**, and the control rule is implemented, then based on the information contained in the most recent update on the status of the stocks (NMFS Status of the Stocks, 2014 1st Quarter), the ACLs for all of the 2010 FMUs would be set to a new value that would take effect starting with the calendar year following implementation of the control rule. This new value will respond to the change from ‘subject to overfishing’ (15% reduction or no reduction [i.e., queen conch]) to ‘not subject to overfishing’ (10% reduction).

Changes in status have also been identified for all 2011 FMUs since the preparation of the 2011 Caribbean ACL Amendment, as reported in the 2012 4th Quarter Update on the Status of the U.S. Fisheries, and remain in place as of the 2014 1st Quarter Update. However, most of these changes were from an ‘unknown’ status to a ‘not subject to overfishing’ status. In the 2011 Caribbean ACL Amendment, FMUs classified as ‘unknown’ and FMUs classified as ‘not subject to overfishing’ had their ACL set at 90% of the ABC. The change from ‘unknown’ status to ‘not subject to overfishing’ status resulted from a comparison of each FMUs average landings to their established OFL and the resulting determination that for none of the FMUs did the average landings exceed the OFL, except in the case where increased landings were attributed to enhanced reporting rather than to an actual increase in harvest. The squirrelfish, angelfish, and wrasses FMUs were found to have exceeded their corresponding OFLs in St. Croix and in St. Thomas/St John in 2012. It was determined by the SEFSC, in consultation with the Council, that the increased landings reported for these units were due to enhanced reporting reflecting modifications to the reporting forms that were introduced in July 2011. Therefore, the overfishing status for these three units remained as ‘unknown’. Recently, the commercial scups and porgies and the commercial wrasses FMUs were found to have exceeded their OFL in Puerto Rico for the year 2012. It was determined by the SEFSC that increased landings reported for commercial wrasses in Puerto Rico reflected increased reporting from modifications to the reporting requirements, therefore the overfishing status for this unit in Puerto Rico remained as ‘not subject to overfishing’. A determination from the SEFSC regarding the Puerto Rico scups and porgies FMU is currently not available.

Under **Alternative 2**, the currently established buffer reduction for the wrasses, squirrelfish, grunts, goatfish, jacks, scups and porgies (pending determination), triggerfish and filefish, and boxfish FMUs, for each of the islands and sectors, would continue for the year following implementation of the control rule because those FMUs would still be classified as ‘not subject to overfishing’ or, (for wrasses and squirrelfish in St. Croix and St. Thomas/St. John) unknown. As a result, the ACL for each unit also would remain the same. In contrast, the currently established buffer reductions for the angelfish and surgeonfish FMUs, and for the Caribbean-wide aquarium trade species FMU would change to a new and lower value with a concomitant increase in the ACL for each unit. As discussed in Section 2.2.1, although the overfishing status for these units would remain the same, the buffer that was applied in the 2011 Caribbean ACL Amendment to determine the ACL for these units (i.e., 25% buffer) is more conservative than the

10% buffer reduction applied if **Alternative 2** is chosen. That change in the buffer reduction, from 25% to 10%, would result in a higher ACL.

If **Preferred Alternative 3** and all sub-alternatives are implemented, based on the most recent status of stocks report, the buffer reduction for all grouper and snapper units on all islands and sectors would decrease from 15% to 10% for the year following implementation of the control rule because those units are now classified as ‘not subject to overfishing’. The ACL would then increase. The queen conch and the parrotfish ACLs would remain the same as established in the 2010 Caribbean ACL Amendment, as they would be exempted from the control rule. In a similar way, surgeonfish, angelfish, and the Caribbean-wide aquarium trade species FMUs would also retain their present buffer reductions and ACLs. Lastly, under **Preferred Alternative 3**, based on the most recent status of stocks report, there would be no change in the buffer reduction for the remainder of the 2011 FMUs within each island or island group, including the Caribbean-wide tilefish FMU. Those units would retain their current ACLs for the year following implementation of the control rule because they continue to be classified as ‘not subject to overfishing’.

Please refer to Tables 2.2.1.1.7 - 2.2.1.1.10 to obtain the corresponding scenario-specific ACL values for the units discussed above. The information presented in this section could change if the overfishing status of any unit changes before this control rule is implemented, if implemented.

The control rule proposed in this amendment would not take into account the overfished status of a stock because overfished stocks are managed through rebuilding plans designed to achieve a stock abundance consistent with supporting the MSY on a continuing basis. The proposed control rule would continue to ensure that overfishing does not occur in the short-term, thereby maintaining steady progress toward the long-term goal of rebuilding overfished stocks while preventing other stocks from becoming overfished. In the near future, the Council may revisit the definition of management reference points and ACLs based on new available scientific information through the development of Island-Specific Fishery Management Plans. For more information about the recent status of the stocks as well as NMFS process for status determination, please see Section 3.2.2.1 of this comprehensive amendment.

2.2.3 Annual Process that Would be Used to Apply the Annual Catch Limit Control Rule under Alternative 2 or Preferred Alternative 3

If the Council chooses either **Alternative 2** or **Preferred Alternative 3**, the regulations implementing the action in this amendment may include text briefly describing the control rule and would contain the applicable ACL values for each FMU and (for Puerto Rico only) for each sector (commercial or recreational) within the FMU. Tabular ACL values would be provided for each of the ‘subject to overfishing’ and ‘not to be subject to overfishing’ or ‘unknown’ scenarios.

The overfishing status of a stock/stock complex would continue to be evaluated annually by NMFS (See Section 3.2.2 for a detailed discussion of the process for determining overfishing status). Recent annual landings available for each unit and sector within the unit, for all islands/island regions, would be evaluated against the corresponding OFL. For all Council-managed species, overfishing is determined to be occurring if annual landings exceed the assigned OFL, unless NMFS’ SEFSC, in consultation with the Council and its SSC, determines that the overage occurred because data collection/monitoring improved rather than because landings actually increased.

If, in any particular year, the status of a unit changes, NMFS will officially notify the Council by letter regarding the status change and the corresponding change to a new buffer reduction value. NMFS would apply the buffer reduction defined by the control rule as specified in the corresponding FMP, and the ACL for the next year for that particular FMU would be adjusted.

The public will be notified of the applicable ACL for a particular year by the following methods:

- The NMFS Southeast Regional Office (SERO) website will be annually updated to reflect the overfishing status and corresponding ACL for each unit per island and sector. NMFS’ status change determination letter will also be included on the website.
- A Fishery Bulletin will be published annually that would list each unit, the overfishing status, and the corresponding ACL for that year based on the overfishing status. Fishery Bulletins will be distributed as usual through Constant Contact and through publication in English and Spanish on the NMFS SERO website and on the Council’s website.

Chapter 3. Affected Environment

The action considered in this comprehensive amendment and associated environmental assessment would affect the U.S. Caribbean exclusive economic zone (EEZ) of Puerto Rico and the U.S. Virgin Islands (USVI) (Figure 3.1.1). Species affected by the action in this comprehensive amendment include all species included in the Fishery Management Plan (FMP) for the Reef Fish Fishery of Puerto Rico and the USVI (Reef Fish FMP), the FMP for the Queen Conch Resources of Puerto Rico and the USVI (Queen Conch FMP), the Corals and Associated Plants and Invertebrates FMP of Puerto Rico and the USVI (Coral FMP), and the Spiny Lobster FMP of Puerto Rico and the USVI (Spiny Lobster FMP).

The affected environment is divided into five major components:

- **Physical / Habitat environment** (Section 3.1)
General description of physical environment and habitat (essential fish habitat)
- **Biological environment** (Section 3.2)
Examples include description of the affected species, status of the stocks, protected species
- **Description of the Fisheries** (Section 3.3)
Examples include descriptions of the commercial and recreational fisheries in the U.S. Caribbean
- **Economic and Social environment** (Section 3.4)
Examples include fishing communities and economic description of the fisheries
- **Administrative environment** (Section 3.5)
Example includes the fishery management process

The physical, biological, 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 and queen conch, including Regulatory Amendment 4 to the Reef Fish FMP (CFMC 2013c) and Regulatory Amendment 2 to the Queen Conch FMP (CFMC 2013a). Information from these documents is incorporated by reference. These documents can be found on the National Marine Fisheries Service (NMFS) Sustainable Fisheries, Caribbean Branch website, http://sero.nmfs.noaa.gov/sustainable_fisheries/caribbean/index.html. Summaries of the affected environment can be found in Sections 3.1 - 3.5.

3.1 Physical/Habitat 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 FMPs of the U.S. Caribbean, the EFH Final Environmental Impact Statement (EFH-FEIS) (CFMC 1998, 2004), the Five -Year review of EFH in the U.S. Caribbean, Vols.1 and 2 (CFMC 2011c), and Regulatory Amendment 2 to the Queen Conch FMP (CFMC 2013a). These documents are incorporated herein by reference and are summarized below.

The U.S. Caribbean is located in the eastern portion of the Caribbean archipelago, about 1,100 miles (mi) (1,770 km) east-southeast of Miami, Florida (Olcott 1999). It comprises the Commonwealth of Puerto Rico in the Greater Antilles and the Territory of the USVI in the Lesser Antilles island chain (Figure 3.1.1), both of which separate the Caribbean Sea from the western central Atlantic Ocean. The U.S. Caribbean EEZ covers an area of approximately 196,029 square kilometers (km²) (75,687 square miles [m²]).

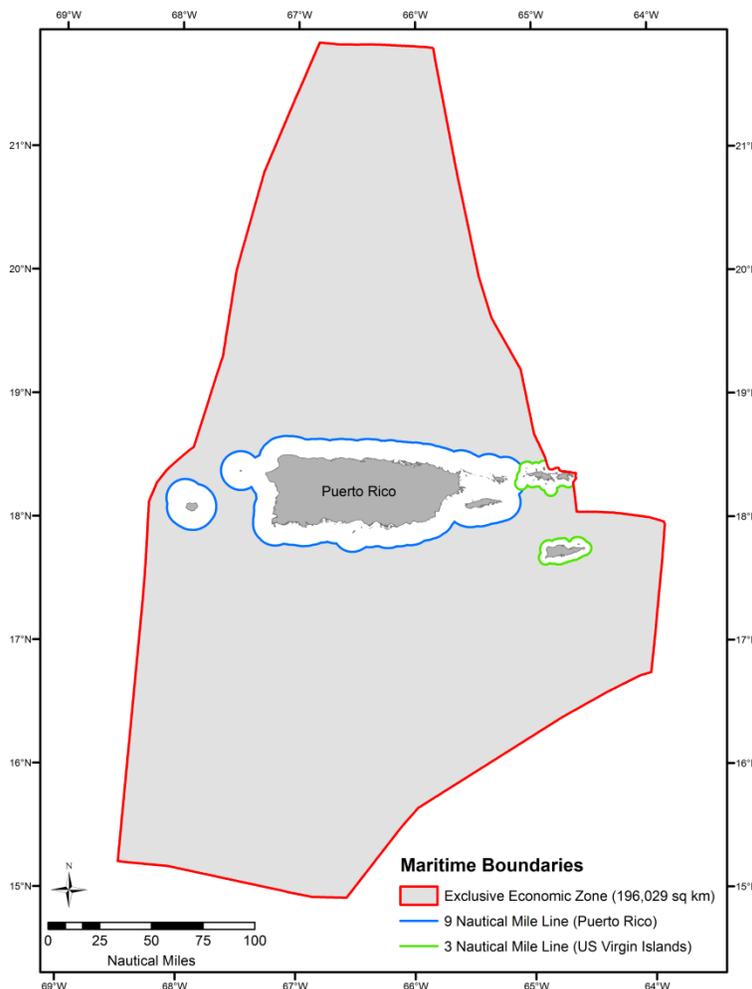


Figure 3.1.1. Boundaries of the U.S. Caribbean EEZ, Puerto Rico waters, and USVI waters.
Source: NMFS 2014.

The USVI are part of the Virgin Islands chain, which lies in the northeastern Caribbean about 50 mi (80 km) east of Puerto Rico. The USVI consist of four major islands, St. Thomas, St. John, St. Croix, and Water Island, and about 50 cays (DPNR 2005). Together, the USVI total approximately 134 mi² (347 km²) of land area (Catanzaro et al. 2002).

The island of St. Croix is located about 46 mi (74 km) south of St. Thomas and St. John (CFMC 2004). Covering about 80 mi² (207 km²), St. Croix is entirely surrounded by the Caribbean Sea. The islands of St. Thomas and St. John are bordered by the Atlantic Ocean to the north and the Caribbean Sea to the south. Their respective areas are approximately 32 mi² (83 km²) and 20 mi² (52 km²) (Catanzaro et al. 2002).

The island of Puerto Rico is almost rectangular in shape, about 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. 2001). Its coast measures approximately 1,227 km (700 mi) and includes the adjacent inhabited islands of Vieques and Culebra. In addition, the Commonwealth of Puerto Rico includes the islands of Mona, Monito, and various other isolated islands without permanent populations. Deep ocean waters fringe Puerto Rico. The Mona Passage, which separates the island from Hispaniola to the west, is about 120 km (75 mi) wide and more than 1,000 m (3,300 ft) deep. Off the northern coast is the 8,500 m (28,000 ft) deep Puerto Rico Trench, and to the south the sea bottom descends to the 5,000 m (16,400 ft) deep Venezuelan Basin of the Caribbean Sea.

The island of St. Croix lies on a different geological platform than the islands of St. Thomas and St. John, and is separated from those islands by a 2.5 mi (4 km) deep trench (CFMC 2004) (Figure 3.1.2). The shelf shared by the islands of St. Thomas and St. John has an area of approximately 510 nm² (1751 km²) with most of the shelf more than 80 feet (ft) (24.4 m) deep (Kojis and Quinn 2012). The St. Croix shelf is much narrower and shallower than that of the northern islands (Goenaga and Boulon 1991), extending only 2.2 nm (4 km) wide in the south, less than 0.1 nm (0.2 km) wide on the northwest, and up to several nautical miles wide in the northeast and on Lang Bank (CFMC 2004; CFMC 2011a). In total, the St. Croix shelf has an area of approximately 99 nm² (343 km²) (references in Gordon 2010) with most of the shelf less than 80 ft (24.4 m) deep (Kojis and Quinn 2012).

Puerto Rico shares the same shelf platform as St. Thomas and St. John, and that shelf also extends east to include the British Virgin Islands. The St. Croix platform connects through a deep submerged mountain range (including Grappler Bank and Investigador, among other banks in the EEZ) to the southeast platform of Puerto Rico (Figure 3.1.2).

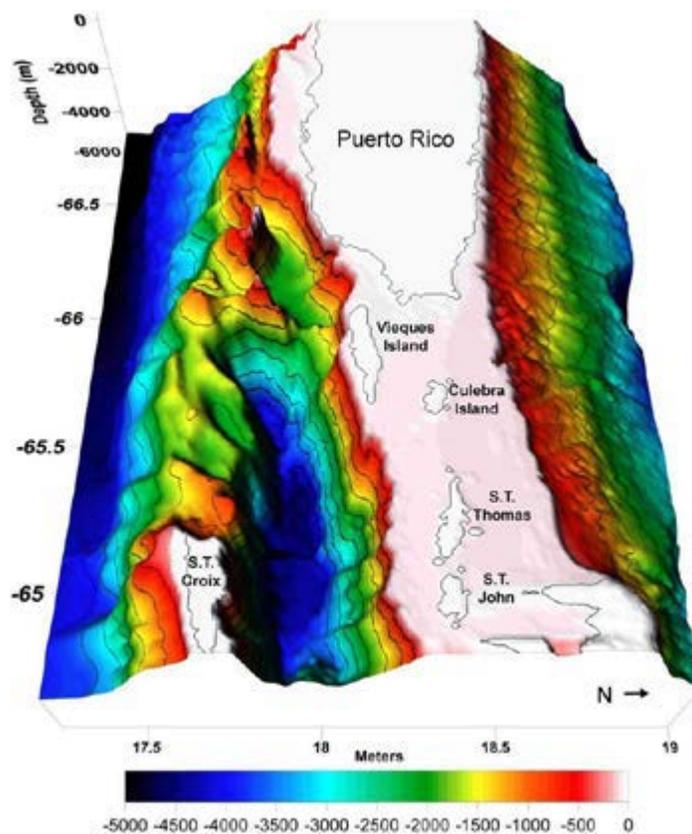


Figure 3.1.2. Shared platform between the east coast of Puerto Rico and St. Thomas/St. John. The deep trough between the Puerto Rico/St. Thomas/St. John platform and St. Croix is clearly seen in this graphic representation of depth (Source: García-Sais et al. 2005).

Habitat

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), are incorporated herein by reference, and are summarized below. A description of the major habitat types of the USVI can be found in the USVI Marine Resources and Fisheries Strategic and Comprehensive Conservation Plan, prepared by the Department of Planning and Natural Resources of the USVI (DPNR 2005) and are incorporated herein by reference. For a description of the major habitat types of Puerto Rico, please see García-Sais et al. (2008).

The coastal marine environment of the USVI and Puerto Rico is characterized by a wide variety of habitat types. Kendall et al. (2001) delineated 21 distinct benthic habitats types. The EFH-FEIS (CFMC 2004) summarized the percent distribution for all habitats in the U.S. Caribbean from the 2,121 mi² (5,494 km²) of total bottom area mapped from aerial photographs. This total

included both Puerto Rico (1,934 mi² [5,009 km²]) and the USVI (187 mi² [485 km²]), and covered from the shore line to about 66 ft (20 m) depth.

In the USVI, 9 mi² (24 km²) of unconsolidated sediment, 62 mi² (161 km²) of SAV, 0.8 mi² (2 km²) of mangroves, and 116 mi² (300 km²) of coral reef and hard bottom were mapped over an area of 187 mi² (485 km²). In Puerto Rico, 19 mi² (49 km²) of unconsolidated sediment, 278 mi² (721 km²) of SAV, 28 mi² (73 km²) of mangroves, and 292 mi² (756 km²) of coral reef and colonized hard bottom were mapped (CFMC 2013).

Essential Fish Habitat

Essential fish habitat (EFH) 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 and the USVI, 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 mangrove wetlands, submerged aquatic vegetation, intertidal flats, palustrine 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. EFH utilized by fish and invertebrate species in this region includes coral reefs, live/hard bottom, and submerged aquatic vegetation.

Habitat Areas of Particular Concern

In addition to protecting habitat from fishing related degradation through FMP regulations, the Caribbean Fishery Management Council (Council), with guidance from its Advisory Panel and Scientific and Statistical Committee (SSC), consults on any relevant habitat issues.

3.2 Biological and Ecological Environment

3.2.1 Description of the Species: Biology/Ecology

The biological environment of the U.S. Caribbean, including the species addressed in this comprehensive amendment, is described in detail in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b). Species affected by the action in this amendment include species in the Reef Fish, Coral, Queen Conch, and Spiny Lobster FMPs. Species in these FMPs are managed as stocks or stock complexes in fishery management units (FMUs).

Table 3.2.1.1. Species included in the Reef Fish, Coral, Spiny Lobster, and Queen Conch FMPs.

Fishery Management Unit	
REEF FISH FMP	
<u>Grouper Unit 1</u> Nassau grouper , <i>Epinephelus striatus</i>	<u>Goatfish FMU</u> Spotted goatfish, <i>Pseudupeneus maculatus</i> ; Yellow goatfish, <i>Mulloidichthys martinicus</i>
<u>Grouper Unit 2</u> Goliath grouper , <i>Epinephelus itajara</i>	<u>Tilefishes FMU</u> Blackline tilefish, <i>Caulolatilus cyanops</i> Sand tilefish, <i>Malacanthus plumieri</i>
<u>Grouper Unit 3</u> Red hind , <i>Epinephelus guttatus</i> , coney <i>Cephalopholis fulvus</i> , rock hind, <i>Epinephelus adscensionis</i> , Graysby, <i>Cephalopolis cruentata</i>	<u>Scups and Porgies FMU</u> Jolthead porgy, <i>Calamus bajonado</i> , Sea bream, <i>Archosargus rhomboidalis</i> , Sheepshead porgy, <i>Calamus penna</i> ; Pluma, <i>Calamus pennatula</i>
<u>Grouper Unit 4</u> Black grouper <i>Mycteroperca bonaci</i> ; Red grouper, <i>Epinephelus morio</i> , Tiger grouper, <i>Mycteroperca tigris</i> , Yellowfin grouper, <i>Mycteroperca venenosa</i>	<u>Squirrelfish FMU</u> Blackbar soldierfish, <i>Myripristis jacobus</i> , Bigeye, <i>Priacanthus arenatus</i> , Longspine squirrelfish, <i>Holocentrus rufus</i> ; Squirrelfish, <i>Holocentrus adscensionis</i>
<u>Grouper Unit 5</u> Misty grouper , <i>Epinephelus mystacinus</i> , Yellowedge grouper , <i>Epinephelus flavolimbatus</i>	<u>Surgeonfish FMU</u> Blue tang, <i>Acanthurus coeruleus</i> , Ocean surgeonfish, <i>Acanthurus bahianus</i> ; Doctorfish, <i>Acanthurus chirurgus</i>
<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>	<u>Grunts FMU</u> White grunt, <i>Haemulon plumierii</i> ; Margate, <i>Haemulon albu</i> ; Tomtate, <i>Haemulon aurolineatum</i> ; Bluestriped grunt, <i>Haemulon sciurus</i> ; French grunt, <i>Haemulon flavolineatum</i> ; Porkfish, <i>Anisotremus virginicus</i>
<u>Snapper Unit 2</u> Cardinal snapper, <i>Pristipomoides macrophthalmus</i> , Queen snapper , <i>Etelis oculatus</i>	<u>Wrasses FMU</u> Hogfish, <i>Lachnolaimus maximus</i> ; Puddingwife, <i>Halichoeres radiates</i> ; Spanish hogfish, <i>Bodianus rufus</i>
<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>Jacks FMU</u> Blue runner, <i>Caranx crysos</i> ; Horse-eye jack, <i>Caranx latus</i> ; Black jack, <i>Caranx lugubris</i> ; Almaco jack, <i>Seriola rivoliana</i> ; Bar jack, <i>Caranx ruber</i> ; Greater amberjack, <i>Seriola dumerili</i> ; Yellow jack, <i>Caranx bartholomaei</i>
<u>Snapper Unit 4</u> Yellowtail snapper, <i>Ocyurus chrysurus</i>	<u>Angelfish FMU</u> Queen angelfish, <i>Holocanthus ciliaris</i> ; Gray angelfish, <i>Pomacanthus arcuatus</i> ; French angelfish, <i>Pomacanthus paru</i>

Fishery Management Unit

Parrotfish Unit

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 chrysopterus*, Stoplight parrotfish, *Sparisoma viride*, Redband parrotfish, *Sparisoma aurofrenatum*, Striped parrotfish, *Scarus iseri* (formerly *Scarus croicensis*)

Aquarium Trade Species¹

Boxfish FMU

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

Triggerfish and Filefish FMU

Ocean triggerfish, *Canthidermis sufflamen*; Queen triggerfish, *Balistes vetula*; Sargassum triggerfish, *Xanthichthys ringens*; Black durgon, *Melichthys niger*; Scrawled filefish, *Aluterus scriptus*; Whitespotted filefish, *Cantherhines macrocerus*

QUEEN CONCH FMP

Queen conch, *Strombus gigas*

SPINY LOBSTER FMP

Spiny lobster, *Panulirus argus*

CORALS AND ASSOCIATED PLANTS AND INVERTEBRATES

Prohibited corals and invertebrates¹

Aquarium Trade Species¹

¹A comprehensive list of the species included in these FMUs can be found in 50 CFR Part 622, Appendix A to Part 622—Species Tables, http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

A complete description of the life history characteristics and ecology of all Council managed species 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 2011 b), and is incorporated in here by reference. The most recent description of the biology and ecology of the parrotfish FMU can be found in Regulatory Amendment 4 to the Reef Fish FMP (CFMC 2013c). Regulatory Amendment 2 to the Queen Conch FMP has the most updated information for the queen conch in federal waters (CFMC 2013b). The biology and ecology of managed corals and reef associated plants and invertebrates were updated through Amendment 4 to the Coral FMP (CFMC 2013a).

3.2.2 Overview of Status Determinations for Stocks (Overfished, Overfishing, and Unknown Status)

The Magnuson-Stevens Act requires that an FMP specify objective and measurable criteria, or reference points, for determining when a stock is subject to overfishing or is overfished⁸ (NMFS 2012). By incorporating the best scientific information available (which may include landings, scientific surveys, and biological and ecological studies), stock assessments (if available) and reference points are used to make overfishing or overfished determinations for a stock. This information is also used by the Fishery Management Councils to recommend the ACL for the stock (NMFS 2013a).

Overfishing—A stock with a fishing mortality (harvest) rate too high to produce its maximum sustainable yield (MSY), which is the largest long-term average catch that can be taken from a stock under prevailing environmental and fishery conditions. The target level of stock abundance is the population that can produce MSY.

Overfished—A stock with a biomass level depleted to a degree that the stock's capacity to produce MSY is jeopardized.

Overfishing Status Determination

Overfishing occurs whenever a stock or stock complex is subjected to a rate or level of fishing mortality that jeopardizes the capacity of a stock or stock complex to produce maximum sustainable yield (MSY) on a continuing basis (CFMC 2011a). A determination of overfishing does not necessarily mean that the fishery is not sustainable or that the stock or its ecosystem is being impaired. These negative outcomes are associated with high levels of overfishing over a period of many years. Management approaches, such as ACLs and accountability measures (AMs), serve to prevent overfishing, thus reducing the likelihood that damaging levels of overfishing will occur (NMFS 2013a).

For Caribbean Council managed species, overfishing is occurring when a) the fishing mortality rate exceeds the maximum fishing mortality rate only in the year the stock is assessed; and b) catch exceeds the overfishing limit (OFL) in all other years when the stock is not assessed (NMFS 2013c). As discussed in Section 1.6 ("Current Management Reference Points or Proxies"), annual landings for all Council managed species would be evaluated relative to the OFL to determine whether overfishing is or is not occurring. This approach is consistent with National Standard (NS) 1 guidelines, which provide fishery managers the flexibility to determine

⁸ "Section 303(a)(10) requires that FMPs specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) and, in the case of a fishery which the Council or the Secretary has determined is approaching an overfished condition or is overfished, contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery. Further, under Section Sec. 304(e)(1)) of the Act, the overfishing criteria specified in the FMP is used to determine the stock status.(NMFS 2013b). Status Determination Criteria (SDC): Objective and measurable criteria used to determine if a stock is being overfished or is in an overfished state according to National Standard Guidelines.

if overfishing occurs based on either fishing mortality rates or actual annual catch (CFMC 2011a).

Specifically, for all units addressed in the 2010 and 2011 Caribbean ACL Amendments (from here on referred to as 2010 and 2011 stocks, respectively), for an FMU to be determined to be ‘subject to overfishing’, reported landings must have exceeded the OFL, unless NMFS’ Southeast Fisheries Science Center (SEFSC), in consultation with the Council and its SSC, determines that the overage occurred because data collection/monitoring improved, rather than because landings actually increased.

If the Secretary of Commerce (Secretary) determines at any time that a fishery is subject to overfishing, the Secretary shall immediately notify the appropriate Council and request that action be taken to end overfishing in the fishery and to implement conservation and management measures to rebuild affected stocks of fish.

Overfished Status Determination

A stock that is overfished has a biomass level depleted to a degree that the stock’s capacity to produce the MSY is jeopardized. While overfishing may be the main cause for depletion of a stock, there are also other factors that can affect the abundance of a fish stock and lead to an overfished listing, such as abnormal levels of disease, extreme population cycles, habitat degradation, and environmental changes such as climate, ocean acidification, and land based pollution (NMFS 2013a).

For Caribbean Council managed species, a stock is determined to be overfished when its stock size is less than the minimum stock size threshold (MSST) set = biomass at MSY (B_{MSY}) $(1-c)$; where c = the natural mortality rate (M) or 0.50, whichever is smaller. These values were estimated for 2010 stocks, however, for 2011 stocks, an estimate of B_{MSY} or proxy is not available, and thus the overfished status is ‘unknown’

(http://www.nmfs.noaa.gov/sfa/statusoffisheries/2012/RTC/2012_Appendix3.pdf)

When the Secretary determines that a stock is overfished, the Council must implement a plan to rebuild it to the level that can support the MSY (NMFS 2013a).

‘Unknown’ Status Determination

A stock is classified as ‘unknown’ when the data in a stock assessment were insufficient and it fails to provide a known conclusion about the overfishing and/or overfished status. Section 304 (e)(1) of the Magnuson-Stevens Act specifies that, for those stocks in a FMP or international agreement, the status shall be determined using the criteria specified in the FMP or agreement. Stocks are listed as ‘unknown’ when the stock does not have status determination criteria (SDC) that can be used to determine stock status. A stock can also be classified as ‘unknown’ when the

stock has defined SDC but have never been assessed relative to these SDC or the assessment failed to provide a conclusive determination about stock status (NMFS 2013b).

3.2.2.1 Status of the Stocks: Southeast Data Assessment and Review (SEDAR) and NMFS Status of U.S. Fisheries Annual Report to Congress

SEDAR

The Council-Federal cooperative SEDAR process provides stock assessments for fisheries resources of NMFS. Despite several attempts, no acceptable quantitative assessments have been developed for Caribbean stocks because data to support traditional stock assessment methods simply do not exist for the species considered so far (SEDAR Procedures Workshop 2009). Caribbean species that have been assessed through the SEDAR process are listed below. The SEDAR website provides complete reports for these species (<http://www.sefsc.noaa.gov/sedar/>). For most of these stocks, the data has been deemed insufficient to conduct proper assessments. Other methods to deal with Caribbean data have been suggested, for example in the Caribbean Data Evaluation Workshop held in 2009 (http://www.sefsc.noaa.gov/sedar/download/CaribData_Final.pdf?id=DOCUMENT).

- Caribbean-Atlantic Deepwater Snapper-Grouper (SEDAR 04, 2003-2004)
- Caribbean Spiny Lobster & Yellowtail Snapper (SEDAR 08 A, 2005)
- Caribbean Yellowfin Grouper, Mutton Snapper, Queen Conch (SEDAR 14, 2007)
- Caribbean Queen Snapper, Silk Snapper and Redtail Parrotfish (SEDAR 26, 2011⁹)
- Caribbean Blue Tang and Queen Triggerfish (SEDAR 30, 2012)
- Caribbean Red Hind (SEDAR 35, 2014-ongoing)

NMFS Status of U.S. Fisheries Annual Report to Congress

The status of all stocks managed under the Magnuson-Stevens Act is reported in the Annual Report to Congress on the Status of U.S. Fisheries (i.e., Status of Stocks) pursuant to the Magnuson-Stevens Act. The National Marine Fisheries Service Office of Sustainable Fisheries updates the Status of Stocks on a quarterly basis utilizing the most current stock assessment information (NMFS 2013b). For purposes of this report, the status of all managed species contained in an FMP is to be reported at the level for which the status determination criteria are specified in the FMP (NMFS 2013b). Results are presented as the Fish Stock Sustainability Index (FSSI) in the Annual Report to Congress of the Status of U.S. Fisheries. The report provides a ‘snapshot’ of the status of U.S. fisheries at the end of the specific year (NMFS 2013a).

⁹ SEDAR 26 (2011) outcomes indicated that the evaluated species were not undergoing overfishing. However, it was not possible to derive standard reference points from this assessment.

NMFS developed the FSSI to track the outcome of building and maintaining fish stocks and complexes at productive levels and to incorporate the critical components of managing fish harvest rates and increasing knowledge about the status of fish stocks and complexes. The FSSI is based on a set of fish stocks and complexes selected for their importance to commercial and recreational fisheries (NMFS 2013b). The FSSI stocks are queen conch, GU1, GU2, GU4, SU1, SU3, SU4, and spiny lobster, all reported at the Caribbean level. Non-FSSI stocks are parrotfish, SU2, GU3, GU5, aquarium trade species, and tilefish, all at the Caribbean level, and angelfish, boxfish, goatfish, grunts, jacks, porgies, squirrelfish, surgeonfish, triggerfish and filefish, wrasses, at the individual island/island region level (Puerto Rico, St. Croix, and St. Thomas/St. John).

If the Secretary determines that a stock or stock/complex is determined to be overfished or undergoing overfishing, the Secretary shall officially notify the appropriate Fishery Management Council and request that action be taken to end overfishing in the fishery and to implement conservation and management measures to rebuild affected stocks of fish. Within NMFS, the task of making the determinations of overfishing and overfished has been delegated to the Assistant Administrator (AA) for Fisheries. Once a stock assessment or other accepted basis is peer reviewed and accepted as Best Scientific Information Available, the Regional Administrator (RA) submits an Issues Advisory/Decision Memo (DM) requesting that the AA concur with the status indicated in the DM. Informing the Councils of stocks subject to overfishing or overfished stocks is the duty of the RA and will be communicated by a formal letter notifying them of such status (Magnuson-Stevens Act Section 304(e) (2) [NMFS 2013b]).

For most of the U.S. Caribbean managed species, multiple species are grouped into stock complexes, and the status of the stock complex is reported as a single unit (e.g., GU2, parrotfish complex) (NMFS 2013b). Others are reported as a single species, such as the case of queen conch and spiny lobster. For example, the 2010 Caribbean ACL Amendment defined the OFLs at the complex level for groupers and snappers Caribbean-wide (e.g., all groupers and all snappers) but the FSSI/Non-FSSI stocks are reported at the individual unit level (e.g., GU1, Snapper Unit [SU] 1). Until the FSSI is modified to reflect changes in the stock reporting units for snappers and groupers, stocks will continue to be listed at the individual snapper and grouper unit levels and if landings do not exceed the OFL for the complex, then the individual units will be reported as not subject to overfishing in the FSSI.

In addition, until recently, the status of stocks listed all the stocks at the U.S. Caribbean level, although the 2011 Caribbean ACL Amendment defined OFLs by island region. The 4th Quarter 2013 Report on the Status of the U.S. Fisheries (2013 4th Quarter Report) started reporting the status per island region for ten of the non-FSSI species complexes that had previously defined island-specific OFLs (CFMC 2011b): angelfishes, boxfishes, goatfishes, grunts, jacks, porgies, squirrelfishes, surgeonfishes, triggerfishes and filefishes, and wrasses. Fish Stock Sustainability

Index stocks with defined OFLs per island or island region, such as the spiny lobster, will be reported as such in fiscal year 2015.

Current Overfishing Status Determination for Caribbean Council Managed Stocks/Stock Complexes

Through the end of 2011, before the implementation of ACLs and AMs in 2012, U.S. Caribbean FSSI stocks including queen conch, GU1, GU2, GU4, SU1, and the non-FSSI parrotfish complex were classified as ‘subject to overfishing’. The overfishing status of the FSSI stocks SU3, SU4, and spiny lobster was determined to be ‘unknown’ (NMFS 2012). In late 2012, these stocks were reclassified from ‘subject to overfishing’ or status ‘unknown’ to ‘not subject to overfishing’ (NMFS 2013a). For these stocks/stocks complexes the ‘not subject to overfishing’ classification continues to this day as reported in the most recent quarterly update to the status of the stocks ([2014 1st Quarter Update on the NMFS Status of U.S. Fisheries](#)). The information used to make the most recent status determination in the FSSI (available at the time of preparation of this comprehensive amendment) was based on the most recent data available for Puerto Rico, St. Croix, and St. Thomas/St. John. This information corresponds to 2011 annual landings for the Puerto Rico commercial and recreational sectors and commercial landings for St. Croix and St. Thomas/St. John.

Seven non-FSSI stock complexes in each of Puerto Rico, St. Croix, and St. Thomas/St. John (i.e., grunts, goatfish, scups and porgies, jacks, triggerfish and filefish, boxfish, surgeonfish) as well as three non-FSSI stocks reported at the Caribbean level (i.e., GU3, GU5, and SU2) are currently classified in the 2014 1st Quarter Update on the Status of the Stocks as ‘not subject to overfishing’ as updated from the previous ‘unknown’ or ‘undefined¹⁰’ status in 2011 (Table 3.2.2.1). The aquarium trade species FMU as well as the tilefish FMU, both reported at the Caribbean level since neither of them have defined OFLs per island or island region, are also currently determined to be ‘not subject to overfishing’ from their previously ‘undefined’ and ‘unknown’ classifications, respectively.

During the most recent evaluations of stock status (2013 4th Quarter Update and 2014 1st Quarter Update on the Status of U.S. Fisheries), the St. Croix and St. Thomas/St. John angelfish, squirrelfish, and wrasses stock complexes (non-FSSI) were found to have exceeded their OFLs. However, the SEFSC, in consultation with the Council, determined that the high landings reported for these species were due to enhanced reporting reflecting modifications to the reporting forms introduced in 2011 in the USVI. For this reason, the status of these complexes continues to be defined as ‘unknown’, until more data becomes available.

¹⁰ Stocks listed as ‘undefined’ are those for which there is no status criterion by which to make a determination (NMFS 2011c).

Section 2.2.2 of this document discusses the current status of the stocks and how it relates to the action proposed by this amendment.

Table 3.2.2.1. Comparison of ‘subject to overfishing’ stock status classification for all U.S. Caribbean managed FMUs among the NMFS Status of U.S. Fisheries 2011 Annual Report, the NMFS Status of U.S. Fisheries 2012 Annual Report, and the 2014 1st Quarter Update report on the NMFS Status of U.S. Fisheries. (Sources: NMFS Status of U.S. Fisheries Reports http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/fssi.html).

FMU	OFL Definition	Annual Report 2011	Annual Report 2012	2014 1 st Quarter Update
Grouper Unit 1 ¹ (GU1)	Caribbean-Wide Level	Yes	No	No
GU2 ¹		Yes	No	No
GU3		Unknown	No	No
GU4		Yes	No	No
GU5		Unknown	No	No
SU1		Yes	No	No
SU2		Unknown	No	No
SU3		Unknown	No	No
SU4		Unknown	No	No
Parrotfish		Yes	No	No
Queen Conch		Yes	No	No
Aquarium Trade Species ²		Undefined	No	No
Tilefish		Unknown	No	No
Spiny Lobster ³		Puerto Rico (PR), St. Croix (STX), St. Thomas/St. John (STT/ STJ) but reported at the Caribbean Wide level	Unknown	No
				OFL Definition
Angelfishes	Unknown	Unknown	Unknown	PR
				STX
				STT/STJ
Wrasses	Unknown	Unknown	Unknown	PR
				STX
				STT/STJ
Squirrelfish	Unknown	Unknown	Unknown	PR
				STX
				STT/STJ
Grunts	Unknown	No	No	PR
				STX
				STT/STJ
Goatfish	Unknown	No	No	PR
				STX
				STT/STJ
Jacks	Unknown	No	No	PR

			STX	
			STT/STJ	
Scups & Porgies	Unknown	No	PR	No
			STX	
			STT/STJ	
Triggerfish and Filefish	Unknown	No	PR	No
			STX	
			STT/STJ	
Boxfish	Unknown	No	PR	No
			STX	
			STT/STJ	
Surgeonfish	Unknown	No	PR	No
			STX	
			STT/STJ	

¹Harvest prohibited in the EEZ.

² Aquarium Trade Species include species in the Reef Fish FMP and in the Corals and Reef Associated Plants and Invertebrates FMP.

* Grouper Unit (GU) 1: Nassau grouper; GU2: goliath grouper; GU3: red hind, coney, graysby, and rock hind; GU4: yellowfin, red, tiger, and black groupers; Snapper Unit (SU) 1: silk, blackfin, black, vermillion, and wenchman snappers; SU2: cardinal and queen snappers; SU3: gray, lane, mutton, dog, schoolmaster, and mahogany snappers; SU4: yellowtail snapper.

³ The OFL for the spiny lobster is defined at the individual island/island region level (Puerto Rico, STX, and STT/STJ) however, in the FSSI it is reported at the Caribbean level.

Current Overfished Stocks

Stocks currently classified as overfished, including GU1 (i.e., Nassau grouper), GU2 (i.e., goliath grouper), GU4 (i.e., yellowfin, red, black, and tiger groupers), and queen conch, continue to be managed through rebuilding plans implemented through the SFA Amendment in 2005 (CFMC 2005) (Table 3.2.2.2). For overfished stocks, rebuilding plans are special forms of target control rules to be implemented when stocks have fallen below limit biomass levels (Restrepo et al. 1998). Rebuilding plans are required until the stock has been rebuilt to a level consistent with supporting MSY on a sustainable basis (NMFS 2013b). A typical rebuilding plan allows fishing to continue, but at a reduced level so that the stock will increase to its target level and can produce the MSY (NMFS 2013a). Current management of U.S. Caribbean overfished stocks allows for the harvest of GU4 and queen conch; harvest prohibitions continue to be in place for GU1 and GU2.

The SU1 and parrotfish complex, both reported at the Caribbean level, continue to be classified as not overfished. The remainder of the Caribbean stocks (per island/island region or at Caribbean-wide level) continues to be classified as ‘unknown’ (Table 3.2.2.2). A stock is classified as unknown when the data in a stock assessment were insufficient and it fails to provide a known conclusion about the overfishing and/or overfished status.

Table 3.2.2.2. Comparison of ‘overfished’ stock status classification for Council managed stocks/stocks complexes among the NMFS Status of U.S. Fisheries 2011 Annual Report, NMFS Status of U.S. Fisheries 2012 Annual Report, and the 2014 1st Quarter Update on the NMFS Status of U.S. Fisheries. (Sources: NMFS Status of U.S. Fisheries Reports http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/fssi.html).

FMU	OFL Definition	Annual Report 2011	Annual Report 2012	2014 1 st Quarter Update	Rebuilding Plan / Date Completion
GU1 ¹	Caribbean Wide Level	Yes	Yes	Yes	Yes/2030
GU2 ¹		Yes	Yes	Yes	Yes /2035
GU3		Unknown	Unknown	Unknown	
GU4		Yes	Yes	Yes	Yes/2015
GU5		Unknown	Unknown	Unknown	
SU1		No	No	No	
SU2		Unknown	Unknown	Unknown	
SU3		Unknown	Unknown	Unknown	
SU4		Unknown	Unknown	Unknown	
Parrotfish		No	No	No	
Queen Conch		Yes	Yes	Yes	Yes/2020
Aquarium Trade Species ²		Undefined	Unknown	Unknown	
Tilefish		Unknown	Unknown	Unknown	
Spiny Lobster ³	Defined at individual island level but reported at Caribbean Wide level	Unknown	Unknown	Unknown	
				OFL Definition	
Angelfish	Unknown	Unknown	Unknown	PR	Unknown
				STX	
				STT/STJ	
Wrasses	Unknown	Unknown	Unknown	PR	Unknown
				STX	
				STT/STJ	
Squirrelfish	Unknown	Unknown	Unknown	PR	Unknown
				STX	
				STT/STJ	
Grunts	Unknown	Unknown	Unknown	PR	Unknown
				STX	
				STT/STJ	

FMU	Annual Report 2011	Annual Report 2012	2014 1 st Quarter Update Report	
			OFL Definition	
Goatfish	Unknown	Unknown	PR	Unknown
			STX	
			STT/STJ	
Jacks	Unknown	Unknown	PR	Unknown
			STX	
			STT/STJ	
Scups & Porgies	Unknown	Unknown	PR	Unknown
			STX	
			STT/STJ	
Triggerfish and Filefish	Unknown	Unknown	PR	Unknown
			STX	
			STT/STJ	
Boxfish	Unknown	Unknown	PR	Unknown
			STX	
			STT/STJ	
Surgeonfish	Unknown	Unknown	PR	Unknown
			STX	
			STT/STJ	

¹Harvest prohibited in the EEZ.

² Aquarium Trade Species include species in the Reef Fish FMP and in the Corals and Reef Associated Plants and Invertebrates FMP.

*Grouper Unit (GU)1: Nassau grouper; GU2: goliath grouper; GU3: red hind, coney, graysby, and rock hind; GU4: yellowfin, red, tiger, and black groupers; Snapper Unit (SU)1: silk, blackfin, black, vermillion, and wenchman snappers; SU2: cardinal and queen snappers; SU3: gray, lane, mutton, dog, schoolmaster, and mahogany snappers; SU4: yellowtail snapper.

³ The OFL for the spiny lobster is defined at the individual island/island region level (Puerto Rico, STX, and STT/STJ) however, in the FSSI it is reported at the Caribbean level.

3.2.3 Protected Species

At least seventeen species of whales and dolphins have been reported in or near U.S. waters in the northeastern Caribbean (Mignucci-Giannoni 1998). All seventeen are protected under the Marine Mammal Protection Act. Four of these species are also listed as endangered under the Endangered Species Act (ESA) (i.e., sperm, sei, fin, and humpback whales). ESA-listed species known to occur in this area include the humpback, fin, sei, and sperm whale. In addition to those marine mammals, four species of sea turtles (green, hawksbill, leatherback, and loggerhead); and two *Acropora* coral species (elkhorn [*Acropora palmata*] and staghorn [*A. cervicornis*]) are also protected under the ESA. Portions of designated critical habitat for loggerhead, green, and leatherback sea turtles, as well as *Acropora* corals also occur within the U.S. Caribbean. The potential impacts from the continued authorization of the fishing under the FMPs for the Reef Fish Resources, Corals and Reef Associated Plants and Invertebrates, Spiny Lobster, and Queen Conch, of Puerto Rico and the USVI on all ESA-listed species have been considered in previous

ESA Section 7 consultations. Summaries of those consultations and their determination are in Appendix A (Other Applicable Law). Those consultations indicate that spiny lobster and reef fish fisheries are likely to interact with sea turtles, *Acropora* coral, and *Acropora* critical habitat; these species and critical habitat are described briefly below.

Green sea turtle hatchlings are thought to occupy pelagic areas of the open ocean and are often associated with *Sargassum* rafts (Carr 1987, Walker 1994). Pelagic stage green sea turtles are thought to be carnivorous. Stomach samples of these animals found ctenophores and pelagic snails (Frick 1976; Hughes 1974). At approximately 20 to 25 cm (7.9 – 9.9 inches) carapace length, juveniles migrate from pelagic habitats to benthic foraging areas (Bjorndal 1997). As juveniles move into benthic foraging areas a diet shift towards herbivory occurs. They consume primarily seagrasses and algae, but are also known to consume jellyfish, salps, and sponges (Bjorndal 1980, 1997; Paredes 1969; Mortimer 1981, 1982). The diving abilities of all sea turtles species vary by their life stages. The maximum diving range of green sea turtles is estimated at 110 m (360 ft) (Frick 1976), but they are most frequently making dives of less than 20 m (65 ft) (Walker 1994). The time of these dives also varies by life stage. The maximum dive length is estimated at 66 minutes with most dives lasting from 9 to 23 minutes (Walker 1994).

The hawksbill's pelagic stage lasts from the time they leave the nesting beach as hatchlings until they are approximately 22-25 cm in straight carapace length (Meylan 1988; Meylan and Donnelly 1999). The pelagic stage is followed by residency in developmental habitats (foraging areas where juveniles reside and grow) in coastal waters. Little is known about the diet of pelagic stage hawksbills. Adult foraging typically occurs over coral reefs, although other hard-bottom communities and mangrove-fringed areas are occupied occasionally. Hawksbills show fidelity to their foraging areas over several years (van Dam and Diez 1998). The hawksbill's diet is highly specialized and consists primarily of sponges (Meylan 1988). Gravid females have been noted ingesting coralline substrate (Meylan 1984) and calcareous algae (Anderes Alvarez and Uchida 1994), which are believed to be possible sources of calcium to aid in eggshell production. The maximum diving depths of these animals are not known, but the maximum length of dives is estimated at 73.5 minutes. More routinely, dives last about 56 minutes (Hughes 1974).

Leatherbacks are the most pelagic of all ESA-listed sea turtles and spend most of their time in the open ocean. Although they will enter coastal waters and are seen over the continental shelf on a seasonal basis to feed in areas where jellyfish are concentrated. Leatherbacks feed primarily on cnidarians (medusae, siphonophores) and tunicates. Unlike other sea turtles, leatherbacks' diets do not shift during their life cycles. Because leatherbacks' ability to capture and eat jellyfish is not constrained by size or age, they continue to feed on these species regardless of life stage (Bjorndal 1997). Leatherbacks are the deepest diving of all sea turtles. It is estimated that these species can dive in excess of 1000 m (Eckert et al. 1989) but more frequently dive to

depths of 50 m to 84 m (Eckert et al. 1986). Dive times range from a maximum of 37 minutes to more routine dives of 4 to 14.5 minutes (Standora et al. 1984, Eckert et al. 1986, Eckert et al. 1989, Keinath and Musick 1993). Leatherbacks may spend 74% to 91% of their time submerged (Standora et al. 1984).

Loggerheads are less common in the Caribbean region than in the Gulf of Mexico or South Atlantic regions. Loggerhead hatchlings forage in the open ocean and are often associated with *Sargassum* rafts (Hughes 1974, Carr 1987, Walker 1994, Bolten and Balazs 1995). The pelagic stage of these sea turtles are known to eat a wide range of things including salps, jellyfish, amphipods, crabs, syngnathid fish, squid, and pelagic snails (Brongersma 1972). Stranding records indicate that when pelagic immature loggerheads reach 40-60 cm straight carapace length they begin to live in coastal inshore and nearshore waters (Witzell 2002). Here they forage over hard- and soft-bottom habitats (Carr 1986). Benthic foraging loggerheads eat a variety of invertebrates with crabs and mollusks being an important prey source (Burke et al. 1993). Estimates of the maximum diving depths of loggerheads range from 211-233 m (692-764 ft.) (Thayer et al. 1984, Limpus and Nichols 1988). The lengths of loggerhead dives are frequently between 17 and 30 minutes (Thayer et al. 1984, Limpus and Nichols 1988, Limpus and Nichols 1994, Lanyan et al. 1989) and they may spend anywhere from 80-94 percent of their time submerged (Limpus and Nichols 1994, Lanyan et al. 1989).

Acropora, the only two species of acroporids in the Caribbean (i.e., *Acropora palmata* – Elkhorn coral and *Acropora cervicornis* – Staghorn coral), are two of the major reef-building corals in the wider Caribbean. Elkhorn colonies form flattened to near-round branches that typically radiate outward from a central trunk that is firmly attached to the sea floor. Staghorn colonies are stag antler-like, with cylindrical, straight, or slightly curved branches. The branching morphology of these species provides important habitat for other reef organisms. Historically, both acroporid species formed dense thickets at shallow (<5 m [<16 ft]) and intermediate (10 to 15 m [33 to 49 m]) depths in many reef systems, including locations in the Florida Keys, western Caribbean (e.g., Jamaica, Cayman Islands, Caribbean Mexico, Belize), and eastern Caribbean. In the 1960s and 1970s in the USVI, elkhorn coral was the main reef-building coral at depths less than 10 meters (33 ft) (Rogers et al. 2002). Elkhorn coral grew in nearly monospecific stands on the reef crest and in the upper and lower forereef zones of well-developed fringing and bank barrier reefs, as well as on isolated patch reefs (Rogers et al. 2002). The maximum range in depth reported for elkhorn coral is <1 to 30 m (<3.3 to 98 ft), but historic data for this coral in the USVI indicate that it was common at depths from 1 to 15 m (3.3 to 49 m) (Bacle 2002, Rogers et al. 2008). The preferred habitat of elkhorn coral is the seaward face of a reef (turbulent shallow water), including the reef crest, and shallow spur-and-groove zone (Shinn 1963, Cairns 1982, Rogers et al. 1982). Historically, staghorn coral was reported from depths ranging from <1 to 60 m (Goreau and Goreau 1973). It is suspected that 60 m (197 ft) is an extreme situation and that the coral is relatively rare below 20 m (66 ft) depth. The common depth range at which staghorn coral is currently observed is 5 to 17 m (16 to 56 ft). In the USVI, this species was abundant, but not

often found in dense thickets or well-defined zones (Rogers et al. 2002); unlike in areas in the western Caribbean where this species was historically the primary constructor of mid-depth (10 to 15 m [33 to 49 m]) reef terraces (Adey 1978).

On November 26, 2008, a final rule designating *Acropora* critical habitat was published in the *Federal Register* (FR 73 72210) and defined the physical or biological features essential to the conservation of the species (also known as essential feature). The essential features to the conservation of *Acropora* species is substrate of suitable quality and availability, in water depths from the mean high water line to 30 m (98 ft), to support successful larval settlement, recruitment, and reattachment of fragments. Substrate of suitable quality and availability means consolidated hardbottom or dead coral skeletons free from fleshy macroalgae or turf algae and sediment cover. Areas containing these features have been identified in the U.S. Caribbean include Puerto Rico, St. Thomas/St. John, and St. Croix (Figures 3.2.3.1 A and B).

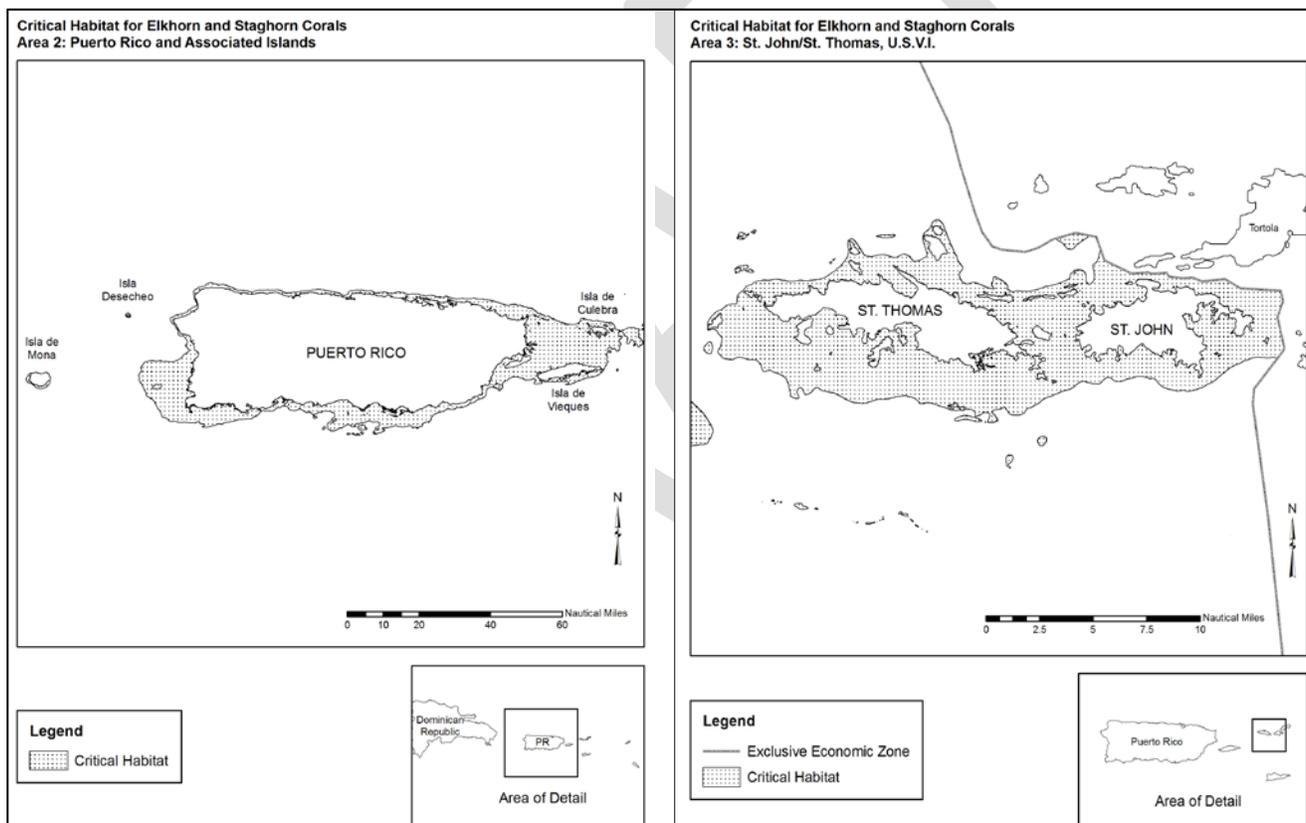


Figure 3.2.3.1 A. Designated Critical Habitat Areas 2 and 3 for Elkhorn and Staghorn Corals.
Source: FR 73 72210; November 26, 2008.

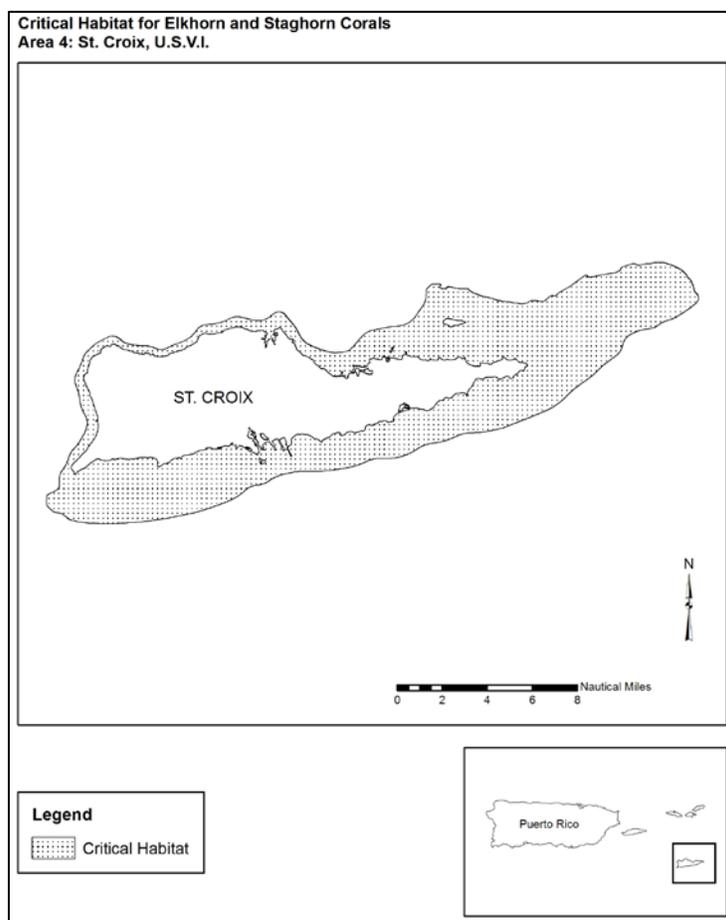


Figure 3.2.3.1 B. Designated Critical Habitat Area 4 for Elkhorn and Staghorn Corals.
Source: 73 FR 72210; November 26, 2008.

3.3 Description of the Fisheries

In-depth reviews of the commercial and recreational reef fish, spiny lobster, queen conch, and coral fisheries of the U.S. Caribbean are contained in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b), and are incorporated herein by reference. A summary is provided below.

The fisheries of Puerto Rico and the USVI provide food, livelihoods, and income to Puerto Ricans and U.S. Virgin Islanders. The fisheries in the U.S. Caribbean (federal and state) waters can be divided into commercial, recreational, and subsistence. The commercial fisheries of both Puerto Rico and the USVI have been characterized as “artisanal¹¹” because their commercial fishing vessels tend to be less than (and commonly much less than) 45 feet long, have small crews, participate in multiple fisheries, and yield smaller revenues, and their seafood processors are small-scale producers.

Fishing vessel permits are not required to commercially harvest any Council-managed species in federal waters of the U.S. Caribbean (CFMC 2013c). There are no federal licenses or permits issued for the recreational harvest of reef fish, queen conch, spiny lobster, or aquarium trade species in the EEZ of the U.S. Caribbean. However, a federal permit may be issued to take or possess Caribbean prohibited coral only as a scientific research activity, exempted fishing, or exempted education activity. Since 2010, all anglers fishing recreationally in U.S. Caribbean federal waters are required to be registered through the National Angler Registry (<https://www.countmyfish.noaa.gov/register/>). In addition, there are Highly Migratory Species (HMS) permit requirements that apply to the commercial and the recreational sector fishing in the U.S. Caribbean EEZ. For more information on the HMS permit requirements please visit http://www.nmfs.noaa.gov/sfa/hms/Compliance_Guide/index.htm. For more information about the permit requirements in federal and state waters, please see Section 3.5 of this document.

A detailed description of the fishing gears and methods used in the U.S. Caribbean reef fish, queen conch, spiny lobster, and coral fisheries is provided in the 2010 and in the 2011 Caribbean ACL Amendments (CFMC 2012a, b). Gears and methods used in the commercial 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 gears used in the U.S. Caribbean recreational fishery are hook-and-line and SCUBA diving equipment (Griffith et al. 2007).

In the USVI, the number of licensed commercial fishermen registered in the DPNR Division of Fish and Wildlife 2010-2011 registration list was 297 (Kojis and Quinn 2012). There is no

¹¹ The NOAA Fisheries Glossary Revise Edition June 2006 defines artisanal fishery as a fishery based on traditional or small-scale gear and boats.

information available on the exact number of recreational fishers in the USVI. Tobias (2005) discusses that there are over 2,000 registered boats in the USVI and that approximately 10% of the population participate in recreational fishing activities. Ongoing development of a Marine Recreational Information Program will provide data on the recreational fisheries in the USVI.

In Puerto Rico, a survey by Matos-Caraballo and Agar in 2008 identified 868 active commercial fishermen. After completing the 2008 survey, Matos-Caraballo and Agar received an additional report in February of 2009 from the Puerto Rico Department of Natural and Environmental Resources (PRDNER), the agency responsible for the administration of the commonwealth fishing licenses, with a database of commercial fishing licenses showing 1,129 valid licenses. In 2011 and 2012, the number of commercial fishermen in Puerto Rico more than doubled (3,408) from that reported in 2009 (E. Piñeiro, personal communication). Historically, commercial fishermen in Puerto Rico were required by the PRDNER to show their tax return forms when applying for their commercial license. The PRDNER would use the tax forms to determine what amount of each fisher's income originated from commercial fishing. In 2011, the PRDNER put in place a moratorium eliminating the tax return requirement when applying for a commercial license. The moratorium appears to have triggered fishermen in the recreational sector to move to the commercial sector by applying for the Puerto Rico "commercial beginner's license." Obtaining this commercial license allows the recreational fishermen the use of additional fishing gears (e.g., bandit gear) and to sell their catch, both of which are prohibited practices under a recreational license. In 2013, the PRDNER reinstated the tax form requirement for commercial fishermen, and also created a limited entry system for snappers, which was the reef fish complex most affected by this change.

The number of recreational fishermen in Puerto Rico appears to vary substantially from year to year. For example, an estimated 250,000 fishers participated in 1991 whereas in 2007 the estimated number of participants fell between 160,000 and 170,000 (Griffith et al. 2007). However, until more consistent annual estimates of recreational fishing activity are obtained, long-term trajectories of growth (or shrinkage) cannot be discerned.

For more information regarding U.S. Caribbean Fisheries please see Section 3.4.2 (Description of the Social and Cultural Environment).

3.4 Economic and Social Environment

3.4.1 Economic Environment

3.4.1.1 Economic Description of the Puerto Rico and U.S. Virgin Islands Commercial and Recreational Sector Fishing Industries

The information contained in this section supplements and updates the work done in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b) and is incorporated herein by reference.

Commercial Sector

The data presented here for the commercial sector comes from individual trip reports. All tables reporting landings are in whole pounds. Landings come from state and federal waters. Species groups/complex categories are ACL unit categories. When the data shows that less than three vessels landed poundage for a particular category, the data is confidential and this is indicated in the table and explained in the notes at the bottom of the table. Ex-vessel revenue data is shown in real 2013 U.S. Dollars.

Puerto Rico

Trips

Table 3.4.1.1.1 shows the change in number of commercial trips, pounds, and associated revenue over the period 2008-2012. Expanded landings are reported in the table. This is the number of pounds that were used to establish ACLs. Ex-vessel revenue was estimated based on the expanded pounds. The number of trips has not been expanded because there is no standard methodology for doing this.

In the past five years, the number of commercial fishing trips averaged approximately 55,000 trips annually, average landings were almost 2.7 million pounds (whole), and ex-vessel revenues averaged almost \$9 million (Table 3.4.1.1.1). Number of trips peaked in 2012 while pounds landed and ex-vessel revenue peaked in 2008 (see note below Table 3.4.1.1.1 for a possible explanation of this inconsistency).

Table 3.4.1.1.1. Annual Number of Commercial Trips, Landings (whole pounds), and Ex-Vessel Revenue (real 2013 U.S. Dollars) for Puerto Rico, 2008-2012.

Year	Number of Trips	Landings (whole pounds)	Estimated Ex-Vessel Revenue (real U.S. dollars)
2008	52,724	3,356,620	\$9,969,566
2009	55,771	2,849,139	\$9,022,358
2010	48,810	2,812,295	\$9,231,395
2011	57,810	2,057,031	\$7,014,290
2012	60,164	2,299,847	\$8,202,150
Average	55,056	2,674,986	\$8,687,952

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

Note: While pounds have been expanded consistent with the approach taken in determining appropriate ACLs, the estimated ex-vessel revenue column was calculated using ex-vessel prices from reported landings and values. The reader should note that the number of trips have not been expanded but have been taken directly from the trip report data.

Table 3.4.1.1.2 and Figure 3.4.1.1.1 show the number of commercial trips by month for each year. There does not appear to be a peak for when trips are taken during the year. However, December has consistently fewer trips than other months, likely due to time taken off by fishermen to celebrate the holidays.

Table 3.4.1.1.2. Monthly Number of Commercial Trips for Puerto Rico, 2008-2012.

Month	2008	2009	2010	2011	2012
January	4,758	4,770	4,397	4,521	5,197
February	4,908	4,616	4,492	4,148	5,751
March	4,736	4,874	4,717	4,423	5,757
April	4,632	4,273	3,650	5,004	4,925
May	5,204	4,663	4,723	5,246	5,897
June	4,593	5,571	4,667	5,299	4,632
July	4,852	4,864	3,876	5,407	4,767
August	4,987	4,657	4,220	4,923	5,083
September	4,024	4,609	3,460	5,075	5,183
October	3,714	5,131	3,521	4,791	4,154
November	3,280	4,105	3,481	4,886	4,766
December	3,036	3,638	3,606	4,087	4,052

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

Note: The reader should note that the number of trips has not been expanded but have been taken directly from the trip report data.

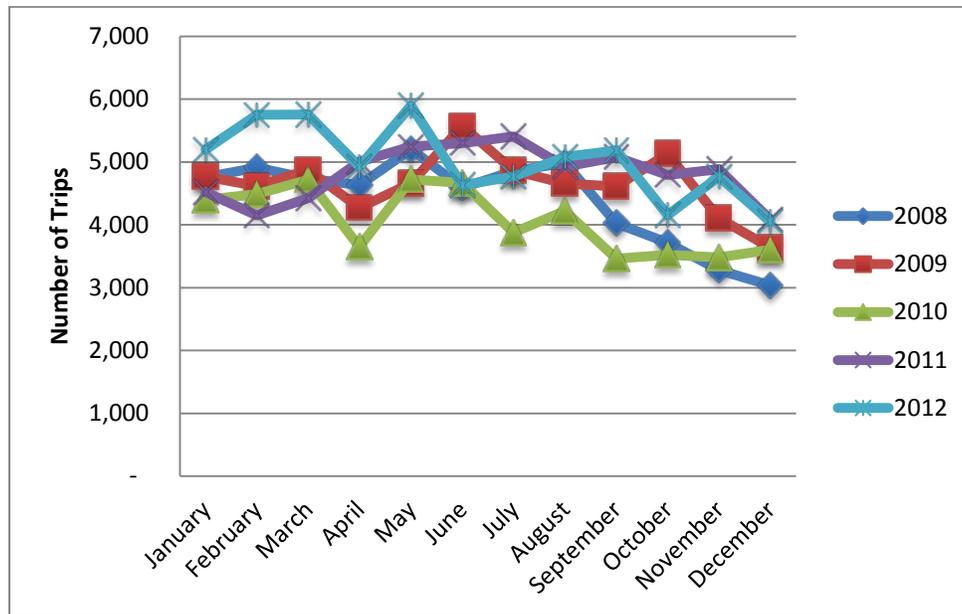


Figure 3.4.1.1.1. Monthly Number of Commercial Trips for Puerto Rico, 2008-2012.

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

Table 3.4.1.1.3 shows the number of commercial trips by ACL unit where a species in the ACL unit was reportedly caught and retained. Spiny lobster, species in Snapper Unit 3, and queen conch were landed on the greatest number of commercial trips.

Table 3.4.1.1.3. Number of Commercial Trips by Species Group/Complex for Puerto Rico, 2008-2012.

Species Group/Complex	2008	2009	2010	2011	2012	Average
AQUARIUM TRADE	0	9	5	2	0	3
BOXFISHES	2,536	2,868	2,490	2,765	2,544	2,641
GOATFISHES	326	395	328	335	509	379
GROUPERS	2,849	2,953	2,653	3,134	2,754	2,869
GRUNTS	2,050	2,362	1,833	1,321	1,123	1,738
JACKS	1,408	1,455	1,090	1,235	1,371	1,312
PARROTFISH UNIT	1,739	1,973	1,581	1,565	1,758	1,723
PORGIES	1,113	1,097	794	890	1,168	1,012
QUEEN CONCH	4,232	4,691	4,299	5,872	6,844	5,188
SNAPPER UNIT 1	2,489	2,171	2,276	2,811	3,415	2,632
SNAPPER UNIT 2	1,616	1,258	1,608	2,014	1,764	1,652
SNAPPER UNIT 3	5,347	5,846	5,235	5,644	5,699	5,554
SNAPPER UNIT 4	2,681	2,683	2,506	2,851	3,208	2,786
SNAPPER (Unclassified)	2,004	2,402	1,906	2,002	1,951	2,053

SPINY LOBSTER	7,715	8,429	7,247	9,270	10,490	8,630
SQUIRRELFISHES	499	414	515	478	487	479
TILEFISHES	0	0	3	0	0	1
TRIGGERFISHES AND FILEFISHES	2,190	2,366	2,018	2,834	2,887	2,459
WRASSES	2,735	3,057	2,453	3,109	3,323	2,935
Without an ACL	8,696	8,894	7,621	9,142	8,869	8,644
Total	52,225	55,323	48,461	57,274	60,164	54,689

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

Landings and Revenue

Table 3.4.1.1.4 shows annual landings by ACL unit and Table 3.4.1.1.5 shows annual revenue by ACL unit for Puerto Rico for 2008-2012. Both tables rely on estimates of expanded pounds used in the calculation of ACLs. Queen conch, spiny lobster, and species without ACLs provide the greatest amount of landings and ex-vessel revenues for Puerto Rico. The Snapper Units also provide significant quantities of fish and ex-vessel revenues.

Table 3.4.1.1.4. Annual Commercial Landings (whole pounds) by Species Group/Complex for Puerto Rico, 2008-2012.

Species Group/Complex	2008	2009	2010	2011	2012
BOXFISHES	51,397	58,979	57,310	40,326	38,911
GOATFISHES	5,215	9,656	6,459	6,812	9,656
GROUPERS	87,738	87,135	92,162	59,715	67,979
GRUNTS	69,575	84,537	65,601	39,954	34,075
JACKS	104,498	88,385	67,589	35,528	47,111
PARROTFISH UNIT	90,450	54,555	43,909	38,154	46,569
PORGIES	28,328	23,539	15,693	19,655	29,061
QUEEN CONCH	242,041	273,309	273,459	235,759	367,543
SNAPPER UNIT 1	352,975	369,179	276,528	149,268	167,167
SNAPPER UNIT 2	261,998	239,977	384,877	218,854	142,760
SNAPPER UNIT 3	175,321	148,127	174,108	167,303	171,836
SNAPPER UNIT 4	365,868	222,698	215,404	151,284	182,284
SNAPPER (Unclassified)	54,523	47,426	52,909	38,317	40,890
SPINY LOBSTER	329,227	322,992	289,609	274,318	337,870
SQUIRRELFISHES, TILEFISH, AQUARIUM TRADE	19,430	10,485	8,995	6,744	6,919
TRIGGERFISHES AND FILEFISHES	55,361	47,194	45,650	50,714	59,969
WRASSES	54,980	67,187	59,427	53,623	69,647
Without an ACL	1,007,695	693,779	682,606	470,703	479,600
Total	3,356,620	2,849,139	2,812,295	2,057,031	2,299,847

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

Note: Aquarium Trade Species, Tilefish, and Squirrelfish ACL Units have been combined to address confidentiality concerns.

Table 3.4.1.1.5. Annual Commercial Ex-Vessel Revenue (real 2013 U.S. Dollars) by Species Group/Complex for Puerto Rico, 2008-2012.

Species Group/Complex	2008	2009	2010	2011	2012
BOXFISHES	\$113,356	\$131,752	\$191,616	\$87,318	\$83,525
GOATFISHES	\$13,258	\$25,252	\$16,225	\$16,213	\$23,667
GROUPERS	\$219,447	\$214,146	\$209,465	\$154,404	\$165,473
GRUNTS	\$125,809	\$166,358	\$129,351	\$73,859	\$58,578
JACKS	\$177,706	\$158,605	\$116,237	\$65,696	\$83,288
PARROTFISH UNIT	\$172,228	\$111,664	\$88,068	\$70,338	\$82,287
PORGIES	\$55,115	\$50,338	\$33,076	\$36,222	\$50,544
QUEEN CONCH	\$1,050,262	\$1,234,810	\$1,279,102	\$1,112,568	\$1,782,856
SNAPPER UNIT 1	\$1,261,990	\$1,311,379	\$1,075,257	\$592,542	\$687,053
SNAPPER UNIT 2	\$969,142	\$797,051	\$1,371,999	\$907,333	\$634,343
SNAPPER UNIT 3	\$438,327	\$368,707	\$432,134	\$430,207	\$428,455
SNAPPER UNIT 4	\$926,201	\$556,193	\$524,961	\$379,709	\$490,058
SNAPPER (Unclassified)	\$135,522	\$119,548	\$127,343	\$90,955	\$98,547
SPINY LOBSTER	\$2,170,108	\$2,153,304	\$1,900,584	\$1,763,396	\$2,147,591
SQUIRRELFISHES, TILEFISH, AQUARIUM TRADE	\$31,707	\$19,020	\$16,135	\$11,094	\$11,303
TRIGGERFISHES AND FILEFISHES	\$102,861	\$91,553	\$81,175	\$82,029	\$95,068
WRASSES	\$174,885	\$208,900	\$184,519	\$166,476	\$207,313
Without an ACL	\$1,831,643	\$1,303,779	\$1,454,146	\$973,931	\$1,028,243
Total	\$9,969,567	\$9,022,358	\$9,231,394	\$7,014,290	\$8,158,191

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

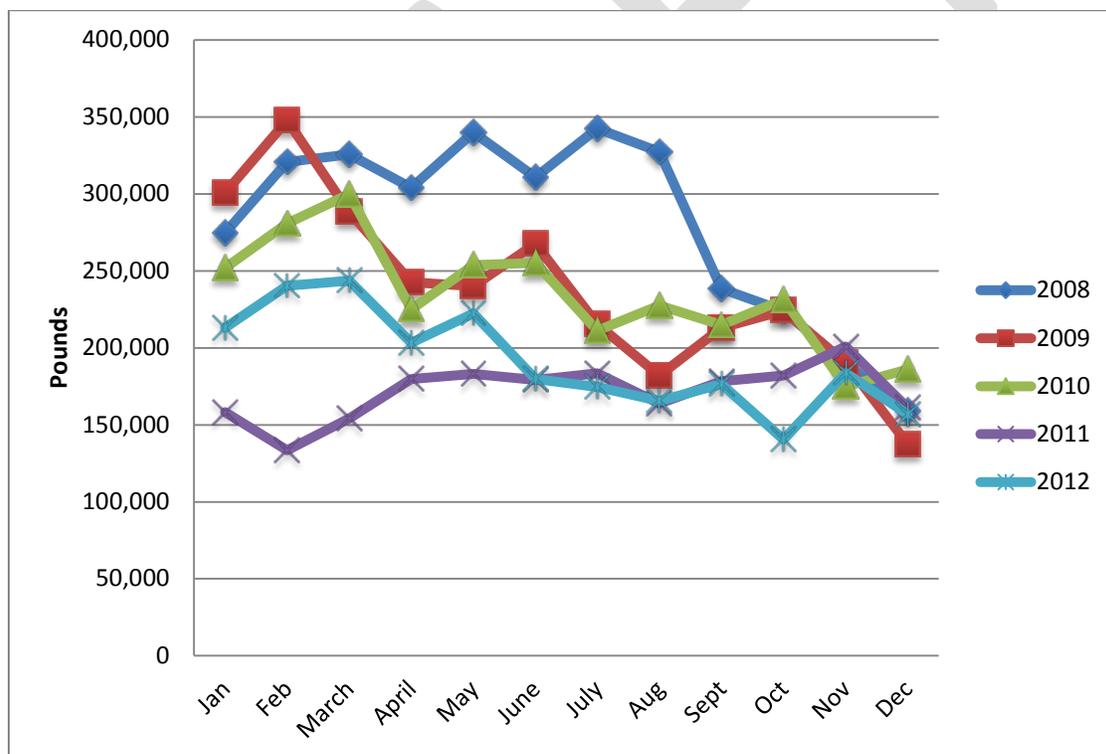
Note: Aquarium Trade, Tilefish, and Squirrelfish ACL Units have been combined to address confidentiality concerns.

Table 3.4.1.1.6 and Figure 3.4.1.1.2 show monthly landings for 2008-2012. Table 3.4.1.1.7 and Figure 3.4.1.1.3 show monthly ex-vessel revenue for 2008-2012. These figures were not replicated by ACL unit because of confidentiality issues for species with lower landings. The data indicate slightly lower landings in December for most years but 2011 seems to be an anomaly in the respect with lower landings occurring at the beginning of the calendar year.

Table 3.4.1.1.6. Monthly Commercial Landings (whole pounds) for Puerto Rico, 2008-2012.

Month	2008	2009	2010	2011	2012
Jan	274,570	300,683	251,954	158,306	213,086
Feb	320,682	347,776	280,790	133,528	240,339
March	325,607	288,208	299,723	154,072	243,502
April	303,847	242,505	224,999	179,797	203,405
May	339,977	240,133	253,713	182,967	222,409
June	310,821	267,524	255,259	179,123	179,697
July	342,423	215,254	211,204	183,384	174,620
August	327,310	182,084	227,455	163,741	165,459
Sept	238,450	213,080	214,881	178,360	176,373
Oct	223,993	224,086	231,397	182,025	140,449
Nov	189,878	190,379	174,999	200,848	183,666
Dec	159,062	137,427	185,921	160,880	156,842

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

**Figure 3.4.1.1.2.** Monthly Commercial Landings (whole pounds) for Puerto Rico, 2008-2012.

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

Table 3.4.1.1.7. Monthly Commercial Ex-Vessel Revenue for Puerto Rico (real 2013 weighted U.S. dollars), 2008-2012.

Month	2008	2009	2010	2011	2012
Jan	\$815,506	\$1,135,818	\$1,093,527	\$1,196,322	\$748,196
Feb	\$952,464	\$1,067,911	\$1,135,129	\$993,798	\$843,888
March	\$967,092	\$1,030,421	\$1,255,045	\$1,054,218	\$854,994
April	\$902,463	\$950,306	\$873,274	\$1,300,004	\$714,204
May	\$1,009,773	\$894,803	\$1,034,917	\$1,383,029	\$780,932
June	\$923,176	\$1,016,304	\$1,071,997	\$1,389,641	\$630,960
July	\$1,017,037	\$812,261	\$780,477	\$1,418,093	\$613,133
Aug	\$972,150	\$801,792	\$871,425	\$1,200,197	\$580,966
Sept	\$708,225	\$822,781	\$770,596	\$1,334,325	\$619,288
Oct	\$665,286	\$939,711	\$940,644	\$1,264,835	\$493,150
Nov	\$563,960	\$768,836	\$1,077,147	\$1,452,281	\$644,896
Dec	\$472,433	\$721,905	\$837,060	\$1,164,249	\$550,710

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

Note: The monthly and annual estimated ex-vessel revenues for all species landed contained in Tables 3.4.1.1.7 and 3.4.1.1.9 were calculated using the weighted average annual price derived from an ex-vessel revenue raw data not shown here which contains revenue and pounds harvested by species. The weighted average annual price was determined by the proportion of each species in the total landings. For example, assume only two species were harvested, species X, which had an average price per pound of \$4 and constituted 75% of total landings, and species Y, which had an average price per pound of \$1 and constituted 25% of total landings. The weighted average price across both species would be equal to \$3.25 $((0.75 * \$4) + (0.25 * \$1))$. In Table 3.4.1.1.7, the same weighted average price per year is used for each month.

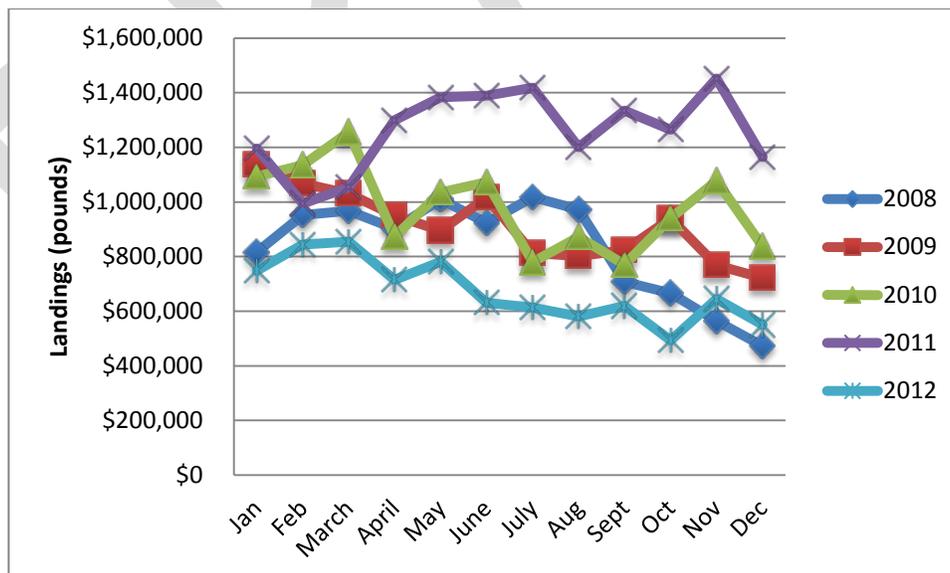


Figure 3.4.1.1.3. Monthly Commercial Ex-Vessel Revenue (real 2013 weighted U.S. dollars) for Puerto Rico, 2008-2012.

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

Note: Ex-vessel revenue was calculated using monthly expanded pounds for each year multiplied by weighted annual ex-vessel prices for each ACL unit to get an ex-vessel price estimate for the year. See note above (Table 3.4.1.1.7) for a full explanation.

Gear Usage

Tables 3.4.1.1.8 and 3.4.1.1.9 show landings and ex-vessel revenue, respectively, by gear type for 2008-2012. Bottom hook and line and diving have been used to bring in the most landings and ex-vessel revenue.

Table 3.4.1.1.8. Annual Commercial Landings (whole pounds) by Gear Type for Puerto Rico, 2008-2012.

Gear Type	2008	2009	2010	2011	2012
DIVING	675,003	670,655	669,554	609,680	773,293
LONG LINE	24,382	12,165	58,737	27,794	20,472
VERTICAL LINE	1,887,252	1,339,297	1,449,580	887,968	881,174
NETS	304,503	352,452	202,765	142,534	186,306
CAST NETS	120,184	47,167	60,504	26,822	46,966
HAUL SEINES	8,707	47,342	32,643	43,603	18,359
TRAPS	336,589	380,061	338,412	318,630	373,277
TOTAL	3,356,620	2,849,139	2,812,195	2,057,031	2,299,847

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

Table 3.4.1.1.9. Annual Commercial Ex-Vessel Revenue (real 2013 U.S. dollars) by Gear Type for Puerto Rico, 2008-2012.

Gear Type	2008	2009	2010	2011	2012
DIVING	\$2,008,464	\$2,126,452	\$2,195,997	\$2,077,346	\$3,565,185
LONG LINE	\$72,549	\$38,572	\$192,645	\$94,701	\$56,446
VERTICAL LINE	\$5,615,498	\$4,246,521	\$4,754,318	\$3,025,548	\$2,712,059
NETS	\$906,045	\$1,117,523	\$665,026	\$485,652	\$390,049
CAST NETS	\$357,606	\$357,606	\$357,606	\$357,606	\$357,606
HAUL SEINES	\$25,907	\$150,108	\$107,062	\$148,567	\$32,371
TRAPS	\$1,001,516	\$1,205,063	\$1,109,921	\$1,085,660	\$1,437,735
TOTAL	\$9,987,585	\$9,241,845	\$9,382,575	\$7,275,080	\$8,551,451

Source: Southeast Fisheries Science Center, October 2013 for 2008-2011 data and April 2014 for 2012 data.

Note: Ex-vessel revenue was calculated using monthly expanded pounds for each year multiplied by weighted annual ex-vessel prices for each ACL unit to get an ex-vessel price estimate for the year. See above note (Table 3.4.1.1.7) for a full explanation.

St. Thomas and St. John

Vessels and Trips

Figure 3.4.1.1.4 shows the number of active vessels for 2008-2012. An active vessel is a vessel that reported landing at least some poundage of fish during a given year. It is possible to show the number of vessels because vessel ID numbers are distributed as part of the licensing procedure in St. Thomas and St. John. The average number of active vessels from 2008-2012 was 104 vessels while the average number of inactive vessels was 84. A total of 188 vessels landed at least some poundage of fish between 2008-2012.

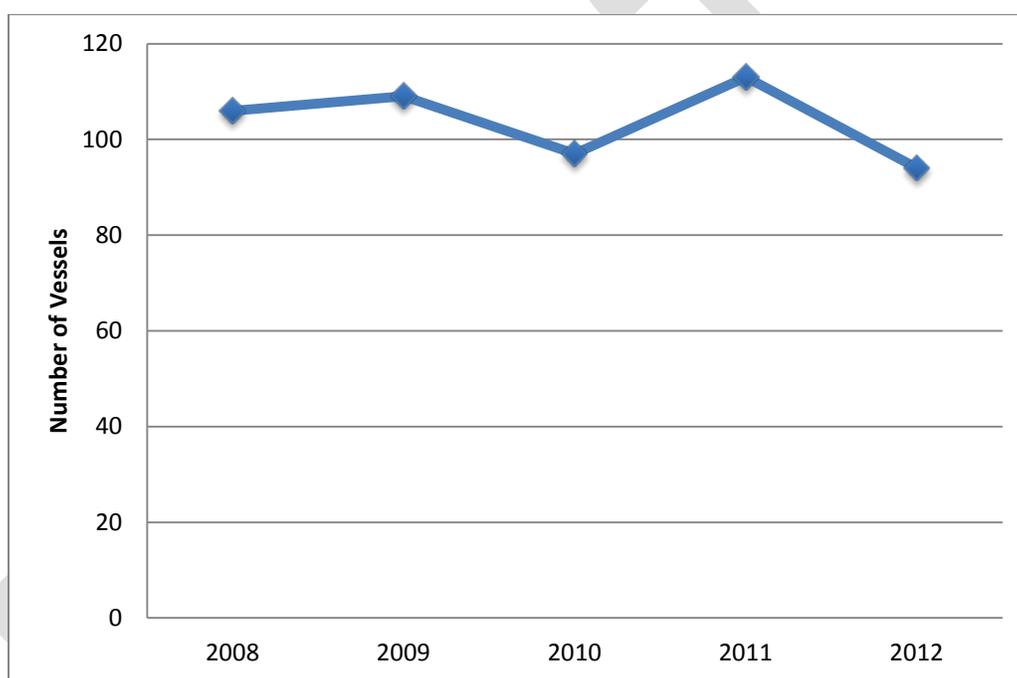


Figure 3.4.1.1.4. Annual Number of Active Commercial Vessels in St. Thomas/St. John, 2008-2012. Source: Southeast Fisheries Science Center, October 2013.

Table 3.4.1.1.10 shows the number of trips with landings from each ACL unit from 2008-2012.

Table 3.4.1.1.10. Number of Commercial Trips Reporting Landings by Species Group/Complex in St. Thomas/St. John, 2008-2012.

Species Unit/Complex	2008	2009	2010	2011	2012
ANGELFISHES	426	465	504	988	1,216
BOXFISHES	1,751	1,664	1,435	1,128	979
GOATFISHES	18	16	5	2	1
GROUPERS	1,635	1,735	1,650	1,763	1,884
GRUNTS	1,887	1,828	1,695	1,481	1,306
JACKS	642	713	532	403	409
PARROTFISH UNIT	1,679	1,666	1,587	1,600	1,627
PORGIES	1,747	1,750	1,585	726	38
QUEEN CONCH	26	40	29	52	15
SNAPPER UNIT 1	0	0	0	151	419
SNAPPER UNIT 2	0	0	0	2	5
SNAPPER UNIT 3	0	0	0	447	648
SNAPPER UNIT 4	0	0	0	446	842
SNAPPERS	2,701	2,941	2,608	1,077	1
SPINY LOBSTER	1,435	1,387	1,256	1,089	1,076
SQUIRRELFISHES	272	256	218	553	966
SURGEONFISHES	1,873	1,819	1,694	1,367	1,248
TRIGGERFISH&FILEFISHES	1,965	1,914	1,771	1,501	1,429
WRASSES	51	70	148	160	176
Without an ACL	1,196	1,552	1,164	1,340	1,642
Total	19,304	19,816	17,881	16,276	15,928

Source: Southeast Fisheries Science Center, October 2013.

Note: The count of vessels submitting a trip report acts as a proxy for the number of trips since the trip report for St. Thomas/St. John does not ask for number of trips.

Landings and Revenue

Tables 3.4.1.1.11 and 3.4.1.1.12 show annual landings and ex-vessel revenue by ACL unit from 2008-2012. From 2008 to 2012, landings declined 43% from almost 691,000 pounds in 2008 to approximately 390,000 pounds in 2012. Revenue declined nearly 26% from approximately \$3 million to \$2.3 million over the same time period. In 2012, the largest poundage caught was in the spiny lobster, snappers, triggerfishes and filefishes, jacks and groupers ACL units, in that order. In 2012, spiny lobster was the highest revenue grossing species followed by snappers, groupers, triggerfishes and filefishes, and jacks, in that order.

Table 3.4.1.1.11. Annual Commercial Landings (whole pounds) by Species Group/Complex in St. Thomas/St. John, 2008-1012.

Species Group/Complex	2008	2009	2010	2011	2012
ANGELFISHES	8,365	9,077	10,586	18,337	16,047
BOXFISHES	33,008	30,323	25,813	15,757	12,288
GROUPERS	56,910	68,602	60,806	53,170	41,184
GRUNTS	39,144	36,557	38,407	25,402	16,102
JACKS	56,197	68,478	46,043	35,049	45,523
PARROTFISH UNIT	39,613	33,049	34,010	23,289	17,224
PORGIES	22,287	21,603	20,387	8,498	144
QUEEN CONCH	857	1,329	1,577	1,930	592
SNAPPER UNIT 1	NA	NA	NA	3,783	9,934
SNAPPER UNIT 2	NA	NA	NA	conf	156
SNAPPER UNIT 3	NA	NA	NA	7,449	10,539
SNAPPER UNIT 4	NA	NA	NA	18,266	32,993
SNAPPERS	145,187	143,615	121,186	46,740	conf
SPINY LOBSTER	110,465	115,762	114,577	84,302	83,138
SQUIRRELFISHES	3,792	3,045	2,366	6,510	9,805
SURGEONFISHES	37,407	31,718	31,927	19,294	15,078
TRIGGERFISHES AND FILEFISHES	84,131	79,469	79,555	57,067	45,989
WRASSES AND GOATFISH	759	1,453	2,569	1,976	1,824
Without an ACL	52,449	65,063	51,954	41,937	31,834
Total	690,496	709,049	641,712	468,740	390,391

Source: Southeast Fisheries Science Center, October 2013.

Note: Goatfish and Wrasses ACL units have been combined to address confidentiality concerns. The term “conf” denotes a confidentiality issue.

Table 3.4.1.1.12. Annual Commercial Revenue (real 2013 U.S. dollars) by Species Group/Complex in St. Thomas/St. John, 2008-2012.

Species Group/Complex	2008	2009	2010	2011	2012
ANGELFISHES	\$36,204	\$35,591	\$33,931	\$56,983	\$48,868
BOXFISHES	\$214,284	\$140,595	\$114,627	\$66,773	\$52,387
GROUPERS	\$246,307	\$422,104	\$377,240	\$330,400	\$250,731
GRUNTS	\$169,416	\$180,307	\$195,811	\$140,474	\$94,747
JACKS	\$243,220	\$317,712	\$205,118	\$165,369	\$230,952
PARROTFISH UNIT	\$171,443	\$153,220	\$150,658	\$108,234	\$87,394
PORGIES	\$96,459	\$93,830	\$87,122	\$35,219	\$849
QUEEN CONCH	\$5,564	\$9,692	\$11,392	\$13,992	\$4,205
SNAPPER UNIT 1	NA	NA	NA	\$23,504	\$60,476
SNAPPER UNIT 2	NA	NA	NA	conf	\$950
SNAPPER UNIT 3	NA	NA	NA	\$46,284	\$64,163
SNAPPER UNIT 4	NA	NA	NA	\$113,502	\$200,860

Species Group/Complex	2008	2009	2010	2011	2012
SNAPPERS	\$628,366	\$899,822	\$759,980	\$290,438	conf
SPINY LOBSTER	\$717,134	\$917,767	\$875,750	\$651,673	\$674,844
SQUIRRELFISHES	\$16,412	\$11,594	\$10,974	\$25,782	\$39,469
SURGEONFISHES	\$161,897	\$147,115	\$141,181	\$88,492	\$76,499
TRIGGERFISHES AND FILEFISHES	\$364,117	\$368,696	\$352,417	\$264,116	\$233,320
WRASSES AND GOATFISH	\$5,508	\$9,854	\$13,728	\$11,731	\$11,103
Without an ACL	\$243,423	\$306,688	\$222,677	\$220,144	\$173,446
Total	\$3,319,752	\$4,014,588	\$3,552,606	\$2,653,110	\$2,305,263

Source: Southeast Fisheries Science Center, October 2013.

Note: Goatfish and Wrasses ACL units have been combined to address confidentiality concerns. The term “conf” denotes a confidentiality issue.

Table 3.4.1.1.13 shows the annual number of vessels landings various pound ranges for 2008-2012. In St. Thomas/St. John, there were similar numbers of active and inactive (no landings at all) vessels from 2008-2012. Approximately 67% of active vessels harvested less than 5,000 pounds in 2012. Almost 22% harvested over 10,000 pounds with the remainder harvesting 5,000 to 10,000 pounds.

Table 3.4.1.1.13. Annual Number of Commercial Vessels Landing Various Ranges of Pounds in St. Thomas/St. John, 2008-2012.

Landings Ranges	2008	2009	2010	2011	2012
No landings (inactive vessels)	83	80	92	76	95
1 - 99	4	5	6	4	7
100 - 499	17	16	15	21	16
500 - 999	17	12	8	15	15
1,000 - 4,999	31	37	35	42	33
5,000 - 9,999	14	16	14	19	12
10,000 - 14,999	8	11	8	7	5
15,000 - 19,999	8	4	2	2	2
20,000 - 24,999	3	1	4	0	3
25,000 - 29,999	1	4	1	2	0
30,000 +	3	3	4	1	1
Total active vessels	106	109	97	113	94

Source: Southeast Fisheries Science Center, October 2013.

Gear Usage

Tables 3.4.1.1.14 and 3.4.1.1.15 show landings and ex-vessel revenue, respectively, by gear type for 2008-2012.

Table 3.4.1.1.14. Annual Commercial Landings (whole pounds) by Gear Type in St. Thomas/St. John, 2008-2012.

Gear	2008	2009	2010	2011	2012
DIVING	9,985	14,652	7,725	8,827	3,660
VERTICAL LINE AND LONGLINE	116,823	132,920	100,752	70,332	57,310
NETS	15	3	3	2,639	9,167
CAST NETS	2,568	2,202	2,836	1,213	536
HAUL SEINES	84,183	95,608	62,979	35,768	33,689
TRAPS	475,648	460,812	455,459	337,197	285,450
Total	689,614	706,194	629,751	455,965	389,809

Source: Southeast Fisheries Science Center, October 2013.

Note: Several gear categories had confidentiality issues. These categories (Trammel Net, Longline, HL_DLL, HL_BOTTOM, Gillnet, GILL_NET_SURFACE) were combined for this reason.

Table 3.4.1.1.15. Annual Commercial Ex-Vessel Revenue (real 2013 U.S. dollars) by Gear Type in St. Thomas/St. John, 2008-2012.

Gear	2008	2009	2010	2011	2012
DIVING	\$50,515	\$84,784	\$44,342	\$49,325	\$22,836
VERTICAL LINE AND LONGLINE	\$523,012	\$754,654	\$570,706	\$411,403	\$334,108
NETS	\$2,787	\$622	\$1,090	\$13,556	\$50,991
CAST NET	\$11,114	\$8,401	\$11,434	\$4,887	\$2,794
HAUL SEINES	\$365,820	\$505,814	\$329,382	\$188,524	\$181,591
TRAPS	\$2,363,583	\$2,644,477	\$2,530,005	\$1,911,181	\$1,713,001
Total	\$3,316,831	\$3,998,752	\$3,486,959	\$2,578,876	\$2,305,321

Source: Southeast Fisheries Science Center, October 2013.

Note: Several gear categories had confidentiality issues. These categories (Trammel Net, Longline, HL_DLL, HL_BOTTOM, Gillnet, GILL_NET_SURFACE) were combined for this reason.

St. Croix

Vessels and Trips

Figure 3.4.1.1.5 shows the number of active vessels in St. Croix. An active vessel is a vessel that made at least some amount of landings in a particular year. The number of active vessels

decreased 24% from 137 in 2008 to 104 in 2012. An average of 129 vessels was active over the five-year period while an average of 167 was inactive (did not land any poundage in one of the five years). A total of 296 vessels were active in at least one of the five years.

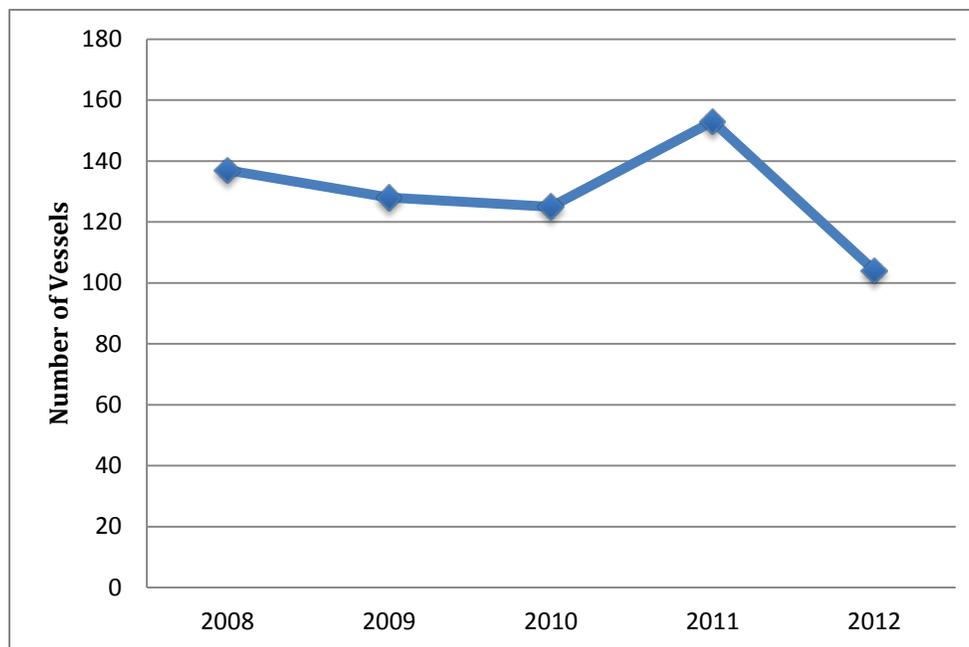


Figure 3.4.1.1.5. Annual Number of Commercial Active Vessels in St. Croix, 2008-2012.
Source: Southeast Fisheries Science Center, October 2013.

Table 3.4.1.1.16 shows the number of trips landings at least some poundage of each of the ACL units.

Table 3.4.1.1.16. Annual Number of Commercial Trips Reporting Landings for Each Species Group/Complex in St. Croix, 2008-2012.

Species Group/Complex	2008	2009	2010	2011	2012
ANGELFISHES	11	13	87	810	1,441
AQUARIUM TRADE	0	0	0	7	11
BOXFISHES	892	912	458	385	272
GOATFISHES	204	268	94	147	141
GROUPERS	1,642	2,026	1,743	2,156	2,454
GRUNTS	2,875	3,617	2,624	2,659	2,318
JACKS	352	405	328	278	349
PARROTFISH UNIT	4,459	4,552	3,211	4,241	5,369
PORGIES	539	429	427	302	41
QUEEN CONCH	1,936	1,038	1,410	1,062	721
SNAPPER UNIT 1	0	0	0	463	651
SNAPPER UNIT 2	0	0	0	126	145

Species Group/Complex	2008	2009	2010	2011	2012
SNAPPER UNIT 3	0	0	0	1,156	2,634
SNAPPER UNIT 4	0	0	0	345	609
SNAPPERS	3,754	3,713	3,196	1,720	0
SPINY LOBSTER	3,578	3,820	3,383	2,449	2,042
SQUIRRELFISHES	16	10	1	88	99
SURGEONFISHES	2,511	2,938	2,156	2,376	1,936
TRIGGERFISHES AND FILEFISHES	2,387	2,863	2,059	1,819	1,547
WRASSES	0	0	0	4	3
Without an ACL	2,815	2,521	2,031	1,887	1,439
Total	27,971	29,125	23,208	24,480	24,222

Source: Southeast Fisheries Science Center, October 2013.

Note: The count of vessels submitting a trip report acts as a proxy for the number of trips since the trip report for St. Croix does not ask for number of trips.

Landings and Revenue

Tables 3.4.1.1.17 and 3.4.1.1.18 show the annual landings and ex-vessel revenue by ACL unit, respectively, over the period 2008 to 2012. An average 770,000 pounds were landed and an average of \$7 million in ex-vessel revenues (nominal) was earned from 2008 to 2012. Landings dropped almost 51% from 2008 to 2012 while revenues dropped 44% over the five-year period. In 2012, the parrotfish ACL unit provided the greatest amount of landings followed by spiny lobster and queen conch ACL units. Spiny lobster, parrotfish, and queen conch ACL units provided the greatest amount of ex-vessel revenues in 2012, in that order.

Table 3.4.1.1.17. Annual Commercial Landings (whole pounds) by Species Group/Complex in St. Croix, 2008-2012.

Species Group/Complex	2008	2009	2010	2011	2012
ANGELFISHES	63	99	815	8,510	14,253
AQUARIUM TRADE	0	0	0	82	128
BOXFISHES	8,268	7,418	4,302	5,335	1,819
GOATFISHES	1,775	2,678	541	712	529
GROUPERS	29,585	34,650	29,117	30,800	29,853
GRUNTS	39,836	46,789	32,514	34,418	24,761
JACKS	8,715	11,881	12,358	10,341	8,355
PARROTFISH UNIT	354,997	316,094	162,623	154,531	118,798
PORGIES	5,694	4,249	5,189	2,698	146
QUEEN CONCH	123,681	71,557	81,917	53,210	36,771
SNAPPER UNIT 1	0	0	0	8,975	23,139
SNAPPER UNIT 2	0	0	0	2,730	4,036
SNAPPER UNIT 3	0	0	0	14,123	30,922
SNAPPER UNIT 4	0	0	0	4,711	9,400

Species Group/Complex	2008	2009	2010	2011	2012
SNAPPERS	112,389	96,393	92,354	55,946	
SPINY LOBSTER	148,003	149,908	139,685	109,751	86,917
SURGEONFISHES	38,127	37,274	29,645	32,187	21,231
TRIGGERFISHES AND FILEFISHES	32,698	38,735	30,711	26,464	22,644
WRASSES AND SQUIRRELFISH	77	32	7	795	623
Without an ACL	134,944	123,628	99,116	88,859	77,111
Total	1,038,850	941,382	720,886	645,177	511,434

Source: Southeast Fisheries Science Center, October 2013.

Note: Squirrelfish and Wrasses ACL Units have been combined to address confidentiality concerns.

Table 3.4.1.18. Annual Commercial Ex-Vessel Revenue (real 2013 U.S. Dollars) by Species Group/Complex in St. Croix, 2008-2012.

Species Group/Complex	2008	2009	2010	2011	2012
ANGELFISHES	\$273	\$362	\$2,612	\$26,440	\$43,385
AQUARIUM TRADE	\$0	\$0	\$0	\$157	\$243
BOXFISHES	\$35,782	\$34,432	\$18,999	\$22,752	\$7,731
GOATFISHES	\$9,603	\$14,801	\$2,909	\$3,975	\$3,220
GROUPERS	\$192,064	\$213,277	\$181,481	\$191,388	\$181,743
GRUNTS	\$172,407	\$230,638	\$167,313	\$191,898	\$145,764
JACKS	\$37,718	\$55,129	\$55,232	\$49,586	\$42,393
PARROTFISH UNIT	\$1,536,419	\$1,466,419	\$714,476	\$698,567	\$602,690
PORGIES	\$24,644	\$18,454	\$19,879	\$9,086	\$859
QUEEN CONCH	\$802,934	\$521,671	\$595,358	\$385,750	\$261,165
SNAPPER UNIT 1	\$0	\$0	\$0	\$55,775	\$140,871
SNAPPER UNIT 2	\$0	\$0	\$0	\$16,963	\$24,575
SNAPPER UNIT 3	\$0	\$0	\$0	\$87,761	\$188,252
SNAPPER UNIT 4	\$0	\$0	\$0	\$29,270	\$57,227
SNAPPERS	\$729,627	\$604,046	\$583,883	\$347,640	\$0
SPINY LOBSTER	\$1,281,107	\$1,188,799	\$1,062,657	\$834,731	\$705,523
SQUIRRELFISHES AND WRASSES	\$333	\$126	\$30	\$3,381	\$2,569
SURGEONFISHES	\$165,013	\$172,876	\$129,993	\$148,658	\$107,710
TRIGGERFISHES AND FILEFISHES	\$141,516	\$179,713	\$134,873	\$119,434	\$114,878
Without an ACL	\$784,036	\$729,208	\$594,006	\$521,531	\$477,111
Total	\$5,913,476	\$5,429,950	\$4,263,702	\$3,744,742	\$3,107,908

Source: Southeast Fisheries Science Center, October 2013.

Note: Squirrelfish and Wrasses ACL Units have been combined to address confidentiality concerns.

Table 3.4.1.1.19 shows the annual number of vessels landings various pound ranges for 2008-2012. In St. Croix, in all years except 2011, there were lower numbers of active vessels than

inactive (no landings at all) vessels. Approximately 80% of active vessels harvested less than 5,000 pounds in 2012. Almost 14% harvested over 10,000 pounds with the remainder harvesting 5,000 to 10,000 pounds.

Table 3.4.1.1.19. Annual Number of Commercial Vessels Landing Various Pound Ranges in St. Croix, 2008-2012.

Pound Ranges	2008	2009	2010	2011	2012
0	159	168	171	143	192
1 - 99	6	6	6	11	5
100 - 499	9	13	13	29	22
500 - 999	22	10	17	22	20
1,000 - 4,999	58	57	46	60	38
5,000 - 9,999	17	18	26	14	5
10,000 - 14,999	5	10	4	9	5
15,000 - 19,999	5	5	4	3	1
20,000 - 24,999	5	0	2	2	1
25,000 - 29,999	2	3	3	1	3
30,000 +	8	6	4	2	4
ACTIVE VESSELS	137	128	125	153	104

Source: Southeast Fisheries Science Center, October 2013.

Gear Usage

Tables 3.4.1.1.20 and 3.4.1.1.21 show the annual landings and ex-vessel revenue, respectively, by gear type for 2008-2012. Landings from Diving have provided the largest amount of landings and revenue (over half of all landings and revenue at 63%) in St. Croix with smaller amounts of vertical line and longline (18%) methods and trap fishing (15%).

Table 3.4.1.1.20. Annual Commercial Landings (whole pounds) by Gear Type in St. Croix, 2008-2012.

Gear	2008	2009	2010	2011	2012
DIVING	655,378	652,302	463,650	393,517	325,986
VERTICAL LINE AND LONGLINE	189,826	174,304	140,501	118,425	90,361
NETS	5048	3118	2310	2607	11,428
CAST NETS	13,084	5,019	531	1,806	3,363
HAUL SEINES	55,199	17,415	14,622	15,759	2,612
TRAPS	120,314	89,072	87,919	99,496	77,675
Total	1,038,849	941,230	709,533	631,610	511,425

Source: Southeast Fisheries Science Center, October 2013.

Table 3.4.1.1.21. Annual Commercial Ex-Vessel Revenue (real 2013 U.S. dollars) by Gear Type in St. Croix, 2008-2012.

Gear	2008	2009	2010	2011	2012
DIVING	\$3,805,364	\$3,754,434	\$2,754,299	\$2,267,137	\$1,978,751
VERTICAL LINE AND LONGLINE	\$1,170,182	\$1,070,884	\$863,696	\$768,552	\$573,659
NETS	\$22,644	\$14,485	\$13,520	\$12,565	\$14,570
CAST NETS	\$79,540	\$30,879	\$3,069	\$9,352	\$17,062
HAUL SEINES	\$245,852	\$66,642	\$60,988	\$66,305	\$13,251
TRAPS	\$589,895	\$491,609	\$497,129	\$566,456	\$510,614
Total	\$5,913,477	\$5,428,933	\$4,192,701	\$3,690,368	\$3,107,907

Source: Southeast Fisheries Science Center, October 2013.

For more information see economic descriptions of the USVI commercial and recreational fishing industries in 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.

Recreational Sector

This section presents information from the Marine Recreational Information Program (MRIP) from the NOAA Office of Science and Technology website found at:

<http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/index>.

Puerto Rico

In 2012, 94,000 marine recreational participants took 351,000 trips and caught a total of 526,000 fish. The most commonly caught non-bait species (in numbers of fish) were dolphinfish, silk snapper, anchovy family, lane snapper, and blue runner. By weight, the largest harvests were dolphinfish, wahoo, common snook, tripletail, great barracuda, and king mackerel (Fisheries of the U.S., 2012).

Catch and Harvest

Table 3.4.1.1.22 shows the number of fish harvested and released through recreational fishing.

Table 3.4.1.1.22. Total Recreationally Harvested and Released Numbers of Fish in Puerto Rico, 2008-2012.

Year	Harvested	Released
2008	1,341,257	176,930
2009	663,590	119,179
2010	392,624	156,115
2011	387,316	58,980
2012	477,730	48,664

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

Effort (Angler Trips)

Table 3.4.1.1.23 shows the total number of angler trips in Puerto Rico while Table 3.4.1.1.24 breaks down the number of angler trips by mode (shore, charter boat, and private/rental boat).

Table 3.4.1.1.23. Total Recreational Angler Trips in Puerto Rico, 2008-2012.

Year	Angler Trips
2008	798,551
2009	636,151
2010	536,183
2011	424,587
2012	350,568

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

Table 3.4.1.1.24. Total Recreational Angler Trips by Mode in Puerto Rico, 2008-2012.

Year	Shore	Charter Boat	Private/Rental Boat
2008	423,190	12,622	362,739
2009	345,584	2,610	287,957
2010	219,651	4,113	312,419
2011	232,917	4,730	186,939
2012	140,266	1,839	208,462

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

Participation

Table 3.4.1.1.25 shows individual participation in recreational fishing in Puerto Rico.

Table 3.4.1.1.25. Recreational Participation by Region (individuals) in Puerto Rico, 2008-2012.

Year	Coastal Resident	Out of State
2008	127,863	21,681
2009	110,236	22,352
2010	92,191	11,096
2011	98,662	13,795
2012	83,837	10,003

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

Economic Value and Expenditures

There is no information at this time regarding economic value and expenditures of recreational fishing in the U.S. Caribbean.

Summary

In general, there has been a downward trend in harvest, releases, number of trips and recreational fishing participation since 2008. The reason for this could be the increase in diesel prices and/or the downturn in the economy, which could result in less expenditure on recreational fishing.

U.S. Virgin Islands

Please refer to the amendments above for information about the USVI recreational fisheries. While no MRIP program is in place, there has been some academic and territorial research on recreational fisheries and these are discussed in previous amendments.

3.4.2 Description of the Social and Cultural Environment

Descriptions of the social environment of reef fish, queen conch, spiny lobster, and coral fisheries are included in CFMC (2011a) and CMFC (2011b) and are incorporated by reference. In addition, detailed descriptions of the social environment of specific fisheries are included in recent amendments including CFMC (2013b) (Queen Conch FMP) and CFMC (2013a) (Reef Fish FMP) and are incorporated herein by reference.

This comprehensive amendment proposes changes to the reef fish, coral, queen conch, and spiny lobster FMPs (including snappers, groupers, spiny lobster, boxfish, goatfish, grunts, wrasses, jacks, scups and porgies, squirrelfish, triggerfish and filefish, tilefish, angelfish, surgeonfish, parrotfish, queen conch, and aquarium trade species). Therefore, this section includes a description of fishermen and fishing communities in Puerto Rico and the USVI in relation to their involvement in the included fisheries. Additional fisheries not managed by the Caribbean Council (such as highly migratory species) are also included in the narrative, in order to provide context on the dependence on Council-managed species. For recent commercial and recreational landings of the FMUs or species in the reef fish, coral, queen conch, and spiny lobster FMPs, the reader is directed to refer to Tables 2.2.1.1.1-2.2.1.1.5 in Section 2.1.1.1. Also, additional narratives on the impacted fisheries, which can be used to supplement this section, are included in Section 3.3 (Description of the Fisheries) of this document.

Data are presented at the community level, when possible, in order to meet the requirements of National Standard 8 (NS 8) of the Magnuson-Stevens Act. NS8 requires the consideration of the importance of fishery resources to human communities when changes in fishing regulations are considered. For the following analysis, the majority of data are presented at the island, commonwealth, or territory level because these data are not available at the place-based community level of analysis.

Puerto Rico Fishing Community

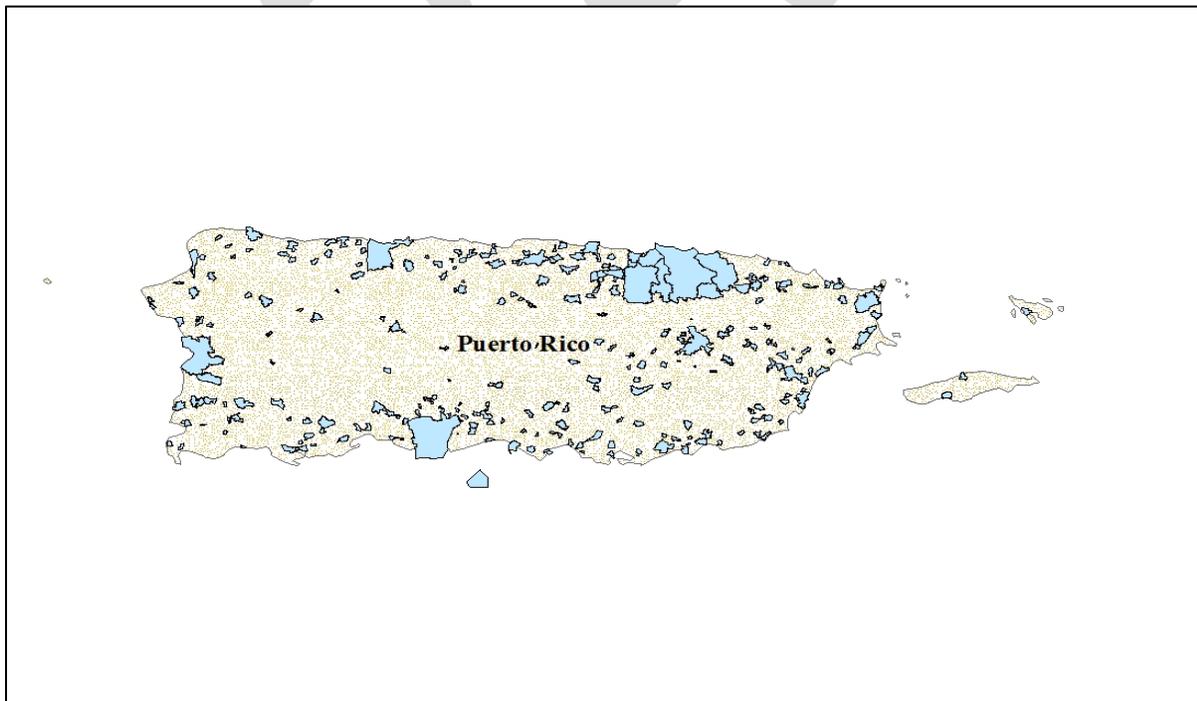


Figure 3.4.2.1. Map of Puerto Rico with census designated places.
Source: NMFS SERO Fisheries Social Science Branch, M. Jepson.

Fishing traditions in coastal communities in Puerto Rico are visible through the celebration of the Virgen del Carmen, the patron saint of fishers, which derives from the fishing and maritime tradition of Spain. In addition, more recent traditions are visible through the Festival Del Pescao (Seafood Festival) in Cabo Rojo, a festival which was created during the 1970s and occurs during Lent. Fish are important and culturally significant to the Puerto Rican diet. Fish are particularly important among Catholics during Lent, which includes one of the most brisk seasons for seafood sales. Fish is both a high-priced food enjoyed by tourists and coastal visitors and a low-cost and high quality protein which is sold to working people (Griffith et al. 2007).

As with most island coastal economies, there are three main types of fisheries in Puerto Rico: commercial, recreational, and subsistence. The commercial sector is responsible for the majority of landings. Puerto Rico's commercial fishery has been referred to as "artisanal" and can be considered small-scale and family-based (Griffith et al. 2007). Most fishing operations are multi-gear and multi-species according to Griffith et al. (2007) with nearly two-thirds utilizing at least three gear types. A number of different gear types are used by Puerto Rican fishermen, including: handline, rod and reel, longline, bottomline, fish traps, lobster traps, gill nets, trammel nets, cast nets and SCUBA gear (Matos-Caraballo and Agar 2011). There seems to be an increase in the use of SCUBA gear in the commercial fisheries.

According to a recent census, there were approximately 868 active commercial fishermen in Puerto Rico in 2008 (Matos-Caraballo and Agar 2011). This number is highly contested though, as pointed out in Griffith et al. (2007), and in the past even a range of 1,500 to 2,500 has been suggested too low by fishermen. The confusion may be attributed to what an active fisherman is considered to be. Nevertheless, the number, as reported in that census, decreased from an earlier census conducted in 1988 when there were over 1,700 fishermen or the 2003 census which counted 1,132. Nearly 75 percent of fishermen reported that they worked full-time as fishermen; whereas 25 percent reported that they worked part-time as fishermen and held other occupations or received retirement benefits (Matos-Caraballo and Agar 2011). Recently, as reported in Section 3.3.1, in 2011 and 2012, the number of commercial fishermen in Puerto Rico more than doubled (3,408) from the number reported in 2009. The increase in the number of commercial fishermen was likely due to the moratorium on the historical requirement to submit tax forms to be used by PRDNER to determine the amount of income a fisher derived from commercial fishing. This moratorium on the requirement to show tax forms when applying for a commercial license was put in place in 2011; however the tax requirement was re-instated in 2013.

Out of the 868 commercial fishermen interviewed in a recent census, reef fish was the top category in terms of importance with 77.3 percent of respondents targeting reef fish (Table 3.4.2.1) (Matos-Caraballo and Agar 2011). Deepwater snapper was the second most commonly targeted category (55.5%), and spiny lobster was the third (49.3%). Ornamental fish were targeted to a lesser degree with only 1.6 percent of fishermen reporting that they targeted

ornamental fish (Table 3.4.2.1). The number of fishermen targeting specific species varied by coastal region with top species (species targeted by more than half of respondents) for the north coast including reef fish (88.3%), deep-water snapper (71.6%), and pelagic species (65.4%). Whereas, top species for the east coast included reef fish (75.5%), deep-water snapper (71.6%), pelagic species (66.5%) and spiny lobster (64.5%). Along the south coast, the top species were reef fish (88.0%) and spiny lobster (57.1%). Along the west coast of Puerto Rico, the top species were reef fish (64.8%) and deep-water snapper (51.3%, Table 3.4.2.1).

Table 3.4.2.1. Target species by coastal region. Source: Matos-Caraballo and Agar (2011).

Percentage of fishermen who target the following species	North Coast	East coast	South coast	West coast	Puerto Rico
Reef fish	88.3%	75.5%	88.0%	64.8%	77.3%
Deep-water snapper	71.6%	71.6%	39.5%	51.3%	55.5%
Pelagic species	65.4%	66.5%	30.0%	26.4%	41.8%
Spiny lobster	27.8%	64.5%	57.1%	47.2%	49.3%
Queen conch	13.0%	34.8%	45.1%	34.6%	33.4%
Baitfish	53.1%	32.9%	30.9%	17.9%	30.7%
Octopus	1.9%	0.0%	19.3%	1.3%	6.0%
Sirajo goby	8.0%	0.0%	0.9%	0.0%	1.7%
Land crab	9.3%	10.3%	6.0%	2.2%	6.0%
Ornamental fish	0.6%	1.9%	0.9%	2.5%	1.6%

Puerto Rico fishermen target multiple species and a variety of species are important to each municipality. Rarely, did more than one to two species account for more than 10 percent of the landings in a specific municipality, and in many cases the third most important species listed accounted for less than 10 percent of the landings (Tables 3.4.2.2).

Table 3.4.2.2. Three most important species by municipality, 1999-2003. Percentages of landings by species are included as the numerical value. Source: Griffith et al. (2007).

Municipality	1 st Species	2 nd Species	3 rd Species
San Juan	Yellowtail Snapper 15.0	Jacks 8.0	Lane Snapper 6.4
Cataño	Jacks 7.9	Mojarras 6.9	White Grunt 5.5
Toa Baja	Jacks 7.9	Mojarras 6.9	White Grunt 5.5
Mayagüez	Yellowtail Snapper 12.6	Lane Snapper 11.1	King Mackerel 7.5
Añasco	Silk Snapper 41.0	Lane Snapper 9.6	Lobster 6.0

Municipality	1 st Species	2 nd Species	3 rd Species
Rincón	Queen Snapper 28.6	Silk Snapper 25.1	Dolphin 5.1
Ponce	Yellowtail Snapper 18.1	Lane Snapper 13.5	Snappers (generic) 9.1
Juana Díaz	Lobster 32.2	Lane Snapper 17.5	Other fishes 7.5
Santa Isabel	Lane Snapper 22.2	Lobster 9.3	Yellowtail and Mutton Snappers 8.7
Salinas	Lane Snapper 15.7	Yellowtail and Mutton Snappers 9.5	White Grunt/Lobster 9.0
Guayama	Lobster 9.0	White Grunt 8.4	Lane Snapper 8.3
Patillas	Lobster 11.8	Lane Snapper 6.8	Parrotfish 6.0
Arroyo	Parrotfish 15.1	Lobster 10.4	Ballyhoo 7.0
Peñuelas	Lobster 26.0	Hogfish 16.3	Octopus 11.6
Guayanilla	White Grunt 12.1	Mutton Snapper 8.6	Lane Snapper 8.4
Guánica	Lobster 14.0	Yellowtail Snapper 12.0	Hogfish 9.0
Isabela	Lobster 20.7	Nasau Grouper 14.1	Silk Snapper 12.1
Camuy	Yellowtail Snapper 18.1	Mutton Snapper 10.5	King Mackerel 9.2
Arecibo	Silk Snapper 32.9	King Mackerel 8.7	Lobster 8.0
Barceloneta	Silk Snapper 14.3	Triggerfish 8.8	Lane Snapper 7.1
Manatí	Herrings 5.7	White Mullet 5.6	Jacks 4.9
Vega Baja	Silk Snapper 10.2	Red Hind 7.4	Bar Jack 5.7
Vega Alta	Silk Snapper 10.3	Bar Jack 6.4	Red Hind 6.2
Dorado	Silk Snapper 10.0	Triggerfish 6.8	Schoolmaster 6.4
Carolina	Jacks 8.0	White Mullet 7.6	Yellowtail Snapper 7.6
Loíza	Silk Snapper 10.5	Vermilion Snapper 8.5	Yellowtail Snapper 6.6
Rio Grande	Yellowtail Snapper 11.1	Vermilion Snapper 9.9	White Grunt 9.3
Luquillo	White Grunt 10.3	Lane Snapper 7.2	King Mackerel 6.2
Fajardo	Yellowtail Snapper 17.9	Lobster 7.7	King Mackerel 5.4
Ceiba	White Grunt 12.5	Lobster 7.7	Boxfishes 5.4
Vieques	Lobster 15.4	Yellowtail Snapper 8.7	Triggerfish 6.5
Culebra	Nasau Grouper 17.2	Lobster 15.4	Triggerfish 15.1
Naguabo	Lobster 18.7	1 st class fish 16.1	3 rd class fish 13.7
Humacao	Lobster 13.7	Yellowtail Snapper 9.3	White Grunt 7.8
Yabucoa	Yellowtail Snapper 12.7	Lane Snapper 10.8	White Grunt 10.8
Maunabo	Lane Snapper 12.3	White Grunt 11.9	Lobster 9.3
Lajas	Lobster 8.2	White Grunt 7.8	Lane Snapper 6.5

Municipality	1 st Species	2 nd Species	3 rd Species
Cabo Rojo	Lobster 17.8	Boxfishes 9.8	Lane Snapper 6.7
Aguada	Silk Snapper 13.0	Skipjack Tuna 8.5	King Mackerel 7.6
Aguadilla	Silk Snapper 12.9	Skipjack Tuna 10.0	King Mackerel 9.9

Puerto Rico’s recreational fishermen range from charter boat captains to individuals who fish with a can, line and a hook. As of March 9, 2010, there were 582 recreational (including subsistence) fishermen in Puerto Rico registered with the National Angler Registry. As reported in Section 3.4.1.1, a total of 94,000 marine recreational participants embarked on 351,000 fishing trips in 2012. The majority of trips were taken using a private or rental boat (59.5%), followed by shore mode (40%), and charter boat (0.5%, Tables 3.4.1.1.23-24). Coastal residents made up the majority of participation in the marine recreational sector (89.3% in 2012); whereas a smaller portion of recreational participation included those from other states (10.7%, Table 3.4.1.1.25).

Subsistence fishing in Puerto Rico is primarily a working class family activity and they see fish as a source of high quality protein for their family (Griffith et al. 2007). They do differ in some respects from other sectors with regard to key aspects, in that they may often be retired or unemployed (Griffith et al. 2007). Subsistence fishermen target snapper-grouper species (40%) and pelagic species including species such as dolphin (7.4%) and king mackerel (5.9%), but nearly no shellfish. The varieties of gear used by subsistence fishers are similar to those of recreational fishers; however few use SCUBA gear (Griffith et al. 2007). It is clear that many Puerto Ricans participate in subsistence fishing. However, without more detailed research, it is difficult to know how pervasive this activity is on the island or their household’s dependence upon fish as a food source.

Griffith et al. (2007) found that in terms of fishing communities there were both place-based and network-based communities in Puerto Rico. Although fishermen were spread out considerably across the island, there were certain locations that seemed to provide key features of a place-based fishing community including fishing infrastructure and social interactions on a daily basis. Overall, they were able to identify 38 place-based fishing communities on the island (Griffith et al. 2007).

St. Croix Fishing Community

Fishing on the island of St. Croix has a long history as with the other islands. Historically, it has been a “marginal” activity to the larger backdrop of other economic sectors on the island. However, fishing has been a core value and important to the identity of the Cruzan population (Valdés-Pizzini et. al 2010).

Commercial fishing on St. Croix is much like that of Puerto Rico in that is “artisanal.” Most fishermen construct and repair their gear and boats, as well as market their fish (Kojis and Quinn 2012; Valdés-Pizzini et. al 2010). The number of commercial fishers is elusive as in Puerto Rico but recent estimates place the number of active fishermen in the range of 200-250. This does not include those who may provide support services for registered fishermen or those who may not be registered to fish (Valdés-Pizzini et. al 2010). However, a recent commercial fisher registration list placed the number of St. Croix licensed commercial fishermen at 177 as of March 2011 (Kojis and Quinn 2012).

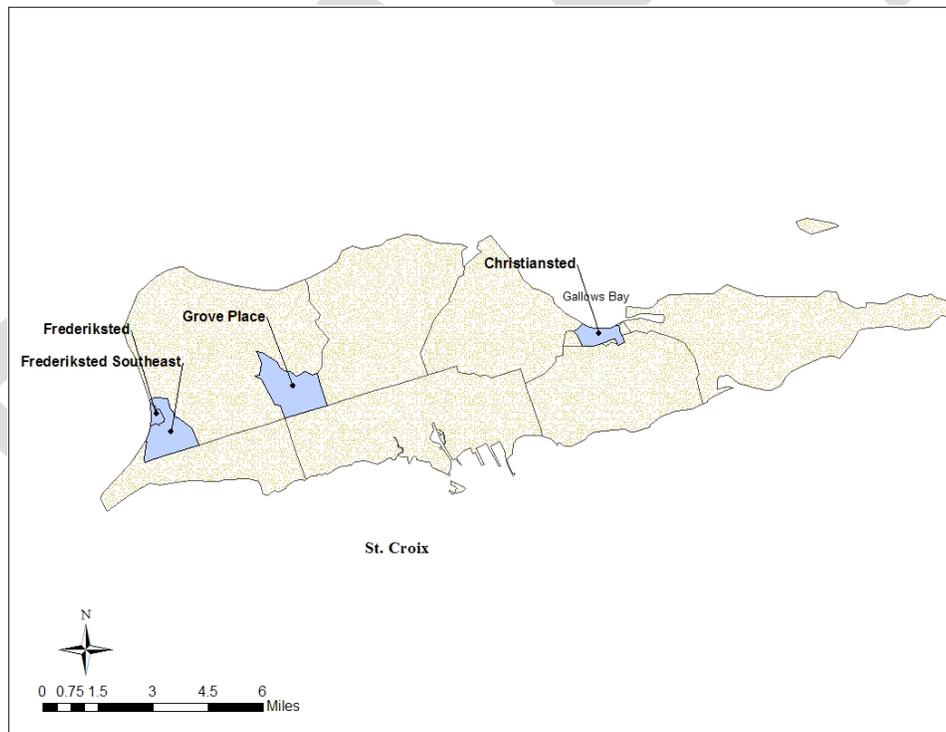


Figure 3.4.2.2. Map of St. Croix with census designated places.
Source: NMFS SERO Fisheries Social Science Branch, M. Jepson.

The majority of St. Croix commercial fishermen classify themselves as Hispanic with the next largest ethnic group identified as West Indian. The most frequent racial designation is Black.

Most are full-time fishermen putting in over 36 hours a week (Kojis and Quinn 2012), however, the percentage may be lower than other islands and may be linked to perceptions of the current state of the fisheries. Many seek work outside of fishing, as it is increasingly difficult to make a living from that particular occupation (Valdés-Pizzini et. al 2010); however it has been reported that it is difficult for fishermen to find other employment (58.2% of fishermen interviewed indicated it was very hard or hard to find other employment, [Kojis and Quinn 2012]). Many fishers hold other occupations in addition to fishing, termed occupational multiplicity. These fishers continue to fish in addition to their other occupations and intend to continue to engage in fishing for as long as they are physically capable (Grace-Mccaskey 2012).

The dominant gear type used is hook and line with diving second. Trap fishing is third, but many fishermen indicated that they fish several gear types throughout the year (Kojis and Quinn 2012). Vessels are usually small and hauled on trailers transported to different parts of the island according to the type of fishery prosecuted seasonally.

Licensed fishermen land their fish at many landing locations around the island (16 different locations on St. Croix were reported by interviewed fishermen); however, the top three most important landing sites were Altona Lagoon in Christiansted, the Molasses Pier, and Frederiksted Fish Market (Kojis and Quinn 2012). St. Croix fishermen commonly market their fish themselves (Kojis and Quinn 2012).

Commonly in St. Croix, commercial fishermen keep part of their catch to be consumed by their families for subsistence. Fishermen also commonly give away part of their catch to friends to be used for their subsistence (Kojis and Quinn 2012).

A variety of species are caught by commercial fishermen in St. Croix and fishermen commonly target more than one category of fish. Out of the 154 fishermen interviewed in a recent census, reef fish was the top category in terms of importance with 79.9 percent of respondents targeting reef fish (Table 3.4.2.3). Spiny lobster was the second most commonly targeted category with 57.8 percent of interviewed fishermen targeting spiny lobster and queen conch was the fourth most commonly targeted category with 57.8 percent of fishermen targeting spiny lobster (Table 3.4.2.3).

Table 3.4.2.3. Relative importance of categories of fish, mollusks, and crustaceans to St. Croix interviewed licensed commercial fishers. Frequency includes the number of fishermen who answered that they harvest a particular category. Percentages can equal more than 100 % because fishermen harvested more than one category. Source: Kojis and Quinn (2012).

Categories of Fish	Frequency	Percent
Reef fish	123	79.9%
Coastal pelagic	48	31.2%
Deep pelagic	74	48.1%
Deepwater snapper	58	37.7%
Bait fish	10	6.5%
Queen conch	65	42.2%
Whelk/West Indian top shell	20	13.0%
Spiny lobster	89	57.8%
Total # of fishers	154	316.2%

Most of the deepwater snapper are fished off the Eastern and Southeastern end of the Island, while the major trap grounds are off the southwestern part of the island according to Valdés-Pizzini et al. (2010). Dive fishing occurs most on the East End and along the southern shore which are the most productive fishing grounds and the focus of conservation initiatives (Valdés-Pizzini et al. 2010).

While there has been limited research on the recreational fishing sector of St. Croix, a few reports provide a brief glimpse of related activities. In one survey of fishing clubs, tuna, dolphin, and wahoo were identified as the primary target species of recreational fishermen from St. Croix (Messineo and Uwate 2004). Valdés-Pizzini et al. (2010) report that about 11% of St. Croix residents participate in recreational fishing, although because they are not required to have a license. The charter fishing and sport fishing tournaments are becoming increasingly important to the St. Croix economy, but the St. Croix offshore fleet is modest compared that of St. Thomas and St. John (Valdés-Pizzini et al. 2010).

In terms of fishing communities on the island, it seems to be the consensus of Valdés-Pizzini et al. (2010) that the geographical dispersion of fishermen throughout the island and the same dispersion of their fishing activities make it difficult to identify any particular community as a fishing community. Gallow Bay historically has been considered a fishing community, but has recently undergone significant change that now brings to question whether this area could be considered a fishing community. There are ties to the “roots” of commercial fishing, but day to day activities often hide the activities that link the community to fishing (Valdés-Pizzini et al. 2010). Fishermen in St. Croix do not typically live in areas that are close to the coast but instead tend to live along a “diagonal line that extends from the north to the southwest coinciding with

the Centerline Road.” The current pattern of fishers’ residences is based on the historical factors such as the process of homesteading where the government provided land to farmers in order to try to revitalize the sugar industry (Valdés-Pizzini et al. 2010).

St. Thomas and St. John Fishing Community

Both commercial and recreational fishing are important aspects of the island economies of St. Thomas and St. John, although the tourism sector may significantly dwarf their contributions in terms of economic value. Still, there are important remnants of commercial fishing communities that exist on the islands and newer spaces for recreational fishing that are growing in importance (IAI 2007). Whether they are fishing communities in the true sense or fishing activity is so spread across the island that the entire geography should be considered a fishing community, as has been suggested (Stoffle et al. 2011), is still undetermined.

Two areas where concentrations of commercial fishing activity are located on St. Thomas are the Northside and Southside of the island. Hull Bay on the Northside provides a protected area with a boat ramp where many commercial vessels are moored. Frenchtown on the Southside has docking facilities along with a covered market that has considerable activity throughout the week but especially on Saturdays (IAI 2007).

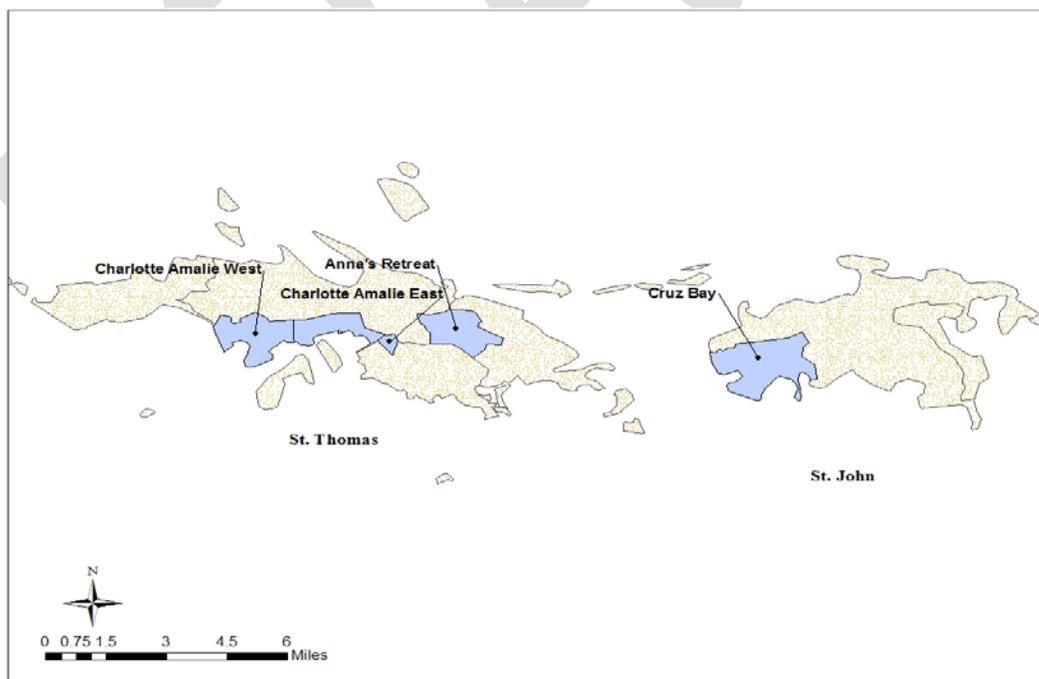


Figure 3.4.2.3. Map of St. Thomas and St. John with census designated places.

Source: NMFS SERO Fisheries Social Science Branch, M. Jepson.

Like St. Croix and Puerto Rico, commercial fishing on St. Thomas and St. John is much like that of the other islands in that is likely “artisanal.” Most fishermen construct and repair their gear and boats, as well as market their fish (Kojis and Quinn 2012). The recent census places the number of active fishermen at around 120 on both islands (Kojis and Quinn 2012).

The majority of commercial fishermen of St. Thomas and St. John classify themselves as French descent with the next largest ethnic group identified as West Indian. The most frequent racial designation is White. The time spent fishing is split almost evenly between full-time fishermen putting in over 36 hours a week, those putting in 15-36 hours a week, and those spending less than 15 hours a week (Kojis and Quinn 2012).

The dominant gear type used is hook and line with traps second. Dive gear fishing is third, but many fishermen, as in St. Croix indicated that they fish several gear types throughout the year (Kojis and Quinn 2012). Vessels are also small and hauled on trailers transported to different parts of the island according to the type of fishery prosecuted seasonally. However, both the Northside and Southside provide mooring and dockage as do other marinas and protected bays around the island where vessels are kept (IAI 2007).

According to IAI (2007) the primary trap fishing areas for lobster and finfish are located to the south and north of the islands. The primary handline area is to the south with a small area north of St. Thomas, while net fishing is almost exclusively conducted on the Northside of St. Thomas (IAI 2007). The primary target of fishermen from St. Thomas/St. John was reef fish (84.6%). Coastal pelagics were second (50.5%) with spiny lobster third (29.7%, Table 3.4.2.4).

Table 3.4.2.4. Relative importance of categories of fish, mollusks, and crustaceans to St. Thomas/St. John interviewed licensed commercial fishers. Frequency includes the number of fishermen who answered that they harvest a particular category. Percentages can equal more than 100% because fishermen harvested more than one category. Source: Kojis and Quinn 2012.

Categories of Fish	Frequency	Percent
Reef fish	77	84.6%
Coastal pelagic	46	50.5%
Deep pelagic	9	9.9%
Deep-water snapper	7	7.7%
Bait fish	3	3.3%
Queen conch	8	8.8%
Whelk/West Indian top shell	9	9.9%
Spiny lobster	27	29.7%
Total # of fishers	91	204.4%

Recreational fishing is likely more important in St. Thomas than other islands in the USVI. The East End of the island has a concentration of charter fishing vessels and infrastructure. In contrast to commercial fishermen, recreational fishermen are more likely to target coastal pelagic fish which explains the highly disperse fishing area for charter fishermen which extends well beyond the north sides of both islands and far south of St. Thomas (IAI 2007). Again, there seems to be little if any description of subsistence fishing in either St. Thomas or St. John, although subsistence fishing does exist and is likely an important source of food for many, we do not have sufficient information to provide a complete description.

In terms of fishing communities on the island, it seems that the geographical dispersion of fishermen throughout the island and the same dispersion of their fishing activities has led some to suggest that the entire island should be designated a fishing community (Stoffle et al. 2011). Some parts of St. Thomas have been identified as having substantial fishing activity and it has been suggested that they could be considered a place-based fishing community (IAI 2007). Nevertheless, fishing has been identified as an important component of the culture and livelihood of many individuals on the islands, whether commercial, recreational or subsistence.

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 United States and its territories. This executive order is generally referred to as environmental justice (EJ).

Minority populations: The Hispanic origin group which is considered a minority in the continental United States is the majority ethnic group in Puerto Rico. In the year 2010, 16.3% of the population of the continental United States was comprised of residents that identified 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, 2010 Census). In the USVI the majority of the population is Black or African American (72% including those of two or more races) according to the year 2000 Census; whereas the percentage of the population comprised of Black or African American residents of the continental United States was 12.9% for the same year. The minority (minority is commonly interpreted for the United States as White, non-Hispanic) rates for all of Puerto Rico and the USVI are 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 45.2% of the population in Puerto Rico for the year

2010, significantly higher than that of the continental United States which included 15.3% of the population below poverty (U.S. Census Bureau, 2010 Census). For the year 2010 the poverty rate for the USVI was 22.2%, also significantly higher than the rate for the continental United States (U.S. Census Bureau, 2010 Census). These overall higher poverty rates indicate that the U.S. Caribbean includes more individuals that are likely to be more vulnerable and experience higher levels of effects when changes in fisheries management are conducted.

Because this proposed action is expected to impact fishermen in the U.S. Caribbean, and information is not available in most cases to link these fishermen to the communities in which they reside, all communities in Puerto Rico and the USVI 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 the USVI or 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 2010 was 45.2%. This value translates into an EJ poverty threshold of approximately 54.2%. The communities below exceeded this poverty threshold and are the most likely to be vulnerable to EJ concerns (Table 3.4.3.1).

Table 3.4.3.1. Puerto Rico communities which exceeded poverty threshold for year 2010.
Source: U.S. Census Bureau 2010.

Community	Percent of Population Below Poverty Level
Adjuntas	57.2
Aguada	56.5
Barranquitas	54.7
Ciales	59.3
Coamo	55.8
Comerío	58.4
Corozal	58.4
Guánica	58.2
Guayanilla	56.5
Isabela	57.1
Lajas	55.7
Lares	58.1

Las Marías	58.2
Maricao	65.7
Maunabo	55.6
Moca	57
Morovis	62
Naranjito	55.3
Orocovis	62.6
Patillas	57
Peñuelas	57.7
Quebradillas	60.6
Salinas	58.5
San Sebastián	58.5
Utuado	57.6
Villalba	57.1
Yauco	56.8

As mentioned above, the poverty rate for the USVI in 2010 was 22.2%. This value translates into an EJ poverty threshold of approximately 26.6%. The communities below exceeded this poverty threshold and are likely the most vulnerable to EJ concerns (Table 3.4.3.2).

Table 3.4.3.2. U.S. Virgin Islands communities which exceeded poverty threshold for year 2010. Source: U.S. Census Bureau 2010.

Community	Poverty Rate
Charlotte Amalie	27.3
Charlotte Amalie East	30.7
Christiansted	41.1
Frederiksted	45.9
Frederiksted Southeast	38.9

The greater commonwealth of Puerto Rico and territory of the U.S. Virgin Islands and the majority of the communities expected to be affected by this proposed amendment have minority or economic profiles that include higher rates than that of the continental United States. EJ issues could arise in FMUs or species which could experience decreases in their ACLs as a result of this proposed amendment, particularly in regard to poverty. Food insecurity is a large issue in the U.S. Caribbean and these vulnerable low-income populations could be impacted to a greater extent because of their dependence on the fish they receive through fishing efforts and utilize as food to supplement their income.

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 actions 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.

Responsibility for federal fishery management decision-making 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 Council consists of seven voting members: four public members appointed by the Secretary, one each from the fishery agencies of Puerto Rico and the USVI, and one from NMFS. The Council is responsible for fishery resources in federal waters of the U.S. Caribbean. These waters extend to 200 nautical miles offshore from the nine-mile seaward boundary of the Commonwealth of Puerto Rico and the three-mile seaward boundary of the Territory of the USVI.

The total area of fishable habitat in the U.S. Caribbean is estimated to be approximately 2,467 square nautical miles (nm²) (8,462 km²). Fishable habitat is defined as those waters less than or

equal to 100 fathoms (600 ft; 183 m). The fishable habitat within the EEZ is 355 nm² (1,218 km²) or 14.39% of the U.S. Caribbean total, with 116 nm² (398 km²) (4.7%) occurring off Puerto Rico and 240 nm² (823 km²) (9.7%), occurring off the USVI. The vast majority of the fishable habitat in federal waters off Puerto Rico is located off the west coast.

The vast majority of the fishable habitat in federal waters off the USVI is located off the north coast of St. Thomas. The majority of fishing activity for Council-managed species occurs in that area, except for fishing for deep-water snappers, which occurs primarily in the EEZ at depths greater than 100 fathoms (600 ft; 183 m) (CFMC 2005).

Public interests are also involved in the fishery management process through participation on advisory panels and through Council meetings that, with few exceptions for discussing personnel matters, are open to the public. In addition, the regulatory process is in accordance with the Administrative Procedures Act, in the form of “notice and comment” rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments.

Regulations 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 and commonwealth and territory 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 Highly Migratory Species Fishery Management Plan: Caribbean Fishery Management Measures re-evaluated the management measures for commercial and recreational HMS fisheries operating in the U.S. Caribbean. The rule implementing this amendment became effective on January 2, 2013. This rule had the purpose of improving permitting of and data collection from vessels operating in the U.S. Caribbean to better manage the traditional small-scale commercial HMS fishing fleet 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 Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks (HMS FMP, <http://www.nmfs.noaa.gov/sfa/hms/>) and Amendment 4 to the HMS FMP (<http://www.nmfs.noaa.gov/sfa/hms/FMP/AM4.htm>).

Recreational fishing in the EEZ requires fishermen register in the National Registry. For information, please visit the Recreational Fisheries Statistics Web site at <http://www.countmyfish.noaa.gov/>.

3.5.2 Territory and Commonwealth Fishery Management

The governments of the Territory of the USVI and the Commonwealth of Puerto Rico have the authority to manage their respective state fisheries. The USVI is an unincorporated territory with a semi-autonomous government and its own constitution. As a commonwealth, Puerto Rico has an autonomous government, but is voluntarily associated with the U.S. (OTA 1987). The USVI has jurisdiction over fisheries in waters extending up to three nautical miles from shore, with the exception of about 5,650 acres of submerged lands off St. John which are owned and managed by the National Park Service (Goenaga and Boulon 1991). The USVI DPNR is the USVI's fishery management agency. The DPNR regulates commercial and recreational fishing activities with the advice of the Division of Fish and Wildlife and the St. Thomas/St. John and St. Croix Fisheries Advisory Committees (Uwate 2002 in DPNR 2005). The DPNR/Division of Environmental Enforcement is responsible for enforcing regulations within USVI waters (Uwate 2002 in DPNR 2005). Puerto Rico has jurisdiction over fisheries in waters extending up to nine nautical miles from shore. Those fisheries are managed by Puerto Rico's Department of Natural and Environmental Resources. 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.

Each state fishery management agency 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, both Puerto Rico and the USVI cooperate with numerous state and federal regulatory agencies when managing marine resources.

Both Puerto Rico and the USVI require commercial fishing licenses, permits for some species, and reporting. Puerto Rico requires a license for commercial fishers, and has categories for full-time, part-time, novice, 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 in place.

The USVI only has a license requirement for commercial fishers who are permanent USVI residents, with the exception of a recreational shrimp permit for Altona Lagoon and Great Pond on St. Croix, and for fishing activities in the Great St. James Marine Reserve off St. Thomas. Any person that trades any part of his catch, including charter boat operators who sell or trade their catch, must obtain a commercial license (DPR 2012). In the USVI, a moratorium on new commercial fishing licenses has been in place since 2001.

USVI commercial fishermen are required to report their catch (all species) and effort for every trip (CFMC 2010). Catch report forms must be submitted to the DPR on a monthly basis, no later than 15 days after the end of the fishing month. The level of non-reporting, under-reporting, and delayed reporting is not well known. However, the DPR has been working with the fishermen to improve accuracy of reports and the reporting rate.

In the USVI, permits are not required for recreational fishing. Recreational fishers are not allowed to sell their catch or to use certain fishing gears to catch fish (i.e., traps, pots, haul seines and set-nets). Subsistence fishermen that do not use pots, traps, haul seines, and set-nets (commercial gear) are not required to have a license (DPR 2012). However, fishing permits are required to fish in some areas in the USVI (DPR 2012; Section 3.4.2 of this document).

Additional information regarding fishery management in state 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 the USVI can be found in Sections 3.3 and 3.4.2.

Chapter 4. Environmental Effects

Chapter 4 describes the effects to the physical, biological and ecological, economic, social, and administrative environments from the alternatives in the proposed action. In the following sections, the terms fishery management unit (FMU) and stock may be used interchangeably.

4.1 Management Measures for the Proposed Action: Annual Catch Limit Control Rule

Action: Establish a control rule to adjust the buffer reduction applied to the overfishing limit (OFL) or to the acceptable biological catch (ABC) used to derive the annual catch limit (ACL), to reflect a change in overfishing status of the stock.

Summary of Management Alternatives

Alt. 1: No Action

Alt. 2: ACL Control Rule for all managed species where $ACL = [OFL \text{ (or ABC)} \times (0.85)]$ for FMUs determined to be 'subject to overfishing', and where $ACL = [OFL \text{ (or ABC)} \times (0.90)]$ for FMUs determined to be 'not subject to overfishing'.

Preferred Alt. 3: ACL Control Rule as **Alternative 2**, but allows for exceptions:

Preferred Sub-alt. 3a. Parrotfish FMU – As defined in the 2010 Caribbean ACL Amendment, $ACL = [ABC \times (0.85)]$. An additional 5.8822 percent reduction to St. Croix's parrotfish FMU ACL

Preferred Sub-alt. 3b. Surgeonfish FMU – As defined in the 2011 Caribbean ACL Amendment, $ACL = [ABC \times (0.75)]$

Preferred Sub-alt. 3c. Angelfish FMU – As defined in the 2011 Caribbean ACL Amendment, $ACL = [ABC \times (0.75)]$

Preferred Sub-alt. 3d. Queen conch FMU – As defined in the 2010 Caribbean ACL Amendment, for St. Croix, $ACL = ABC$ specified by the Council's SSC. For Puerto Rico and St. Thomas/St. John, $ACL = 0$.

Preferred Sub-alt. 3e. Aquarium Trade Species FMU – As defined in the 2011 Caribbean ACL Amendment, $ACL = [ABC \times (0.75)]$

4.1.1 Direct and Indirect Effects on the Physical Environment

Management actions that affect the physical environment mostly relate to the interactions of fishing gear with the sea floor. The degree or magnitude of the effects will depend on if an action increases or decreases fishing gear interactions with the bottom habitat. It also depends on the vulnerability of a particular habitat to disturbance and the rate at which the habitat can

recover from such disturbances (Barnette 2001). The primary gear types used in the reef fish, queen conch, spiny lobster, and coral fisheries are described in Section 3.3. These include vertical line gear, traps, spear fishing, and hand harvest. Vertical line gear has the potential to snag and entangle bottom structures, which can result in breakage and abrasions (Barnette 2001). Traps can break and damage vulnerable corals, including Endangered Species Act (ESA) listed species, which offer significant benthic structure and essential fish habitat (EFH) in the U.S. Caribbean (Barnette 2001). Hand harvest while free diving or SCUBA diving, commonly used in the queen conch fishery and, to some extent in the spiny lobster fishery, is expected to have little to no adverse direct effects on the physical environment in general, including *Acropora* species and their designated critical habitat. However, indirect effects from anchoring may occur. Because this proposed action is administrative in nature, this action would not change the primary gears or how they are used currently in these fisheries. While future implementation of this rule could potentially change how these gears are used, no direct effects on the physical environment are expected over the short- or long- term from the implementation of this specific action, beyond those resulting from an increase or a decrease in the ACL. The cumulative effects of repeated anchoring by fishermen using any harvest method, including spear guns and hand harvest, as well as the use of fishing traps, also can damage (e.g., reduce vertical relief) hard bottom areas where fishing occurs (Barnette 2001 in CFMC 2011a). The cumulative effects of anchoring and trap fishing will depend on how much the proposed action causes an increase or decrease in the quantity and time spent in fishing activities.

The action in this comprehensive amendment proposes to adjust the buffer reductions applied to the OFL or to the ABC to derive the ACL for Council-managed species for which harvest is allowed. Although this action would affect all Council-managed fisheries conducted in the U.S. Caribbean exclusive economic zone (EEZ), it is not expected to substantially modify fishing activities in federal waters. Modifying how management reference points are specified, such as the relationship between the OFL, ABC, and the ACL, is not expected to cause direct physical effects. Modifying the ACL of a particular unit as a result of the action proposed may have indirect effects on the physical environment that would depend upon the degree to which a change in the ACL limits or liberalizes the catch of such unit in any given year. For example, larger ACLs are likely to support less restrictive management controls and increased habitat interactions relative to smaller ACLs. Indirect effects on the physical environment would also be expected if the action modifies the amount of time that fishing activities (in the form of fishing gear interactions with the sea floor or anchoring) are conducted in a particular habitat. Indirect effects of the action on the physical environment would depend on how much each of the possible alternatives contributes to an increase or decrease in habitat interactions.

Alternative 1 (no action) would not establish a control rule, and thus would retain the current buffer reductions to the OFL or ABC used to determine the ACL for managed units as established in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b). Because the current ACL values would remain the same, physical indirect effects, would remain the same.

However, with **Alternative 1** there is the possibility that, if in a particular year, the status of an FMU changes to ‘subject to overfishing’ from ‘not subject to overfishing’ or ‘unknown’; there would be no expeditious mechanism with which to adjust the ACL to reflect the current status of the fishery. If the unit’s current ACL is not restrictive enough, it could lead to continued overfishing. Overfishing can cause indirect effects to the physical environment in the long term by negatively affecting, for example, the reef’s ecological balance and biodiversity (ecological interactions). Under **Alternative 1**, if an FMU is no longer subject to overfishing but its current ACL is too restrictive, catches could be constrained more than needed. However, this could benefit the physical environment relative to the other alternatives that would allow for increasing harvest by reducing physical interactions with the habitat as fishing effort is reduced.

Alternative 2 would establish an ACL control rule that would modify the buffer applied to the OFL or the ABC to derive the ACL for all managed species for which harvest is allowed. Under **Alternative 2**, if in a particular year, based on the most recent annual landings, an FMU is determined to be ‘subject to overfishing’ from a previous ‘not subject to overfishing’ status or ‘unknown’ status, a buffer reduction of 15% would be applied to the OFL or the ABC to derive a new ACL for the following year. This reduction in the allowed harvest (from 10% to 15% buffer reduction) for a particular FMU (i.e. a smaller ACL) would likely have the greatest benefit to the physical environment because of the expected reduction in fishing effort. However, the extent of the beneficial indirect effects would depend on the changes to the ACL relative to the current ACL. This change for most species would be approximately 5%, and for some others will vary between 10-15%. In addition, the possibility of fewer vessels may result in fewer interactions between habitat and fishing gear (i.e., anchors) (direct effect), if a reduction in an ACL reduces the number of fishing trips. Although, the amount that these physical interactions are minimized would also depend on how much fishermen compensate for the fishing opportunities lost in a particular fishery and increase fishing for other species.

In general, the degree of the effects would depend on 1) how often the overfishing status of a stock changes through time and thus triggers the application of the control rule that would result in changes to the ACL, 2) how much the current ACL would change under a new overfishing status, and 3) how much landings would change because of a change to the ACL.

Section 2.2.1.1 analyzes potential changes to the current ACLs under the different alternatives proposed. For example, if in a particular year the status of a 2011 stock (except for surgeonfish, angelfish, or aquarium trade species) changed to ‘subject to overfishing’ from ‘not subject to overfishing’ or ‘unknown’, the ACL for that unit would be reduced by approximately 5%. Although the relationship is not direct because fishers may take the same number of trips and simply harvest fewer fish on each trip, it is reasonable to project a reduction in direct physical impacts to the environment of no more than 5%.

Conversely, under **Alternative 2**, if in a particular year an FMU is determined to have changed to a ‘not subject to overfishing’ or an ‘unknown’ status from a previous ‘subject to overfishing’ status, then a 10% buffer would be applied to the OFL or ABC to derive the new ACL. Section 2.2.1.1, analyzed how much the ACL would change under a ‘not subject to overfishing’ or ‘unknown’ status in **Alternative 2**. For 2010 FMUs, for example, which were previously determined to be ‘subject to overfishing’, a change in status would increase the ACL for any unit, except for queen conch, by approximately 5%. When compared to a more restrictive ACL, a larger ACL could make the species more vulnerable to overfishing, which could in the long term negatively impact the stock relative to the status quo by indirectly affecting, for example, the reef’s ecological balance (e.g., cascade effects, predator-prey interactions) and biodiversity (ecological interactions). Increasing harvest opportunities could increase the potential for habitat interactions (direct physical effects) if that change is more than the current average annual landings for that particular fishery. Overall, long-term biological and ecological effects of these increases are not expected to be significant.

Sub-section C of Section 2.2.1.1 compared the resulting ACLs from **Alternative 2** to the average of recent landings for 2010 and 2011 stocks. For example, the average of landings for the years 2010-2011 for the Snapper Unit 2 for the Puerto Rico commercial sector and for grouper in St. Thomas/St. John exceeded not only the current ACL for the unit if no action was taken but also the new ACL that would be derived under a ‘not subject to overfishing’ status in **Alternative 2**. That overage from the current ACL translated into triggering of AMs in 2013 for those two units. Under a ‘not subject to overfishing’ scenario, those two units would have also exceeded the new ACL (although by a lesser amount) and thus AMs would also need to be triggered. Shortening the season could provide benefits to the physical environment by reducing fishing effort and thus habitat interactions with the bottom. The same would apply for those 2011 stocks that exceeded their ACL under **Alternative 1**, and thus the new ACL that would be derived under a ‘not subject to overfishing’ status (Table 2.2.1.1.16).

Alternative 2 would apply the control rule to all managed species for which harvest is allowed. As discussed in Section 2.2.1, **Alternative 2** would not support the special management measures that currently apply to the parrotfish, angelfish, surgeonfish, queen conch, and aquarium trade species FMUs. For the angelfish and surgeonfish FMUs for each island and sector, and for aquarium trade species FMU at the Caribbean-wide level, **Alternative 2** would translate into an increase in the allowed harvest under both the ‘subject to overfishing’ and ‘not subject to overfishing’ or ‘unknown’ status scenarios. Parrotfish harvest would also be increased if the complex is ‘not subject to overfishing’ any longer, like in the present, and the allowed ACL is increased as a result. Increasing harvest opportunities for these units would increase the potential for interactions with the habitat supporting those fisheries, including coral reef habitat. In the case of angelfish and surgeonfish, which are mostly captured with traps, this means that the habitat/gear interaction could be even more evident. For queen conch, applying a buffer to the ABC would certainly reduce the current harvest allowed under any of the ‘subject to

overfishing’ and ‘not subject to overfishing’, or ‘unknown’ status scenarios. For the queen conch, **Alternative 2** is not expected to contribute any additional positive indirect effects on the physical environment because of minimal effects expected from hand harvest methods used to fish for queen conch. Nevertheless, a decrease in harvest opportunities for the queen conch may potentially decrease anchoring interactions, thus benefiting the physical environment relative to the status quo.

Preferred Alternative 3 would establish an ACL control rule that would affect managed species for which harvest is allowed, but provides for the specific FMUs mentioned above to be exempted from the rule. Under **Preferred Sub-alternatives 3a** through **3e**, the relationships between the OFL or ABC and the ACL would remain as status quo for parrotfish, surgeonfish, angelfish, queen conch, and aquarium trade species per island/island region and (for Puerto Rico only) per sector. There would be no added physical impacts related to fishing for these species. For the rest of the Council-managed species, most of the effects on the physical environment that would be expected under **Preferred Alternative 3** are the same as would be expected under **Alternative 2**.

Preferred Sub-alternative 3a provides for the parrotfish complex to be exempt from application of the control rule. Parrotfish would continue to have the same ACLs defined in the 2010 Caribbean ACL Amendment. As discussed in Section 2.2.1, these were derived from buffer reductions to the ABCs recommended by the Council’s Scientific and Statistical Committee (SSC) for each island/island group, and further divided by commercial and recreational sectors for Puerto Rico. The parrotfish ACL in the St. Croix management area, where a directed fishery for parrotfish occurs, was further reduced to address uncertain effects of that harvest on essential settlement substrate for threatened Acroporid corals. Further reducing the ACL for legally caught parrotfish had the purpose of further increasing the grazing pressure exerted by these species, thereby potentially increasing availability of critical habitat (hard substrate devoid of fleshy macroalgae) for Acroporid coral recruits. By taking this action, the Council addressed the important contributions of parrotfish to the health and vibrancy of Caribbean coral reefs. Under this sub-alternative, given that the current ACL values for parrotfish would remain valid, physical indirect effects as mentioned above would not be expected to differ from the status quo.

Preferred Sub-alternative 3b and **Preferred Sub-alternative 3c** provide for the surgeonfish FMU and the angelfish FMU, respectively, to be exempted from the control rule. The ACLs for surgeonfish and angelfish for Puerto Rico (commercial and recreational), St. Croix, and St. Thomas/St. John established in the 2011 Caribbean ACL Amendment would continue to be valid under each of these sub-alternatives. Thus, physical indirect effects are not expected to be different than status quo. The buffer reductions applied to the ABC for these FMUs to derive the ACLs considered the ecological role of these species as important herbivores (surgeonfish) and spongivores (angelfish) in coral reef communities. Surgeonfish, like parrotfish, contribute important algal grazing services and thus serve an important role in maintaining critical habitat

for Acroporids. Angelfish serve as an important spongivore in coral reefs, and with herbivores, contribute to maintain the ecological integrity of many of our Caribbean coral reefs.

Preferred Sub-alternative 3d provides for the queen conch FMU to be exempted from the ACL Control Rule. Under this sub-alternative, the current ACLs established in the 2010 Caribbean ACL Amendment for queen conch in Puerto Rico, St. Thomas/St. John (ACL = 0), and St. Croix (ACL = 50,000 lbs) would continue to be valid; therefore, any indirect effects on the physical environment are not expected to be different than status quo.

Preferred Sub-alternative 3e would exempt the aquarium trade species FMU from the ACL Control Rule. This FMU contains species in both the Reef Fish FMP and the Coral FMP. The ACL for this FMU is Caribbean-wide and was established in the 2011 Caribbean ACL Amendment. Under this sub-alternative, the current Caribbean-wide ACL would continue to be valid; therefore, any indirect effects on the physical environment would not be expected to be different than status quo.

4.1.2 Direct and Indirect Effects on the Biological and Ecological Environment

Although this action would affect all Council-managed fisheries conducted in the U.S. Caribbean EEZ, it is not expected to substantially modify fishing activities in federal waters. The action proposed in this amendment would simplify the process of adjusting the ACLs, if needed, in the future, rather than doing it on a case by case basis or through a lengthier full plan amendment. The action may have beneficial impacts such as more responsive management sensitive to the status of the targeted population and increased revenue from healthy fisheries. However, the latter may be adverse as well, if a change in status results in a reduction in allowable harvest.

Modifying how management reference points are specified, such as the relationship between the OFL, ABC, and the ACL, is not expected to cause direct biological or ecological effects. Adjusting the ACL as a result of the action proposed may have indirect effects on the biological and ecological environment and the magnitude of those effects would depend on how much the new ACL limits the catch of an FMU in any given year. For example, although a reduced buffer could benefit fishers by allowing for a slightly larger ACL, a larger ACL could also make the species more vulnerable to overfishing relative to a smaller ACL, which could negatively impact the stock and ultimately, negatively impact fishermen in the long run.

Alternative 1 is the no action alternative and would not establish a control rule, thus would retain the current buffer reductions to the OFL or ABC used to determine the ACL for Council managed species as established in the 2010 and 2011 Caribbean ACL Amendments (CFMC 2011a, b). The buffers chosen were the ones the Council considered would provide the best

balance between maximizing harvest while preventing overfishing. If no action is taken and an FMU is no longer subject to overfishing, but the current ACL remains at a more restrictive level, catches could be constrained more than needed. This restriction could result in lost yield and failure to achieve the optimum yield (OY). In the long term, a more restrictive ACL would reduce the likelihood of the OFL being exceeded and overfishing occurring, thus benefiting the biological environment relative to a higher ACL. Depending on harvest patterns, when compared to a less restrictive ACL, a more restrictive or conservative ACL may increase the possibility of triggering accountability measure (AM) closures, further reducing fishing effort by shortening the season and benefiting the biological and ecological environment. Section 2.2.1.1 C compares recent landings to the ACL to analyze the impact of taking no action in **Alternative 1**. This analysis shows that some 2010 and 2011 stocks exceeded their corresponding ACL triggering AMs in 2013. It also shows that if landing patterns continue, the same units would also exceed the status quo ACL in future years and AMs would need to be applied for those units.

On the contrary, if an FMU becomes ‘subject to overfishing’ but the current ACL that corresponds to that FMU is less restrictive, this could lead to continued overfishing which decreases its biomass and increases the likelihood of the stock becoming overfished, negatively affecting the biological and ecological environment relative to a lower ACL. Hence, with **Alternative 1** there would be greater risks of landings exceeding the OFL and continuous overfishing than with either **Alternative 2** and **3**. If a stock is subject to overfishing for a longer period, it would be more difficult for the stock to recover from such a situation. In the case of overfished stocks, such as Grouper Unit 4 (GU4), this could reduce the effectiveness of the rebuilding plan. **Alternative 1** would result in the least biological benefit because it would not allow for responsive management sensitive to the status of the fisheries. With respect to protected resources, **Alternative 1** is anticipated to perpetuate the existing level of risk of interactions between these species and the fishery.

Alternative 2 would establish a control rule to modify the buffer reduction that is applied to the OFL or to the ABC (if specified) to derive an ACL in response to changes in the overfishing status of all Council-managed species for which harvest is allowed. Under **Alternative 2**, if in a particular year, based on the most recent annual landings, an FMU is determined to be ‘subject to overfishing’ from a previous ‘not subject to overfishing’ or ‘unknown’ status, a buffer reduction of 15% would be applied to the OFL or the ABC to derive a new ACL for the following year. The resulting reduction in the allowed harvest for a particular FMU (approximately 5%) would be expected to indirectly benefit the biological and ecological environment relative to the status quo by reducing fishing effort and thus, reducing fishing mortality for the targeted species. In the long term, a more restrictive ACL would aid in ending overfishing and preventing future overfishing. In the short term, depending on harvest patterns, a more restrictive or conservative ACL may increase the possibility of triggering AM closures (see Section 2.2.1.1 C), when compared to a less restrictive ACL, further reducing fishing effort by shortening the season.

However, the magnitude of indirect benefits would depend on how much the ACL changes relative to the current ACL. Based on the analysis provided in Section 2.2.1.1, if for example, any of the 2011 stocks is determined to be ‘subject to overfishing’ from a previous ‘not subject to overfishing’ or ‘unknown’ status, the new ACL would be approximately 5% less than what is currently allowed for all units in each island and sector except for the angelfish, surgeonfish, and aquarium trade species FMUs. This means that, if current harvest patterns continue, those 2011 stocks that exceeded the current ACL in the past would also exceed the new ACL under the ‘subject to overfishing’ status, although by a greater amount, thus likely triggering AMs. Another indirect effect expected from this action could be an increase in the harvest of other species as fishermen could decide to mitigate for the loss of fishing opportunities for those species that experience a decrease in the ACL. However, U.S. Caribbean fishers usually fish for other species (e.g., reef fish, lobster, pelagics), and these species also have harvest limits, so additional impacts on other species are not expected to be significant.

Conversely, if in a particular year, the status of an FMU is determined to have changed to ‘not subject to overfishing’ or ‘unknown’ from a previous ‘subject to overfishing’ status, then a 10% buffer would be applied to the OFL or ABC (if specified) to derive the new ACL. The larger ACL resulting from a reduced buffer (from 15% to 10%) could make the species more vulnerable to overfishing, which could negatively impact the stock relative to the status quo and ultimately, negatively impact fishermen in the long run. For 2010 stocks, which were previously determined to be ‘subject to overfishing’, a change in status would increase the ACL for any unit, except for queen conch, by approximately 5%. Overall, long-term biological and ecological effects of these increases are not expected to be significant.

Because **Alternative 2** would not allow for exceptions to the control rule, FMUs for which different buffers were used to derive the ACL based on ecological factors or special circumstances, such as queen conch, angelfish, surgeonfish, parrotfish, and aquarium trade species, could be either negatively or positively affected relative to the status quo if there is a change in their overfishing status in a particular year. As discussed earlier in Section 4.1.1 “Effects to the Physical Environment”, **Alternative 2** would not support the established management measures that currently apply to the parrotfish, surgeonfish, angelfish, queen conch, and aquarium trade species FMUs. Management measures were set for these species in the 2010 and 2011 Caribbean ACL Amendments and were selected by the Council after having been evaluated against several other buffer alternatives (NMFS 2011a, b). The buffers chosen were the ones that the Council considered would provide the best balance between optimizing harvest while maintaining the ecological integrity of the coral reef community. For the angelfish, surgeonfish, and aquarium trade species FMUs, **Alternative 2** would translate into an increase in the allowed harvest under both the ‘subject to overfishing’ and the ‘not subject to overfishing’ or ‘unknown’ scenarios. Parrotfish harvest would also be increased if the complex is no longer ‘subject to overfishing’ (as in the present case), and the allowed ACL is increased as a result. Increasing harvest opportunities for these units could increase the potential for overfishing or

lead to an overfished condition, thus potentially adversely affecting the biological and ecological environment relative to the status quo.

For queen conch, applying a buffer to the ABC would reduce the current harvest allowed under any of the scenarios. A potential decrease in harvest opportunities for the queen conch may benefit the biological and ecological environment relative to the status quo by reducing fishing mortality for the species. However, this would be incompatible with the present regulatory environment in federal waters that limits queen conch fishing and possession to a 50,000-pound ACL in Lang Bank east of St. Croix, U.S. Virgin Islands (USVI). The ACLs for Puerto Rico and St. Thomas/St. John would not be affected because harvest is prohibited in those areas, and the ACL is zero. During the development of the 2010 Caribbean ACL Amendment, reductions to the queen conch OFL were analyzed and rejected. The SSC specified an ABC for queen conch of 50,000 pounds consistent with St. Croix's 50,000-pound landings limit in territorial waters, in part as an effort to have compatible regulations to aid enforcement.

It is unclear if **Alternative 2** will generate fewer or more biological and ecological benefits to protected resources than **Alternative 1**. If increased ACLs results in more total fishing effort, then the threat of interactions between U.S. Caribbean fisheries and sea turtles may increase, potentially leading to adverse biological and ecological effects relative to the status quo. Conversely, if lower ACLs reduce total fishing effort, then the potential threat of interactions between fisheries and sea turtles may decrease; a biological and ecological benefit relative to the status quo. If changes in ACLs simply shifts effort from one target species to another, or from one fishery to another, but does not change the total effort, then **Alternative 2** may have very little impact to sea turtles relative to **Alternative 1**. With respect to *Acropora* and *Acropora* critical habitat, the **Alternative 2** outcomes would be similar. If the ACLs for the parrotfish, surgeonfish, and angelfish FMUs are increased, this would likely lead to greater overall harvest of these species, potentially causing reduced grazing pressure. Reduced grazing could potentially decrease the availability of suitable settlement habitat for *Acropora* resulting in adverse biological and ecological effects relative to the status quo. Conversely, decreased ACLs would likely lead to lower overall harvest, potentially resulting in an increase in grazing pressure. Increased grazing could increase the availability of suitable settlement habitat for *Acropora* resulting in beneficial biological and ecological effects relative to the status quo. If changes in ACLs simply shift effort from one target species to another or from one fishery to another, but do not change the total effort, then **Alternative 2** may have very little impact to *Acropora* and *Acropora* critical habitat relative to **Alternative 1**.

Biological and ecological effects expected from **Preferred Alternative 3** are similar to the effects discussed above for **Alternative 2**, except for the effects expected for parrotfish, surgeonfish, angelfish, queen conch, and aquarium trade species. **Preferred Sub-alternatives 3a-3e** would exempt these species from the application of the control rule. Under **Preferred Sub-alternatives 3a** through **3e**, the relationships between the OFL or ABC and the ACL would

remain as status quo for these five FMUs in all island regions and Puerto Rico sectors.

Preferred Sub-alternatives 3a-3e would retain the special buffers (**Alternative 1**) and ACLs for these five FMUs that **Alternative 2** would not. There would be no added biological or ecological impacts related to fishing for these species. The expected effects are discussed below.

Preferred Sub-alternative 3a provides for the parrotfish complex to be exempt from the application of the control rule. Parrotfish would continue to have the same ACLs defined in the 2010 Caribbean ACL Amendment for Puerto Rico (commercial and recreational sectors), St. Thomas/St. John, and St. Croix. As discussed in Section 2.2.1, these ACLs were derived from buffer reductions to the ABCs recommended by the SSC for each island/island group, and further divided by commercial and recreational sectors for Puerto Rico. The parrotfish ACL in the St. Croix management area was further reduced to address uncertain effects of that harvest on essential settlement substrate for threatened Acroporid corals. Further reducing the ACL for legally caught parrotfish had the purpose of further increasing the grazing pressure exerted by these species, thereby potentially increasing availability of critical habitat (hard substrate devoid of fleshy macroalgae) for Acroporid corals. By taking this action, the Council addressed the important contributions of parrotfish to the health and vibrancy of Caribbean coral reefs. Under **Sub-alternative 3a**, the current ACL values for parrotfish would remain valid, thus biological and ecological indirect effects as mentioned above would not be expected to be different than status quo.

Preferred Sub-alternative 3b and **Preferred Sub-alternative 3c** provide for the surgeonfish FMU and the angelfish FMU, respectively, to be exempt from the control rule. The ACLs for surgeonfish and angelfish for Puerto Rico (commercial and recreational), St. Croix, and for St. Thomas/St. John established in the 2011 Caribbean ACL Amendment would continue to be valid under each of these sub-alternatives, thus biological and ecological indirect effects are not expected to be different than status quo. The buffer reductions applied to the ABC for these FMUs derive the ACLs considered the ecological role of these species as important herbivores (surgeonfish) and spongivores (angelfish) in coral reefs. Surgeonfish, like parrotfish, contribute important algal grazing services and thus serve an important role in maintaining critical habitat for Acroporids. Angelfish serve as an important spongivore in coral reefs, and with herbivores, contribute to maintain the ecological integrity of many of our Caribbean coral reefs.

With respect to protected species, the biological and ecological effects from **Preferred Sub-alternatives 3a-3c** are likely to be same as those described previously for **Alternative 1**. These alternatives are likely to have greater biological and ecological benefits to *Acropora* and *Acropora* critical habitat than **Alternative 2** because they would not increase the ACL for these species, ensuring overall grazing pressure does not decrease due to fishing pressure.

Preferred Sub-alternative 3d provides for the queen conch FMU to be exempt from the ACL Control Rule. Under this sub-alternative, the current ACLs established in the 2010 Caribbean

ACL Amendment for queen conch in Puerto Rico and St. Thomas/St. John (ACL = 0), and in St. Croix (ACL = 50,000 lbs) would continue to be valid; therefore, any indirect effects on the biological and ecological environment are not expected to be different than status quo. This ACL quota for the queen conch is considered to be the best compromise between optimizing yield and preventing overfishing of the species while supporting the ongoing rebuilding plan. With respect to protected species, the biological and ecological affects from **Preferred Sub-alternative 3d** are likely to be same as those described previously for **Alternative 1**.

Preferred Sub-alternative 3e would exempt the aquarium trade species FMU from the ACL Control Rule. This FMU contains species in both the Reef Fish FMP and the Coral FMP. The ACL for this FMU is Caribbean-wide and was established in the 2011 Caribbean ACL Amendment. Under this sub-alternative, the current Caribbean-wide ACL would continue to be valid; therefore, any indirect effects on the biological and ecological environment would not be expected to be different than status quo. With respect to protected species, the biological and ecological affects from **Preferred Sub-alternative 3e** are likely to be same as those described previously for **Alternative 1**.

If the overfishing status of any of the units in **Preferred Sub-alternatives 3a** through **3e** changes in any particular year, there would not be an expeditious mechanism to respond to this change in status. However, most of the buffers currently applied to derive the ACLs for these units are either equal to or lower than the proposed 15% reduction to the OFL or ABC for units subject to overfishing. Therefore, any effects from a change in status are expected to be minimal. However, the Council may desire to investigate why the unit(s) exceeded the OFL and thus became subject to overfishing even with a lower buffer applied.

In summary, when compared to **Alternative 1**, adjusting the buffer reductions in both **Alternative 2** and **Preferred Alternative 3** could result in positive or negative biological/ecological impacts to the affected stocks depending on the direction of the change. Although overall, the greatest biological benefit would be provided by those alternatives that allow for the lowest harvest. The Council and NMFS expect the net biological and ecological impacts of implementing the ACL control rule through either **Alternative 2** or **Preferred Alternative 3** to be positive, as this would allow for an improved and quicker response to changing overfishing status of an FMU, which would provide beneficial results to the FMU and, potentially, the larger biological/ecological environment. **Alternative 2** and **Preferred Alternative 3** also provide a mechanism that provides the greatest likelihood that the OY will be achieved, regardless of the direction of change in the buffer. When compared to **Alternative 2**, **Preferred Alternative 3** would be more beneficial to the biological and ecological environment because, by exempting parrotfish, angelfish, surgeonfish, and/or aquarium trade species from the application of the control rule, it would support current management measures for those units at more conservative harvest levels. Although **Alternative 2** may be more beneficial for the queen conch because it would reduce fishing mortality, **Preferred Alternative 3** would keep the

current ACL quota for the queen conch which is considered to be the best compromise between optimizing yield and preventing overfishing of the species while also supporting the ongoing rebuilding plan (Table 4.1.2).

4.1.3 Direct and Indirect Effects on the Economic Environment

Alternative 1 (No Action) would not change the current buffer applied to derive the ACL for Council managed species, thus would retain current ACLs for all units. This would not result in additional economic effects as long as the overfishing status of the unit remains the same. As stated above under the biological section, under the **Alternative 1** (No Action), a situation could occur whereby an FMU is no longer subject to overfishing, but the current ACL is too low. If this happens, landings could be lower than they need to be and the OY would not be met, resulting in short-term adverse economic effects in the form of lost profits. In the long term, lower landings could indirectly benefit fishermen by resulting in healthier stocks and more fish available for harvest. Long-term economic benefits would be expected to occur with higher landings and profits over time.

However, the opposite scenario could also occur, as described in the previous biological section. If an FMU is now subject to overfishing but the current ACL under **Alternative 1** (No Action) is less restrictive, this could lead to continued overfishing and/or the unit to become overfished, negatively affecting the biological and ecological environment relative to a lower ACL. In the short-term, the larger landings and profits would benefit fishermen. However, in the long-term, landings and profits would be negatively affected due to potential lower population levels. Also, if a stock is subject to overfishing for a longer period it would be more difficult for the stock to recover from such a situation. **Alternative 1** would result in the least economic benefits, when compared to **Alternatives 2** and **3** because it would not allow for responsive management sensitive to the status of the fisheries.

Comparisons between recent landings and the ACLs under Alternative 1 (No Action) are shown in Table 2.2.1.1.11 (2010 stocks) and Table 2.2.1.1.12 (2011 stocks). The comparisons show that the SU2 complex in Puerto Rico, queen conch in St. Croix, and grouper in St. Thomas/St. John exceeded their ACLs when compared to the 2010-2011 average under **Alternative 1** (No Action). As stated above, AMs were applied for those units during 2013 in the form of early closures (except for queen conch because AMs do not apply for this species). Comparisons made using 2010-2012 data, show that SU2 in Puerto Rico and queen conch in St. Croix exceeded the ACL but no AM was applied for queen conch. Due to AMs applied for these species in the form of early closures under **Alternative 1** (No Action), commercial fishermen experienced short-term adverse effects in the form of lost ex-vessel revenue. Puerto Rico SU2 fishermen had losses of approximately \$472,785 (132,063 pounds) in 2012 and \$368,432 (102,914 pounds) in 2013 and St. Thomas/St. John grouper fishermen experienced ex-vessel

revenue losses of \$29,505 (4,984 pounds) in 2012. While the SU2 ACL will be exceeded assuming the same landings trends, grouper was only exceeded using 2010-2011 landings comparisons and therefore future landings trends are uncertain.

For 2011 stocks, Puerto Rico wrasses (recreational), St. Croix angelfish, spiny lobster, squirrelfish, triggerfish and filefish, and wrasses and St. Thomas/St. John angelfish, squirrelfish, and wrasses exceeded their ACLs compared to 2011 landings. No AMs were applied to USVI angelfish, squirrelfish, and wrasses because the higher landings were attributed to enhanced reporting. But, AMs were implemented for the remainder. The recreational sector for wrasses certainly experienced adverse economic effects but these are not quantifiable at this time due to a lack of information about the dollar value placed on the catch of recreational fish in the Caribbean. The St. Croix spiny lobster commercial sector experienced ex-vessel revenue losses amounting to approximately \$17,816 (2,401 pounds) compared to 2011 landings. The St. Croix triggerfish and filefish commercial sector experienced ex-vessel losses amounting to approximately \$6,540 (1,473 pounds) compared to 2011 landings.

Making comparisons to the average of 2011-2012 landings, Puerto Rico commercial wrasses, St. Croix commercial angelfish, squirrelfish, and wrasses, and St. Thomas commercial angelfish, squirrelfish, and wrasses exceeded their ACLs. AMs were not applied to these species due to increased or enhanced reporting. If these landings trends continue under **Alternative 1** (No Action), commercial and recreational fishermen would experience short-term adverse economic effects for those FMUs and this would extend to those species that AMs have not applied to in the past if AMs are applied in the future.

Alternative 2 and Preferred Alternative 3 under the ‘Subject to overfishing’ Status Scenario

Alternative 2 under a ‘subject to overfishing status’ scenario would not change most of the current ACLs of 2010 stocks except the ACL for St. Croix queen conch, which would experience a decrease in the ACL. For most of the 2011 stocks, a ‘subject to overfishing scenario’ would cause a reduction in ACLs. However, the ACLs for angelfish, surgeonfish, and aquarium trade species will increase even under a subject to overfishing scenario because their ACLs were set at 75% of the ABC in the 2011 Caribbean ACL amendment. Under the ‘subject to overfishing’ status scenario, the ACLs for these species will be set at 85% of the ABC. So, harvest will increase for those species. That is why there is a proposal to exempt them from the application of the rule by adding sub-alternatives in **Preferred Alternative 3**.

Any decrease in a stock’s ACL implies a reduction in availability. This could result in a reduction in annual landings and ex-vessel revenues for commercial fishermen and a reduction in fish caught for recreational and subsistence fishermen.

The resulting ACLs from the ACL Control Rule proposed under **Preferred Alternative 3** would be the same as in **Alternative 2** for all managed species except for those units in **Preferred Sub-**

alternatives 3a-3e (i.e., parrotfish, surgeonfish, angelfish, queen conch, and aquarium trade species). The additional economic effects under **Preferred Alternative 3** are therefore the same as under **Alternative 2** (see above and tables below). The ACLs proposed under **Preferred Sub-alternatives 3a-3e** would be the same as under **Alternative 1** (No Action) and therefore no additional economic effects are expected.

A *decrease* in any ACL could result in potentially short-term direct adverse economic effects for commercial, recreational, and subsistence fishermen if annual landings decrease. If landings decrease in the short-run, this could result in beneficial long-term direct economic effects for commercial, recreational, and subsistence fishermen through higher long-run ex-vessel revenues (for commercial fishermen) and more fish (for recreational fishermen) due to healthier than otherwise stocks. An *increase* in any ACL could result in potentially short-term direct beneficial economic effects for commercial and recreational fishermen if landings increase. If landings increase, this could result in adverse long-term direct economic effects for fishermen due to lower than otherwise long-run ex-vessel revenues (for commercial fishermen) and less fish caught (for recreational fishermen) resulting from less healthy stocks.

There are no known studies of estimates of the economic value of recreationally caught fish in the Caribbean. There are also no data for the cost and earnings of headboat or charter vessels in the Caribbean. Therefore, the economic effects of the proposed action on recreational fishermen are simply directional because they cannot be quantified at this time.

Tables 2.2.1.1.7 through 2.2.1.1.10 in Section 2.2.1.1 B show the maximum changes in the ACLs by weight for stocks subject to overfishing and not subject to overfishing scenarios. Estimates of the losses by value are based on the differences between the current and potential ACLs under the various alternatives. These are shown where data are available in the tables below. It should be noted that these are maximum estimated losses and gains assuming that AMs are applied and enforced.

Table 4.1.3.1 shows estimates of maximum potential short-term changes in ex-vessel revenue for commercial fishermen and estimates of the direction of economic effects (negative or positive) for recreational and subsistence fishermen for the stocks addressed in the 2010 Caribbean ACL Amendment and the 2011 Caribbean ACL Amendment, respectively, under the ‘subject to overfishing’ status scenario.

Table 4.1.3.1. Maximum potential change in annual commercial ex-vessel revenue and the direction of economic effects for the recreational and subsistence sectors under Alternative 2, Preferred Alternative 3, and Preferred Sub-alternatives 3a-3e assuming the ‘subject to overfishing status scenario’. Change in ACL pounds are shown in parentheses next to commercial or recreational estimated value changes. Source: Estimates made based on changes in pounds in Table 2.2.1.1.7 and Table 2.2.1.1.8 under Section 2.2.1.1 B above, and implied ex-vessel revenues from Chapter 3 Table 3.4.1.1.5, Table 3.4.1.1.12, and Table 3.4.1.1.18 for 2010 - 2012 for Puerto Rico, St. Croix, and St. Thomas/St. John, respectively.

Puerto Rico	Alternative 2 Economic Effects		Preferred Alternative 3 Economic Effects	
	Comm (change in ex-vessel revenues and lbs)	Rec (change in direction of effects)	Comm (change in ex- vessel revenues and lbs)	Rec (change in direction of effects)
Snapper Unit 1	No change		No change	
Snapper Unit 2	No change		No change	
Snapper Unit 3	No change		No change	
Snapper Unit 4	No change		No change	
Grouper	No change		No change	
Parrotfish	No change		Sub-alternative 3a	
			No change	
Queen Conch	No change		Sub-alternative 3d	
			No change	
Boxfish	-\$10,269 (-4,784)	(-) (-256)	-\$10,269 (-4,784)	(-) (-256)
Goatfish	-\$2,392 (-976)	(-) (-20)	-\$2,392 (-976)	(-) (-20)
Grunts	-\$31,704 (-10,133)	(-) (-279)	-\$31,704 (-10,133)	(-) (-279)
Wrasses	-\$8,954 (-3,008)	(-) (-281)	-\$8,954 (-3,008)	(-) (-281)
Jacks	-\$8,452 (-4,781)	(-) (-2,833)	-\$8,452 (-4,781)	(-) (-2,833)
Scups and Porgies	-\$4,468 (-1,374)	(-) (-143)	-\$4,468 (-1,374)	(-) (-143)
Squirrelfish	-\$2,390 (-926)	(-) (-216)	-\$2,390 (-926)	(-) (-216)
Triggerfish and Filefish	-\$8,293 (-3,249)	(-) (-1,219)	-\$8,293 (-3,249)	(-) (-1,219)
Angelfish	(+) (No revenue data) (1,197)	(+) (599)	Sub-alternative 3c	
			No change	
Surgeonfish	(+) (No revenue data) (957)	(+) (478)	Sub-alternative 3b	
			No change	
Spiny Lobster	(-) (-18,218)		(-) (18,218)	
St. Croix	Alternative 2 Economic Effects in Ex-Vessel Revenues		Preferred Alternative 3 Economic Effects in Ex-Vessel Revenues	
Snapper	No change		No change	
Grouper	No change		No change	
Parrotfish	No change		Sub-alternative 3a	
			No change	
Queen Conch	(-) (-7,500)		Sub-alternative 3d	
			No change	
Boxfish	-\$1,989 (-468)		-\$1,989 (-468)	

Goatfish	-\$1,278 (-210)	-\$1,278 (-210)
Grunts	-\$12,062 (-2,049)	-\$12,062 (-2,049)
Wrasses	No change	No change
Jacks	\$4,364 (-860)	\$4,364 (-860)
Scups and Porgies	-\$5,331 (-258)	-\$5,331 (-258)
Squirrelfish	-\$29 (-7)	-\$29 (-7)
Triggerfish and Filefish	-\$7,042 (-1,388)	-\$7,042 (-1,388)
Angelfish	\$122 (40)	Sub-alternative 3c No change
Surgeonfish	\$22,728 (4,480)	Sub-alternative 3b No change
Spiny Lobster	\$48,387 (-5,961)	\$48,387 (-5,961)
St. Thomas/St. John	Alternative 2 Economic Effects in Ex-Vessel Revenues	Preferred Alternative 3 Economic Effects in Ex-Vessel Revenues
Snapper	No change	No change
Grouper	No change	No change
Parrotfish	No change	Sub-alternative 3a No change
Queen Conch	No change	Sub-alternative 3d No change
Boxfish	-\$6,604 (-1,549)	-\$6,604 (-1,549)
Goatfish	(-) (No revenue data) (-17)	(-) (No revenue data) (-17)
Grunts	-\$12,298 (-2,090)	-\$12,298 (-2,090)
Wrasses	-\$195 (-32)	-\$195 (-32)
Jacks	-\$10,603 (-2,090)	-\$10,603 (-2,090)
Scups and Porgies	-\$7,146 (1,212)	-\$7,146 (1,212)
Squirrelfish	-\$950 (-236)	-\$950 (-236)
Triggerfish and Filefish	-\$20,984 (-4,136)	-\$20,984 (-4,136)
Angelfish	\$3,207 (1,053)	Sub-alternative 3c No change
Surgeonfish	\$19,787 (3,900)	Sub-alternative 3b No change
Spiny Lobster	-\$46,990 (-5,789)	-\$46,990 (-5,789)
Caribbean Wide	Alternative 2	Preferred Alternative 3
Tilefish	(-) (No revenue data) (-813)	(-) (No revenue data) (-813)
Aquarium Trade Species	(+) (No revenue data) (1,087)	Sub-alternative 3e No change

Note: A negative (-) or positive (+) sign representing adverse or beneficial effects, respectively, is used in two situations: 1) where recreational effects cannot be quantified due to lack of value data or 2) A situation where the ACL is combined for both commercial and recreational fishermen (Puerto Rico spiny lobster and St. Croix queen conch).

Note: A “(-) (No revenue data)” or “(+) (No revenue data)” indicates that there are no revenue values available for these species groups/complexes in the trip ticket data. Therefore, economic effects cannot be quantified. We can

assume, however, that if the poundage change in ACL is positive, then the economic effects are beneficial and if the poundage change in ACL is negative, then the economic effects are adverse.

Note: The reader should again note that the changes in actual landings resulting from the change in ACLs under each status scenario (‘subject to overfishing’ and ‘not subject to overfishing’) are uncertain. Therefore, the changes in ex-vessel revenue to commercial fishermen and economic effects to recreational and subsistence fishermen noted above are also uncertain and can be thought of as maximum potential changes.

Using 2010-2012 data for 2010 stocks, and 2011-2012 data for 2011 stocks, Tables 2.2.1.1.13 and 2.2.1.1.14 show the 2010 and 2011 stock complexes that would have exceeded their ACLs under a ‘subject to overfishing’ scenario in **Alternative 2** (Puerto Rico SU2, queen conch in St. Croix, and grouper in St. Thomas for 2010 stocks, and Puerto Rico recreational wrasses, St. Croix angelfish, spiny lobster, triggerfish and filefish, and wrasses, and St. Thomas/St. John angelfish, squirrelfish, and wrasses for 2011 stocks). Again, queen conch is not subject to an AM and therefore, no changes in landings would be expected. Also, similar to **Alternative 1** (No Action), high landings of USVI angelfish, squirrelfish, and wrasses were attributed to improved reporting. If these same landings trends continued that occurred in 2010-2012, recreational and commercial fishermen of the remaining complexes would experience adverse economic effects due to AMs implemented. Losses for Puerto Rico SU2 and St. Thomas/St. John grouper would be the same as under **Alternative 1** (No Action). Losses in the commercial spiny lobster and triggerfish and filefish complexes would be larger than under **Alternative 1** (No Action) and amount to approximately \$62,055 (8,363 pounds) for St. Croix spiny lobster and approximately \$12,703 using 2011 data and \$4,271 using 2011-2012 data (2,861 and 962 pounds, respectively) for St. Croix triggerfish and filefish.

Under **Preferred Alternative 3**, economic effects are the same as those under **Alternative 2** under both the ‘subject to overfishing’ and ‘not subject to overfishing’ scenarios as discussed above except for parrotfish (**Preferred Sub-alternative 3a**), surgeonfish (**Preferred Sub-alternative 3b**), angelfish (**Preferred Sub-alternative 3c**), queen conch (**Preferred Sub-alternative 3d**), and aquarium trade species (**Preferred Sub-alternative 3e**). For these, results are the same as those under **Alternative 1** (No Action).

Alternative 2 and Preferred Alternative 3 under the ‘Not Subject to Overfishing’ and ‘Unknown’ Status Scenario

Alternative 2 under a ‘not subject to overfishing’ status scenario would change ACLs for all 2010 stocks and a few 2011 stocks. As stated in the previous paragraph, any decrease in an ACL could potentially result in lower landings, which would result in short-term direct adverse economic effects but long-term beneficial economic effects. The reverse is also true. Any increase in an ACL could potentially result in higher landings, which would result in short-term direct beneficial economic effects but long-term adverse economic effects.

Preferred Alternative 3 economic effects would be the same as **Alternative 2** economic effects because the resulting ACLs would be the same. The economic effects for **Preferred Sub-alternatives 3a-3e** would be the same as the economic effects under **Alternative 1 (No Action)** since those ACLs would remain as they currently are.

Table 4.1.3.2 shows estimates of maximum potential short-term ex-vessel revenue effects for commercial fishermen and estimates of the direction of economic effects for recreational fishermen for the stocks addressed in the 2010 Caribbean ACL Amendment and the 2011 Caribbean ACL Amendment, respectively, under the ‘not subject to overfishing’ status scenario. The values in all tables in this section represent maximum economic effects because they are based on ACLs and not actual landings.

Table 4.1.3.2. Maximum potential annual change in commercial ex-vessel revenue and the direction of economic effects for the recreational and subsistence sectors under Alternative 2, Preferred Alternative 3, including Sub-alternatives 3a-3e assuming the ‘not subject to overfishing’ status scenario. Change in ACL pounds are shown in parentheses next to commercial or recreational estimated value changes. Source: Estimates made based on changes in pounds in Table 2.2.1.1.7 and Table 2.2.1.1.8 under Section 2.2.1.1 B above and implied ex-vessel revenues from Chapter 3 Table 3.4.1.1.5, Table 3.4.1.1.12, and Table 3.4.1.1.18.

Puerto Rico	Alternative 2 Economic Effects		Preferred Alternative 3 Economic Effects	
	Comm (change in ex-vessel revenues and lbs)	Rec (change in direction of effects)	Comm (change in ex- vessel revenues and lbs)	Rec (change in direction of effects)
Snapper Unit 1	\$31,304 (16,746)	(+) (5,620)	\$31,304 (16,746)	(+) (5,620)
Snapper Unit 2	\$38,138 (8,583)	(+) (2,048)	\$38,138 (8,583)	(+) (2,048)
Snapper Unit 3	\$50,716 (20,340)	(+) (4,892)	\$50,716 (20,340)	(+) (4,892)
Snapper Unit 4	\$51,384 (21,959)	(+) (1,677)	\$51,384 (21,959)	(+) (1,677)
Grouper	\$25,418 (10,442)	(+) (4,542)	\$25,418 (10,442)	(+) (4,542)
Parrotfish	\$5,476 (3,099)	(+) (901)	Sub-alternative 3a	
			No change	
Queen Conch	No change	No change	Sub-alternative 3d	
			No change	
Boxfish	No change		No change	
Goatfish	No change		No change	
Grunts	No change		No change	
Wrasses	No change		No change	
Jacks	No change		No change	
Scups and Porgies	No change		No change	
Squirrelfish	No change		No change	
Triggerfish and	No change		No change	

Filefish			
Angelfish	(+) (No revenue data) (1,796)	(+) (898)	Sub-alternative 3c
			No change
Surgeonfish	(+) (No revenue data) (1,436)	(+) (717)	Sub-alternative 3b
			No change
Spiny Lobster	No change		No change
St. Croix	Alternative 2		Preferred Alternative 3
	Economic Effects in Ex-Vessel Revenues		Economic Effects in Ex-Vessel Revenues
Snapper	\$36,785 (6,056)		\$36,785 (6,056)
Grouper	\$10,897 (1,790)		\$10,897 (1,790)
Parrotfish	\$71,624 (14,118)		Sub-alternative 3a
			No change
Queen Conch	-\$35,512 (-5,000)		Sub-alternative 3d
			No change
Boxfish	No change		No change
Goatfish	No change		No change
Grunts	No change		No change
Wrasses	No change		No change
Jacks	No change		No change
Scups and Porgies	No change		No change
Squirrelfish	No change		No change
Triggerfish and Filefish	No change		No change
Angelfish	\$183 (60)		Sub-alternative 3c
			No change
Surgeonfish	\$34,097 (6,721)		Sub-alternative 3b
			No change
Spiny Lobster	No change		No change
St. Thomas/St. John	Alternative 2		Preferred Alternative 3
	Economic Effects in Ex-Vessel Revenues		Economic Effects in Ex-Vessel Revenues
Snapper	\$47,906 (7,869)		\$47,906 (7,869)
Grouper	\$18,569 (3,050)		\$18,569 (3,050)
Parrotfish	\$12,685 (2,500)		Sub-alternative 3a
			No change
Queen Conch	No change		Sub-alternative 3d
			No change
Boxfish	No change		No change
Goatfish	No change		No change
Grunts	No change		No change
Wrasses	No change		No change
Jacks	No change		No change
Scups and Porgies	No change		No change
Squirrelfish	No change		No change
Triggerfish and Filefish	No change		No change

Angelfish	\$4,809 (1,579)	Sub-alternative 3c
		No change
Surgeonfish	\$29,680 (5,850)	Sub-alternative 3b
		No change
Spiny Lobster	No change	No change
Caribbean Wide	Alternative 2	Alternative 3
Tilefish	No change	No change
Aquarium Trade Species	(+) (No revenue data) (1,631)	Sub-alternative 3e
		No change

Note: A negative (-) or positive (+) sign representing adverse or beneficial effects, respectively, is used in two situations: 1) where recreational effects cannot be quantified due to lack of value data or 2) A situation where the ACL is combined for both commercial and recreational fishermen (Puerto Rico spiny lobster and St. Croix queen conch).

Note: A “(-) (No revenue data)” or “(+) (No revenue data)” indicates that there are no revenue values available for these species groups/complexes in the trip ticket data. Therefore, economic effects cannot be quantified. We can assume, however, that if the poundage change in ACL is positive, then the economic effects are beneficial and if the poundage change in ACL is negative, then the economic effects are adverse.

Note: The reader should again note that the changes in actual landings resulting from the change in ACLs under each status scenario (‘subject to overfishing’ and ‘not subject to overfishing’) are uncertain. Therefore, the changes in ex-vessel revenue to commercial fishermen and economic effects to recreational and subsistence fishermen noted above are also uncertain and can be thought of as maximum potential changes.

Tables 2.2.1.1.15 and 2.2.1.1.16 provide results for 2010 and 2011 stocks, respectively, under the **Alternative 2** ‘not subject to overfishing’ scenario using recent 2010 through 2012 landings data. For the 2010 stocks, when compared to 2010-2011 annual landings, Puerto Rico SU2, St. Croix queen conch, and St. Thomas/St. John grouper exceed their ACLs. Accountability measures do not apply for queen conch but if these fishing trends continue for the other two species, AMs (in the form of early closures) would apply and this would result in short-term economic losses in the form ex-vessel revenue losses of approximately \$442,058 (123,480 pounds) using average 2010-2011 data and \$337,705 (94,331 pounds) using average 2010-2012 data for Puerto Rico Snapper Unit 2 commercial fishermen and approximately \$11,449 (1,934 pounds) for St. Thomas/St. John commercial fishermen using average 2010-2011 data. This assumes that recent landings trends would continue.

For the 2011 stocks, the same units exceed their ACL under the **Alternative 2** ‘not subject to overfishing’ scenario as under **Alternative 1** (No Action) when using landings from 2011. When compared to average landings from 2011-2012, the USVI wrasses, angelfish, and squierrelfish plus Puerto Rico commercial wrasses exceed the ACL under Alternative 2 ‘not subject to overfishing. While AMs would not apply to USVI angelfish, squierrelfish, and wrasses due to better data reporting resulting in higher landings, AMs would apply to Puerto Rico recreational wrasses, St. Croix spiny lobster, and triggerfish and filefish. Accountability

measures (AMs) would apply to these units in the form of early closures and result in adverse economic effects for both recreational and commercial fishermen. As stated above, the adverse economic effects to recreational fishermen cannot be quantified due to a lack of data. If recent landings trends continued, the adverse economic effects for commercial fishermen would come in the form of lost ex-vessel revenues. St. Croix spiny lobster commercial ex-vessel revenue losses would amount to approximately \$17,816 compared to 2011 data (2,401 pounds). St. Croix triggerfish and filefish commercial fishermen would experience ex-vessel revenue losses of approximately \$6,545 using 2011 data (1,474 pounds). Puerto Rico commercial wrasses exceeded the ACL compared to 2011-2012 landings by 7,488 pounds, resulting in approximately \$22,706 in ex-vessel revenue losses. However, it should be noted that Puerto Rico high landings of commercial wrasses in 2012 were attributed to increased reporting resulting from modifications to the reporting requirements from the Puerto Rico Department of Natural and Environmental Resources.

As stated above, under **Preferred Alternative 3**, economic effects are the same as those under **Alternative 2** under both the ‘subject to overfishing’ and ‘not subject to overfishing’ scenarios as discussed above except for parrotfish (**Preferred Sub-alternative 3a**), surgeonfish (**Preferred Sub-alternative 3b**), angelfish (**Preferred Sub-alternative 3c**), queen conch (**Preferred Sub-alternative 3d**), and aquarium trade species (**Preferred Sub-alternative 3e**). For these, results are the same as those under **Alternative 1** (No Action).

As previously stated, these adverse economic effects that may occur based on comparisons with recent landings, assume that these recent landings will continue. However, the AMs that would be triggered would come in the form of early closures. The early closures would bring the landings back to within the ACL and an AM would be less likely to be triggered the following year. Therefore, these economic effects are likely short-term.

4.1.4 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 that interaction. 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 4.1.3 (Economic Effects), alternatives predicting positive or negative economic effects are expected to have correlating positive or negative social effects.

When fishermen are referred to in the following analysis, commercial, recreational, and subsistence fishermen are included unless expressly described in the text as only pertaining to one or two specific categories of fishermen.

Alternative 1 (No action)

Alternative 1 (No action) would retain the current buffer reductions applied to the OFL or ABC, which is used to derive the ACLs for the FMUs included in the reef fish, coral, queen conch, and spiny lobster FMPs. Remaining at the status quo buffer reductions for all FMUs under **Alternative 1** (No action) could result in impacts to fishermen if the overfishing status of an FMU changes, brought about by the inability of fisheries managers to quickly respond to a change in the current status of the fishery through regulations. If the status of an FMU changes to ‘subject to overfishing’ from ‘not subject to overfishing’ or ‘unknown’, there would be no quick mechanism to adjust the ACL to reflect the updated status of the fishery. This could lead to continued overfishing, which could result in negative impacts to fishermen in the long-term resulting from a decrease in the health of fish stocks. Conversely, if an FMU is no longer subject to overfishing, and a more conservative ACL is retained under **Alternative 1** (No action) because the buffer reductions remain at status quo, then fishermen could lose possible positive impacts from the inability to fish at an increased harvest level. Also, if a more conservative ACL is retained, there could be an increased possibility of triggering an AM closure. This could shorten the fishing season and result in decreased fishing opportunities.

Alternative 1 (No action) would retain the included species’ ACLs at the status quo level and could continue to provide greater protection for the resource if the ACLs under **Alternative 1** (No action) are less than the ACLs under **Alternative 2** and **Preferred Alternative 3**, as is the case for the majority of the 2010 stocks under a ‘not subject to overfishing’ scenario in **Alternatives 2** and **Preferred Alternative 3** (provided in Table 2.2.1.1.9). This protection could result in indirect positive effects for fishermen who depend on the resource, including healthier stocks and the possibility of more fish. However, for the 2010 stocks (except for queen conch: the ACL for queen conch in St. Croix would be reduced under **Alternatives 2**, but would remain at the status quo level under **Preferred Sub-alternative 3d**, and the ACL for queen conch in Puerto Rico and St. Thomas/St. John would remain at zero under all alternatives because harvesting of queen conch is prohibited in federal waters of those areas), fishermen could lose possible positive impacts from the ability to fish at an increased harvest level under **Alternative 2** and **Preferred Alternative 3** under a ‘not subject to overfishing’ scenario (Table 2.2.1.1.9), if catch levels remain at the status quo level in **Alternative 1** (No action).

When recent landings are compared to the ACLs under **Alternative 1** (No action), several of the 2010 stocks exceeded their ACLs when compared to the 2010-2011 average (Table 2.2.1.1.11) and experienced AMs in 2013. These stocks include Puerto Rico SU2 (commercial) and St. Thomas/St. John grouper (commercial). In addition, one unit, the Puerto Rico SU2 (commercial)

exceeded the ACL when compared to the 2011-2012 average (Table 2.2.1.1.11) and triggered AMs in 2014. However, the 2014 fishing season for this stock will not be shortened based on the fishing rate for the most recent year of data. If landing patterns continue, it is expected that these FMUs could experience AMs in future years if ACLs remain at the status quo level under **Alternative 1** (No action). Accountability measures would include closures during the following year which would equal the amount of the overage in landings from the prior year. Fishermen would likely experience negative effects from a reduction in landings due to the AMs experienced under **Alternative 1** (No action). St. Croix queen conch exceeded its status quo ACL under **Alternative 1** (No action) when compared to both the 2010-2011 average and the 2010-2012 average (Table 2.2.1.1.11); however AMs do not apply to queen conch. Although fishermen would not be negatively impacted by a reduction in harvest resulting from an AM, they could be negatively impacted in the long-term (resulting from negative impacts to the resource from continuing to overharvest) under **Alternative 1** (No action), if landing patterns continue.

Retaining status quo ACLs under **Alternative 1** (No action) could positively impact fishermen in the short-term who depend on species within FMUs which could experience a decrease in ACL under the ‘subject to overfishing status’ scenario possible under **Alternative 2** and **Preferred Alternative 3**. These include the majority of 2011 stocks (except for Puerto Rico angelfish and surgeonfish; St Croix wrasses (remains the same), angelfish, and surgeonfish; and St. Thomas/St. John angelfish and surgeonfish, all of these FMUs would either experience increases in ACL or the ACL would remain the same under **Alternative 2** and **Preferred Alternative 3**). However, under **Alternative 1** (No action) these fishermen could be negatively impacted in the long-term because the more conservative reduction under **Alternative 2** and **Preferred Alternative 3** would not be applied and the resource could be negatively impacted which could indirectly impact fishermen dependent on the resource.

When 2011 landings are compared to the ACLs under **Alternative 1** (No action), several of the 2011 stocks exceeded their ACLs (Table 2.2.1.1.12). These stocks include Puerto Rico wrasses (recreational); St. Croix angelfish (commercial), spiny lobster (commercial), squirrelfish (commercial), triggerfish and filefish (commercial), and wrasses (commercial); and St. Thomas/St. John angelfish (commercial), squirrelfish (commercial), and wrasses (commercial). However, the landings for St. Croix and St. Thomas/St. John for angelfish, squirrelfish, and wrasses were attributed to enhanced reporting requirements and AMs were not applied. The remainder of these groups experienced AMs in 2013 and fishermen likely experienced negative impacts resulting from a decrease in allowable harvest (because AMs include closures during the following year which equal the amount of the overage in landings from the prior year). Also, when the 2010-2012 landings average is compared to the ACLs under **Alternative 1** (No action), several stocks exceeded their ACLs (Table 2.2.1.1.12). These FMUs include St. Croix and St. Thomas/St. John angelfish (commercial), squirrelfish (commercial), and wrasses (commercial), and Puerto Rico wrasses (commercial). High landings for these groups were attributed to

enhanced or increased reporting and AMs were not applied in 2014. If landings patterns remain the same, the above mentioned 2011 stocks would continue to exceed their ACLs under **Alternative 1** (No action). If AMs are applied for any of these groups, fishermen would experience negative effects under **Alternative 1** (No action), resulting from a decrease in allowable harvest during the following year.

Alternative 2 and Preferred Alternative 3 under the ‘Subject to Overfishing’ Status Scenario

As described in section 4.1.3, under a ‘subject to overfishing’ status scenario, the ACLs for the majority of the 2010 stocks would remain the same under **Alternative 2** as under **Alternative 1** (No action). However, in this scenario under **Alternative 2**, the ACL for St. Croix queen conch would decrease. This decrease could negatively impact queen conch fishermen in the short-term because their catch and resulting benefits would be decreased; however it could indirectly benefit fishermen in the long-term if the resource is positively impacted by a decrease in harvest through healthier stocks and the availability of more fish.

When the 2010-2011 average is compared to the ACLs under **Alternative 2** under the ‘subject to overfishing’ status scenario, several of the 2010 stocks exceeded their ACLs (Table 2.2.1.1.13). These stocks also exceeded their ACLs under **Alternative 1** (No action) and include Puerto Rico SU2 (commercial), St. Thomas/St. John grouper (commercial), and St. Croix queen conch. In addition, when the 2010-2012 landings average is compared to ACLs under **Alternative 2** under the ‘subject to overfishing’ status scenario, two of the 2010 stocks, Puerto Rico SU2 (commercial) and St. Croix queen conch exceeded their ACLs (Table 2.2.1.1.13). If landings patterns remain the same, it is expected that these FMUs could experience AMs under **Alternative 2** (except for queen conch because AMs do not apply to queen conch). Accountability measures would include closures during the following year which would equal the amount of the overage in landings from the prior year. Fishermen would likely experience negative effects from a reduction in landings due to the AMs experienced under **Alternative 2**. Because the ACLs for Puerto Rico SU2 (commercial) and St. Thomas/St. John grouper (commercial) would remain the same under a ‘subject to overfishing’ scenario in **Alternative 2**, overages in landings would remain the same and the negative effects to fishermen the following year would thus be the same as under **Alternative 1** (No action). St. Croix queen conch exceeded its status quo ACL under **Alternative 2** when compared to both the 2010-2011 and the 2010-2012 averages; however AMs do not apply to queen conch. Although fishermen would not be negatively impacted by a reduction in harvest resulting from an AM, they would likely be negatively impacted in the long-term (resulting from negative impacts to the resource from continuing to overharvest) under **Alternative 2**, if landing patterns continue. Also, because the ACL for St. Croix queen conch would decrease under **Alternative 2** under the ‘subject to overfishing’ status scenario, overages in landings would be greater under **Alternative 2** than under **Alternative 1** (No Action). Overharvesting would likely occur at a greater level under **Alternative 2** which could increase the long-term negative impacts to fishermen.

Under a ‘subject to overfishing’ status scenario, the ACLs for the majority of 2011 stocks would decrease under **Alternative 2** (the exceptions include: Puerto Rico angelfish and surgeonfish, St. Croix angelfish and surgeonfish, St. Thomas/St. John angelfish and surgeonfish, and Caribbean-wide aquarium trade species FMUs which would experience an increase in ACL, and the ACL for St. Croix wrasses which would remain the same under **Alternative 2**). This would likely negatively affect fishermen in the short-term because their allowable catch and resulting benefits would decrease. However, it could indirectly benefit fishermen in the long-term if the resource is positively impacted by a decrease in harvest through healthier stocks and the availability of more fish. Fishermen who catch species that would experience an increase in ACL under a ‘subject to overfishing’ status scenario under **Alternative 2** (Puerto Rico angelfish and surgeonfish, St. Croix angelfish and surgeonfish, St. Thomas/St. John angelfish and surgeonfish, and Caribbean-wide aquarium trade species FMUs) would likely benefit in the short-term from an increased ability to harvest these fish. Whereas, fishermen targeting wrasses in St. Croix would not receive any additional short-term benefits under a ‘subject to overfishing’ status scenario under **Alternative 2**, as the ACL would remain the same.

When 2011 landings are compared to the ACLs under **Alternative 2** under the ‘subject to overfishing’ status scenario (Table 2.2.1.1.14), the same groups exceeded their ACLs under **Alternative 1** (No Action) including Puerto Rico wrasses (recreational); St. Croix angelfish (commercial), spiny lobster (commercial), squirrelfish (commercial), triggerfish and filefish (commercial), and wrasses (commercial); and St. Thomas/St. John angelfish (commercial), squirrelfish (commercial), and wrasses (commercial). In addition, Puerto Rico wrasses (commercial) also exceeded their ACL under **Alternative 2** under the ‘subject to overfishing’ status scenario. The majority of these groups exceed their ACL by a greater amount under **Alternative 2** than under **Alternative 1** (No Action) (except for angelfish which would decrease under **Alternative 2**). The landings for St. Croix and St. Thomas/St. John for angelfish, squirrelfish, and wrasses were attributed to enhanced reporting requirements and AMs do not need to be applied. Because AMs are not required to be applied, fishermen would likely not experience any negative impacts resulting from overages under **Alternative 2** under the ‘subject to overfishing’ status scenario, if landing patterns remain the same. However, the remainder of these groups would experience AMs if landing patterns remain the same and fishermen would likely experience negative impacts resulting from a decrease in allowable harvest (because AMs include closures during the following year which equal the amount of the overage in landings from the prior year). Under **Alternative 2**, overages in landings for these groups would be larger and the negative effects to fishermen the following year would likely be greater, than under **Alternative 1** (No action).

Also, when the 2011-2012 landings average is compared to the ACLs under **Alternative 2** under the ‘subject to overfishing’ scenario (Table 2.2.1.1.14), the same 2011 stocks exceeded their ACLs as under **Alternative 1** (No Action). These FMUs include St. Croix and St. Thomas/St.

John angelfish (commercial), squirrelfish (commercial), and wrasses (commercial). In addition, St. Croix triggerfish and filefish (commercial) and Puerto Rico wrasses (commercial) and scups and porgies (commercial) exceeded the ACL under **Alternative 2** under the ‘subject to overfishing’ scenario. The majority of these groups exceeded their ACL by a greater amount under **Alternative 2** than under **Alternative 1** (No Action) (except for angelfish which would decrease under **Alternative 2**). Landings for St. Croix and St. Thomas/St. John for angelfish, squirrelfish, and wrasses were attributed to enhanced reporting requirements, and landings for Puerto Rico commercial wrasses were attributed to increased reporting, and AMs would not need to be applied in 2014 for these groups. Because AMs are not required to be applied, fishermen would likely not experience any negative impacts resulting from overages under **Alternative 2** under the ‘subject to overfishing’ status scenario, if landing patterns remain the same. However, the remainder of these groups would experience AMs if landing patterns remain the same and fishermen would likely experience negative impacts resulting from a decrease in allowable harvest (because AMs include closures during the following year which equal the amount of the overage in landings from the prior year) unless landings are determined to be due to enhanced or increased reporting. Under **Alternative 2**, overages in landings for these groups would be larger and the negative effects to fishermen the following year would likely be greater, than under **Alternative 1** (No action).

Under a ‘subject to overfishing’ status scenario, the ACLs under **Preferred Alternative 3** would be the same for 2010 and 2011 stocks as under **Alternative 2**. The effects would thus be the same under both **Alternative 2** and **Preferred Alternative 3** for the majority of 2010 and 2011 stocks. However, the exceptions to this rule includes **Preferred Sub-alternatives 3b-3e** which include no change from the status quo presented in **Alternative 1** (No action) for St. Croix queen conch, angelfish, and surgeonfish, St. Thomas/St. John angelfish and surgeonfish, Puerto Rico angelfish and surgeonfish, and the Caribbean-wide aquarium trade species FMUs. However, under **Alternative 2**, these FMUs include increases (St. Croix angelfish and surgeonfish; St. Thomas/St. John angelfish and surgeonfish, Puerto Rico angelfish and surgeonfish, and the Caribbean-wide aquarium trade species) or decreases (St. Croix queen conch). Annual catch limits for these units would remain at status quo levels under **Preferred Sub-alternatives 3b-3e** which could positively affect fishermen indirectly in the long-term. Remaining at this more conservative catch level could benefit the resource through healthier stocks, the availability of more fish, and through the services these species provide (such as to the ecology of coral reefs by angelfish and surgeonfish). However, in the short-term, fishermen could lose the possible positive effects from the ability to fish at an increased allowable harvest level which would be available under **Alternative 2** (with the exemption of queen conch, whose harvest would be decreased as discussed above).

When recent landings are compared to the ACLs under **Preferred Alternative 3** under the ‘subject to overfishing’ status scenario, the social effects would be the same as under **Alternative 2** for the majority of 2010 and 2011 stocks. However, the exceptions to this rule

includes **Preferred Sub-alternatives 3b-3e** which include no change from the status quo presented in **Alternative 1** (No action) for parrotfish, surgeonfish, angelfish, queen conch, and aquarium trade species. The effects for these FMUs would thus be the same as the social effects presented for **Alternative 1** (No action).

Alternative 2 and Preferred Alternative 3 under the ‘Not Subject to Overfishing’ and ‘Unknown’ Status Scenario

As described in section 4.1.3, under a ‘not subject to overfishing’ or ‘unknown’ status scenario, the ACLs for nearly all 2010 stocks (except for queen conch: the ACL for queen conch in St. Croix would be reduced under **Alternative 2**, and the ACL for queen conch in Puerto Rico and St. Thomas/St. John would remain at zero under all alternatives because harvesting in the federal EEZ is prohibited for queen conch in those areas) and some 2011 stocks (angelfish, surgeonfish, and aquarium trade) would increase. The resulting increased ACLs would likely positively affect fishermen in the short-term. However, it is possible that fishermen could experience negative effects in the long-term because the resource would not experience benefits brought about by a decrease in catch (including the possibility of healthier stocks, availability of more fish, and through the services these species provide). A number of 2011 stocks would remain the same under **Alternative 2** as under **Alternative 1** (No action).

When recent landings are compared to the ACLs under **Alternative 2** under the ‘not subject to overfishing’ status scenario, several of the 2010 stocks exceeded their ACLs (Table 2.2.1.1.15). These stocks also exceeded their ACLs under **Alternative 1** (No action) and include Puerto Rico SU2 (commercial), St. Thomas/St. John grouper (commercial), and St. Croix queen conch (commercial). If landings patterns remain the same, it is expected that these FMUs could experience AMs under **Alternative 2** (except for queen conch because AMs do not apply to queen conch). Accountability measures would include closures during the following year which would equal the amount of the overage in landings from the prior year. Fishermen would likely experience negative effects from a reduction in landings due to the AMs experienced under **Alternative 2**. Because the ACLs for Puerto Rico SU2 (commercial) and St. Thomas/St. John grouper (commercial) would increase under a ‘not subject to overfishing’ scenario under **Alternative 2**, overages in landings would be smaller and the negative effects to fishermen the following year would likely be less, than under **Alternative 1** (No action). St. Croix queen conch exceeded its status quo ACL under **Alternative 2** when compared to recent landings; however AMs do not apply to queen conch. Although fishermen would not be negatively impacted by a reduction in harvest resulting from an AM, they would likely be negatively impacted in the long-term (resulting from negative impacts to the resource from continuing to overharvest) under **Alternative 2**, if landing patterns continue. Also, because the ACL for St. Croix queen conch would decrease under **Alternative 2** under the ‘not subject to overfishing’ status scenario, overages in landings would be greater under **Alternative 2** than under

Alternative 1 (No Action). Overharvesting would likely occur at a greater level under **Alternative 2** which could increase the long-term negative impacts to fishermen.

When recent landings are compared to the ACLs under **Alternative 2** under the ‘not subject to overfishing’ status scenario, several 2011 stocks exceeded their ACLs (Table 2.2.1.1.16). These stocks also exceeded their ACL under **Alternative 1** (No Action) and include Puerto Rico wrasses (recreational and commercial); St. Croix angelfish (commercial), spiny lobster (commercial), squirrelfish (commercial), triggerfish and filefish (commercial), and wrasses (commercial); and St. Thomas/St. John angelfish (commercial), squirrelfish (commercial), and wrasses (commercial). The landings for St. Croix and St. Thomas/St. John angelfish, squirrelfish, and wrasses were attributed to enhanced reporting and the landings for Puerto Rico commercial wrasses were attributed to increased reporting, and AMs would not need to be applied for these groups. If landings patterns remain the same and higher landings continue to be attributed to enhanced and/or increased reporting, fishermen involved in these fisheries would likely not experience negative effects resulting from exceeding the ACL under **Alternative 2** under the ‘not subject to overfishing’ status. However, the remainder of these groups would experience AMs and fishermen would likely experience negative impacts resulting from a decrease in allowable harvest (because AMs include closures during the following year which equal the amount of the overage in landings from the prior year) **Alternative 2** under the ‘not subject to overfishing’ status scenario. Under **Alternative 2** under the ‘not subject to overfishing’ status scenario, overages in landings for these groups would be nearly the same as under **Alternative 1** (No action) and thus effects to fishermen would be expected to be the same.

Under a ‘not subject to overfishing’ or ‘unknown’ status scenario, the ACLs under **Preferred Alternative 3** would be the same for 2010 and 2011 stocks as under **Alternative 2**. The social effects would thus be the same under both **Alternative 2** and **Preferred Alternative 3** for the majority of 2010 and 2011 stocks. However, the exceptions to this rule includes **Preferred Sub-alternatives 3a-3e** which include no change from the status quo presented in **Alternative 1 (No action)** for St. Croix parrotfish, queen conch, angelfish, and surgeonfish; St. Thomas/St. John parrotfish, angelfish, and surgeonfish, Puerto Rico parrotfish, angelfish, and surgeonfish, and the Caribbean-wide aquarium trade FMUs. However, under **Alternative 2**, these FMUs include increases (St. Croix, St. Thomas/St. John, and Puerto Rico parrotfish, angelfish, and surgeonfish, and the Caribbean-wide aquarium trade species) or decreases (St. Croix queen conch).

When recent landings are compared to the ACLs under **Preferred Alternative 3** under the ‘not subject to overfishing’ status scenario, the social effects would be the same as under **Alternative 2** for the majority of 2010 and 2011 stocks. However, the exceptions to this rule includes **Preferred Sub-alternatives 3b-3e** which include no change from the status quo presented in **Alternative 1** (No action) for parrotfish, surgeonfish, angelfish, queen conch, and aquarium trade species. The effects for these FMUs would thus be the same as the social effects presented for **Alternative 1** (No action).

4.1.5 Direct and Indirect Effects on the Administrative Environment

An action becomes more administratively burdensome when it triggers management review and action more frequently. **Alternative 1** would not establish a control rule to adjust the buffer applied to the OFL or the ABC and derive the ACL. Keeping current buffers and thus ACL values for managed species would not have any administrative effects because no action would be taken. However, there would not be a responsive mechanism in place to expedite the adjustment of the OFL or ABC to derive the ACL for any FMU as their overfishing status changes. If the Council desires to adjust the buffer applied to the OFL or ABC for that particular unit to reflect the change in overfishing status, this would add the administrative burden of having to individually amend the corresponding FMP through the lengthier plan amendment process, limiting the Council's ability to implement regulatory changes in a timely manner.

In addition, if the status of an FMU changes to 'subject to overfishing' from 'not subject to overfishing' or 'unknown', and there is no expeditious mechanism in place to adjust the buffer in response to a change in status, the ACL currently in place may not be precautionary enough and could lead the stock to become subject to overfishing and/or overfished. This would add an administrative burden because it would elicit further resource-intensive action to rebuild stocks under provisions of the Magnuson-Stevens Act.

Under the no action alternative (**Alternative 1**), if the status of a unit changes from 'subject to overfishing' to 'not subject to overfishing' in a particular year, the ACL currently in place for that unit may end up being too restrictive. In the short term, depending on harvest patterns, a more restrictive or conservative ACL may increase the possibility of triggering AM closures, when compared to a less restrictive ACL, adding the administrative burden of implementing the closure. In contrast, in the long term, assuming the ACL is not exceeded, a more restrictive ACL would prevent overfishing, and thus would minimize future administrative actions and thus effects.

The establishment of the ACL Control Rule proposed in **Alternative 2** and in **Preferred Alternative 3** would add the short term administrative burden of establishing the process in the regulations and implementing the action. However, in the long term it would simplify the process of adjusting the buffers applied to the OFL if the status of a unit changes in a particular year

Alternative 2 would apply the ACL Control Rule to all managed species for which harvest is allowed. **Alternative 2** would result in a more restrictive ACL if, in a particular year, a unit is determined to be 'subject to overfishing'. In the long term, a more restrictive ACL would aid in ending overfishing, and thus would reduce the administrative burden of having to take additional measures to end overfishing for the species. However, when compared to a less restrictive ACL, the short term impact of a more conservative ACL may be an increased likelihood of triggering

AM closures and thus adding the administrative burden of implementing the closures. This short term administrative effect becomes even more evident for the queen conch, a species with special management measures established in the 2010 Caribbean ACL Amendment. As discussed in Section 2.2.1, applying a buffer reduction to the queen conch's ABC would certainly reduce the current harvest allowed in federal waters under any of the 'overfishing/not subject to overfishing' status scenarios. A potential decrease in harvest opportunities for the queen conch would be incompatible with the present regulatory environment in federal waters and would add the administrative burden of enforcing regulations that are not compatible with the USVI. **Alternative 2** would not affect the current administrative environment for the queen conch in Puerto Rico and St. Thomas/St. John because harvest is prohibited in those areas and the ACL is zero.

Conversely, if adjusting the OFL buffer reduction as a result of a change in the overfishing status results in less restrictive or insufficiently precautionary ACLs, this could lead stocks to become 'subject to overfishing' or become overfished. Then the action could become administratively burdensome because it would elicit further resource-intensive action to end overfishing or, if overfished, to rebuild stocks under Magnuson-Stevens Act provisions. For surgeonfish, angelfish, and aquarium trade species, an additional administrative burden may be added by **Alternative 2** because it would duplicate efforts already conducted in the 2010 and 2011 Caribbean ACL Amendments, where similar buffers to the ones proposed in this action were already considered and subsequently rejected by the Council (NMFS 2012a, b).

Management reference points for all Council managed species may be reevaluated in the near future during the development of the Island-Based FMPs for each of Puerto Rico, St. Croix, and St. Thomas/St. John.

The administrative effects expected from **Preferred Alternative 3** are almost similar to the effects expected from **Alternative 2** discussed above, except for the administrative effects resulting from changes to parrotfish, surgeonfish, angelfish, queen conch, and aquarium trade species reduction buffers. In general, the establishment of the ACL Control Rule proposed in **Preferred Alternative 3** would add the short term administrative burden of establishing the process in the regulations and implementing the action. For all managed species except for the species mentioned above, **Preferred Alternative 3** would, in the long term, simplify the process of adjusting the buffers applied to the OFL if the status of a unit changes in a particular year, benefiting the administrative environment.

Preferred Sub-alternatives 3a-3e provide for exemptions to the control rule, and the administrative effects of any of these sub-alternatives would be similar to those described for **Alternative 1**. Under any of **Preferred Sub-alternatives 3a-3e**, the relationship between the OFL or ABC and the ACL would remain as status quo. Keeping current buffers and thus ACL values for any of these special management units translates into less administrative burden

because it would support current management measures. However, there would not be a responsive mechanism in place to expedite the adjustment of the OFL or ABC to derive the ACL for these units if their overfishing status changes. If the Council desires to adjust the buffer for a particular unit to reflect the change in overfishing status, this would add the administrative burden of having to individually amend the corresponding FMP through the lengthier plan amendment process.

In summary, in the short term **Alternative 1** would be less administratively burdensome because it will not prompt further action. In the long term, both **Alternative 2** and **Preferred Alternative 3**, when compared to **Alternative 1**, would result in the greatest administrative benefit because both would allow for more responsive management sensitive to the status of the fisheries. Implementing the control rule under either **Alternative 2** or **Preferred Alternative 3** provides the Council with the flexibility to respond quicker to changes in the status of the fisheries instead of having to go through the lengthier full plan amendment process. When compared to **Alternative 2**, **Preferred Alternative 3** would be less administratively burdensome because it would not modify current management measures for parrotfish, angelfish, surgeonfish, queen conch, and/or aquarium trade species. This, of course, depends on the suite of sub-alternatives chosen.

4.2 Cumulative Effects Assessment

As directed by the Council on Environmental Quality (CEQ) regulations, federal agencies are mandated to assess not only the direct and indirect impacts, but the cumulative impacts of proposed actions as well. The CEQ regulations define 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 non-federal) or person undertakes such other actions.” Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R. 1508.7). Cumulative effects can either be additive or synergistic. A synergistic effect occurs when the combined effects are greater than the sum of the individual effects.

This section uses an approach for assessing cumulative effects based upon guidance offered by the CEQ publication - Considering Cumulative Effects Under the National Environmental Policy Act (1997). The report outlines 11 items for consideration in drafting a cumulative effects assessment (CEA) for a proposed action.

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.

The 1997 CEQ cumulative impacts guidance states this step is accomplished through three activities as follows:

- I. The direct and indirect effects of the proposed action (Chapter 4);
- II. Which resources, ecosystems, and human communities are affected (Chapter 3); and
- III. Which effects are important from a cumulative effects perspective (information revealed in this CEA).

2. Establish the geographic scope of the analysis.

The immediate areas affected by this action and analyzed in this CEA are the federal waters of the U.S. Caribbean. These waters extend off Puerto Rico from 9 nautical miles (nm) to 200 nm and from 3 nm to 200 nm off the USVI. Managed resources, non-target species, habitat, and protected species present in federal waters of the U.S. Caribbean are also within this geographic scope. The immediate areas affecting humans would include fishing communities of the USVI and Puerto Rico. These are discussed in Sections 3.4.2 and 3.4.3. A description of the geographic range for species affected by this amendment can be found in Section 3.1. The species affected include all Council managed species for which harvest is allowed and which are included in the four Council FMPs: Queen Conch, Reef Fish, Spiny Lobster, and Corals and Reef Associated Plants and Invertebrates. The ranges of other protected species affected by this action are described in Section 3.2.3.

3. Establish the timeframe for the analysis.

The timeframe for the CEA should take into account both historical efforts to manage reef fish, queen conch, spiny lobster, and coral fisheries resources in federal waters, as well as future considerations if this comprehensive amendment and its subsequent regulation are approved and implemented by the National Marine Fisheries Service (NMFS). The timeframe for the CEA begins with the implementation of the council FMPs: Queen Conch FMP in 1997, Reef Fish FMP in 1985, the Spiny Lobster FMP in 1981, and the Corals FMP in 1994. Sections 1.5.1 and 1.5.2 describe the history of management for resources in these FMPs related to the action proposed in this amendment. A complete history of management can be found in the 2010 and 2011 Caribbean ACL amendments (CFMC 2011a, b).

Biological and socio-economic information in this amendment is updated through the most recent actions affecting queen conch, reef fish, corals, and spiny lobster management. Management actions included in the 2010 Caribbean ACL Amendment (CFMC 2011a) for the reef fish and queen conch, and in the 2011 Caribbean ACL Amendment (CFMC 2011b) for spiny lobster and corals, are summarized in Section 1.5.1. Caribbean actions implemented in 2013 affected the Corals and Reef Associated Plants and Invertebrates (Coral), Queen Conch, and Reef Fish FMPs. Updated management histories for these FMPs can be found in: Amendment 4 to the Coral FMP (CFMC 2013a), Regulatory Amendment 2 to the Queen Conch

FMP (CFMC 2013b), and Regulatory Amendment 4 to the Reef Fish FMP (CFMC 2013c), respectively. Management measures in these amendments are summarized in Section 1.5.2. The Generic Essential Fish Habitat Amendment (CFMC 1998), EFH- Final Environmental Impact Statement (FEIS) (CFMC 2004), Griffith et al. (2007), Stoffle et al. (2009), Valdés-Pizzini et al. (2010), and Grace-Mccaskey (2012) provide more extensive characterization of fishing-dependent communities.

4. Identify the other actions affecting the resources, ecosystems, and human communities of concern.

The following are some past, present, and future actions that could impact the reef fish, queen conch, spiny lobster, coral resources in the U.S. Caribbean EEZ, as well as the fishing communities that depend on those resources.

Past

The CEA included in the 2010 Caribbean ACL Amendment (CFMC 2011a) analyzed cumulative effects to the queen conch and reef fish, and the CEA included in the 2011 Caribbean ACL Amendment (CFMC 2011b) analyzed cumulative effects to the spiny lobster and coral resources in the U.S. Caribbean EEZ. Both of these CEAs also described baseline economic and social conditions for fishing communities in Puerto Rico and the USVI. These CEAs described the effects of the establishment of ACLs, AMs, and the redefinition of management reference points for queen conch, reef fish, spiny lobster, and corals in the U.S Caribbean 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 socioeconomic impacts. The analyses of cumulative effects listed in each of the 2010 and 2011 Caribbean ACL Amendments are still considered to be accurate and useful at the present time.

Amendment 4 to the Coral FMP removed seagrass species from the FMP. The CEA included in this amendment analyzed cumulative effects to the corals and reef associated plants and invertebrates in federal water resulting from this action. The CEA concluded that the action in that amendment was an administrative action and no cumulative effects were expected from it. The analysis in this CEA is still considered to be accurate and useful at the present time.

The CEA in Regulatory Amendment 2 to the Queen Conch FMP analyzed cumulative effects of modifying trip and bag limits for the harvest of queen conch in the EEZ. This CEA revealed no significant, cumulative adverse effects on the biological/ecological and socio-economic environments. The action in this amendment was expected to only minimally affect the rate at which the ACL is reached; therefore, it was considered to be consistent with the queen conch rebuilding plan, the FMP, FMP amendments, and the Southeast Data Assessment and Review (SEDAR) assessment (SEDAR 14, NMFS 2007). The analysis of cumulative effects listed in Regulatory Amendment 2 is still considered to be accurate and useful at the present time.

There is currently a petition to NMFS to list the queen conch as threatened or endangered under the ESA. The petition listed the following threats, among others, as reasons for the listing: overharvest from commercial fisheries, loss of nursery habitat, inadequate regulations, and water pollution. On August 24, 2012, NMFS determined the petition presented substantial information indicating that listing may be warranted and filed a positive 90-day finding in the Federal Register (FR 77 51763); NOAA Fisheries Service, FAQs, <http://sero.nmfs.noaa.gov/pr/esa/ESA%20Petition/FAQs%20Queen%20conch>.

The CEA included in Regulatory Amendment 4 to the Reef Fish FMP (CFMC 2013c) revealed no significant, cumulative adverse effects on the biological environment. This CEA concluded that to the extent that establishing minimum size limits for harvesting parrotfish can prevent overfishing and assist in rebuilding overfished stocks, positive long-term benefits to the biological and socio-economic environments should be expected. The analysis of cumulative effects listed in Regulatory Amendment 4 is still considered to be accurate and useful at the present time.

Present and Reasonably Foreseeable Future

Island-based FMPs are presently being developed for the U.S. Caribbean, and when put in place will replace the present Reef Fish, Spiny Lobster, Queen Conch, and Corals and Reef Associated Plants and Invertebrates FMPs specific to Puerto Rico, St. Thomas/St. John, and St. Croix. This action could affect the way the queen conch, reef fish, spiny lobster, and coral resources are managed in the U.S. Caribbean, as management could be tailored to each island or island group. It is possible that through these FMPs, management reference points and ACLs will be revisited. How the action proposed in this comprehensive amendment would be affected by the creation of Island-based FMPs is currently unknown.

The Council is also currently developing an action to modify seasonal closures in three managed areas in western Puerto Rico, Abrir la Sierra Bank, Tourmaline, and Bajo de Sico. This action could affect the way the fishery resources are managed in those federal waters.

5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.

In terms of the biophysical environment, the resources and ecosystems identified in earlier steps (e.g., steps 1 and 2) of the CEA are the reef fish, spiny lobster, coral resources, and queen conch directly affected by the regulations, and those species (i.e., *Acropora* spp.) that are indirectly affected by the regulations. The human environment identified in earlier steps of the CEA is composed of the fishing communities of Puerto Rico and the USVI that depend on those resources and the ecosystem services they provide.

Information on the physical, biological, ecological, social, and economic environments affecting the identified resources is provided in Chapter 3 of this document. Section 2.2.2 describes the

current status of the stocks affected by this comprehensive amendment and how the changes proposed in this amendment would affect the current ACLs for those stocks. There are currently four stocks determined to be overfished: queen conch, grouper unit 1 (Nassau grouper), grouper unit 2 (goliath grouper), and grouper unit 4 (yellowfin, black, red, and tiger). These stocks are currently under rebuilding plans. There are no stocks currently subject to overfishing in the U.S. Caribbean. Section 3.3.3 provides an overview of how status determinations are made for Caribbean stocks.

6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.

This section examines whether resources, ecosystems, and human communities are approaching conditions where additional stresses could have an important cumulative effect beyond any current plan, regulatory, or sustainability threshold (CEQ 1997). Sustainability thresholds, which are levels of impact beyond which the resources cannot be sustained in a stable state, can be identified for some resources. Other thresholds are established through numerical standards, qualitative standards, or management goals. This CEA should address whether thresholds could be exceeded because of the contribution of the proposed action to other cumulative activities affecting resources.

Definitions of overfishing and overfished status for Council managed species were identified in the 2005 SFA Amendment (CFMC 2005). Numerical values of thresholds such as maximum sustainable yield (MSY) proxies, OY, and OFL for the queen conch and reef fish were updated in the 2010 Caribbean ACL Amendment (CFMC 2011a). For spiny lobster and coral resources these values were updated in the 2011 Caribbean ACL Amendment. Both of these amendments became effective in 2012. These updates are discussed in Section 1.6 of this document. At the time of preparation of this environmental assessment, the values for management reference points and ACLs for all managed species established in the 2010 and 2011 Caribbean ACL Amendments were still valid.

Stresses affecting fishery resources and protected resources as well as the human communities that depend on those resources include but are not limited to natural events, habitat quality, human population growth, and anthropogenic threats (e.g., habitat loss and degradation, sedimentation, pollution, water quality, overharvest). Some managed species may be more sensitive to the quality of their environment than others. For example, any changes in benthic conditions resulting from land based increases in sedimentation or turbidity will adversely affect the available productive habitat for queen conch (Appeldoorn et al. 2011) and corals.

Other factors directly affecting the human communities include high fuel costs, increased seafood imports, restricted access to traditional fishing grounds, and regional economies. Increased seafood imports are significant as it relates to market competition, where a glut of fish products can flood the market and lower ex-vessel prices. Once market channels are lost to

imported seafood products it may be hard for fishery participants to regain those channels (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 the community dependence on local fisheries as their main source of income and food (<http://www.caribjournal.com/2012/08/12/usvi-seeks-to-reopen-hovensa-refinery-possibly-under-new-ownership/>).

Environmental changes (e.g., potential threats from climate change, ocean acidification) can also affect fishery populations, protected resources, and the people and communities that depend on those resources. New and recent information about climate change has begun to shed light on how global climate change will affect, and is already affecting, reef fish, spiny lobster, queen conch, and coral resources. Climate change is one of the most important environmental issues to arise in the past few decades and promises to remain so for the foreseeable future (Delach et al. 2014). Climate change can affect marine ecosystems through ocean warming by increased thermal stratification, changes to upwelling patterns, sea level rise, increases in wave height and frequency, loss of sea ice, and increased risk of diseases in marine biota, among other things. 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). 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). Any of these could affect the local or regional seafood output and thus the local economy (Carter et al. 2014). In the U.S. Caribbean region, as well as along the southeastern U.S. continental shelf and the Gulf of Mexico, the major climate induced 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).

Climate variability is also a factor that needs to be considered when addressing climate effects, and in the reasonable foreseeable future it may be far more influential than unidirectional climate change (B. Arnold, personal communication). 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 (NOAA PFL Climate Variability and Marine Fisheries, <http://www.pfeg.noaa.gov/research/climatemarine/cmffish/cmffishery.html>, accessed June 2014). 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 (Figure 4.2.1). 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. Based on the pattern depicted in Figure 4.2.1, cyclical water

temperature has peaked, and if the pattern holds then water temperature patterns in the next few decades may actually decrease despite the general increasing trend due to climate change.

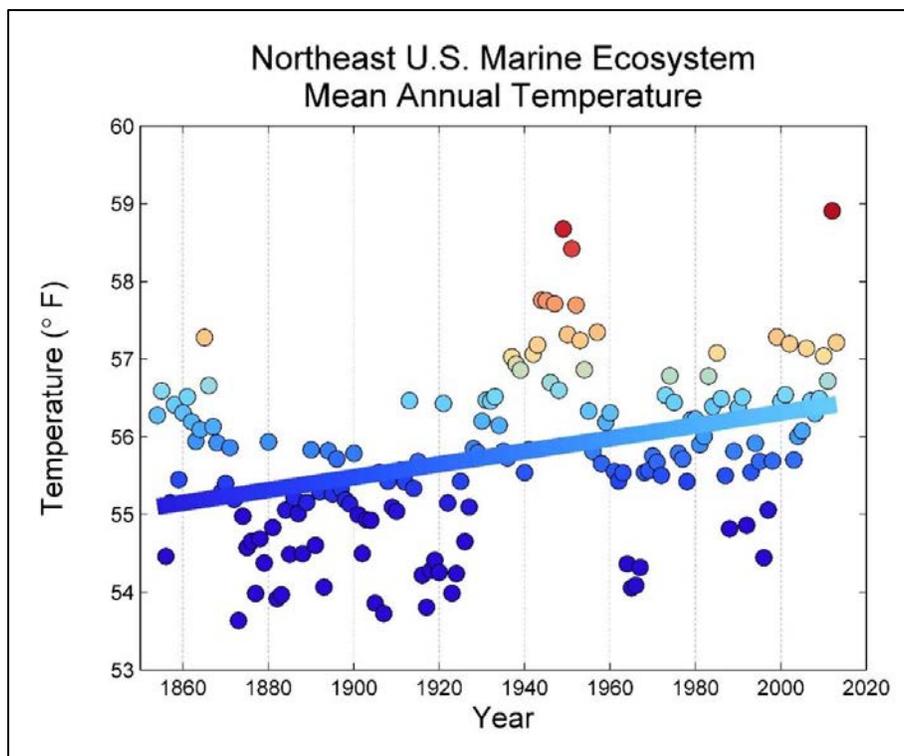


Figure 4.2.1. Long-term water temperature variability in waters of the northeastern United States, obtained from J. Hare using NOAA_ERSST_V3 data provided by the NOAA/OAR/ESRL PSD, Boulder, Colorado, USA, from their Web site at <http://www.esrl.noaa.gov/psd/>

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 species affected by the proposed action. Moreover, climate change impacts appear to be more substantial, or at least more noticeable so far, as one moves away from the equator. Thus, impacts of climate change may be less measurable in the Caribbean than in the higher latitudes (B. Arnold, personal communication), although impacts could be greater in the tropics due to organisms being less well adapted to temperature fluctuations. Nevertheless, when the potential effects of the proposed action and alternatives 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.

Excess carbon dioxide (CO₂) dissolves into the ocean and is converted to corrosive carbonic acid, this is known as “ocean acidification”(Oceanus 2013). At the same time, the CO₂ also supplies carbon that combines with calcium already dissolved in seawater to provide the main ingredient for shells, calcium carbonate (CaCO₃) (Oceanus 2013). Some organisms directly deposit CaCO₃ along their inner shell walls, and consequently, depend on a sufficient ambient carbonate concentration to build shells successfully (UNEP 2009). Commercially valuable mollusks such as bivalves (e.g., scallops, oysters) and gastropods (e.g., conchs) use this method to build shells (Cooley and Doney 2009). Corals also depend on carbonate to build their skeletons. The net responses of organisms to rising CO₂ will vary depending on often opposing sensitivities to decreased seawater pH, carbonate concentration, and carbonate saturation state, and to elevated oceanic total inorganic carbon and gaseous CO₂ (Cooley and Doney 2009). Increased ocean acidity caused by elevated CO₂ could directly damage organisms by partially dissolving their shells (Oceanus 2013, <https://www.whoi.edu/oceanus/viewArticle.do?id=52990>) or by decreasing growth rates. Larval and juvenile organisms are particularly susceptible. To the extent that coral reef habitat becomes less available, fish that depend on coral reefs for food, shelter, and nursery habitat may be indirectly affected by changes in seawater pH (Harrould-Kolieb et al. 2010). Other species with more protective coverings on their shells and skeletons, such as crustaceans, temperate urchins, mussels, and coralline red algae may be less vulnerable to decreasing seawater pH (Oceanus 2013). However, the specifics of how ocean acidification affects these species are not well understood.

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 and the alternatives proposed in this comprehensive amendment are not expected to increase or decrease the potential impacts of climate change and ocean acidification on fishery resources and other protected resources. Other anthropogenic impacts to reef fish, spiny lobster, coral resources, and queen conch in the affected area may be more pressing than climate change or even decadal-scale climate variability. Continued monitoring of the effects of climate change, climate variability, and ocean acidification should continue to 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).

7. Define a baseline condition for the resources, ecosystems, and human communities.

The purpose of defining a baseline condition for the resource and ecosystems in the area of the proposed action is to establish a point of reference for evaluating the extent and significance of expected cumulative effects. For a detailed discussion of the baseline condition of the reef fish and queen conch, please see the 2010 Caribbean ACL Amendment (CFMC 2011a), the 2011 Caribbean ACL Amendment for spiny lobster and coral resources, and the history of management and biological and ecological environment sections of this comprehensive amendment (Sections 1.5 and 3.2, respectively). Baseline information for the queen conch, mutton snapper, and yellowfin grouper can be found in SEDAR 14 (NMFS 2007). Baseline information on several other species can be found in SEDAR 8A (Spiny lobster and yellowtail snapper (NMFS 2005), SEDAR 26 (queen snapper, silk snapper, and redbtail parrotfish, SEDAR 30 (blue tang and queen triggerfish), and SEDAR 35 (red hind grouper) (<http://www.sefsc.noaa.gov/sedar/>). The information included in the referenced SEDAR reports and CFMC (2011a, b) was reviewed and found to be relevant. The referenced SEDAR reports describe general management information for the specific species (status, stock exploitation status, stock biomass status), specific management criteria (MSY, OY), stock rebuilding information (if applicable), regulatory history, and biological and life history descriptions, among other. Section 1.5 of this comprehensive amendment and environmental assessment provides a description of the history of management in federal waters including the most recent management actions which affected queen conch, reef fish, and corals.

Section 2.2.2 describes the current status of Council-managed stocks. The most recent status of the managed stocks can also be found in the latest quarter update of the report to Congress on the Status of U.S. Fisheries (NMFS Status of U.S. Fisheries, 1st Quarter 2014, http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/archive/2014/first/q1_2014_stock_status_tables.pdf).

Protected species in the affected environment are described in Section 3.2.3 of this amendment, and include sea turtles, marine mammals, and corals. The status and health of EFH for the managed species has been extensively described (CFMC 1998, 2004, 2011c). The Council, NMFS, and other federal and local agencies have designated numerous areas in the Caribbean to protect and conserve EFH. These areas protect EFH from a wide variety of direct impacts, including loss of fishing gear, restricted use of certain fishing gears, and damage from anchors.

8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.

This proposed action would adjust the buffer reduction that is applied to the OFL or to the ABC (if defined) to derive the ACL for managed species. The effects of the proposed action on the physical, biological/ecological, social, economic, and administrative environment are discussed in Chapter 4 of this EA. Table 4.2.1 below summarizes the cause-and-effect relationships of

establishing and modifying management reference points within the time period of the CEA and regulatory action related to the establishment of management reference points.

Table 4.2.1. Cause and Effect Relationships within the time period of the CEA.

Time Period /Dates	Cause (Management Action)	Observed and/or Expected Effects
Effective date November 2005	<p>Comprehensive Sustainable Fisheries Act Amendment (CFMC 2005)</p> <ol style="list-style-type: none"> 1) Established biological reference points and stock status criteria for reef fish, spiny lobster, queen conch, and corals 2) Established rebuilding schedules for queen conch, Grouper Unit 1,2, and 4 3) Designated EFH and HAPCs for managed species 	<p>Reduce fishing mortality and help rebuild overfished stocks.</p> <p>Describe and identify EFH according to functional relationships between life history stages of federally managed species and Caribbean marine and estuarine habitats.</p>
Effective date January 2012	<p>2010 Caribbean ACL Amendment (CFMC 2011a)</p> <ol style="list-style-type: none"> 1) Revised management reference points (maximum sustainable yield, optimum yield, OFL, ABC) for snapper, grouper, parrotfish, and queen conch 2) Established ACLs and AMs for queen conch and snapper, groupers, and parrotfish. 3) Prohibited the harvest of midnight, blue, and rainbow parrotfish 4) Established framework measures for the Queen Conch and the Reef Fish FMPs 5) Established recreational bag limits for snappers, groupers, and parrotfishes. 6) Provided guidelines for triggering AMs and applying those AMs 	<p>Prevent overfishing while maintaining catch levels consistent with achieving optimum yield (OY).</p> <p>Establish management measures that are consistent with the biological needs of a resource while achieving optimum yield as determined by environmental, economic, and social considerations. This implies restricting harvest if biological and environmental needs are not met or allowing increased harvest if economic benefits are reduced because of overly restrictive regulation. Participation, bag, size, seasonal, or areal limits should be consistent with allowable harvest limits, both in total and by sector.</p>
Effective date January 2012	<p>2011 Caribbean ACL Amendment (2011b)</p> <ol style="list-style-type: none"> 1) Revised management reference points and status determination criteria for selected reef fish, spiny lobster, and aquarium trade species. 2) Established ACLs and AMs for spiny lobster, other managed reef fish species, and coral resources (including aquarium trade species) that were not determined to be undergoing overfishing. 3) Allocated ACLs among island management areas 4) Established framework procedures for the Spiny Lobster FMP and modified framework measures for the Coral FMP 5) Established recreational bag limits for reef fish and spiny lobster 	<p>Establish Island-specific ACLs and AMs in response to harvesting activities on a single island (Puerto Rico, St. Croix) or island group (St. Thomas/St. John) while minimizing the effects of fishing activities on the other islands or island groups;</p> <p>Establish separate ACLs for each of the commercial and recreational sectors for the Puerto Rico EEZ management area, because landings data are available for both the commercial and recreational sectors</p> <p>Species-specific management measures set to consider the ecological importance of the species, species that are currently managed under a partial harvest prohibition, or species for which harvest patterns are unknown.</p>

9. Determine the magnitude and significance of cumulative effects.

The action proposed in this amendment would simplify the process of adjusting the ACLs by prescribing a predetermined response, rather than by requiring a response on a case-by-case basis or through a lengthier full plan amendment. Thus, management will be more responsive to the status and health of the targeted fishery, enhancing the likelihood that OY will be achieved within the context of sustainability. This action would affect all Council-managed fisheries conducted in the U.S. Caribbean, although it is not expected to substantially modify fishing activities. The action may have beneficial impacts such as more responsive management sensitive to the status of the targeted population and increased revenue from healthy fisheries. However, impacts may be adverse as well, if for example a change in status results in a reduction in allowable harvest. Overall, modifying the buffer reduction applied to derive the ACL based on the overfishing status is not expected to cause or contribute significant direct or indirect negative effects on the biological, physical, and administrative environments. Impacts on the socio-economic environment may be positive or negative depending on the direction of change. In the case of a negative change, a 5% reduction to available harvest represents at least a potential 5% decrease in fisher earnings, an amount certainly of significance to the personal economy of the fisher. However, this reduction is expected to be relatively short-term for two reasons. First, the reduced harvest will likely soon result in a reduction in the annual harvest to a point below the established OFL, thereby resulting in a reclassification to ‘not undergoing overfishing’ status. Second, the long-term prospects for the fishery will be enhanced as a result of this more adaptive and conservative management approach, resulting in increased future harvest opportunities for the fishers. Few additional cumulative effects are expected, and those that are realized are expected to be short-term in nature.

Sub-alternatives are also provided to allow for exemptions to the control rule that would leave in place current buffer reductions applied to FMUs considered to play an essential ecological role within the coral reef community, FMUs for which the Council’s SSC has set a specific level of ABC, or for other reasons deemed appropriate by the Council. Exempting parrotfish, angelfish, surgeonfish, queen conch, and aquarium trade species from the application of the control rule would not add any additional cumulative effects because it would support current management measures for those units at more conservative harvest levels. Chapter 4 of this document discusses the magnitude and significance of the proposed action and alternatives on Council managed resources.

Other management measures taken in the past such as the establishment of seasonal closures, recreational bag limits, AMs, and ACLs (measures directly related to this proposed action), in combination with the action proposed in this comprehensive amendment, are intended to contribute to the prevention or substantial reduction in the risk of overfishing. These are expected to have positive long-term biological benefits, although short-term economic and social negative effects may occur in those cases where current harvest is reduced due to changes in overfishing status. An indirect effect expected from this action could be an increase in the

harvest of other species as fishermen could decide to mitigate for the loss of fishing opportunities for those species that experience a decrease in the ACL because of changes in the overfishing status of a unit. However, U.S. Caribbean fishers already fish for other species (e.g., reef fish, lobster, pelagics), and these species also have harvest limits, and thus additional impacts on these species are not expected to be significant. Other activities conducted in the EEZ, such as research activities, are not expected to add to the cumulative effects from this action.

10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.

As discussed above in item 9 of the CEA, the establishment of the ACL Control Rule is not expected to directly adversely affect the biological environment, and any significant socio-economic effects are expected to be short-term. Therefore, there is no need to modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects. The action in this amendment is expected to place a short-term burden on the administrative environment due to the need to prepare regulations to implement the proposed action. The ‘no action’ alternative would avoid this short- administrative burden. However, the ‘no action’ alternative would not achieve the goal of this comprehensive amendment, which is to provide a new, straightforward, and more responsive approach to implementing reductions from reference points to account for attributes of the fishery. Because this action is not expected to substantially modify fishing activities, indirect effects on the biological/ecological, physical, and socio-economic environments that may occur are considered to be short-term in nature, unavoidable and are part of the operation of the fishery itself, and would not substantially change regardless if the proposed action in this amendment is or is not implemented.

To ensure stocks are managed for OY, periodic reviews of stock status are needed. These reviews are designed to incorporate new information and to address unanticipated developments in the fisheries, and would be used to make appropriate adjustments in the regulations should harvest not achieve OY objectives. These assessments would be requested as needed by the SEDAR Steering Committee. Reviews of the reef fish, queen conch, spiny lobster, and corals and reef associated plants and invertebrate populations should benefit from updated landings information through Puerto Rico commonwealth, USVI territorial, and federal fishery monitoring programs to be implemented in the future. Additionally, NMFS and other government agencies support research on several of the affected species by federal, state, academic, and private research entities.

Actions the Council could employ to manage the reef fish, queen conch, corals and reef associated plants and invertebrates, and spiny lobster resources, beyond modifying the relationships among management reference points, include but would not be limited to reducing the length of the fishing seasons, establishing a permit system to limit the number of fishers in federal waters, placing restrictions on gear use, closing areas to harvest, and other management mechanisms. The Council has several options for implementing such measures. The first is to

amend the respective Council FMPs to include new information and management actions. The second is through regulatory amendments to the FMPs. Finally, the Council can request NMFS to take other management actions through emergency or interim measures, although emergency and interim actions are governed by important restrictions on their use. Emergency actions and interim measures can be implemented only under limited circumstances. They only remain in effect for 180 days after the date of publication of the rule unless extended by publication in the *Federal Register* for one additional period of not more than 186 days, provided the public has had an opportunity to comment. The Magnuson-Stevens Act further states that when a Council requests that an emergency action or interim measure is taken, the Council should also be actively preparing plan amendments or regulations that address the emergency on a permanent basis.

11. Monitor the cumulative effects of the selected alternative and adapt management.

The effects of the proposed action will be monitored through collection of fisheries-dependent and fisheries-independent data by NMFS and the Puerto Rico and USVI governments, stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations. In the USVI, commercial landings data are collected by the Department of Planning and Natural Resources. Recreational landings data for managed species are not currently collected in the USVI. In Puerto Rico, commercial and recreational landings data are collected by the Department of Natural and Environmental Resources.

Chapter 5. Regulatory Impact Review

5.1 Introduction

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

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

5.2 Problems and Objectives

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

5.3 Methodology and Framework for Analysis

This RIR assesses management measures from the standpoint of determining the resulting changes in costs and benefits to society. To the extent practicable, the net effects of the actions for an existing fishery can be stated in terms of producer and consumer surplus, changes in profits, and employment in the direct and support industries. However, data limitations prevent such a depth of analysis.

5.4 Description of the Fishery

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

5.5 Economic Impacts of Management Measures

This action would establish a control rule to adjust the buffer reduction applied to the overfishing limit (OFL) or to the acceptable biological catch (ABC) used to derive the annual catch limit (ACL) to reflect a change in overfishing status of the stock. As such, it may change the ACL for a stock that could result in a change in annual landings of that stock.

Preferred Alternative 3 would establish an ACL Control Rule that uses a 15% buffer reduction to determine the ACL for a fishery management unit (FMU) that is subject to overfishing and a 10% buffer reduction to determine the ACL for an FMU that is not subject to overfishing.

Specifically, under **Preferred Alternative 3**,

ACL = [OFL (or ABC) x (0.85)] for an FMU subject to overfishing and

ACL = [OFL (or ABC) x (0.90)] for an FMU not subject to overfishing.

Preferred Alternative 3 would not apply to parrotfish, surgeonfish, angelfish, queen conch, and aquarium trade species FMUs, and instead **Preferred Sub-alternatives 3a – 3e** would apply to those FMUs (Table 5.5.1).

Table 5.5.1. Fishery management units by preferred alternative or sub-alternative.

FMU	Preferred Alternative	FMU	Preferred Sub-alternative
Boxfish	3	Parrotfish	3a
Goatfishes	3	Surgeonfish	3b
Grouper	3	Angelfish	3c
Grunts	3	Queen Conch	3d
Jacks	3	Aquarium Trade Species	3e
Scups & Porgies	3		
Snapper	3		
Spiny Lobster	3		
Squirrelfish	3		
Tilefish	3		
Triggerfish & Filefish	3		
Wrasses	3		

5.5.1 Caribbean-Wide Impact

Two of the above FMUs (aquarium trade species and tilefish) have Caribbean-wide ACLs. These ACLs are for combined commercial and recreational (including subsistence) landings. Tables 5.5.1.1 and 5.5.5.2 compare the current ACLs (**Alternative 1**) for aquarium trade species and tilefish to the ACLs of **Preferred Sub-alternative 3e** (aquarium trade species) and **Preferred Alternative 3** (tilefish).

By keeping the buffer reduction as its current level (whether the FMU is subject to overfishing or not), **Preferred Sub-alternative 3e** would indirectly keep the ACL for aquarium trade species FMU at its current level whether it is subject to overfishing or not (Table 5.5.1.1).

Consequently, **Preferred Sub-alternative 3e** would have no direct or indirect impact on landings of aquarium trade species and no associated economic impact beyond the status quo.

Table 5.5.1.1. Comparison of status quo (**Alternative 1**) ACL and **Preferred Sub-alternative 3e** ACL for the Aquarium Trade Species FMU. Values are in pounds of whole weight (lbs ww).

FMU	Caribbean-Wide ACL (lb ww)				
	Current ACL (Alt. 1)	Subject to Overfishing		Not Subject to Overfishing	
		Alt. 1	Pref. Alt. 3e	Alt. 1	Pref. Alt. 3e
Aquarium Trade Species	8,155	8,155	8,155	8,155	8,155

Table 5.5.1.2. Comparison of status quo (**Alternative 1**) ACL and **Preferred Alternative 3** ACL for Tilefish FMU.

FMU	Caribbean-Wide ACL (lb ww)				
	Current ACL (Alt. 1)	Subject to Overfishing		Not Subject to Overfishing	
		Alt. 1	Pref. Alt. 3	Alt. 1	Pref. Alt. 3
Tilefish	14,642	14,642	13,829	14,642	14,642

Preferred Alternative 3 would indirectly reduce the ACL for the tilefish FMU from 14,642 to 13,829 pounds (lbs) whole weight (ww) when the FMU is subject to overfishing, but keep it at its current level when the FMU is not subject to overfishing (Table 5.5.1.2). From 2008 through 2012, annual landings of tilefish were substantially lower than its current ACL of 14,642 lb ww as shown in Table 2.2.1.1.5, and also substantially below the OFL. Therefore, based on those baseline landings, it is expected that tilefish has not been and is not presently subject to overfishing and **Preferred Alternative 3** would have no direct or indirect additional impact on landings of tilefish and no associated economic impact beyond the baseline.

5.5.2 Puerto Rico

Commercial Sector

Preferred Sub-alternatives 3a – 3d would indirectly keep the commercial ACLs for parrotfish, surgeonfish, angelfish and queen conch, respectively, at their current levels. Consequently, **Preferred Sub-alternatives 3a – 3d** would have no direct or indirect effect on commercial landings and associated dockside revenues in Puerto Rico beyond the baseline.

Preferred Alternative 3 would indirectly decrease commercial ACLs for nine FMUs (highlighted in orange) if they are determined to be subject to overfishing (**Table 5.5.2.1**).

Preferred Alternative 3 would also indirectly increase the commercial ACL (beyond current levels) for five FMUs (highlighted in green) when they are determined to be not subject to overfishing .

Table 5.5.2.1. Comparison of status quo (**Alternative 1**) and **Preferred Alternative 3** commercial ACLs for 14 FMUs.

Puerto Rico Commercial Sector ACLs (lb ww)					
FMU	Current ACL (Alt. 1)	Subject to Overfishing		Not Subject to Overfishing	
		Alt. 1	Pref. Alt. 3	Alt. 1	Pref. Alt. 3
Boxfish	86,115	86,115	81,331	86,115	86,115
Goatfishes	17,565	17,565	16,589	17,565	17,565
Grouper	177,513	177,513	177,513	177,513	187,955
Grunts	182,396	182,396	172,263	182,396	182,396
Jacks	86,059	86,059	81,278	86,059	86,059
Scups & Porgies	24,739	24,739	23,365	24,739	24,739
Snapper Unit 1	284,685	284,685	284,685	284,685	301,431
Snapper Unit 2	145,916	145,916	145,916	145,916	154,499
Snapper Unit 3	345,775	345,775	345,775	345,775	366,115
Snapper Unit 4	373,295	373,295	373,295	373,295	395,254
Squirrelfish	16,663	16,663	15,737	16,663	16,663
Triggerfish & Filefish	58,475	58,475	55,226	58,475	58,475
Wrasses	54,147	54,147	51,139	54,147	54,147

The above indirect decreases and increases in commercial ACLs represent potential changes in annual landings. Actual changes are dependent on current levels of annual landings relative to the OFL. Annual landings of an FMU that are equal to or less than its OFL indicate the FMU is not subject to overfishing. Most ACLs are less than their corresponding OFLs. Consequently, it is reasonable to conclude that when both annual and average annual landings of an FMU are less

than its ACL, it is not subject to overfishing. That is not necessarily the case, however, when just average annual landings are considered because accountability measures (AMs) and subject-to-overfishing determinations are based on different spans of time. The AMs are triggered when the average of the most recent three years of landings exceeds the ACL and a subject-to-overfishing determination is made when only the most recent year of landings exceeds the OFL. It is possible for the most recent year's landings to exceed the OFL without exceeding the three-year average exceeding the ACL.

The following analysis considers two alternative baselines: first, the average of annual landings from 2008 through 2011 and, second, annual landings only in 2012. Although baseline landings are typically estimated as a 5-year average of landings, the implementation of the 2010 and 2011 ACL Amendments on January 28, 2012, supports the separation of 2012 from the previous years. Therefore, each of the two alternative baseline landings are compared to the current and proposed ACLs to estimate the economic impacts of the preferred alternatives.

During the 5-year period from 2008 through 2012, there were years when landings of jacks, scups & porgies, Snapper Units 1 and 2, spiny lobster, and wrasses exceeded their current ACLs (highlighted in yellow in Table 5.5.2.2). For example, landings of Snapper Unit 2 exceeded its current ACL each year from 2008 through 2011, while landings of wrasses exceeded its current ACL from 2008 through 2010 and 2012. It must be noted, however, that the increase in landings of wrasses in 2012 was due to improved reporting and not increased effort

Table 5.5.2.2 Comparison of current Puerto Rico commercial ACLs (**Alternative 1**) and annual commercial landings potentially affected by **Preferred Alternative 3**.

FMU	Annual Commercial Landings (lb ww)					Lb ww
	2008	2009	2010	2011	2012	ACL (Alt. 1)
Boxfish	51,397	58,979	57,310	40,326	38,911	86,115
Goatfishes	5,215	9,656	6,459	6,812	9,656	17,565
Grouper	87,738	87,135	92,162	59,715	67,979	177,513
Grunts	69,575	84,537	65,601	39,954	34,075	182,396
Jacks	104,498	88,385	67,589	35,528	47,111	86,059
Scups & Porgies	28,328	23,539	15,693	19,655	29,061	24,739
Snapper Unit 1	352,975	369,179	276,528	149,268	167,167	284,685
Snapper Unit 2	261,998	239,977	384,877	218,854	142,760	145,916
Snapper Unit 3	175,321	148,127	174,108	167,303	171,836	345,775
Snapper Unit 4	365,868	222,698	215,404	151,284	182,284	373,295
Spiny Lobster	329,227	322,992	289,609	274,318	211,865	327,920
Squirrelfish	19,430	10,385	8,405	6,732	6,919	16,663
Triggerfish & Filefish	55,361	47,194	45,650	50,714	41,835	58,475
Wrasses	54,980	67,187	59,427	53,623	69,647	54,147

Preferred Alternative 3 would not indirectly change the commercial ACLs for grouper and Snapper Units 1 through 4 when they are subject to overfishing and, therefore, would have no additional economic impact on fishermen who harvest grouper and Snapper Units 1 through 4 when any of those FMUs are subject to overfishing.

Preferred Alternative 3 would increase the commercial ACLs for grouper and Snapper Units 1 through 4 when they are not subject to overfishing. When making overfishing determinations, individual OFLs do not apply for these units. Instead, there is a Caribbean-wide OFL for the snapper complex and one for grouper and each consists of the sum of all the individual OFLs for snapper and for grouper for all three island groups and sectors (St. Croix, St. Thomas/St. John, and Puerto Rico (commercial and recreational)). The snapper complex OFL is 1,915,759 lb ww. The grouper OFL is 396,483 lb ww. From 2008 through 2012, Caribbean-wide annual landings of the snapper complex and grouper were less than their respective OFLs. That indicates grouper and Snapper Units 1 through 4 have not been and are expected to not be subject to overfishing, and **Preferred Alternative 3** would result in an indirect increase in their respective ACLs.

Every year from 2008 through 2012, annual commercial landings of grouper were less than its commercial ACL. Consequently, an increase of the commercial ACL for grouper caused by **Preferred Alternative 3** is expected to have no additional impact on landings and associated dockside revenues.

In 2012, annual commercial landings of Snapper Units 1 (black, blackfin, vermilion, and silk snapper) and Snapper Unit 2 were less than their current commercial ACLs. If 2012 annual landings represent baseline landings, **Preferred Alternative 3** would have no additional impact on annual commercial landings of Snapper Units 1 and 2 (Table 5.5.2.3).

Table 5.5.2.3. Expected status and increase in annual landings of grouper and Snapper Units 1-4 FMUs by weight and value due to **Preferred Alternative 3** (NSO: Not subject to overfishing).

FMU	Expected Status	Expected Increase, lb ww and 2013 \$	
		2012 Landings as Baseline	2008 - 2011 Landings as Baseline
Grouper	NSO	0 and \$0	0 and \$0
Snapper Unit 1	NSO	0 and \$0	2,303 and \$8,544
Snapper Unit 2		0 and \$0	8,583 and \$30,727
Snapper Unit 3		0 and \$0	0 and \$0
Snapper Unit 4		0 and \$0	0 and \$0

If baseline commercial landings of Snapper Units 1 and 2 are better represented by earlier years (2008 – 2011), landings of Snapper Units 1 and 2 exceed their commercial ACLs in some years. Average annual landings of Snapper Unit 1 from 2008 – 2011 exceeded its commercial ACL by 2,303 lb ww. Similarly, average annual landings of Snapper Unit 2 exceeded its commercial ACL during that time by 130,510 lb ww. **Preferred Alternative 3** is expected to indirectly increase the commercial ACLs for Snapper Units 1 and 2 by 16,746 and 8,583 lb ww, respectively. If those 2008 – 2011 annual averages represent baseline landings, **Preferred Alternative 3** would result in an annual increase of Snapper Unit 1 of 2,303 lb ww and \$8,544 and Snapper Unit 2 of 8,583 lb ww and \$30,727 (Table 5.5.2.3).

Because annual commercial landings of Snapper Units 3 and 4 have been consistently below their current commercial ACLs, **Preferred Alternative 3** is expected to have no additional effect on annual commercial landings and dockside values of grouper, Snapper Units 3 (gray, lane, mutton, dog, schoolmaster and mahogany snapper) and 4 (yellowtail snapper) (Table 5.5.2.3).

Preferred Alternative 3 would indirectly decrease the commercial ACLs for nine FMUs when they are subject to overfishing: boxfish, goatfishes, grunts, jacks, scups & porgies, spiny lobster, squirrelfish, triggerfish & filefish, and wrasses. **Preferred Alternative 3** would not indirectly change the ACLs for or have an added economic impact on those nine FMUs when they are not subject to overfishing. The present status of these FMUs is not subject to overfishing; however, a determination for scups & porgies is pending. Consequently, using baseline landings, **Preferred Alternative 3** is expected to have no additional effect on annual commercial landings and dockside values of boxfish, goatfishes, grunts, jacks, spiny lobster, squirrelfish, triggerfish & filefish, and wrasses (Table 5.5.2.4).

Table 5.5.2.4. Expected status and decrease in annual commercial landings of boxfish, goatfishes, grunts, jacks, scups & porgies, spiny lobster, squirrelfish, triggerfish & filefish, and wrasses by weight and value due to **Preferred Alternative 3**.

FMU	Expected Status	Expected Decrease, lb ww and 2013 \$	
		2012 Landings as Baseline	Ave. 2008 - 2011 Landings as Baseline
Boxfish	NSO	0 and \$0	0 and \$0
Goatfishes	NSO	0 and \$0	0 and \$0
Grouper	NSO	0 and \$0	0 and \$0
Grunts	NSO	0 and \$0	0 and \$0
Jacks	NSO	0 and \$0	0 and \$0
Scups & Porgies	NSO (SO)	0 and \$0 (1,374 and \$2,569)	0 and \$0
Spiny Lobster	NSO	0 and \$0	0 and \$0
Squirrelfish	NSO	0 and \$0	0 and \$0
Triggerfish & Filefish	NSO	0 and \$0	0 and \$0
Wrasses	NSO	0 and \$0	0 and \$0
Total		0 and \$0 (1,374 and \$2,569)	0 and \$0

Because a determination for scups & porgies is pending, and because in 2012, annual commercial landings of scups & porgies exceeded its OFL, the following analysis includes the possibility of a determination of overfishing for scups & porgies.

If 2012 landings are representative of baseline landings, annual commercial landings of scups & porgies would exceed its current commercial ACL. If it is determined that the FMU is subject to overfishing, its ACL would be reduced by 1,374 lbs ww in the short run and annual landings would similarly fall by 1,374 (\$2,569) in the short run (Table 5.5.2.4). However, if it is determined that scups & porgies are not subject to overfishing **Preferred Alternative 3** would have no added impact on commercial landings of scups & porgies. On the other hand, if the average of annual landings from 2008 through 2011 is more representative of baseline landings, annual landings of scups & porgies would be 21,804 lb ww, which is less than its current commercial ACL. Consequently, despite the decrease in the commercial ACL, **Preferred Alternative 3** would have no added effect on annual commercial landings of scups & porgies beyond the baseline.

In summary, it is expected that **Preferred Alternative 3** could indirectly increase annual commercial landings of Snapper Units 1 and 2 in Puerto Rico in the short- and long-run by 2,303 lb ww (\$8,544) and 8,583 lb ww (\$30,727): in total, 10,866 lb ww and \$39,271. However, **Preferred Alternative 3** could also indirectly reduce annual commercial landings of scups & porgies in the short-run by as much as 1,374 lbs ww and \$2,569. If those changes occur simultaneously in the short-term, the net impact would be an increase of commercial landings of 9,572 lb ww and \$36,702 in the short run. **Preferred Sub-alternatives 3a – 3e** would have no added economic effect on the commercial sector.

Recreational Sector

Preferred Sub-alternatives 3a – 3d would indirectly keep the recreational ACLs for parrotfish, surgeonfish, angelfish, and queen conch, respectively, at their current levels. Consequently, **Preferred Sub-alternatives 3a – 3d** would have no effect on recreational landings and associated economic benefits in Puerto Rico beyond the baseline.

Preferred Alternative 3 would indirectly decrease the recreational ACLs for nine FMUs (highlighted in orange) if they are subject to overfishing (Table 5.5.2.5). **Preferred Alternative 3** would also indirectly increase the recreational ACL (beyond current levels) for five FMUs (highlighted in green).

Table 5.5.2.5. Comparison of status quo (**Alternative 1**) and **Preferred Alternative 3** recreational ACLs for 14 FMUs.

Puerto Rico Recreational Sector ACLs (lb ww)					
FMU	Current ACL (Alt. 1)	Subject to Overfishing		Not Subject to Overfishing	
		Alt. 1	Pref. Alt. 3	Alt. 1	Pref. Alt. 3
Boxfish	4,616	4,616	4,360	4,616	4,616
Goatfishes	362	362	342	362	362
Grouper	77,213	77,213	77,213	77,213	81,755
Grunts	5,028	5,028	4,749	5,028	5,028
Jacks	51,001	51,001	48,169	51,001	51,001
Scups & Porgies	2,577	2,577	2,434	2,577	2,577
Snapper Unit 1	95,526	95,526	95,526	95,526	101,146
Snapper Unit 2	34,810	34,810	34,810	34,810	36,858
Snapper Unit 3	83,158	83,158	83,158	83,158	88,050
Snapper Unit 4	28,509	28,509	28,509	28,509	30,186
Squirrelfish	3,891	3,891	3,675	3,891	3,891
Triggerfish & Filefish	21,929	21,929	20,710	21,929	21,929
Wrasses	5,050	5,050	4,769	5,050	5,050

During the 5-year period from 2008 through 2012, there were years when recreational landings of boxfish, goatfishes, grouper, grunts, jacks, snapper units 1 & 2, squirrelfish, triggerfish & tilefish and wrasses exceeded their current recreational ACLs (highlighted in yellow in Table 5.5.2.6). In 2012, only recreational landings of jacks exceeded its recreational ACL.

Table 5.5.2.6. Comparison of current Puerto Rico recreational ACLs (**Alternative 1**) and annual recreational landings potentially affected by **Preferred Alternative 3**.

FMU	Annual Recreational Landings (lb ww)					Lb ww ACL (Alt. 1)
	2008	2009	2010	2011	2012	
Boxfish	5,454	2,721	326	2,474	1,401	4,616
Goatfishes	0	717	0	280	139	362
Grouper	114,763	31,635	21,506	7,800	18,677	77,213
Grunts	5,976	5,261	1,556	2,109	3,603	5,028
Jacks	48,788	49,962	26,669	31,469	57,668	51,001
Scups & Porgies	1,861	196	576	1,812	1,653	2,577
Snapper Unit 1	123,831	47,995	42,068	33,760	36,456	95,526
Snapper Unit 2	62,761	4,542	10,169	0	7,379	34,810
Snapper Unit 3	73,852	39,344	35,193	20,874	41,070	83,158
Snapper Unit 4	20,202	17,015	10,147	9,343	17,249	28,509
Spiny Lobster ¹	N/A	N/A	N/A	N/A	N/A	327,920
Squirrelfish	15,460	1,107	840	754	370	3,891
Triggerfish & Filefish	62,525	17,721	6,168	1,970	13,005	21,929
Wrasses	26,404	11,737	10,122	5,539	3,237	5,050

Preferred Alternative 3 would not indirectly change the recreational ACLs for grouper and Snapper Units 1 – 4 when they are subject to overfishing, and, therefore, it would have no additional economic impact when grouper and Snapper Units 1 – 4 are subject to overfishing.

Preferred Alternative 3 would indirectly increase the recreational ACLs for grouper and Snapper Units 1 through 4 when they are not subject to overfishing. In 2012, annual recreational landings of grouper were less than its recreational ACL. Similarly, the average of annual landings from 2008 through 2011 was also less than the recreational ACL. Consequently, it is expected that **Preferred Alternative 3** would have no added impact on recreational landings of grouper and their associated economic benefits.

As stated previously, there are no individual OFLs for the snapper units. Instead, the OFL is for the snapper complex and includes both commercial and recreational landings. It is expected that the snapper complex will not be subject to overfishing. Consequently, it is expected that **Preferred Alternative 3** would indirectly increase the recreational ACLs for Snapper Units 1 through 4.

In 2012, annual recreational landings of grouper and Snapper Units 1 through 4 were less than their current recreational ACLs. The averages of annual recreational Snapper Units 1 through 4 landings from 2008 through 2011 are also less than their respective recreational ACLs. Hence, regardless of which is used as the baseline (2012 or average of 2008 – 2011), it is expected that **Preferred Alternative 3** would have no additional impact on annual recreational landings of Snapper Units 1 through 4 (Table 5.5.2.7).

Table 5.5.2.7. Expected status and increase in annual recreational landings of grouper and Snapper Units 1 through 4 by weight and value due to **Preferred Alternative 3** (NSO: Not subject to overfishing).

FMU	Expected Status	Expected Increase, lb ww and \$0	
		2012 Landings as Baseline	Average 2008 - 2011 Landings as Baseline
Grouper	NSO	0 and \$0	0 and \$0
Snapper Unit 1	NSO	0 and \$0	0 and \$0
Snapper Unit 2	NSO	0 and \$0	0 and \$0
Snapper Unit 3	NSO	0 and \$0	0 and \$0
Snapper Unit 4	NSO	0 and \$0	0 and \$0

Preferred Alternative 3 would indirectly decrease the recreational ACLs for nine FMUs when they are subject to overfishing: boxfish, goatfishes, grunts, jacks, scups & porgies, spiny lobster, squirrelfish, triggerfish & filefish, and wrasses. **Preferred Alternative 3** would not indirectly change the ACLs for or have an added economic impact on those nine FMUs when they are not subject to overfishing. It is expected that none of these FMUs would be subject to overfishing; however, the following analysis includes the possibility of an overfishing determination of jacks because 2012 recreational landings exceeded its recreational OFL. If jacks are determined to be subject to overfishing, the recreational ACL would be reduced by 2,832 lb ww. In 2012, recreational landings of jacks exceeded its ACL. Therefore, if 2012 landings represent the baseline and jacks are determined to be subject to overfishing, **Preferred Alternative 3** would indirectly reduce recreational landings of jacks by 2,832 lb ww (Table 5.5.2.8). If the average of 2008 through 2011 landings is used as the baseline for landings of jacks, baseline landings would be less than the reduced ACL, and therefore, **Preferred Alternative 3** would have no indirect additional impact on recreational landings of jacks and associated economic benefits.

Table 5.5.2.8. Expected status and decrease in annual landings of various FMUs by weight in the short-run due to **Preferred Alternative 3**.

FMU	Expected Status	Expected Decrease, lb ww	
		2012 Landings as Baseline	2008 - 2011 Landings as Baseline
Boxfish	NSO	0 and \$0	0 and \$0
Goatfishes	NSO	0 and \$0	0 and \$0
Grunts	NSO	0 and \$0	0 and \$0
Jacks	NSO (SO)	0 and \$0 (2,832 and \$NA ¹)	0 and \$0
Scups & Porgies	NSO	0 and \$0	0 and \$0
Spiny Lobster	NSO	0 and \$0	0 and \$0
Squirrelfish	NSO	0 and \$0	0 and \$0
Triggerfish & Filefish	NSO	0 and \$0	0 and \$0
Wrasses	NSO	0 and \$0	0 and \$0
Total		0 (2,832 and \$NA)	0 and \$0

¹ Data not available to generate a dollar estimate.

In conclusion, **Preferred Alternative 3** is expected to have no additional economic impact on the recreational sector in Puerto Rico in the long or short run. However, if it is determined that jacks is subject to overfishing in the recreational sector, there would a reduction of annual recreational landings of the FMU up to 2,832 lb ww and associated economic benefits in the short run.

5.5.3 St. Croix

Combined Commercial and Recreational Sectors

The ACLs for St. Croix are not divided by sector because of lack of recreational data. Therefore, annual landings of an FMU are derived entirely from the commercial sector, although they count toward the combined sector ACL.

Preferred Alternatives 3a – 3d would indirectly keep the ACLs for parrotfish, surgeonfish, angelfish and queen conch, respectively, at their current levels. Consequently, **Preferred Alternatives 3a – 3d** would have no effect on annual landings and associated economic benefits of those four FMUs in St. Croix beyond the baseline.

Preferred Alternative 3 would indirectly increase the ACLs for grouper and snapper if they are not subject to overfishing, and would decrease the ACLs for boxfish, goatfishes, grunts, jacks, scups & porgies, spiny lobster, squirrelfish and triggerfish & filefish when they are subject to overfishing (Table 5.5.3.1).

The ACL for wrasses would not change because it is so small that the change of buffers does not affect it. Hence, **Preferred Alternative 3** would have no added impact on annual landings of wrasses and economic benefits that derive from those landings in St. Croix.

Table 5.5.3.1. Comparison of status quo (**Alternative 1**) and **Preferred Alternative 3** ACLs for 11 FMUs of St. Croix.

St. Croix ACLs (lb ww)					
FMU	Current ACL (Alt. 1)	Subject to Overfishing		Not Subject to Overfishing	
		Alt. 1	Pref. Alt. 3	Alt. 1	Pref. Alt. 3
Boxfish	8,433	8,433	7,965	8,433	8,433
Goatfishes	3,766	3,766	3,556	3,766	3,766
Grouper	30,435	30,435	30,435	30,435	32,225
Grunts	36,881	36,881	34,832	36,881	36,881
Jacks	15,489	15,489	14,629	15,489	15,489
Scups & Porgies	4,638	4,638	4,380	4,638	4,638
Snapper	102,946	102,946	102,946	102,946	109,002
Spiny Lobster	107,307	107,307	101,346	107,307	107,307
Squirrelfish	121	121	114	121	121
Triggerfish & Filefish	24,980	24,980	23,592	24,980	24,980
Wrasses	7	7	7	7	7

During the 5-year period from 2008 through 2012, there were years when landings exceeded the current ACLs (highlighted in yellow in Table 5.5.3.2). In 2012, only landings of squirrelfish and wrasses exceeded their ACLs.

Table 5.5.3.2. Comparison of current St. Croix ACLs (**Alternative 1**) and annual landings potentially affected by **Preferred Alternative 3**.

FMU	Annual Landings (lb ww)					Lb ww
	2008	2009	2010	2011	2012	ACL (Alt. 1)
Boxfish	8,268	7,418	4,302	5,335	1,819	8,433
Goatfishes	1,775	2,678	541	712	529	3,766
Grouper	29,585	34,650	29,117	30,800	29,853	30,435
Grunts	39,836	46,789	32,514	34,418	24,761	36,881
Jacks	8,715	11,881	12,358	10,341	8,355	15,489
Scups & Porgies	5,694	4,249	5,189	2,698	146	4,638
Snapper	112,389	96,393	92,354	84,463	64,262	102,946
Spiny Lobster	148,003	149,908	139,685	109,751	86,917	107,307
Squirrelfish	77	32	7	2,768	3,834	121
Triggerfish & Filefish	32,698	38,735	30,711	26,464	22,644	24,980

In 2012, landings of squirrelfish and wrasses exceeded their OFLs. The 2012 increase in squirrelfish and wrasse landings are attributed to improved reporting, not an increase in effort. None of the other FMUs (boxfish, goatfishes, grouper, grunts, jacks, scups and porgies, snapper, spiny lobster, squirrelfish and triggerfish & filefish) had 2012 landings greater than their OFLs. Therefore, it is included among those FMUs expected to not be subject to overfishing.

It is expected that **Preferred Alternative 3** would not indirectly decrease the ACLs for boxfish, goatfishes, grouper, grunts, jacks, scups and porgies, snapper, spiny lobster, squirrelfish, and wrasses. Therefore, **Preferred Alternative 3** is expected to have no additional economic impact on landings of and associated economic benefits from landings of boxfish, goatfishes, grouper, grunts, jacks, scups & porgies, snapper, spiny lobster, squirrelfish and wrasses in St. Croix (Table 5.5.3.3).

Table 5.5.3.3. Expected status and decreases in landings, pounds whole weight and 2013 \$. (NSO: Not subject to overfishing. SO: Subject to overfishing).

FMU	Expected Status	Expected Decrease, lb ww and 2013 \$	
		2012 Landings as Baseline	2008 - 2011 Landings as Baseline
Boxfish	NSO	0 and \$0	0 and \$0
Goatfishes	NSO	0 and \$0	0 and \$0
Grouper	NSO	0 and \$0	0 and \$0
Grunts	NSO	0 and \$0	0 and \$0
Jacks	NSO	0 and \$0	0 and \$0
Scups & Porgies	NSO	0 and \$0	0 and \$0
Snapper	NSO	0 and \$0	0 and \$0
Spiny Lobster	NSO	0 and \$0	0 and \$0
Squirrelfish	NSO (SO)	0 and \$0	0 and \$0
Triggerfish & Filefish	NSO	0 and \$0	0 and \$0
Total		0 and \$	0 and \$0

Preferred Sub-alternatives 3a and 3d would indirectly keep the ACLs for parrotfish and queen conch at their present levels and there would be no additional economic impact on commercial or recreational fishermen that harvest parrotfish and/or queen conch. As stated previously, the ACLs for angelfish and surgeonfish apply to Caribbean-wide landings. **Preferred Sub-alternatives 3b and 3e** would not indirectly affect their ACLs and would have no additional economic impact in St. Croix (or the U.S. Caribbean).

In conclusion, **Preferred Alternative 3** and **Preferred Sub-alternatives 3a through 3e** would have no added economic impact in St. Croix.

5.5.4 St. Thomas/St. John

Combined Commercial and Recreational Sectors

As stated previously, **Preferred Alternatives 3a through 3e** would indirectly keep the ACLs for parrotfish, surgeonfish, angelfish, queen conch and surgeonfish, respectively, at their current levels. Consequently, **Preferred Alternatives 3a through 3e** would have no effect on landings of and associated economic benefits from those five FMUs in St. Thomas/St. John beyond the baseline.

Preferred Alternative 3 would increase the ACLs for grouper and snapper if they are not subject to overfishing and would decrease the ACLs for boxfish, goatfishes, grunts, jacks, scups

and porgies, spiny lobster, squirrelfish, wrasses and triggerfish and filefish when they are subject to overfishing (Table 5.5.4.1).

Table 5.5.4.1. Comparison of status quo (**Alternative 1**) and **Preferred Alternative 3** ACLs for 11 FMUs of St. Thomas/St. John.

St. Thomas/St. John ACLs (lb ww)					
FMU	Current ACL (Alt. 1)	Subject to Overfishing		Not Subject to Overfishing	
		Alt. 1	Pref. Alt. 3	Alt. 1	Pref. Alt. 3
Boxfish	27,880	27,880	26,331	27,880	27,880
Goatfishes	320	320	302	320	320
Grouper	51,849	51,849	51,849	51,849	54,899
Grunts	37,617	37,617	35,527	37,617	37,617
Jacks	52,907	52,907	49,967	52,907	52,907
Scups & Porgies	21,819	21,819	20,607	21,819	21,819
Snapper	133,775	133,775	133,775	133,775	141,644
Spiny Lobster	104,199	104,199	98,410	104,199	104,199
Squirrelfish	4,241	4,241	4,005	4,241	4,241
Triggerfish & Filefish	74,447	74,447	70,311	74,447	74,447
Wrasses	585	585	553	585	585

During the 5-year period from 2008 through 2012, there were years when landings exceeded their current ACLs (highlighted in yellow in Table 5.5.4.2). In 2008, annual landings of nine of the 11 FMUs exceeded their current ACL, whereas in 2012, only landings of squirrelfish and wrasses exceeded their ACLs. Annual landings of wrasses exceeded its current ACL each of the five years.

Table 5.5.4.2. Comparison of current St. Thomas/St. John ACLs (**Alternative 1**) and annual landings of FMUs potentially affected by **Preferred Alternative 3**.

FMU	Annual Landings (lb ww)					Lb ww ACL (Alt. 1)
	2008	2009	2010	2011	2012	
Boxfish	33,008	30,323	25,813	15,757	12,288	27,880
Goatfishes	74	94	52	17	1	320
Grouper	56,910	68,602	60,806	53,170	41,184	51,849
Grunts	39,144	36,557	38,407	25,402	16,102	37,617
Jacks	56,197	68,478	46,043	35,049	45,523	52,907
Scups & Porgies	22,287	21,603	20,387	8,498	144	21,819
Snapper	145,187	143,615	121,186	76,259	53,624	133,775
Spiny Lobster	110,465	115,762	114,577	84,302	83,138	104,199
Squirrelfish	3,792	3,045	2,366	6,510	9,805	4,241
Triggerfish & Filefish	84,131	79,469	79,555	57,067	45,989	74,447
Wrasses	685	1,359	2,517	1,959	1,823	585

Preferred Alternative 3 is expected to indirectly increase the ACLs for grouper and snapper because they are not undergoing overfishing. If 2012 landings are representative of the baseline, there would be no actual increase in landings of either grouper or snapper because annual landings would remain less than the present ACL. If the average of 2008 through 2011 landings is more representative of the baseline, **Preferred Alternative 3** would have no effect on annual landings of snapper; however, it would increase annual grouper landings by 3,050 lb ww and \$18,056 in the short and long run (Table 5.5.4.3).

In 2012, landings of squirrelfish and wrasses exceeded their OFLs. However, those high landings were due to improved reporting in the USVI, and consequently, are not expected to be subject to overfishing. It is also expected that boxfish, goatfishes, grunts, jacks, scups & porgies, spiny lobster, triggerfish & filefish, and wrasses would not be subject to overfishing. Consequently, **Preferred Alternative 3** would not indirectly change the ACLs for these FMUs and there would be no changes of landings and associated economic benefits from these FMUs (Table 5.5.4.3).

Table 5.5.4.3. Expected status and short-run effects of **Preferred Alternative 3** in St. Thomas /St. John.

FMU	Expected Status	Expected Change, lb ww and 2013 \$	
		2012 Landings as Baseline	2008 - 2011 Landings as Baseline
Boxfish	NSO	0 and \$0	0 and \$0
Goatfishes	NSO	0 and \$0	0 and \$0
Grouper	NSO	0 and \$0	3,050 and \$18,056
Grunts	NSO	0 and \$0	0 and \$0
Jacks	NSO	0 and \$0	0 and \$0
Scups & Porgies	NSO	0 and \$0	0 and \$0
Snapper	NSO	0 and \$0	0 and \$0
Spiny Lobster	NSO	0 and \$0	0 and \$0
Squirrelfish	NSO	0 and \$0	0 and \$0
Triggerfish & Filefish	NSO	0 and \$0	0 and \$0
Wrasses	NSO	0 and \$0	0 and \$0
Total		0 and \$0	3,050 and \$18,056

In summary, **Preferred Sub-alternatives 3a** through **3e** would have no additional economic impacts in St. Thomas/St. John. **Preferred Alternative 3** could increase annual landings in St. Thomas/St. John by as much as 3,050 and \$18,056.

5.5.5 Total economic impact

Preferred Sub-alternatives 3a through 3e are expected to have no additional economic impact anywhere in the U.S. Caribbean.

Preferred Alternative 3 is expected to have no added economic impact in St. Croix.

The total short-run annual economic impact of **Preferred Alternative 3** in St. Thomas/St. John would range from increases in dockside revenue from \$0 to \$18,056. In the long run, there could be an added annual economic benefit of \$18,056, from increased landings (Table 5.5.4.3).

Preferred Alternative 3 could increase annual commercial landings in Puerto Rico in the short and long-run by as much as 10,866 lb ww and \$39,271 (Table 5.5.2.3). However, **Preferred Alternative 3** could also reduce annual commercial landings in the short-run by as much as 1,374 lb ww and \$2,569 (Table 5.5.2.4). If those changes occur simultaneously in the short-term, the net impact would be an increase of commercial landings of 9,572 lb ww and \$36,702. In the long-run, there would be annual economic benefits up to \$39,271 less the costs of obtaining those increased landings.

Preferred Alternative 3 is expected to have no additional economic impact on the recreational sector in Puerto Rico in the long or short run. However, if it were determined the Jacks FMU is subject to overfishing, there would be a reduction of annual recreational landings of jacks up to 2,832 lb ww and associated economic benefits in the short run.

5.6 Private and Public Costs

The preparation, implementation, enforcement, and monitoring of this, or any Federal action, involves the expenditure of public and private resources, which can be expressed as costs associated with the regulations. Costs associated with this action include, but are not limited to, Council costs of document preparation, meeting, and other costs; NMFS administration costs of document preparation, meetings and review, and annual law enforcement costs. A preliminary estimate is up to \$150,000 before annual law enforcement costs.

5.7 Determination of Significant Action

Pursuant to E.O. 12866, a regulation is considered a “significant regulatory action” if it is expected to: 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.

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

DRAFT

Chapter 6. Regulatory Flexibility Act Analysis

6.1 Introduction

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

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

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

The purpose and need, issues, problems, and objectives of the emergency action are presented in Section 1.4 and are incorporated herein by reference.

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

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

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

This action will apply to small businesses in the U.S. Caribbean that engage in commercial finfish and shellfish fishing in the exclusive economic zone. There are estimated to be 3,408 licensed commercial fishermen in Puerto Rico. As of March 2011, there were 177 licensed commercial fishermen in St. Croix and 120 in St. Thomas/St. John (Kojis and Quinn 2012). It is presumed here that each of those licensed fishermen represents a single business in the finfish fishing (NAICS 114111) and/or shellfish fishing (NAICS 114112) industry.

The Small Business Administration (SBA) size standards for finfish fishing and shellfish fishing are presently, as of June 17, 2014, \$19 million, and \$5 million in annual receipts, respectively. However, as of July 14, 2014, those size standards will increase to \$20.5 million and \$5.5 million. It is presumed here that all of the commercial finfish and shellfish fishing businesses in Puerto Rico and the U.S. Virgin Islands (USVI) have annual receipts less than these figures and are, therefore, small.

6.5 Description of compliance requirements of the proposed rule

The preferred alternatives would establish a control rule to adjust the buffer reduction applied to the overfishing limit or to the acceptable biological catch used to derive the annual catch limit (ACL) to reflect a change in overfishing status of the stock. As such, it may change the ACL for a stock that could result in either an increase or decrease in annual landings of that stock and associated economic benefits. The action would not change any existing record-keeping requirements.

6.6 Substantial number of small entities criterion

The proposed rule would apply to all small commercial finfish and shellfish fishing businesses in Puerto Rico and the USVI that harvest reef fish and shellfish in federal waters.

6.7 Economic impact

As described in the RIR, this action is not expected to affect annual shellfish landings in the U.S. Caribbean. Hence, there would be no adverse or beneficial economic impact to commercial shellfish fishing businesses of Puerto Rico or the U.S. Virgin Islands.

This action is expected to produce short-term and long-run annual economic benefits for Puerto Rico's combined commercial finfish fishing businesses up to \$39,271 in additional dockside revenue (Table 5.5.2.3). However, it could also reduce annual commercial finfish landings in the short-run by as much as \$2,569 (Table 5.5.2.4). If those annual changes occur simultaneously in the short-term, the net impact would be an increase of commercial landings with a dockside value of \$36,702. In the long-run, there would be annual economic benefits up to \$39,271 less the cost of obtaining those additional landings.

There would be no economic impact in St. Croix, based on comparisons of baseline landings, current ACLs, and the proposed changes of the ACLs. The total short-run economic impact in St. Thomas/St. John would range from \$0 to \$18,056 annually in additional dockside revenue less the cost of obtaining the additional landings. In the long run, there could be an added annual economic benefit of \$18,056 less the cost of obtaining the added annual landings (Table 5.5.4.3).

6.8 Description of significant alternatives

Among the considered alternatives (**Alternative 2**) was an indirect decrease in the ACL for queen conch from 50,000 to 42,500 pounds (lbs) whole weight (ww) if it is subject to overfishing. That would have produced an adverse economic impact on St. Croix's small shellfish fishing businesses because baseline landings equal the present ACL. The preferred alternative would keep the ACL at 50,000 lbs ww, whether it is subject to overfishing or not.

That same considered alternative (**Alternative 2**) would have increased the ACLs for angelfish, surgeonfish, and aquarium trade species fishery management units. Those increases would have allowed for increases in annual landings of those stocks; however, the short-run gains in dockside revenue could be out-weighted by larger long-run costs of reduced stocks.

Chapter 7. List of Preparers

Table 7-1. List of Interdisciplinary Plan Team (IPT) Members

Name	Agency	Title
María del Mar López	NMFS/SF	IPT Lead / Fishery Biologist
Bill Arnold	NMFS/SF	Caribbean Branch Chief / Fishery Biologist
Graciela García-Moliner	CFMC	Fishery Biologist
Jose A. Rivera	NMFS/HC	EFH Specialist
Kate Quigley	CFMC	Economist
Christina Package-Ward	NMFS/SF	Anthropologist
Denise Johnson	NMFS/SF	Economist
Andrew Herndon	NMFS/PR	Fishery Biologist
Michael Larkin	NMFS/SF	Data Analyst
Meaghan Bryan	NMFS/SEFSC	Fishery Biologist
Shepherd Grimes	NOAA/GC	Attorney
Scott Sandorf	NMFS/SF	Technical Writer
David Keys	NMFS/SER	Regional NEPA Coordinator
Brent Stoffle	NMFS/SEFSC	Anthropologist
Lynn Rios	NOAA/OLE	Enforcement Officer

NMFS = National Marine Fisheries Service, CFMC = Caribbean Fishery Management Council, SF = Sustainable Fisheries Division, PR = Protected Resources Division, SERO = Southeast Regional Office, SER = Southeast Region, HC = Habitat Conservation Division, GC = General Counsel, SEFSC = Southeast Fisheries Science Center, OLE= Office of Law Enforcement

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 13th 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 Silver Spring 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 Junta de Calidad Ambiental (Puerto Rico Environmental Quality Board)

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Appendices

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 Procedures 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 30-day wait 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 issue agency-specific standards to: 1) Ensure information quality and develop a pre-dissemination review process; 2) establish administrative mechanisms allowing affected persons to seek and obtain correction of information; and 3) report periodically to 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 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 adversely modify 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 adversely modify designated critical habitat.

NMFS has completed ESA Section 7 consultations on the continued authorization of the Queen Conch, Spiny Lobster, Corals and Reef Associated Plants and Invertebrate, and Reef Fish fisheries under their respective FMPs. In 2011, NMFS completed separate biological opinions evaluating the impacts of the continuing authorization of the reef fish (NMFS 2011d) and spiny lobster fisheries (NMFS 2011e) on ESA-listed species. The reef fish biological opinion stated the fishery was not likely to adversely affect loggerhead sea turtles, sea turtle critical habitat, or marine mammals (see NMFS 2011d for discussion on these species and entities). However, the opinion did state that reef fish fishery would adversely affect green, hawksbill, and leatherback sea turtles and *Acropora* coral but would not jeopardize their continued existence. The opinion also stated the reef fish fishery would adversely affect *Acropora* critical habitat but would not

destroy or adversely modify it. An incidental take statement was issued for green, hawksbill, and leatherback sea turtles, as well as *Acropora* corals. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them.

The spiny lobster biological opinion stated the fishery was not likely to adversely affect elkhorn coral, loggerhead sea turtles, sea turtle critical habitat, or marine mammals (see NMFS 2011e, for discussion on these species and entities). However, the opinion did state that the spiny lobster fishery would adversely affect green, hawksbill, and leatherback sea turtles and staghorn coral but would not jeopardize their continued existence. The opinion also stated the spiny lobster fishery would adversely affect *Acropora* critical habitat but would not destroy or adversely modify it. An incidental take statement was issued for green, hawksbill, and leatherback sea turtles, as well as staghorn coral. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them.

NMFS met the ESA Section 7 consultation requirements to evaluate the potential impacts to listed species from the continued authorization of the Corals and Reef Associated Plants and Invertebrate fisheries via informal consultations. In a consultation memorandum dated February 8, 2013, NMFS concurred with the determination that the continued authorization of the fishery was not likely to adversely affect any listed species or critical habitat. That determination was based primarily on the fact that the vast majority of the fishery does not operate in federal waters and because the fishery is highly selective and fishers can easily avoid listed species. The memorandum also concurred with the determination that the essential feature of *Acropora* critical habitat (i.e., consolidated hardbottom or dead coral skeleton that is free from fleshy macroalgae cover and sediment cover, occurring in water depths from the mean high water line to 30 meters (98 feet)), was not likely to be adversely affected by the continued authorization of fishery. The memorandum agreed with the determination that coral reef fishers would not cause consolidated hardbottom to become unconsolidated and would not cause the growth of macroalgae or sedimentation; therefore, any adverse were unlikely to occur and are discountable.

NMFS completed an informal consultation on the continued authorization of the queen conch fishery on November 18, 2010. The memorandum concurred that the previous not likely to adversely affect determinations for sea turtles and marine mammals in 2005 biological opinion on all Caribbean fisheries remained valid (NMFS 2005). The memorandum also determined the fishery was not likely to adversely affect *Acropora* or their critical habitat. It stated 1) the queen conch fishery in the EEZ is very small; 2) queen conch are most common in seagrass areas where *Acropora* do not occur and *Acropora* critical habitat is not designated; and 3) the hand harvest of queen conch is highly selective. For these reasons the memorandum determined that any adverse effects to *Acropora* and their critical habitat from the collection of queen conch were

extremely unlikely to occur and discountable. However, in a June 14, 2013, memorandum, NMFS reevaluated information regarding the occurrence of queen conch on hardbottom habitat and their potential role in mediating macroalgae growth on *Acropora* critical habitat. The memorandum determined that queen conch densities are low in the U.S. Caribbean; they prefer habitats that are not *Acropora* critical habitat; and prefer to eat the non-“fleshy macroalgae”, which is a significant threat to *Acropora* critical habitat. The memorandum concluded that because of these factors the harvest of queen conch will have an insignificant effect on *Acropora* critical habitat and request concurrence with that determination. NMFS concurred with this determination. NMFS is evaluating potential effects of the action proposed and will complete any required Section 7 analysis prior to promulgation of a final rule implementing this comprehensive 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. According to the List of Fisheries for 2012 published by NMFS, all gear (dive, hand/mechanical collection fisheries) used in the reef fish, queen conch, spiny lobster, and coral resources fisheries are considered Category III (76 FR 73912), 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.

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." In order 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. The RFA for this action is found in Chapter 6.

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 2011 Annual Catch Limit (ACL) Amendment, which established ACLs and accountability measures for species within the Corals and Reef Associated Plants and Invertebrates FMP. These actions will 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 actions 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 invasive species in the U.S. or elsewhere.

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.

Appendix B. Summary of Regulations in Federal, U.S. Virgin Islands, and Puerto Rico Waters.

Revised 4.24.2014 – NMFS/Sustainable Fisheries/Caribbean Branch. This is a summary of current regulations for informational purposes only. For current official regulations go to: http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

QUEEN CONCH		
	Closed	Open
Federal (only applies to Lang Bank, STX. Season closes when STX territorial limit is reached)	Jun 1 – Oct 31	Nov 1 – May 31
Puerto Rico	Aug 1 – Oct 31	Nov 1 – Jul 31
USVI (50,000 lbs STX & 50,000 lbs STT/STJ) Season closes when limit is reached	Jun 1 – Oct 31	Nov 1 – May 31
SNAPPERS		
Snapper Unit 1: (1) silk, (2) black, (3) blackfin, (4) vermillion, (5) wenchman*		
	Closed	Open
Federal	Oct 1 – Dec 31	Jan 1 – Sept 30
Puerto Rico (only applies to silk and blackfin)	Oct 1 – Dec 31	Jan 1 – Sept 30
USVI (only applies to STT/STJ)	Oct 1 – Dec 31	Jan 1 – Sept 30
*Wenchman was transferred from Snapper Unit 2 to Snapper Unit 1 (Effective January 30, 2012. Seasonal closure does not apply to wenchman).		
Snapper Unit 2: (1) queen, (2) cardinal ^{new}		
Federal	No restrictions	
Puerto Rico		
USVI		
*Cardinal was added to Snapper Unit 2 (Effective January 30, 2012)		
Snapper Unit 3: (1) mutton, (2) lane, (3) gray, (4) dog, (5) schoolmaster, (6) mahogany		
	Closed	Open
Federal (only applies to mutton and lane)	Apr 1 – Jun 30	July 1 – Mar 31
Puerto Rico (only applies to mutton)	Apr 1 – May 31	June 1 – Mar 31
USVI (only applies to mutton and lane)	Apr 1 – Jun 30	July 1 – Mar 31
Snapper Unit 4: (1) yellowtail snapper		
No seasonal closures. Size limits apply year-round		
Federal	12 inches (in) Total Length (TL)	
Puerto Rico	10.5 in Fork Length (FL)	
USVI	No size limit	
PARROTFISH		
Federal	<ul style="list-style-type: none"> No harvest of midnight, blue, and rainbow parrotfish. 8 in (FL) min. size for redband parrotfish <u>only applies to STX</u> 9 in (FL) min. size all other parrotfish (princess, queen, striped, redtail, stoplight, redfin) <u>only applies to STX</u> 	
Puerto Rico	No restrictions	
USVI	No harvest of midnight, blue, and rainbow parrotfish ^(unofficial)	

GROUPERS		
Grouper Unit 1: (1) Nassau grouper		
Federal	PROHIBITED SPECIES	
Puerto Rico		
USVI		
Grouper Unit 2: (1) goliath grouper		
Federal	PROHIBITED SPECIES	
Puerto Rico		
USVI		
Grouper Unit 3: (1) red hind, (2) coney, (3) rock hind, (4) graysby		
	Closed	Open
Federal (only applies to red hind in Red Hind Spawning Aggregation Areas: Lang Bank, Tourmaline, Abrir La Sierra, Bajo de Sico*)	Dec 1 – Last day Feb	Mar 1 – Nov 30
Puerto Rico (only applies to red hind)	Dec 1 – Last day Feb	Mar 1 – Nov 30
USVI	-----	-----
*Creole fish was removed from Grouper Unit 3 and from federal management (Effective January 30, 2012).		
Grouper Unit 4*: (1) yellowfin, (2) red, (3) tiger, (4) black		
	Closed	Open
Federal	Feb 1 – Apr 30	May 1 – Jan 31
Puerto Rico (only applies to yellowfin)	Feb 1 – Apr 30	May 1 – Jan 31
USVI	Feb 1 – Apr 30	May 1 – Jan 31
*Yellowedge and misty groupers were transferred from Grouper Unit 4 to Grouper Unit 5. Black grouper was added into Grouper Unit 4 (Effective January 30, 2012).		
Grouper Unit 5*: (1) yellowedge, (2) misty		
	Closed	Open
Federal (only applies to yellowedge)	Feb 1 – Apr 30	May 1 – Jan 31
Puerto Rico	No restrictions	
USVI (only applies to yellowedge)	Feb 1 – Apr 30	May 1 – Jan 31
CORALS		
Federal	No harvest of corals allowed (stony corals, octocorals, live rock), except by permit for scientific, educational purposes.	
Puerto Rico		
USVI		
SPINY LOBSTER		
Federal	No seasonal closures. Must be landed whole.	
Puerto Rico	Size limit (> 3.5 in (8.9 cm) carapace length) and gear restrictions apply. No harvest of egg bearing females.	
USVI		
*Bajo de Sico is closed to fishing of Council managed reef fish species from Oct 1 – Mar 31, each year		

AQUARIUM TRADE SPECIES	
Federal	List of allowed species
Puerto Rico	List of allowed species; state permit required
USVI	Territorial permit required

FEDERAL RECREATIONAL BAG LIMITS	
Aggregate bag limit for:	Allowed quantity:
snapper grouper parrotfish	5 fish per person/day, or if 3 or more persons are aboard, 15 fish from aggregate per vessel/day; but not to exceed: 2 parrotfish per person/day or 6 parrotfish per vessel/day.
Angelfish, boxfish, goatfish, grunts, wrasses, jacks, scups and porgies, squirrelfish, triggerfish and filefish, tilefish	5 fish per person/day or, if 3 or more persons are aboard, 15 fish from aggregate per vessel/day, but not to exceed: 1 surgeonfish per person/day or 4 surgeonfish per vessel/day.
Spiny lobster	3 spiny lobsters per fisher/day, no more than 10 spiny lobsters per vessel/day.

QUEEN CONCH RECREATIONAL AND COMMERCIAL LIMITS	
RECREATIONAL BAG LIMIT	
Federal	3 conch per person/day, or if > than 4 persons aboard, 12 conchs per vessel
Puerto Rico	3 conch per person/day, 12 per vessel/day
USVI	6 conch per fisher/day, no more than 24 per vessel/day
COMMERCIAL LIMIT	
Federal	200 conch per vessel per day
Puerto Rico	150 conch person/day, 450 per vessel/day
USVI	200 conch per vessel/day

OTHER SPECIES RESTRICTIONS		
		Min. Size (FL)
Puerto Rico	White grunt (<i>Haemulon plumieri</i>)	8 in (203 mm)
	Honeycomb cowfish (<i>Acanthostracion polygonia</i>)	7 in (78 mm)
	Scrawled cowfish (<i>A. quadricornis</i>)	7 in (78 mm)
	Cero (<i>Scomberomorus regalis</i>)	16 in (406 mm)
	King mackerel (<i>S. cavalla</i>)	20 in (508 mm)
	Snook (<i>Centropomus undecimalis</i>)	22 in (559 mm)

SEASONAL AREA CLOSURES	
Grammanik Bank, STT	– NO fishing any fish from Feb 1 - Apr 30, except for HMS
Hind Bank, STT	– Closed year-round to all fishing and anchoring
Mutton Snapper Spawning Aggregation, STX	– NO fishing any fish from Mar 1 - Jun 30
Bajo de Sico, PR	– NO fishing of Council managed reef fish species from Oct 1 – Mar 31. NO anchoring year-round
Tourmaline Bank and Abrir la Sierra Bank, PR	– NO fishing any fish from Dec1 – Last day Feb