OPTIONS PAPER FOR AMENDMENT 2 TO THE FISHERY MANAGEMENT PLAN FOR THE QUEEN CONCH FISHERY OF PUERTO RICO AND THE U.S. VIRGIN ISLANDS AND AMENDMENT 5 TO THE REEF FISH FISHERY MANAGEMENT PLAN OF PUERTO RICO AND THE U.S. VIRGIN ISLANDS

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1.0 SUMMARY

The Caribbean Fishery Management Council (CFMC) is developing this Options Paper with alternatives to establish Annual Catch Limits (ACLs; Actions 2-6) and Accountability Measures (AMs, Action 10) for the commercial (Actions 2-5) and recreational (Action 6) harvest of species or species complexes determined to be overfished and experiencing overfishing in the US Caribbean. This determination of the status of the stock is based on the 2005 Sustainable Fisheries Act Comprehensive Amendment to the Fishery Management Plans of the US Caribbean EEZ (SFA 2005). The species for which the ACLs and AMs have to be established as required by the reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) include the queen conch (*Strombus gigas*), and various species or species groups of reef fish among which are the parrotfish, groupers, specifically Grouper Unit 1 (*Epinephelus striatus* or Nassau grouper), Grouper Unit 2 (*Epinephelus itajara* or Goliath grouper), Grouper Unit 4 (tiger, yellowfin, yellowedge, misty and red groupers), and Snapper Unit 1 (silk, black, blackfin and vermillion snappers). This option papers also includes alternatives for changes to the reef fish species units (Action 1), account for scientific and management uncertainty (Action 7), consideration of permits and gear identification (Action 8), monitoring of ACLs (Action 9), modification of the allowable gear for reef fish (Action 11), and the establishing of a framework for ACLs and AMs for queen conch and reef fish.

The options presented herein are responsive to the comments received and reviewed by the CFMC after two rounds of scoping meetings, a series of meetings of the various Ad-hoc and advisory panels, and stakeholder meetings and testimony at the CFMC meetings. The alternatives cover a range of options for establishing these ACLs and are based in the best available information and informed judgment.

2.0 INTRODUCTION

2.1 Purpose and Need

The **purpose** of this options paper is to establish Annual Catch Limits (ACLs) and Accountability Measures (AMs) for commercial and recreational harvest of U.S. Caribbean (Puerto Rico and the U.S. Virgin Islands) queen conch and reef fish that have been identified as being overfished. Those species or species groups include *Strombus gigas*, various species of parrotfish, *Epinephelus striatus*, *Epinephelus itajara*, members of snapper Fisheries Management Unit (FMU) 1 (Snapper Unit 1), and members of Grouper Unit 4 (Table 1). Options are designed to reduce the probability that cumulative harvest from territorial, commonwealth, and U.S. Exclusive Economic Zone (EEZ) waters by both commercial (Actions 2-5) and recreational (Action 6) sectors will exceed the stocks' ACL as established herein and pursuant to reauthorized Magnuson-Stevens Fishery Conservation and Management Act (MSA) requirements. If an ACL is exceeded,

options are provided to account for overages (Action 10). Additional options address revisions to the composition of the stock complexes presently contained within the reef fish FMUs (Action 1), establish measures to account for uncertainty in the estimation of average catch levels (Action 7), provide for a permit system to monitor harvest and sale (Action 8), modify catch reporting protocols (Action 9), define allowable gear for reef fish harvest and a tag program for certain gear (Action 11), and create a framework for addressing future changes to ACLs and AMs (Action 12). Note that the Caribbean Fishery Management Council may designate more than one preferred alternative for each of the actions presented within this document.

The Annual Catch Limit is the level of annual catch of a stock or stock complex that serves as the basis for invoking Accountability Measures. With few exceptions, the MSA requires that an ACL be set for all stocks or stock complexes, even for data poor stocks. Because catch is considered to include all sources of fishing mortality, an ACL should be set even in situations where retention is prohibited in order to account for discard mortality. Thus, a primary purpose of this document is to provide options for establishing ACLs for all species and species groups that are caught in U.S. Caribbean waters, including those such as Nassau and goliath grouper for which retention is prohibited. The present options focus on those U.S. Caribbean conch and reef-fish species (or species groups) that have been identified as being overfished or undergoing overfishing and for which ACLs must be established no later than 2010. ACLs will be established no later than 2011 for species and species groups identified as not overfished or undergoing overfishing. Note that setting ACLs for the U.S. Caribbean will be a three-step process. The first step in the process is to establish an Overfishing Limit (OFL). For the U.S. Caribbean, as for the North Pacific ((SEDAR 2009, page 169), the OFL can be set to the average catch for a specified period of time. The Allowable Biological Catch (ABC) is then established by multiplying the OFL by a factor (the 'uncertainty' factor) that accounts for scientific uncertainty in the analytical process (discussed below). Finally, the ACL is determined by adjusting the ABC to account for management uncertainty (discussed below).

Table 1. Genus and species names, current (proposed) fishery management unit, and associated English and Spanish common names for the various organisms considered within this options paper. (Sources: http://www.itis.gov/index.html and http://www.caribbeanfmc.com/pdfs/FISH%20COMMON%20NAMES.pdf)

Genus and species	Current (Proposed) FMU	English common name(s)	Spanish common name(s)
Strombus gigas	Conch	queen conch	carrucho
Parrotfish			
Scarus vetula	1 (1)	queen parrotfish	loro reina
Scarus taeniopterus	1 (1)	princess parrotfish	loro princesa
Scarus iseri	1 (1)	striped parrotfish	loro rayado
Scarus coeruleus	1 (2)	blue parrotfish	brindao (La Parguera), loro azul
Scarus coelestinus	1 (2)	midnight parrotfish	judio, loro de medianoche
Scarus guacamaia	1 (2)	rainbow parrotfish	guacamayo, loro guacamayo
Sparisoma aurofrenatum	1 (1)	redband parrotfish	loro banda colorada
Sparisoma rubripinne	1 (1)	redfin parrotfish	loro aletirojo, loro coliamarilla
Sparisoma chrysopterum	1 (1)	redtail parrotfish	loro colirrojo
Sparisoma viride	1 (1)	stoplight parrotfish	loro verde, chappora (La Parguera)
Grouper			
Epinephelus striatus	1 (1)	Nassau grouper	cherna, mero criollo
Epinephelus itajara	2 (2)	goliath grouper	mero grande, mero sapo, mero batata
Epinephelus guttatus	3 (3)	red hind	cabrilla
Epinephelus fulvus	3 (3)	coney	mantequilla
Epinephelus adscensionis	3 (3)	rock hind	cabra mora
Epinephelus cruentatus	3 (3)	graysby	enjambre, cherna enjambre
Paranthias furcifer	3 (none)	creole-fish	rabirrubia de lo alto
Epinephelus flavolimbatus	4 (5)	yellowedge grouper	guajil amarillo
Epinephelus mystacinus	4 (5)	misty grouper	guasa
Epinephelus morio	4 (4)	red grouper	mero rojo
Mycteroperca tigris	4 (4)	tiger grouper	mero trigre, dientes de sable
Mycteroperca venenosa	4 (4)	yellowfin grouper	guajil,
Mycteroperca bonaci	none (4)	black grouper	guajil prieto
Snapper			
Lutjanus buccanella	1 (1)	blackfin snapper	alinegra, negra
Lutjanus vivanus	1 (1)	silk snapper	chillo, chillo ojo amarillo
Apsilus dentatus	1 (1)	black snapper	pargo prieto
Rhomboplites aurorubens	1 (1)	vermilion snapper	besugo
Pristopomoides macrophthalmus	none (2)	cardinal snapper	muniama de afuera
Pristopomoides aquilonaris	2 (1)	wenchman	limosnera
Etelis oculatus	2 (2)	queen	cartucho
Lutjanus griseus	3 (3)	gray	pargo gris
Lutjanus synagris	3 (3)	lane	arrayao
Lutjanus analis	3 (3)	mutton	sama
Lutjanus jocu	3 (3)	dog	pargo colorao
Lutjanus apodus	3 (3)	schoolmaster	pargo amarillo
Lutjanus mahogani	3 (3)	mahogany	rayao de yerba
Ocyurus chrysurus	4 (4)	yellowtail	colirubia

The reef fish FMUs were originally established within the Caribbean Fishery Management Council's Reef Fish Fishery Management Plan (CFMC 1985; 50 FR 34850) implemented in September 1985, and were further modified by Amendment 1 in December 1990 (CFMC 1990; 55 FR 46214) and Amendment 2 in November 1993 (CFMC 1993; 58 FR 53415), by regulatory amendment in October 1991(CFMC 1991; 56 FR 48755) and in January 1997 (CFMC 1996; 61 FR 64485), by technical amendment (59 FR 11560) in April 1994, and by the Sustainable Fisheries Act (SFA) in May 2005.

Changes to the FMUs proposed herein are presented in response to input from fishermen at scoping, Council, and ACLG meetings, re-examination of the biological characteristics of species within each unit, exploitation levels, and omissions from the SFA. These changes are designed to more effectively link functionally related species of reef fish with management regulations specific to those functional groups (SEDAR 2009).

Uncertainty is inherent in the fisheries management process and stems from a variety of sources including but not necessarily limited to estimates of abundance, developing descriptive population models and parameterizing those models, predicting future environmental conditions that affect fish populations, predicting the response of the fishing sector to changes in harvest regulations and to changes in relative abundance of targeted populations, and anticipating future economic, political, and social conditions (Hilborn and Peterman 1996). The National Standards guidelines emphasize the need to incorporate both management and scientific uncertainty. Management uncertainty occurs because of the lack of sufficient information about catch (e.g., late reporting, underreporting, and misreporting of landings or bycatch). Management uncertainty also exists because of the lack of management precision in many fisheries due to lack of in-season fisheries landings data, lack of in-season closure authority, or lack of sufficient in-season management in some fishery management plans (FMPs) when in-season fisheries data are available. Scientific uncertainty includes uncertainty around the estimate of a stock's biomass and its maximum fishing mortality threshold (MFMT); therefore, any estimate of the overfishing limit (OFL) has uncertainty (74 FR 3181). Uncertainty by definition is difficult to quantify, but estimating and accounting for uncertainty with respect to the scientific and management components of the regulatory process is essential to sustainability.

Scientific uncertainty can be mitigated to some degree by increasing knowledge of the fishery. A permit system that identifies the universe of harvesters and allows tracking of the disposition of harvested resources will substantially enhance knowledge of the fishery. Data derived from a comprehensive permit system also will contribute to reducing management uncertainty by providing better estimates of harvesting effort and thereby improving model design and outputs. Spatial information ostensibly available from the permit process will further reduce scientific and management uncertainty by identifying the spatial patterns of effort, capture, and harvest. The Caribbean Fishery Management Council has established an Ad Hoc Advisory Panel (to consist of fishermen, local and federal managers, and scientists) to develop a permitting system, and their recommendations will be incorporated into Action 8 of this options paper. A federal permit system, compatible with commonwealth and territorial permit systems, is needed

to: 1) maintain island level control of fishing and landings activity to better understand exploitation patterns; 2) enhance our ability to obtain landings data from individual fishermen; 3) assist with distinguishing recreational from commercial sales; 4) target active fishermen for educational and/or research activities; 5) enable the application of in-season accountability measures, and 6) other issues that may be discovered during the Ad Hoc group's deliberation process.

The MSA further requires that, if established ACL limits are exceeded, accountability measures are in place *a priori* that allow timely redress of overages. Accountability measures (AMs) are management measures established within ACLs to end and prevent overfishing. There are two types of AMs, those that incorporate preventive in-season management actions (e.g., in-season fishery closure if the target catch limit has been reached) and corrective management actions (e.g., overage payback in a following fishing year). Accountability measures must be established for each fishery/stock and can be established for each sector of the fishery/stock. Both in-season and post-season AM options are available for application in the U.S. Caribbean, the former being more suitable for data-rich stocks with relatively rapid tracking of landings. As noted above, in-season AMs will be facilitated by an effective permit system.

Define allowable gear for each species or species group within each island group (St. Croix, St. Thomas/St. John, and Puerto Rico) including a tag program for certain gears such as pots and traps. The options paper includes an alternative to include the use of spear by commercial fishers as an allowable gear in the reef fish fishery.

To respond more quickly to changes in the fisheries considered in this options paper, it is advisable to establish framework measures for modifying ACLs, AMs, and other management measures in response to future changes in each fishery. Framework actions can be implemented in a shorter period of time than plan amendments because the level of review and public participation is not as extensive. Council and public involvement will remain, but the framework procedure will facilitate rapid response to changes in resource abundance, new scientific information, and changes in fishing patterns among user groups.

There is a **need** to modify rules and regulations regarding the conch and reef fish fisheries of the U.S. Caribbean in response to the Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA) as amended through January 12, 2007. That act provides ten national standards as guidance for the effective conservation and management of fishery resources. Primary among those standards is the requirement to prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry (MSFCMA 301(a)(1). To meet the obligations of these ten national standards requires establishment of stock abundance estimates that can be used to determine whether each stock or stock complex is overfished, as well as, harvest estimates suitable for the determination of rates of harvest relative to sustainable yield. The harvest activities of all fishing sectors that comprise the commercial and recreational fisheries must be documented to the greatest degree possible to assure that the goals of the MSFCMA are met. Thus, the need for timely, effective,

and efficient means to monitor harvest from all sectors is fundamental and is most comprehensively addressed through a permitting system that allows for direct communication with and tracking of all fishing entities. Permitting must be linked to a reporting system that facilitates frequent submission of catch records without unduly burdening the fisherman. To protect co-occurring resources not targeted for harvest while maximizing harvest efficiency, suitable fishing gear also must be considered. Finally, it is necessary to define actions that will be implemented if harvest levels are exceeded, including a framework for responsive modification of harvest regulations in response to changing conditions. To achieve these goals, it would be beneficial for regulations governing fisheries harvest in federal waters to be compatible with regulations governing fisheries harvest in territorial and commonwealth waters.

2.2 Data Overview

The commercial and recreational fishery data available for the US Caribbean is limited and these limitations have been thoroughly documented in various documents among these: SFA (2005 available at http://www.caribbeanfmc.com; SEDAR (2009); SEDAR 04 (2003-2004) (http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=04); SEDAR 08A (2005; http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=08%20A) and SEDAR 14 (2007; http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=14); and numerous other reports by Fisheries Research Laboratory, Department of Natural and Environmental Resources (PR-DNER) (http://www.drna.gobierno.pr/oficinas/arn/recursosvivientes/negociado-de-pesca-y-vida-silvestre/laboratorio-de-investigaciones-pesqueras-1/publicaciones). Among the primary concerns regarding the data are the scarce information on fishing effort, the lack of spatial/geographic information, the missing information on life history parameters, and the spatially and temporally limited fishery independent data (SEDAR 2009).

Fisheries landings data have been collected since 1974 from St. Thomas/St. John, since 1975 from St. Croix, and since 1983 from Puerto Rico. The USVI landings data were not recorded to species with adequate reliability until 1998 (St. Croix) and 2000 (St. Thomas/St. John). At the time of preparation of this document, complete and verified landings data were available through 2007 for both the USVI and Puerto Rico. Thus, year sequences used to calculate average landings estimates, for the purpose of setting ACLs, include 1998-2007 for St. Croix and 2000-2007 for St. Thomas/St. John. Year sequences used to calculate average landings estimates for Puerto Rico generally exclude any years prior to 1999 because the CFMC requested compatibility between USVI and Puerto Rico analyses, and because they desired that ACL estimates be based upon recent landings.

During the years of record for both St. Croix and St. Thomas/St. John, landings were reported at the level of species group or family. For the purposes of the analyses

presented herein, those species groups include conch, parrotfish, grouper, and snapper. As a result, although various FMUs are extant or are being proposed for management, analyses of USVI landings data cannot be resolved to the level of individual FMU except in the case of conch and in the case of the current parrotfish FMU (which includes all species of parrotfish). Although it is proposed in this document to split parrotfish into two FMUs, evaluation of the relative level of landings for each of those two FMUs cannot be accomplished for USVI data. Similarly, both grouper and snapper are presently divided into several FMUs and modifications to those FMUs are proposed in this document. It is not possible to resolve the landings data from the USVI to a level that allows consideration of those individual FMUs.

Even in Puerto Rico, with its much longer history of landings being reported to individual species, there are complications with those assignments that compromise some analyses and prevent the conduct of others. The vast majority of parrotfish landed in Puerto Rico are assigned to the generic 'parrotfishes' category rather than to individual species. These generic landings can be redistributed among the individual species based upon proportional representation in the catch, but such redistribution is not straightforward particularly within individual years. Alternatives are therefore included that estimate a suitable ACL based upon the directly reported data (no redistribution of the generic parrotfish class) and upon data that follows redistribution. Also, due to non-reporting, under-reporting, and mis-reporting of catch, the reported landings from Puerto Rico reflect actual fishing activity to a variable degree. Puerto Rico DNER staff, working with NOAA/SEFSC staff, has developed adjustment factors to account for these reporting discrepancies. Alternatives are included that estimate a suitable ACL based upon reported data (no adjustment) and adjusted data.

Additionally, fish that are caught but subsequently released rather than harvested (i.e., bycatch) are not accounted for in the landings data. Reasons for discarding catch include risk of Ciguatera, catch too small for the market, catch unmarketable, market saturation with a specific species, catch used as bait, catch dead, or (for lobster) the catch is berried (Trumble et al., 2006). Discards may represent a substantial proportion of the total catch. For example, based upon the results of a directed study, St. Croix fishermen discarded 14% by weight of the total catch.

The recreational fishery data available from Puerto Rico has been collected since 2000 under the Marine Recreational Fisheries Statistic Survey, but not for the USVI. These data have been reviewed in the documents cited above and also have been discussed at meetings of working groups designated by the CFMC such as the Technical and Monitoring Compliance Team (TMCT), the Annual Catch Limit Working Group (ACLG 2007, 2008, 2009), the Scientific and Statistical Committee (SSC 2007, 2008, 2009) and the Council meetings (including but not limited to meetings number 127 through 132).

Recent developments in the efforts to improve both data collection and assessment include the Puerto Rico Department of Natural and Environmental Resources Data Form Workshops (2009) and the Southeast Fisheries Science Center (SEFSC) efforts in St. Croix (Gedamke and Schull 2009).

The Trip Interview Program (TIP) implemented in Puerto Rico and the USVI since 1985, was thought to provide enough information to obtain species specific data from the commercial landings. A complete assessment of the data collected (SEDAR 2009) proved the impossibility of such an approach. It was determined that the samples represented less than 5% (in the best of cases) of the total landings thus making it impossible to assess the contribution of the species of interest to the total catches. Additionally, only in limited cases (e.g. silk snapper) of the species being considered herein were there enough sample sizes (e.g., by Island, gear) to be usable in an assessment of the fishery and the impact of regulations on the fishery (SEDAR 2009).

3.0 HISTORY OF MANAGEMENT [RESERVED]

4.0 MANAGEMENT ALTERNATIVES

4.1 Action 1: Amending the Stock Complexes in the Reef Fish Fishery Management Unit

Action 1a. Amend the stocks that comprise the parrotfish FMU.
Alternative 1. No action. Do not change the stocks that comprise the parrotfish FMU.
Alternative 2. Separate the parrotfish FMU into 2 complexes. Parrotfish Unit 1 would include princess, queen, redfin, redtail, stoplight, redband, and striped parrotfish and Parrotfish Unit 2 would include blue, midnight, and rainbow parrotfish.

Action 1b. Amend the stocks that comprise the grouper FMU.
Alternative 1. No action. Do not change the stocks that comprise the grouper FMU.
Alternative 2. Separate Grouper Unit 4 into Grouper Unit 4 (yellowfin, red, tiger, and black grouper) and Grouper Unit 5 (yellowedge and misty grouper). Remove creole fish from Grouper Unit 3.

Action 1c. Amend the stocks that comprise the snapper FMU.
Alternative 1. No action. Do not change the stocks that comprise the snapper FMU.
Alternative 2. Modify the snapper FMU by adding cardinal snapper (*Pristipomoides macrophthalmus*) to Snapper Unit 2 and moving wenchman (*Pristopomoides aquilonaris*) into Snapper Unit 1.

Action 1d. Create a 'data collection only' category for various species of Caribbean reef fish.
Alternative 1. No action. Do not create a 'data collection only' category for various species of Caribbean reef fish.
Alternative 2. Create a 'data collection only' category for various species of Caribbean reef fish and move creole fish from the grouper FMU into the 'data collection only' category.

Discussion

The original stock complexes were developed in the SFA and need to be adjusted as described in Table 2 due to a reexamination of the biological characteristics of the species

Table 2. Present and proposed Fishery Management Units (FMUs) for various species of Caribbean reef fish.

Complex	Current	Proposed
Parrotfish Unit 1	Blue Midnight Princess Queen Rainbow Redfin Redtail Stoplight Redband Striped	Princess Queen Redfin Redtail Stoplight Redband Striped
Parrotfish Unit 2		Blue Midnight Rainbow
Grouper Unit 3	Red hind Coney Rock hind Graysby Creole-fish	Red hind Coney Rock hind Graysby
Grouper Unit 4	Yellowfin Red Tiger Yellowedge Misty	Yellowfin Red Tiger Black
Grouper Unit 5		Yellowedge Misty
Snapper Unit 1	Silk Black Blackfin Vermilion	Silk Black Blackfin Vermilion Wenchman (*Pristopomoides aquilonaris*)
Snapper Unit 2	Queen Wenchman (*Pristopomoides aquilonaris*)	Queen Cardinal (*Pristopomoides macrophthalmus*)

within the complexes, exploitation levels, and omissions from the SFA. Fishers generally agree to the changes proposed in this Action (see Appendix 3 for the Reef Fish FMU).

The parrotfish include 10 species of parrotfish, among which are the blue, midnight and rainbow parrotfish. These three species are the largest of the parrotfish and are considered by the SSC to be in need of additional management. These are ecologically significant species due to the role they play in the well being of the coral reefs. Comments received at the scoping meetings indicate that there is consensus in the creation of a separate unit for these three species. Furthermore, although very limited species specific landings are reported for the parrotfish, the SSC recommended that there be a prohibition on the harvest of parrotfish unit 5 (blue, rainbow and midnight).

The CFMC approved the following **Motion**: create a working group to review the status of all the management units declared overfished. The discussion centered on the change in status of the tiger grouper from overfished and undergoing overfishing to 'unknown', based on the spatially restricted fishery for tiger grouper (only in Vieques), the seasonal occurrence of the fishery, the safety concerns in harvesting tiger grouper because of its distance from shore and occurrence in open un-protected areas, and the relative infrequency of its presence in the Puerto Rican catch. Additionally, the PR-DNER reported that the fishers of Vieques are targeting red hind since the fishery occurs much closer to shore thus being a less risky fishery (safety concerns). The USVI argue that the seasonal closure established in 2005 protects the species in Grouper Unit 4 and that the harvest of yellowfin grouper decreased sharply after the spawning aggregation off St. Thomas was closed to fishing in 2004.

If the Council chooses to separate Grouper Unit 4 into two groups (e.g., to include new Grouper Unit 5), a memo from the CFMC to NMFS describing the rationale for establishing an 'unknown' status for Grouper Unit 5 will be required so an ACL for that group would not be required until 2011.

Snapper units 1 and 2 need to be corrected since the species known as wenchman (*P. aquilonaris*) occurs in shallower water with the species in Snapper Unit 1. The cardinal snapper (*P. macrophthalmus*) is the species that co-occurs with the queen snapper and thus needs to be added to Snapper Unit 2.

4.2 Action 2: Annual Catch Limits for commercial harvest of queen conch (*Strombus gigas*)

When an ACL is set for any species/species group/fishery, it will apply to the entire fishery in that it will be determined to have been met when combined landings from the EEZ and local government waters equal the ACL. The landings data available from the US Caribbean needs to be improved to determine the area from which the fish are harvested. The spatial distribution of the fisheries has been assessed (SEDAR 2009) and the data do not supply information on the distribution of fisheries from the EEZ versus the state waters. This limitation of the data necessitates the determination of ACLs for the combined areas.

Action 2a: Annual Catch Limits for commercial harvest of queen conch off St. Croix

Alternative 1. No action. Do not set an ACL for queen conch in the EEZ off St. Croix.

Alternative 2. Set the ACL for queen conch off St. Croix equal to:

Sub alternative A. Zero for the EEZ.

Sub alternative B. 116,900 pounds of meats from combined territorial and St. Croix EEZ landings, based on the average territorial and EEZ landings from 1999-2007.

Sub alternative C. 138,587 pounds of meats from combined territorial and St. Croix EEZ landings, based on the average territorial and EEZ landings reported for the most recent five years (2003-2007).

Sub alternative D. 50,000 pounds of meats from combined territorial and St. Croix EEZ landings, based on the current USVI quota for St. Croix.

Action 2b: Annual Catch Limits for commercial harvest of queen conch off St. Thomas/St. John

Alternative 1. No action. Do not set an ACL for queen conch in the EEZ off St. Thomas/St. John.

Alternative 2. Set an ACL for queen conch off St. Thomas/St. John equal to:

Sub alternative A. Zero in the EEZ.

Sub alternative B. 1,876 pounds of meats from combined territorial and St. Thomas/St. John EEZ landings, based on the average territorial and federal landings from 2000-2007.

Sub alternative C. 1,981 pounds of meats from combined territorial and St. Thomas/St. John EEZ landings, based on the average territorial and federal landings reported for the most recent five years (2003-2007).

Sub alternative D. 50,000 pounds of meats from combined territorial and St. Thomas/St. John EEZ landings, based on the current USVI quota for St. Thomas/St. John.

Action 2c: Annual Catch Limits for commercial harvest of queen conch off Puerto Rico

Alternative 1. No action. Do not set an ACL for queen conch in the EEZ off Puerto Rico.

Alternative 2. Set an ACL for queen conch off Puerto Rico equal to:

Sub alternative A. Zero in the EEZ.

Sub alternative B. The pounds of meats from combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and federal landings from 1999-2007.

Sub sub alternative i. 205,812 pounds of meats, the average reported commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative ii. 369,299 pounds of meats, the average adjusted commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub alternative C. The pounds of meats from combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and federal landings reported for the most recent five years (2003-2007).

Sub sub alternative i. 175,438 pounds of meats, the average reported commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative ii. 384,584 pounds of meats, the average adjusted commonwealth and Puerto Rico EEZ landings during 2003-2007.

Discussion

Year sequences from which average annual landings were calculated were chosen to respond to various motions or guidance provided by the Council or its subcommittees. These include the period recommended by the ACLG (1999-2006) but with the most recent year of available landings data (2007) added, and the most recent five years of landings (2003-2007) as requested by the CFMC at its 132nd annual meeting. Note that landings data from St. Thomas/St. John territorial waters are only available since 2000, so the ACLG year-sequence recommendation was adjusted accordingly (2000-2007).

An annual quota of 50,000 pounds of queen conch meats has been established for territorial waters surrounding St. Croix and an additional 50,000 pound quota has been established for territorial waters surrounding St. Thomas/St. John. The St. Croix quota will result in a substantial decrease in landings relative to historic levels (Figure 2). Historic queen conch landings from St. Thomas/St. John waters are generally below the 50,000 pounds of meats level (Figure 2). Currently, the harvest of queen conch is prohibited in EEZ waters except off the east coast of St. Croix in the area known as Lang Bank, defined as the area east of 64°34' W. For that reason, any ACL set for queen conch in the EEZ applies only to the Lang Bank area. As a result, although substantial landings of queen conch have been reported from Puerto Rico waters since 1983 (Figure 1), the allowable catch in the EEZ presently is zero.

SEDAR 14 and most recently SEDAR 2009, included a complete review of the data and information on queen conch. This was carried out in 2007 and the reports can be found at: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=14. These SEDARs included discussion on the management regime regulating queen conch harvest. The Queen Conch FMP was implemented in the EEZ in 1997 with regulations compatible with those established in the USVI for minimum size; bag limits (150 conch per licensed commercial fisher per day; seasonal closure (July, August and September); prohibition on the use of HOOKAH for harvesting conch; and the landing of the conch intact. The seasonal closure and the bag limit of 150 conch per fisher were implemented in Puerto Rico in 1997 by an Administrative Order of the PR-DNER. The minimum size for conch was implemented in Puerto Rico in 2004, along with the requirement for a permit to harvest conch. In 2005, the fishery for queen conch was closed in the EEZ, except Lang Bank in St. Croix. The regulations for conch changed in the USVI in 2008 and include a quota of 50,000 lbs per year and extended seasonal closure once the quota is met as well as more restrictive bag limit of 200 conch per boat per day. Seasonally closed areas (Bajo de Sico, Tourmaline, Abrir La Sierra (off the west coast of Puerto Rico), Lang Bank and the mutton snapper area (off St. Croix) and Grammanik Bank (off St. Thomas) have not been evaluated or monitored for conch. Additionally, there is one no-take area of St. Thomas that has not been evaluated for conch but that has the potential to be reservoirs or sources of conch Armstrong et al. 2006; Garcia-Sais et al. in prep.).

These and other regulations need to be evaluated for compliance and impacts on the queen conch fishery.

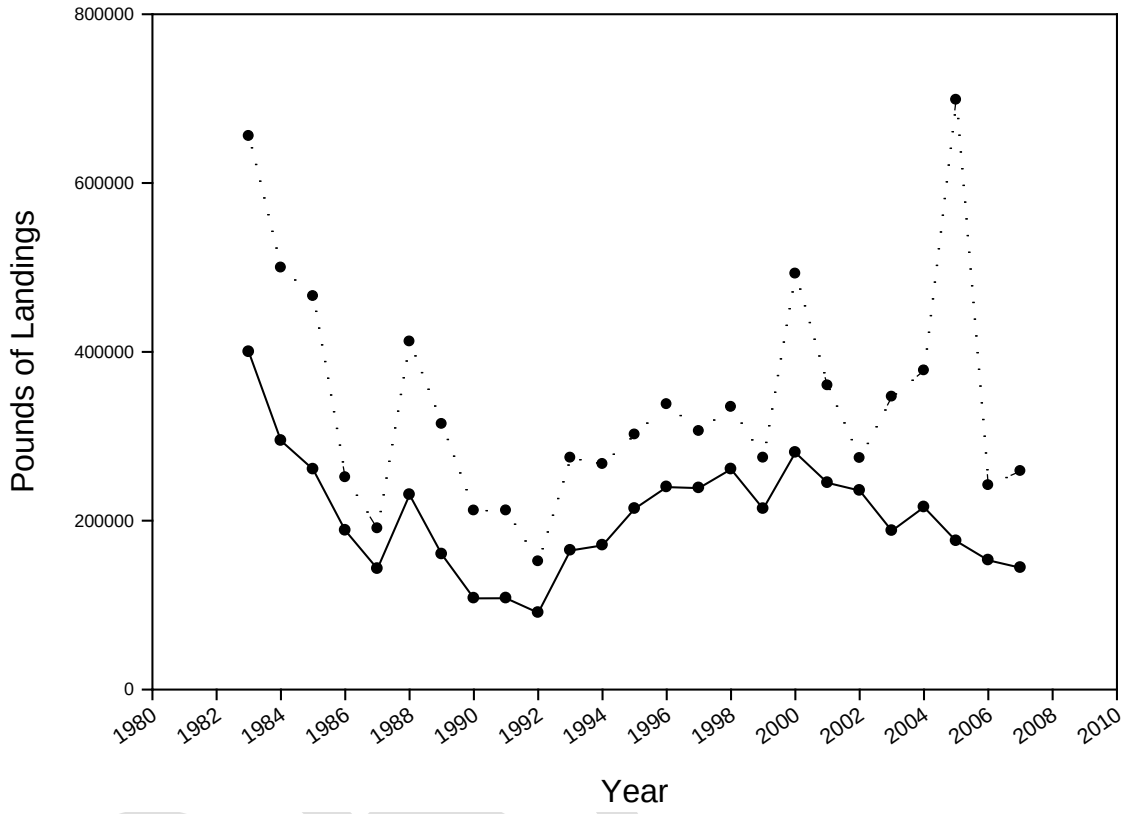

Figure 1. Reported (solid line) and adjusted (dashed line) landings (pounds of meats) of queen conch (*Strombus gigas*) from Puerto Rico commonwealth and associated EEZ waters during 1983-2007.

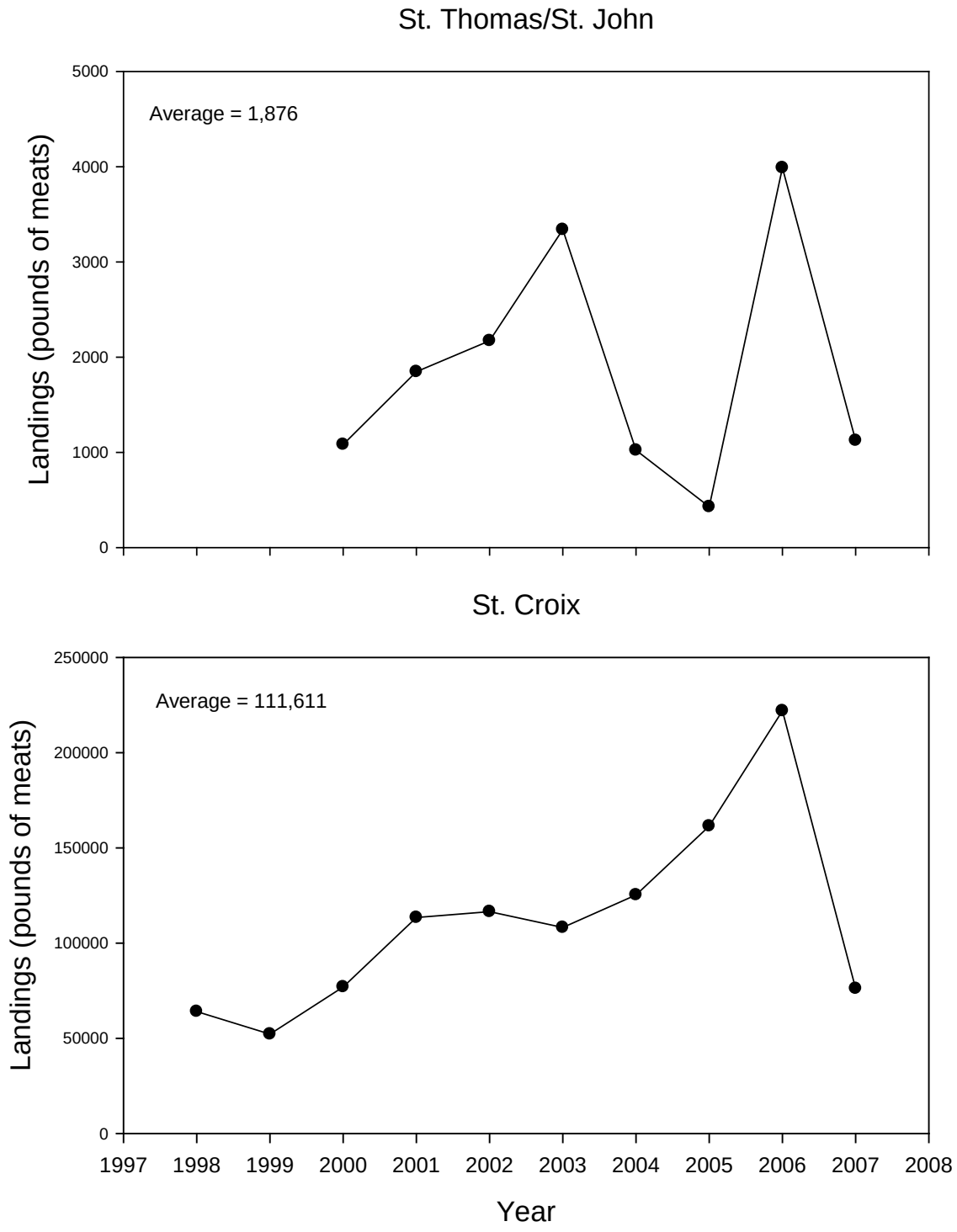

Figure 2. Landings of queen conch (*Strombus gigas*) for St. Thomas/St. John during 2000-2007 (top) and for St. Croix during 1998-2007 (bottom). Note difference in y-axis scale between plots. Landings are in pounds of meats and include all reported landings for territorial and contiguous EEZ waters.

4.3 **Action 3: Annual Catch Limits for commercial harvest of parrotfish**

When an ACL is set for any species/species group/fishery, it will apply to the entire fishery in that it will be determined to have been met when combined landings from the EEZ and local government waters equal the ACL. The landings data available from the US Caribbean needs to be improved to determine the area from which the fish are harvested. The spatial distribution of the fisheries has been assessed (SEDAR 2009) and the data does not supply information on the distribution of fisheries from the EEZ versus the state waters. This limitation of the data necessitates the determination of ACLs for the combined areas.

Action 3a: Annual Catch Limits for commercial harvest of parrotfish off St. Croix

Alternative 1. No action. Do not set an ACL for parrotfish in the EEZ off St. Croix.

Alternative 2. Set the ACL for parrotfish off St. Croix equal to:

Sub alternative A. Zero in the EEZ.

Sub alternative B. 308,333 pounds of combined territorial and St. Croix EEZ landings, based on the average territorial and EEZ landings from 1999-2007.

Sub alternative C. 336,114 pounds of combined territorial and St. Croix EEZ landings, based on the average territorial and EEZ landings reported for the most recent five years (2003-2007).

Sub alternative D. 300,000 pounds of combined territorial and St. Croix EEZ landings, based upon a recommendation from the CFMC Scientific and Statistical Committee (SSC) at their August 31, 2009 meeting.

Action 3b: Annual Catch Limits for commercial harvest of parrotfish off St. Thomas/St. John

Alternative 1. No action. Do not set an ACL for parrotfish in the EEZ off St. Thomas/St. John.

Alternative 2. Set the ACL for parrotfish off St. Thomas/St. John equal to:

Sub alternative A. Zero in the EEZ.

Sub alternative B. 47,245 pounds of combined territorial and St. Thomas/St. John EEZ landings, based on the average territorial and EEZ landings from 2000-2007.

Sub alternative C. 49,353 pounds of combined territorial and St. Thomas/St. John EEZ landings, based on the average territorial and EEZ landings reported for the most recent five years (2003-2007).

Sub alternative D. 50,000 pounds of combined territorial and St. Thomas/St. John EEZ landings, based upon a recommendation from the CFMC Scientific and Statistical Committee (SSC) at their August 31, 2009 meeting.

Action 3c: Annual Catch Limits for commercial harvest of parrotfish off Puerto Rico

Alternative 1. No action. Do not set an ACL for parrotfish in the EEZ off Puerto Rico.

Alternative 2. Set the ACL for parrotfish off Puerto Rico equal to**:**

Sub alternative A. Zero in the EEZ.

Sub alternative B. The pounds of combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and EEZ landings during 1999-2007.

Sub sub alternative i. 213 pounds, the average reported commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative ii. 597 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative iii. 63,780 pounds, the average reported (with redistribution) commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative iv. 111,614 pounds, the average adjusted (with redistribution) commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub alternative C. The pounds of combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and EEZ landings reported for the most recent five years (2003-2007).

Sub sub alternative i. 303 pounds, the average reported commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative ii. 969 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative iii. 43,176 pounds, the average reported (with redistribution) commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative iv. 101,084 pounds, the average adjusted (with redistribution) commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub alternative D. 80,000 pounds of combined commonwealth and Puerto Rico EEZ landings, based upon a recommendation from the CFMC Scientific and Statistical Committee (SSC) at their August 31, 2009 meeting.

Action 3d: Annual Catch Limits for commercial harvest of parrotfish unit 1 off Puerto Rico

Alternative 1. No action. Do not set an ACL for parrotfish unit 1 in the EEZ off Puerto Rico.

Alternative 2. Set the ACL for parrotfish unit 1 off Puerto Rico equal to**:**

Sub alternative A. Zero in the EEZ.

Sub alternative B. The pounds of combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and EEZ landings during 1999-2007.

Sub sub alternative i. 19 pounds, the average reported commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative ii. 25 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative iii. 5,783 pounds, the average reported (with redistribution) commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative iv. 4,760 pounds, the average adjusted (with redistribution) commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub alternative C. The pounds of combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and EEZ landings reported for the most recent five years (2003-2007).

Sub sub alternative i. 0 pounds, the average reported commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative ii. 0 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative iii. 0 pounds, the average reported (with redistribution) commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative iv. 0 pounds, the average adjusted (with redistribution) commonwealth and Puerto Rico EEZ landings during 2003-2007.

Action 3e: Annual Catch Limits for commercial harvest of parrotfish unit 2 in the U.S. Caribbean EEZ

Alternative 1. No action. Do not set an ACL for parrotfish unit 2 in the U.S. Caribbean EEZ.

Alternative 2. Set the ACL for parrotfish unit 2 in the U.S. Caribbean EEZ equal to**:**

Sub alternative A. Zero.

Sub alternative B. The pounds of combined state and U.S. Caribbean EEZ landings, based on the average state and EEZ landings reported during 2000-2007.

Sub sub alternative i. 365,030 pounds, the average reported state and U.S. Caribbean EEZ landings during 2000-2007.

Sub sub alternative ii. 365,453 pounds, the average adjusted state and U.S. Caribbean EEZ landings during 2000-2007.

Sub sub alternative iii. 425,483 pounds, the average reported (with redistribution) state and U.S. Caribbean EEZ landings during 2000-2007.

Sub sub alternative iv. 476,525 pounds, the average adjusted (with redistribution) state and U.S. Caribbean EEZ landings during 2000-2007.

Sub alternative C. The pounds of combined state and U.S. Caribbean EEZ landings, based on the average state and EEZ landings reported for the most recent five years (2003-2007).

Sub sub alternative i. 385,770 pounds, the average reported state and U.S. Caribbean EEZ landings during 2003-2007.

Sub sub alternative ii. 386,436 pounds, the average adjusted state and U.S. Caribbean EEZ landings during 2003-2007.

Sub sub alternative iii. 428,643 pounds, the average reported (with redistribution) state and U.S. Caribbean EEZ landings during 2003-2007.

Sub sub alternative iv. 486,551 pounds, the average adjusted (with redistribution) state and U.S. Caribbean EEZ landings during 2003-2007.

Discussion

At its 132nd meeting, the CFMC approved the following **motion**: all species groups should be consistent with how the data is reported for the USVI. For Puerto Rico, alternatives should reflect species groupings in the Status of Stocks Report as modified by the ACL amendment but also include additional alternatives consistent with groups used in the USVI. Species-specific information for parrotfish is only available for Puerto Rico. Because of this, the ACL alternatives listed above utilize only the total parrotfish landings for the USVI. For Puerto Rico, where species-specific information is available, alternatives consider total parrotfish landings but also separately consider alternatives for Parrotfish Unit 1. Parrotfish Unit 2 is considered on a pan-U.S. Caribbean basis, so the proposed alternatives are based upon combined state and U.S. Caribbean EEZ landings. These alternatives should be evaluated with caution. This caution is advised because species-specific reported Puerto Rico parrotfish landings, particularly during the 2003-2007 time sequence, are heavily weighted towards just a few species. If the landings from the general 'parrotfish' category (> 99% of total) are redistributed based upon proportional species-specific landings, then most or all of those landings fall into just a few of the available parrotfish species categories. There is no basis for evaluating the validity of this redistribution. Moreover, as discussed above, no species-specific landings information is available from the USVI so total parrotfish landings are used to estimate landings for Parrotfish Unit 2. This approach is of doubtful validity but is the only option available for setting a U.S. Caribbean EEZ ACL for the species of parrotfish that populate Unit 2. In support of the argument against separate ACLs for parrotfish units 1 and 2, the trip intercept program (TIP) and biostatistical data for parrotfish indicate that it is not possible to establish separate ACLs for Parrotfish Unit 1 distinct from Parrotfish Unit 2. The ACLG recommendation was to establish a single parrotfish ACL for each island group but to prohibit harvest of rainbow, blue, and midnight parrotfish that constitute Unit 2.

Additionally, the CFMC (132nd meeting) directed staff to develop alternatives for ACLs that rely on catch from the years 1999 to the most recent year available, but also include alternatives where either the ACLG or the SSC specifically recommend some other time frame. Year sequences therefore include the period recommended by the ACLG (1999-2006) but with the most recent year of available landings data (2007) added, and the most recent five years of landings (2003-2007) as requested by the CFMC at its 132nd annual meeting. Note that landings data from St. Thomas/St. John territorial waters are only available since 2000, so the ACLG year-sequence recommendation was adjusted accordingly (2000-2007). Puerto Rico parrotfish landings are available since 1983 (Figure 3), but earlier data were not used based upon the recommendation of the ACLG.

Although seasonal or areal closures specific to parrotfish have not been established in Puerto Rico, the USVI, or U.S. Caribbean EEZ waters, a number of regulations directly and indirectly impact the parrotfish fishery. In the USVI and the EEZ, the use of gill and trammel nets has been banned since 2008 and 2005, respectively. An estimate of the parrotfish harvest that would have occurred, had that ban previously been in effect, is presented in Figure 4 for both St. Croix and St. Thomas/St. John waters. Bottom tending

gears such as traps and pots have been banned year-round from the seasonally closed areas. A number of area closures with varying degrees of management have been established since 2005 in both federal and state waters. And, the mesh size for traps, now the primary gear for harvesting parrotfish, has reached the 2" rectangular (1.5" hexagonal) minimum in all jurisdictions. The use of SCUBA and spear has been regulated in the recreational sector in the state waters of Puerto Rico.

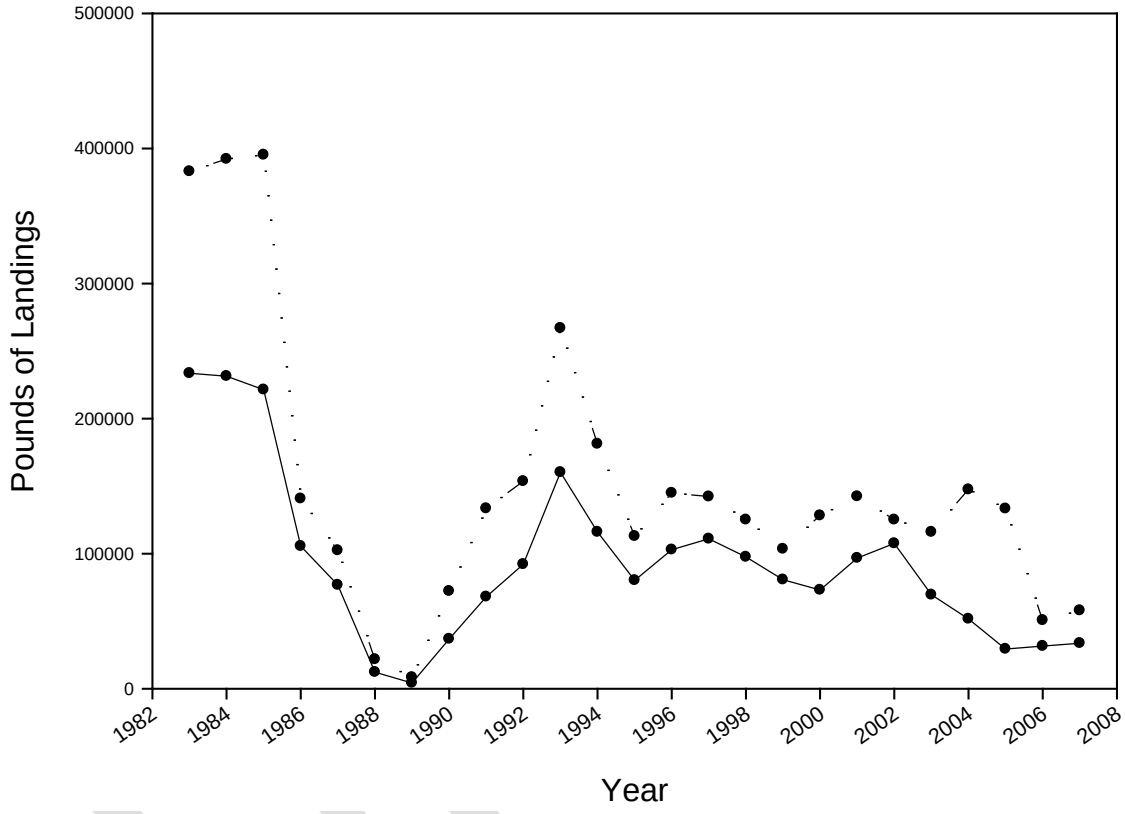

Figure 3. Reported (solid line) and adjusted (dashed line) parrotfish landings for Puerto Rico waters during 1983-2007.

At their August 31, 2009 meeting, the SSC provided, via **motion**, harvest level recommendations for parrotfish in each of the three island groups. For St. Croix, the recommended harvest level was 300,000 pounds specific to Parrotfish Unit 1. However, because parrotfish landings are not distinguished to species in the USVI, assigning that harvest exclusively to Parrotfish Unit 1 requires that harvest of blue, midnight, and rainbow parrotfish (the members of proposed Parrotfish Unit 2) be outlawed at least in St. Croix waters. For St. Thomas/St. John, the recommended harvest level was 50,000 pounds for all species of parrotfish, and similarly for Puerto Rico except that the recommended harvest level was 80,000 pounds. The SSC did not specify whether that ACL was based upon reported or adjusted landings.

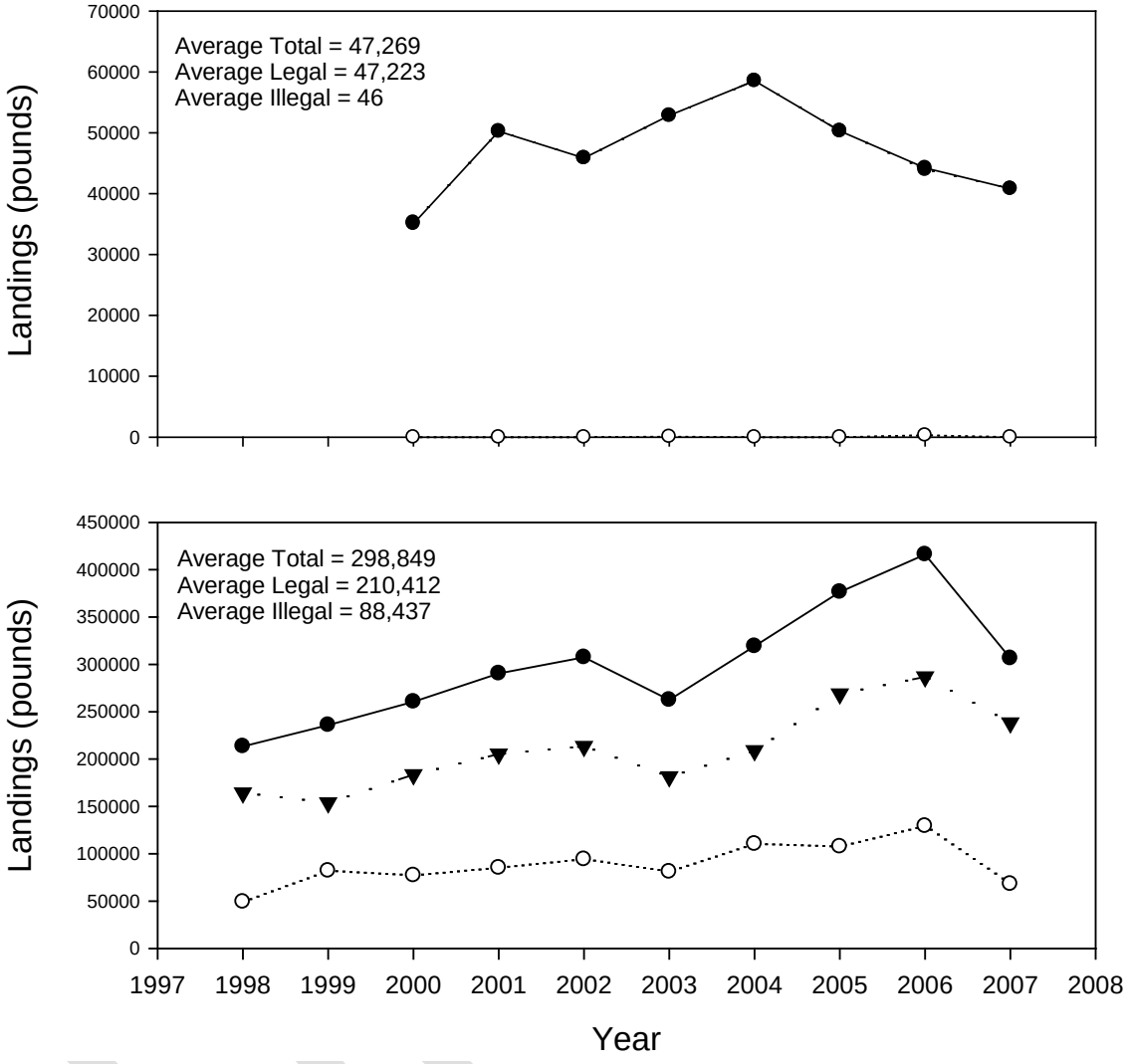

Figure 4. Parrotfish landings for St. Thomas/St. John during 2000-2007 (top) and for St. Croix during 1998-2007 (bottom) waters. Included are plots of total annual landings (filled circles) and annual pounds of landings attributable to harvest by gill or trammel net (open circles), gears that are presently illegal in USVI waters. Also included in the St. Croix plot are the annual landings due to gear other than gill and trammel (filled triangles).

4.4 **Action 4: Annual Catch Limits for commercial harvest of grouper**

When an ACL is set for any species/species group/fishery, it will apply to the entire fishery in that it will be determined to have been met when combined landings from the EEZ and local government waters equal the ACL. The landings data available from the US Caribbean needs to be improved to determine the area from which the fish are harvested. The spatial distribution of the fisheries has been assessed (SEDAR 2009) and the data does not supply information on the distribution of fisheries from the EEZ versus

the state waters. This limitation of the data necessitates the determination of ACLs for the combined areas.

Action 4a: Annual Catch Limits for commercial harvest of Nassau grouper

Alternative 1. No action. Do not set an ACL for Nassau grouper in the EEZ off St. Croix.

Alternative 2. Set the ACL for Nassau grouper in the EEZ off St. Croix equal to zero.

Alternative 3. No action. Do not set an ACL for Nassau grouper in the EEZ off St. Thomas/St. John.

Alternative 4. Set the ACL for Nassau grouper in the EEZ off St. Thomas/St. John equal to zero.

Alternative 5. No action. Do not set an ACL for grouper unit 1 (Nassau grouper) in the EEZ off Puerto Rico.

Alternative 6. Set the ACL for grouper unit 1 (Nassau grouper) in the EEZ off Puerto Rico equal to zero.

Action 4b: Annual Catch Limits for commercial harvest of goliath grouper

Alternative 1. No action. Do not set an ACL for goliath grouper in the EEZ off St. Croix.

Alternative 2. Set the ACL for goliath grouper in the EEZ off St. Croix equal to zero.

Alternative 3. No action. Do not set an ACL for goliath grouper in the EEZ off St. Thomas/St. John.

Alternative 4. Set the ACL for goliath grouper in the EEZ off St. Thomas/St. John equal to zero.

Alternative 5. No action. Do not set an ACL for grouper unit 2 (goliath grouper) in the EEZ off Puerto Rico.

Alternative 6. Set the ACL for grouper unit 2 (goliath grouper) in the EEZ off Puerto Rico equal to zero.

Action 4c: Annual Catch Limits for commercial harvest of grouper other than Nassau and goliath off St. Croix

Alternative 1. No action. Do not set an ACL for grouper other than Nassau and goliath in the EEZ off St. Croix.

Alternative 2. Set the ACL for grouper other than Nassau and goliath off St. Croix equal to:

> **Sub alternative A.** Zero in the EEZ.
>
> **Sub alternative B.** 34,177 pounds of combined territorial and St. Croix EEZ landings, based on the average territorial and EEZ landings from 1999-2007.
>
> **Sub alternative C.** 37,832 pounds of combined territorial and St. Croix EEZ landings, based on the average territorial and St. Croix EEZ landings reported for the most recent five years (2003-2007).

Action 4d: Annual Catch Limits for commercial harvest of grouper other than Nassau and goliath off St. Thomas/St. John

Alternative 1. No action. Do not set the ACL for grouper other than Nassau and goliath in the EEZ off St. Thomas/St. John.

Alternative 2. Set the ACL for grouper other than Nassau and goliath off St. Thomas/St. John equal to:

Sub alternative A. Zero in the EEZ.

Sub alternative B. 59,953 pounds of combined territorial and St. Thomas/St. John EEZ landings, based on the average territorial and St. Thomas/St. John landings from 2000-2007.

Sub alternative C. 64,202 pounds of combined territorial and St. Thomas/St. John EEZ landings, based on the average territorial and St. Thomas/St. John EEZ landings reported for the most recent five years (2003-2007).

Action 4e: Annual Catch Limits for commercial harvest of "current" grouper unit 4 off Puerto Rico

Alternative 1. No action. Do not set an ACL for "current" grouper unit 4 in the EEZ off Puerto Rico.

Alternative 2. Set the ACL for "current" grouper unit 4 off Puerto Rico equal to:

Sub alternative A. Zero in the EEZ.

Sub alternative B. The pounds of combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and Puerto Rico EEZ landings from 1999-2007.

Sub sub alternative i. 8,776 pounds, the average reported commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative ii. 14,389 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative iii. 12,438 pounds, the average reported (with redistribution) commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative iv. 20,625 pounds, the average adjusted (with redistribution) commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub alternative C. The pounds of combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and Puerto Rico EEZ landings reported for the most recent five years (2003-2007).

Sub sub alternative i. 7,785 pounds, the average reported commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative ii. 14,844 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative iii. 10,866 pounds, the average reported (with redistribution) commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative iv. 21,278 pounds, the average adjusted (with redistribution) commonwealth and Puerto Rico EEZ landings during 2003-2007.

Action 4f: Annual Catch Limits for commercial harvest of "proposed" grouper unit 4 off Puerto Rico

Alternative 1. No action. Do not set an ACL for "proposed" grouper unit 4 in the EEZ off Puerto Rico.

Alternative 2. Set the ACL for "proposed" grouper unit 4 off Puerto Rico equal to:

Sub alternative A. Zero in the EEZ.

Sub alternative B. The pounds of combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and Puerto Rico EEZ landings from 1999-2007.

Sub sub alternative i. 2,906 pounds, the average reported commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative ii. 5,035 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative iii. 4,118 pounds, the average reported (with redistribution) commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative iv. 7,218 pounds, the average adjusted (with redistribution) commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub alternative C. The pounds of combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and Puerto Rico EEZ landings reported for the most recent five years (2003-2007).

Sub sub alternative i. 1,983 pounds, the average reported commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative ii. 4,710 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative iii. 2,768 pounds, the average reported (with redistribution) commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative iv. 6,752 pounds, the average adjusted (with redistribution) commonwealth and Puerto Rico EEZ landings during 2003-2007.

Discussion

As with parrotfish, species-specific information for grouper is only available for Puerto Rico. Because of this, the ACL alternatives listed above utilize only the total grouper landings for the USVI (Figure 5). For Puerto Rico, where species-specific information is available, alternatives are included for both current and proposed unit 4. These alternatives should be evaluated with caution. Approximately 38% of the total reported grouper landings from Puerto Rico during 1983-2007 were assigned to the generic 'sea basses' class. Total 'sea bass' landings have been redistributed among the totals for the various individual grouper species, based upon proportional representation of each grouper species in the total (*sans* sea basses) reported catch. There is no basis for evaluating the validity of this redistribution. Moreover, as discussed above, no species-specific landings information is available from the USVI.

The CFMC (132nd meeting) directed staff to develop alternatives for ACLs that rely on catch from the years 1999 to the most recent year available, but also include alternatives where either the ACLG or the SSC specifically recommend some other time frame. Year

sequences therefore include the period recommended by the ACLG (1999-2006) but with the most recent year of available landings data (2007) added, and the most recent five years of landings (2003-2007) as requested by the CFMC at its 132nd annual meeting. Note that landings data from St. Thomas/St. John territorial waters are only available since 2000, so the ACLG year-sequence recommendation was adjusted accordingly (2000-2007).

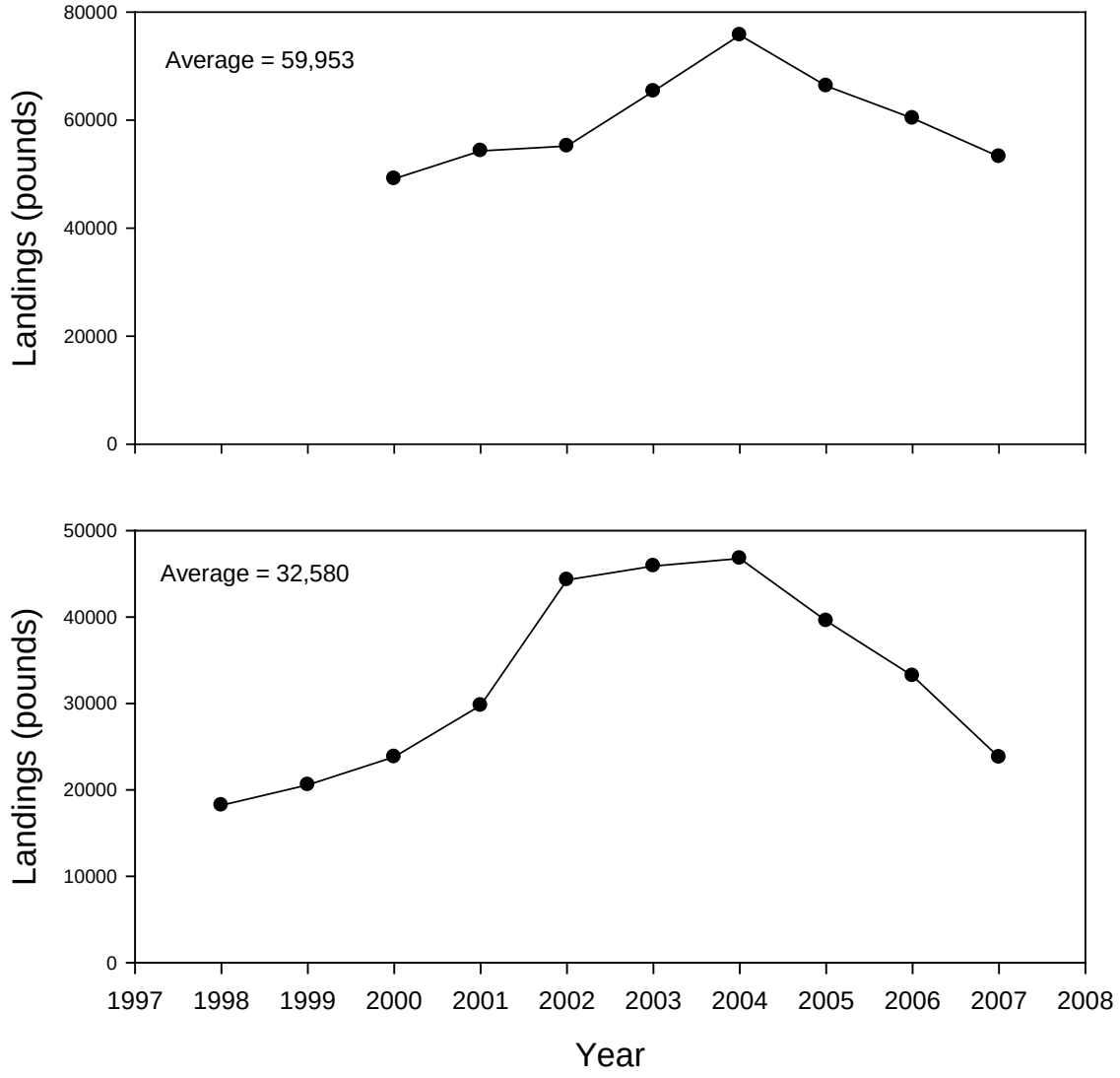

Figure 5. Landings of grouper for St. Thomas/St. John during 2000-2007 (top) and for St. Croix during 1998-2007 (bottom).

Puerto Rico grouper landings are available since 1983 (Figure 6), but earlier data were not used based upon the recommendation of the ACLG. Also note that grouper landings for Puerto Rico may be underestimated to the degree that they are reported in the first class, second class, or third class categories. Those reporting categories include an undefined but extensive list of species and ancillary data was not adequate to allow

separation of class-level data into specific species or species-groups. Thus, any grouper landings that were reported to class are lost for the purpose of setting ACLs.

Seasonal or areal closures potentially beneficial to grouper recently have been established in Puerto Rico and U.S. Caribbean EEZ waters, including the Bajo de Sico, Abrir la Sierra, and Tourmaline banks. Seasonal closures for yellowfin, red, tiger, and black groupers (among others) have been established. Bottom tending gears such as traps and pots have been banned year-round from the seasonally closed areas. And, the mesh size for traps has reached the 2" rectangular (1.5" hexagonal) minimum in all jurisdictions. The use of SCUBA and spear has been regulated in the recreational sector in the state waters of Puerto Rico.

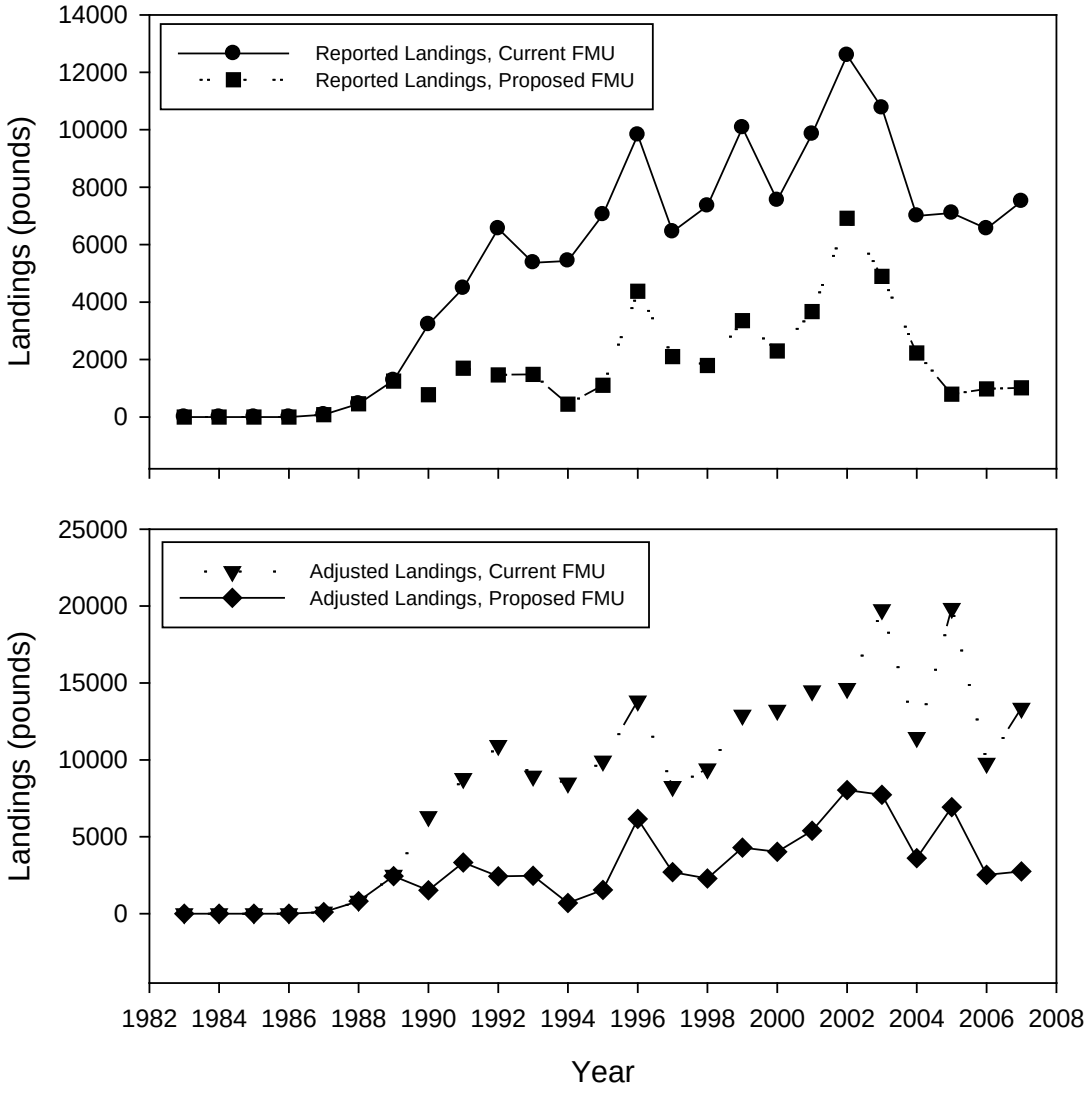

Figure 6. Reported (top) and adjusted (bottom) landings for current and proposed Grouper Unit 4 in Puerto Rico during 1983-2007.

4.5 Action 5: Annual Catch Limits for commercial harvest of snapper

When an ACL is set for any species/species group/fishery, it will apply to the entire fishery in that it will be determined to have been met when combined landings from the EEZ and local government waters equal the ACL. The landings data available from the US Caribbean needs to be improved to determine the area from which the fish are harvested. The spatial distribution of the fisheries has been assessed (SEDAR 2009) and the data does not supply information on the distribution of fisheries from the EEZ versus the state waters. This limitation of the data necessitates the determination of ACLs for the combined areas.

Action 5a: Annual Catch Limit for commercial harvest of snapper off St. Croix

Alternative 1. No action. Do not set an ACL for snapper in the EEZ off St. Croix.

Alternative 2. Set the ACL for snapper off St. Croix at:

Sub alternative A. Zero in the EEZ.

Sub alternative B. 123,217 pounds of combined territorial and St. Croix EEZ landings, based on the average territorial and EEZ landings from 1999-2007.

Sub alternative C. 134,046 pounds of combined territorial and St. Croix EEZ landings, based on the average territorial and St. Croix EEZ landings reported for the most recent five years (2003-2007).

Action 5b: Annual Catch Limit for commercial harvest of snapper off St. Thomas/St. John

Alternative 1. No action. Do not set an ACL for snapper in the EEZ of St. Thomas/St. John.

Alternative 2. Set the ACL for snapper off St. Thomas/St. John to**:**

Sub alternative A. Zero in the EEZ.

Sub alternative B. 159,594 pounds of combined territorial and St. Thomas/St. John EEZ landings, based on the average territorial and EEZ landings during 1999-2007.

Sub alternative C. 156,792 pounds of combined territorial and St. Thomas/St. John EEZ landings, based on the average territorial and EEZ landings reported for the most recent five years (2003-2007).

Action 5c: Annual Catch Limit for commercial harvest of snapper unit 1 off Puerto Rico

Alternative 1. No action. Do not set an ACL for snapper unit 1 in the EEZ off Puerto Rico.

Alternative 2. Set the ACL for snapper unit 1 off Puerto Rico equal to:

Sub alternative A. Zero in the EEZ.

Sub alternative B. The pounds of combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and EEZ landings during 1999-2007.

Sub sub alternative i. 179,492 pounds, the average reported commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative ii. 294,119 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative iii. 189,518 pounds, the average reported (with redistribution) commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub sub alternative iv. 311,329 pounds, the average adjusted (with redistribution) commonwealth and Puerto Rico EEZ landings during 1999-2007.

Sub alternative C. The pounds of combined commonwealth and Puerto Rico EEZ landings, based on the average commonwealth and EEZ landings reported for the most recent five years (2003-2007).

Sub sub alternative i. 119,124 pounds, the average reported commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative ii. 240,464 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative iii. 125,162 pounds, the average reported (with redistribution) commonwealth and Puerto Rico EEZ landings during 2003-2007.

Sub sub alternative iv. 254,570 pounds, the average adjusted commonwealth and Puerto Rico EEZ landings during 2003-2007.

Discussion

For grouper, both the current and proposed versions of unit 4 were considered in the alternatives. For Snapper Unit 1, there is no essential difference between the species included in the current versus the proposed unit, so separate alternatives are not included.

As with parrotfish and grouper, species-specific information for snapper is only available for Puerto Rico. Because of this, the ACL alternatives listed above utilize only the total snapper landings for the USVI (Figure 7). For Puerto Rico, only about 6% of the total reported grouper landings from Puerto Rico during 1983-2007 were assigned to the generic 'snappers' class. Total 'snappers' landings have been redistributed among the totals for the various individual snapper species, based upon proportional representation of each snapper species in the total reported catch. There is no basis for evaluating the validity of this redistribution, but the change to landings estimates is small.

The CFMC (132nd meeting) directed staff to develop alternatives for ACLs that rely on catch from the years 1999 to the most recent year available, but also include alternatives where either the ACLG or the SSC specifically recommend some other time frame. Year sequences therefore include the period recommended by the ACLG (1999-2006) but with the most recent year of available landings data (2007) added, and the most recent five years of landings (2003-2007) as requested by the CFMC at its 132nd annual meeting. Note that landings data from St. Thomas/St. John territorial waters are only available since 2000, so the ACLG year-sequence recommendation was adjusted accordingly (2000-2007). Puerto Rico snapper landings are available since 1983 (Figure 8), but earlier data were not used based upon the recommendation of the ACLG.

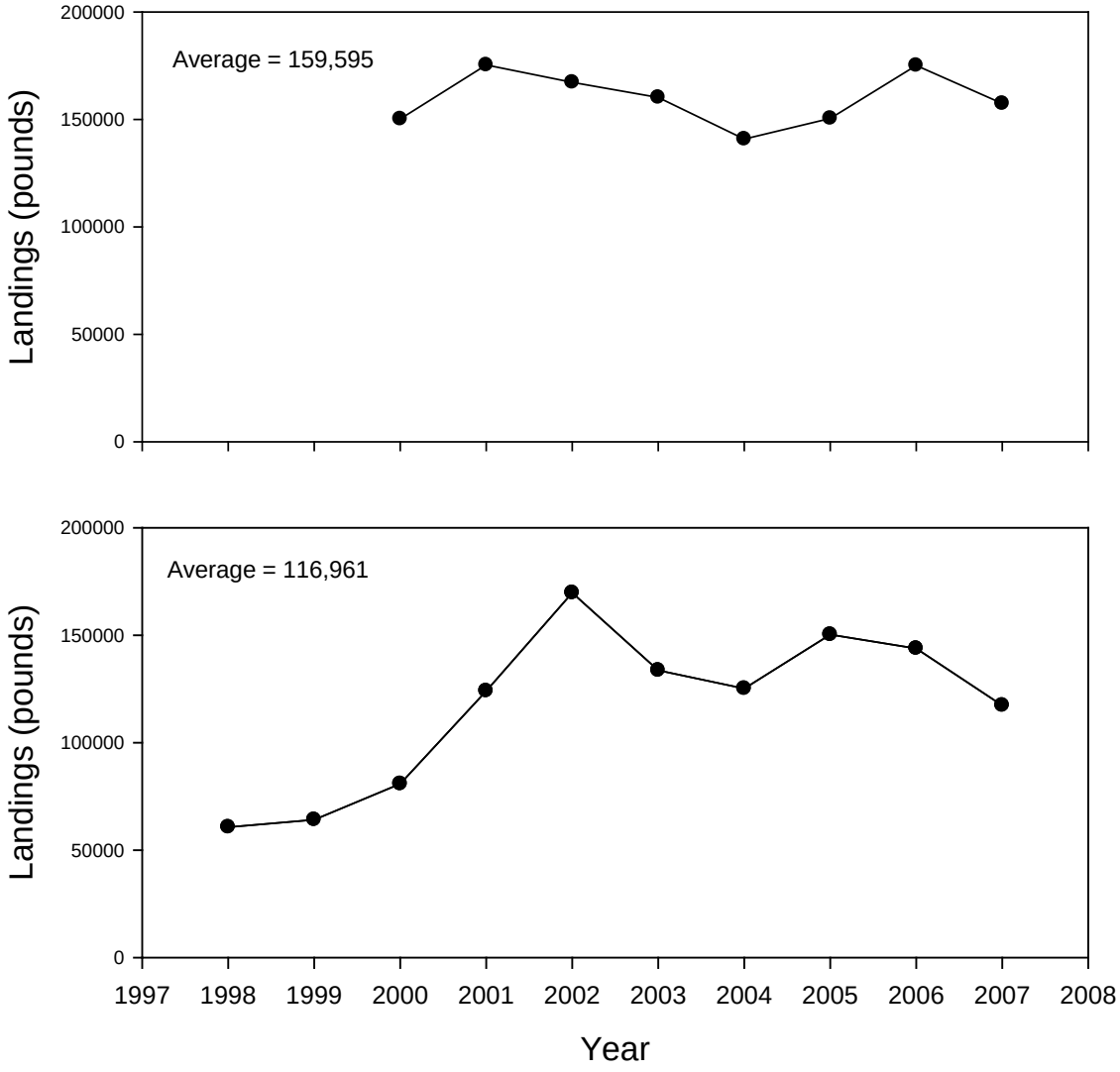

Figure 7. Snapper landings for St. Thomas/St. John during 2000-2007 (top) and for St. Croix during 1998-2007 (bottom).

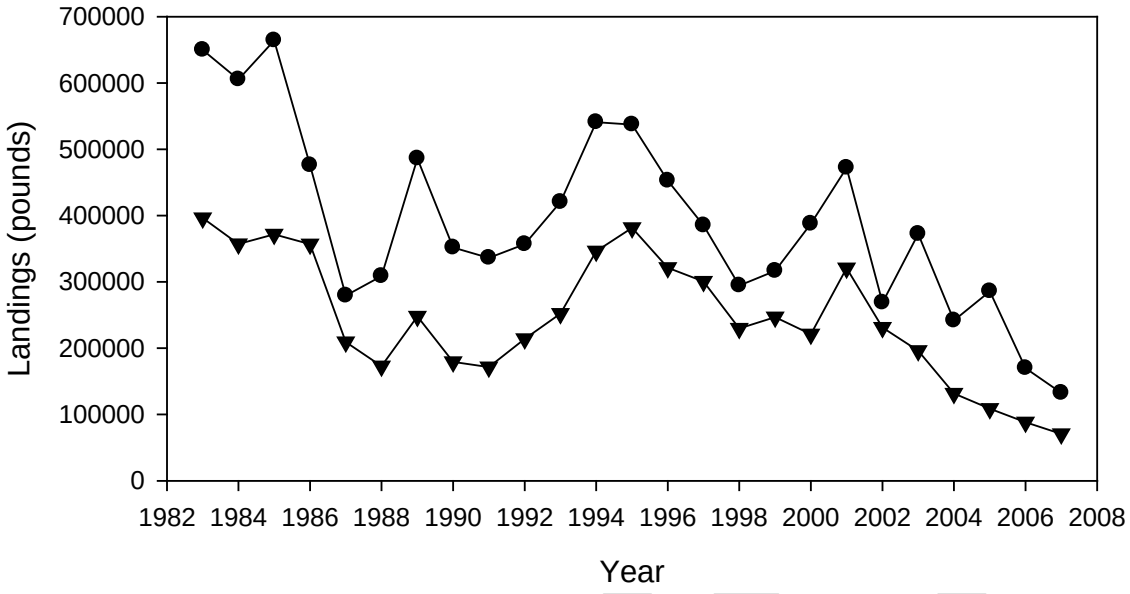

Figure 8. Reported (filled triangles) and adjusted (filled circles) landings for current and proposed Snapper Unit 1 in Puerto Rico during 1983-2007.

4.6 Action 6: Annual Catch Limits for the Recreational Sector

When an ACL is set for any species/species group/fishery, it will apply to the entire fishery in that it will be determined to have been met when combined landings from the EEZ and local government waters equal the ACL. As with the commercial landings, the recreational data lack spatial information that would allow distinction between state and federal waters.

Action 6a. Annual Catch Limits for recreational harvest off St. Croix

Alternative 1. No Action. Do not set ACLs in the EEZ off St. Croix for the recreational sector.

Alternative 2. Do not set recreational ACLs in the EEZ off St. Croix, but use commercial ACL monitoring as a mechanism for recreational accountability measures.

Alternative 3. Do not set recreational ACLs for the EEZ off St. Croix until a recreational survey is implemented.

Alternative 4. Set recreational ACLs to zero in the EEZ off St. Croix.

Action 6b. Annual Catch Limits for recreational harvest off St. Thomas/St. John

Alternative 1. No Action. Do not set ACLs in the EEZ off St. Thomas/St. John for the recreational sector.

Alternative 2. Do not set recreational ACLs for the EEZ off St. Thomas/St. John, but use commercial ACL monitoring as a mechanism for recreational accountability measures.

Alternative 3. Do not set recreational ACLs for the EEZ off St. Thomas/St. John until a recreational survey is implemented.
Alternative 4. Set recreational ACLs to zero in the EEZ off St. Thomas/St. John.

Sub action 6c. Annual Catch Limits for recreational harvest of conch off Puerto Rico

Alternative 1. No Action. Do not set a recreational ACL for conch in the EEZ off Puerto Rico.

Alternative 2. Set the recreational ACL for conch off Puerto Rico:

Sub alternative A. equal to zero in the EEZ.

Sub alternative B. equal to the average conch landings from MRFSS during 2000.

Sub alternative C. Do not set recreational ACLs for conch in the EEZ off Puerto Rico, but use commercial ACL monitoring as a mechanism for recreational accountability measures.

Sub action 6d. Annual Catch Limits for recreational harvest of parrotfish unit 1 off Puerto Rico

Alternative 1. No Action. Do not set a recreational ACL for parrotfish unit 1 in the EEZ off Puerto Rico.

Alternative 2. Set the recreational ACL for parrotfish unit 1 off Puerto Rico:

Sub alternative A. equal to zero in the EEZ.

Sub alternative B. equal to the average parrotfish unit 1 landings (17,785 fish A + B1) from MRFSS during 2000-2007.

Sub alternative C. equal to the average parrotfish unit 1 landings (13,729 fish A + B1) from MRFSS during the most recent five years (2003-2007).

Sub alternative D. Do not set recreational ACLs for parrotfish unit 1 in the EEZ off Puerto Rico, but use commercial ACL monitoring as a mechanism for recreational accountability measures.

Sub action 6e. Annual Catch Limits for recreational harvest of grouper unit 4 off Puerto Rico

Alternative 1. No Action. Do not set a recreational ACL for grouper unit 4 in the EEZ off Puerto Rico.

Alternative 2. Set the recreational ACL for grouper unit 4 off Puerto Rico:

Sub alternative A. equal to zero in the EEZ.

Sub alternative B. equal to the average grouper unit 4 landings (588 fish A + B1) from MRFSS during 2000-2007.

Sub alternative C. equal to the average grouper unit 4 landings (730 fish A + B1) from MRFSS during the most recent five years (2003-2007).

Sub alternative D. Do not set recreational ACLs for grouper unit 4 in the EEZ off Puerto Rico, but use commercial ACL monitoring as a mechanism for recreational accountability measures.

Sub action 6f. Annual Catch Limits for recreational harvest of snapper unit 1 off Puerto Rico

Alternative 1. No Action. Do not set a recreational ACL for snapper unit 1 in the EEZ off Puerto Rico.

Alternative 2. Set the recreational ACL for snapper unit 1 off Puerto Rico:

Sub alternative A. equal to zero in the EEZ.

Sub alternative B. equal to the average snapper unit 1 landings (95,164 fish A + B1) from MRFSS during 2000-2007.

Sub alternative C. equal to the average snapper unit 1 landings (97,937 fish A + B1) from MRFSS during the most recent five years (2003-2007).

Sub alternative D. Do not set recreational ACLs for snapper unit 1 in the EEZ off Puerto Rico, but use commercial ACL monitoring as a mechanism for recreational accountability measures.

Discussion

The only source of recreational data in the U.S. Caribbean that would include information on the species harvested in the EEZ is contained within the Marine Recreational Fisheries Statistics Survey (MRFSS; http://www.st.nmfs.noaa.gov/st1/recreational/index.html), now Marine Recreational Information Program (MRIP; http://www.countmyfish.noaa.gov/mrip/). The survey and the data collection protocols are described in detail at the web sites cited above.

The MRFSS recreational data have been collected in Puerto Rico since 2000 but with varying degrees of effort due in part to limited personnel and high turnover of the personnel conducting the survey. The data do not include information on queen conch but are limited to finfish. The only information on the recreational harvest of queen conch for Puerto Rico is from two waves in 2000 when a special survey was conducted to determine participation of recreational fishers in the conch fishery (http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=14). A wave in the MRFSS survey is a period of two months. It was estimated that there were 50,000 participants in the recreational conch fishery in Puerto Rico.

In the USVI there is limited information on the recreational harvest. Tournament data, mostly inshore tournaments, are collected on reef fish species but are limited to the day of the tournament and to about 5 tournaments per year. There are a series of reports on observations of recreationally important species and their presence in inshore habitats but these are not sufficient to be adequate for assessments. Jennings (1992) published a small survey conducted in 1986 and the Eastern Caribbean Center (2002) published a telephone survey of recreational fishers conducted in 2000. Jennings (1992) estimated that 10% of the resident population fished recreationally and harvested about 54,226 lbs/yr. The most frequently reported reef fish species were yellowtail snapper and red hind. The EEC (2002) estimated that 2,509 residents were involved in boat-based recreational fishing primarily targeting snappers; the contribution to the USVI economy was calculated at 5.9 million dollars but no estimate of landings is provided. The MRFSS in St. Thomas estimated 55,000 recreational trips (http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=14) during 2000 when the survey was conducted in the USVI.

The MRFSS provides information on participation, catch and effort based on telephone interviews and intercepts. The data are collected in two months periods (waves) and are collected from shoreline, boat-based, and charter fishers. The information collected includes location of fishing (state versus EEZ) and species-specific catch (in numbers of fish and using common names for species identification). The intercepts capture additional information including the fish species identification, weights and lengths of individual fish, and information on whether the fish was whole or gutted. The data are reported as Type A (fish identified at intercept), Type B1 (fished reported as landed), and Type B2 or fish released alive.

The data available has been assessed during the SEDARs (e.g. http://www.sefsc.noaa.gov/sedar/download/Sedar14DW03_Rec%20Data.pdf?id=DOCUMENT) and among the issues with the data were the following concerns: (1) limited number of sampled fish (in the 100's for silk snapper, few for yellowfin grouper (n <10); (2) high standard error; and (3) need for validation of the data collected thus far, including weights of fish for conversion to total estimates of landings in pounds. However, the MRFSS is the only data available and serves to provide an estimate of the recreational fishing activity.

Recreational fishing licenses have been required by law in Puerto Rico since 1998 although implementation of that law will not be realized until December 2009. There are is no recreational fishing license required either in the USVI or in the EEZ. There are bag limits for the recreational harvest of queen conch (but not for reef fish) throughout the U.S. Caribbean. Although the fisheries for Nassau and goliath grouper are closed (in all of the U.S. Caribbean), MRFSSS data indicate that both species are still being landed recreationally.

The seasonal closures for grouper unit 4 (yellowfin, tiger grouper, etc.) apply to the recreational fishery in the EEZ but compatible regulations were not implemented by the commonwealth of Puerto Rico. The seasonal closure for snapper unit 1 implemented in the EEZ in 2005, was implemented in the state waters in 2004 but only for two of the four species (silk snapper and blackfin).

The MRFSS landings data (A+B1) for the parrotfish, Grouper Unit 4 (current) and Snapper Unit 1 for Puerto Rico are shown in Figures 9-11 for the years 2000-2007.

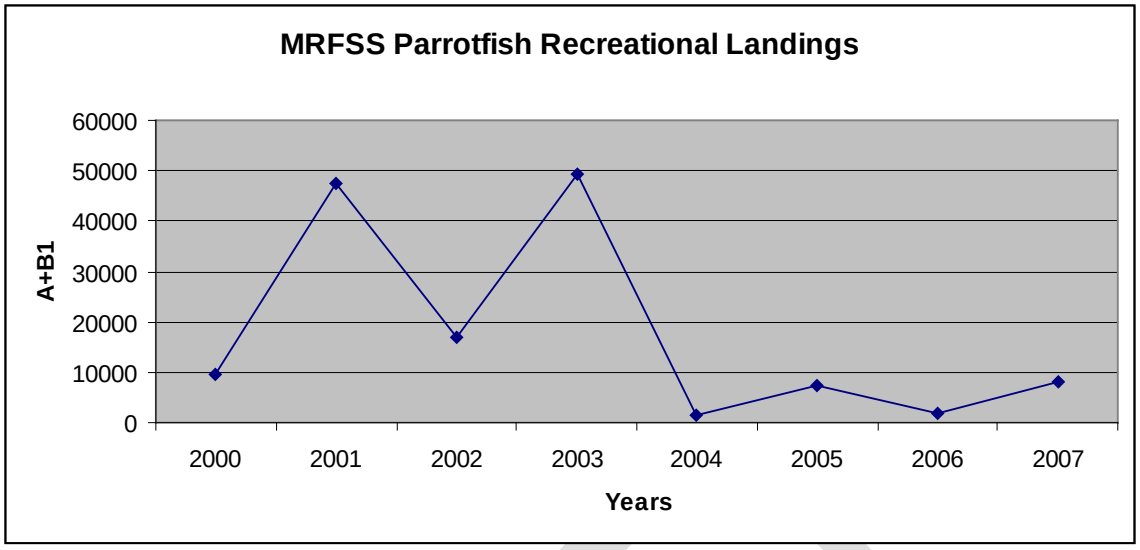

Figure 9. Recreational parrotfish landings from Puerto Rico and contiguous U.S. Caribbean EEZ waters, reported as number of fish. Note the significant reduction in parrotfish landings that occurred between 2003 and 2004.

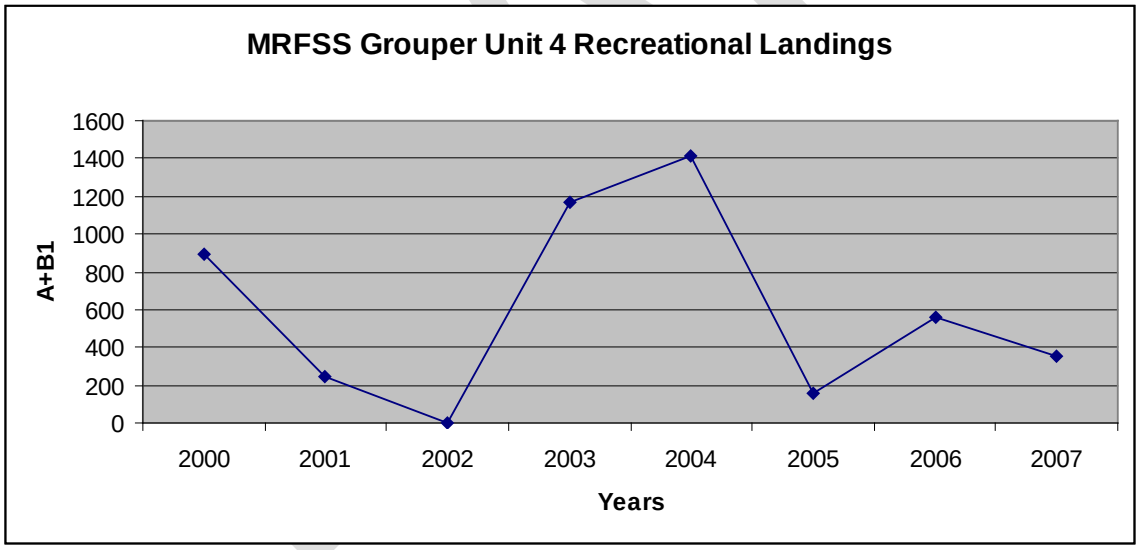

Figure 10. Recreational Grouper Unit 4 landings from Puerto Rico and contiguous U.S. Caribbean EEZ waters, reported as number of fish. The maximum landings during 2004 reflect an increase in the occurrence of misty grouper in the reported catch.

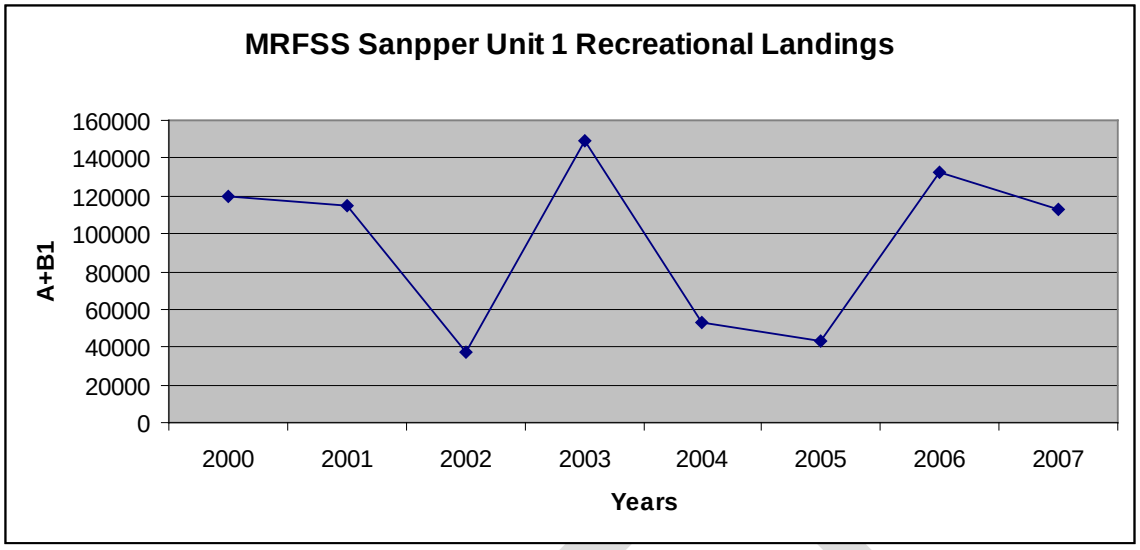

Figure 11. Recreational Snapper Unit 1 landings from Puerto Rico and contiguous U.S. Caribbean EEZ waters, reported as number of fish.

4.7 Action 7: Accounting for Uncertainty

Action 7a: Uncertainty measures for commercial harvest of queen conch
Alternative 1. No Action. Set the ACL for queen conch in the U.S. Caribbean EEZ equivalent to the applicable chosen average catch level for queen conch.
Alternative 2. In setting the ACL for queen conch in the EEZ use:

Sub alternative A. 85% of the chosen average catch level to adjust for uncertainty.
Sub alternative B. 75% of the chosen average catch level to adjust for uncertainty
Sub alternative C. 50% of the chosen average catch level to adjust for uncertainty.
Sub alternative D. 25% of the chosen average catch level to adjust for uncertainty.

Action 7b: Uncertainty measures for commercial harvest of parrotfish
Alternative 1. No Action. Set the ACL for parrotfish in the U.S. Caribbean EEZ equivalent to the applicable chosen average catch level for parrotfish.
Alternative 2. In setting the ACL for parrotfish in the EEZ use:

Sub alternative A. 85% of the chosen average catch level to adjust for uncertainty.
Sub alternative B. 75% of the chosen average catch level to adjust for uncertainty
Sub alternative C. 50% of the chosen average catch level to adjust for uncertainty.
Sub alternative D. 25% of the chosen average catch level to adjust for uncertainty.

Action 7c: Uncertainty measures for commercial harvest of grouper

Alternative 1. No Action. Set the ACL for grouper in the U.S. Caribbean EEZ equivalent to the applicable chosen average catch level for grouper.

Alternative 2. In setting the ACL for grouper use:

Sub alternative A. 85% of the chosen average catch level to adjust for uncertainty.

Sub alternative B. 75% of the chosen average catch level to adjust for uncertainty

Sub alternative C. 50% of the chosen average catch level to adjust for uncertainty.

Sub alternative D. 25% of the chosen average catch level to adjust for uncertainty.

Action 7d: Uncertainty measures for commercial harvest of snapper

Alternative 1. No Action. Set the ACL for snapper in the U.S. Caribbean EEZ equivalent to the applicable chosen average catch level for snapper.

Alternative 2. In setting the ACL for snapper use:

Sub alternative A. 85% of the chosen average catch level to adjust for uncertainty.

Sub alternative B. 75% of the chosen average catch level to adjust for uncertainty

Sub alternative C. 50% of the chosen average catch level to adjust for uncertainty.

Sub alternative D. 25% of the chosen average catch level to adjust for uncertainty.

Discussion

A major aspect of the revised NS1 guidelines is the concept of incorporating management and scientific uncertainty when determining ACLs and AMs. Management uncertainty occurs because of the lack of sufficient information about catch (e.g., late reporting, underreporting, and misreporting of landings or bycatch). Management uncertainty also exists because of the lack of management precision in many fisheries due to lack of in-season fisheries landings data, lack of in-season closure authority, or the lack of sufficient in-season management in some FMPs when in-season fisheries data are available. Scientific uncertainty includes uncertainty around the estimate of a stock's biomass and its maximum fishing mortality threshold (MFMT); therefore, any estimate of OFL has uncertainty (74 FR 3181). For these reasons, the Council may choose to take a more precautionary approach to prevent overfishing by reducing the ACL to account for such uncertainty.

To account for both management and scientific uncertainty, the Council may set uncertainty measures in the form of percentages of average catch levels in each fishery. At the 132nd meeting of the CFMC, a **motion** was submitted and passed that requested an adjustment to 85% of the chosen average annual catch level to account for uncertainty. No background was provided for this level of adjustment. The remaining adjustment

levels that are suggested as alternatives were derived based upon standards developed within NOAA/NMFS, as described in the following paragraphs.

On November 12th -14th, 2008, the Regional Fishery Management Councils held their first-ever meeting of their Scientific and Statistical Committees. The meeting was held in Honolulu, Hawaii. Each Council selected three SSC members plus one staff member to attend. The Caribbean Fishery Management Council (CFMC) selected Barbara Kojis, Jim Berkson, Rich Appeldoorn, and Miguel Rolón to attend. Rich Appeldoorn had to cancel at the last minute due to an injury.

The meeting had two purposes: (1) to receive presentations and reports from each SSC on operating procedures, analytical document review and recommendations, and developing research priorities, and (2) to receive presentations and reports from each SSC on setting catch limits including assessment, peer review process, and determination of OFLs/ACLs. The full report of the meeting is available online at: http://www.fakr.noaa.gov/npfmc/misc_pub/SSCWorkshop08.pdf

Regarding OFL/ACL, three Council SSCs presented material relevant to the CFMC. The Western Pacific Fishery Management Council's (WPFMC) SSC, representing Hawaii, Guam, and other Pacific Islands, have fisheries and data most similar to the CFMC. Their SSC reported that most fisheries have not been managed by quotas or TACs. Data availability is better than that available in the U.S. Caribbean, however. The process for establishing OFLs and ABCs for the WPFMC had not been established by the time of the meeting.

The North Pacific Fishery Management Council (NPFMC) has a long history of setting catch limits and working with highly variable data sets. The NPFMC SSC has established a tier system, whereby data availability determines the methods of establishing reference points and control rules. Tier 6, the worst case scenario for the NPFMC, was established for stocks that only have a reliable catch history from 1978-1995. **In these cases the OFL is set to the average catch from 1978-1995 and the ABC is less than or equal to 0.75 multiplied by the OFL.** A value less than 1.0 is used to incorporate uncertainty into the calculation of the ABC and to be precautionary. They reported that the NPFMC had a long-standing practice of adopting all of their SSC's OFL and ABC recommendations.

The Pacific Fishery Management Council (PFMC) SSC reported that their history was similar to the NPFMC's. They reported that if reliable catch is all that is available, then OFL is set to the average catch over a specified time period. **The ABC is then set less than or equal to 0.50 multiplied by the OFL.** The WPFMC SSC set their scalar equal to 0.50 independently of the NPFMC SSC's value of 0.75. They mentioned that they felt it was important to be especially precautionary in the case of these stocks, where little is known. The NPFMC and PFMC provide strong precedents of how to develop OFLs when only reliable catch estimates are available.

Next, the question came up as to what to do when reliable catch data are not available. There was general sentiment that in the absence of reliable catch data, an SSC cannot set an ABC in the manner applied by the NPFMC or the PFMC and that increased emphasis should instead be placed on collecting reliable catch data. Rick Methot, from NMFS, stressed that this situation does not allow for the absence of management until reliable data are collected. The revised National Standard One (NS1) guidelines, which have come out since the National SSC meeting, state, "There are limited circumstances that may not fit the standard approaches to specification of reference points and management measures set forth in these guidelines. … In these circumstances, Councils may propose alternative approaches for satisfying the NS1 requirements of the Magnuson-Stevens Act than those set forth in these guidelines." This suggests that management alternatives to ACLs may be allowed in limited circumstances, but that sufficient justification must be provided as to the need for and effectiveness of the alternatives.

An uncertainty scalar of 0.25 also is included as an alternative to provide an option to be more conservative than the permitted by the Council motion (0.85), the NPFMC scalar (0.75), or the PFMC scalar (0.50).

4.8 Action 8: Permits and tags

Action 8a: Establish a commercial fishing permit system for St. Croix EEZ waters.
Alternative 1. No Action. Do not establish a permit system for commercial fishing in the EEZ around St. Croix.
Alternative 2. Require a federal permit for commercial fishing in the EEZ around St. Croix.

> **Sub alternative A.** Require that each fisherman submit an application for a federal fishing permit.
> **Sub alternative B.** Award a federal fishing permit to all extant St. Croix territorial fishing permit holders.

Action 8b: Establish a commercial fishing permit system for St. Thomas/St. John EEZ waters.
Alternative 1. No Action. Do not establish a permit system for commercial fishing in the EEZ around St. Thomas/St. John.
Alternative 2. Require a federal permit for commercial fishing in the EEZ around St. Thomas/St. John.

> **Sub alternative A.** Require that each fisherman submit an application for a federal fishing permit.
> **Sub alternative B.** Award a federal fishing permit to all extant St. Thomas/St. John territorial fishing permit holders.

Action 8c: Establish a commercial fishing permit system for Puerto Rico EEZ waters.
Alternative 1. No Action. Do not establish a permit system for commercial fishing in the EEZ around Puerto Rico.

Alternative 2. Require a federal permit for commercial fishing in the EEZ around Puerto Rico.

Sub alternative A. Require that each fisherman submit an application for a federal fishing permit.

Sub alternative B. Award a federal fishing permit to all extant Puerto Rico territorial fishing permit holders.

Action 8d: Establish a commercial sales permit system for St. Croix EEZ waters.

Alternative 1. No Action. Do not establish a permit system for selling catch harvested from EEZ waters around St. Croix.

Alternative 2. Require a federal permit for selling catch harvested from EEZ waters around St. Croix.

Sub alternative A. Require that each fisherman submit an application for a federal catch sell permit.

Sub alternative B. Award a federal catch sell permit to all extant St. Croix territorial commercial fishing permit holders.

Action 8e: Establish a commercial sales permit system for St. Thomas/St. John EEZ waters.

Alternative 1. No Action. Do not establish a permit system for selling catch harvested from EEZ waters around St. Thomas/St. John.

Alternative 2. Require a federal permit for selling catch harvested from EEZ waters around St. Thomas/St. John.

Sub alternative A. Require that each fisherman submit an application for a federal catch sell permit.

Sub alternative B. Award a federal catch sell permit to all extant St. Thomas/St. John territorial commercial fishing permit holders.

Action 8f: Establish a commercial sales permit system for Puerto Rico EEZ waters.

Alternative 1. No Action. Do not establish a permit system for selling catch harvested from EEZ waters around Puerto Rico.

Alternative 2. Require a federal permit for selling catch harvested from EEZ waters around Puerto Rico.

Sub alternative A. Require that each fisherman submit an application for a federal catch sell permit.

Sub alternative B. Award a federal catch sell permit to all extant Puerto Rico territorial commercial fishing permit holders.

Action 8g: Establish a permit system for purchasing catch harvested from St. Croix EEZ waters for subsequent resale.

Alternative 1. No Action. Do not establish a permit system for purchasing catch harvested from EEZ waters around St. Croix for subsequent resale.

Alternative 2. Require a federal permit for purchasing catch harvested from EEZ waters around St. Croix for subsequent resale.

Action 8h: Establish a permit system for purchasing catch harvested from St. Thomas/St. John EEZ waters for subsequent resale.
Alternative 1. No Action. Do not establish a permit system for purchasing catch harvested from EEZ waters around St. Thomas/St. John for subsequent resale.
Alternative 2. Require a federal permit for purchasing catch harvested from EEZ waters around St. Thomas/St. John for subsequent resale.

Action 8i: Establish a permit system for purchasing catch harvested from St. Croix EEZ waters for subsequent resale.
Alternative 1. No Action. Do not establish a permit system for purchasing catch harvested from EEZ waters around St. Croix for subsequent resale.
Alternative 2. Require a federal permit for purchasing catch harvested from EEZ waters around St. Croix for subsequent resale.

Discussion

One of the most pressing problems faced by the Council is the lack of reliable catch data for both the recreational and the commercial fisheries. Permits allow managers the opportunity to gather more accurate data, decreasing both management and scientific uncertainty. With more accurate and reliable catch data, fishery managers will be able to provide more reasonable regulations and to thereby minimize the application of uncertainty measures. A better understanding of catch levels will allow managers to better estimate the health of stocks, thus reducing scientific uncertainty.

At the 132nd meeting, the Council **moved** to establish an Ad Hoc Advisory Panel to consist of fishermen, local and federal managers, and scientists to develop a permitting system. Also discussed in this motion was the possibility of instituting a limited access system.

4.9 Action 9: Monitoring of Annual Catch Limits

Alternative 1. No Action. Maintain existing catch reporting protocols.
Alternative 2. Require any person landing Council managed species to complete and submit an appropriate data collection form, as developed by the SEFSC or the Council's SSC, after every trip.
Alternative 3. Require any federal permit holder to complete and submit an appropriate data collection form, as developed by the SEFSC or the Council's SSC, after every trip.
Alternative 4. Require any federal permit holder to complete and submit an appropriate updated catch report form as developed in coordination with the SEFSC, local and territorial governments, fishermen, and the Council's SSC with enough detail such that CPUE per species can be calculated for each gear.

Discussion

In their FMPs, or associated public documents such as SAFE reports as appropriate, Councils must describe general data collection methods, as well as any specific data collection methods used for all stocks in the fishery, and ecosystem component (EC)

species, including: (1) Sources of fishing mortality (both landed and discarded), including commercial and recreational catch and bycatch in other fisheries; (2) Description of the data collection and estimation methods used to quantify total catch mortality in each fishery, including information on the management tools used (i.e., logbooks, vessel monitoring systems, observer programs, landings reports, fish tickets, processor reports, dealer reports, recreational angler surveys, or other methods); the frequency with which data are collected and updated; and the scope of sampling coverage for each fishery; and (3) Description of the methods used to compile catch data from various catch data collection methods and how those data are used to determine the relationship between total catch at a given point in time and the ACL for stocks and stock complexes that are part of a fishery (50 CFR 600.310 (i)).

The SSC and ACLG continuously recommended implementing better data collection methodologies throughout their respective discussions. Currently, information of this type is limited or non-existent; therefore, better data collection methods are necessary. The U.S. Caribbean Data Improvement Project is a joint federal, commonwealth, territorial, and private initiative to develop effective methods to gather commercial harvest data for reef fish, highly migratory species, and other finfish and invertebrates harvested from Puerto Rico and USVI waters. The first goal of this effort will be the implementation of a new data reporting form in Puerto Rico beginning in January 2010, but full program implementation in both Puerto Rico and the USVI is several years away. Without this improved data collection system, fishery managers will have to apply more stringent uncertainty estimates, which may lead to stricter regulations.

4.10 Action 10: Accountability Measures

Action 10a: Establish Accountability Measures

Alternative 1. No Action. Do not establish Accountability Measures.
Alternative 2. Implement accountability measures for exceeding an ACL, within each species or species group within each of the three island groups (St. Croix, St. Thomas/St. John, Puerto Rico) based on:

Sub alternative A. A single year of landings/catch.
Sub alternative B. A 2-year average of landings/catch.
Sub alternative C. A 3-year average of landings/catch**.**

Action 10b: Apply Accountability Measures

Alternative 1. Within each species or species group within each of the three island groups (St. Croix, St. Thomas/St. John, Puerto Rico), reduce the fishing season in the following calendar year by a length determined to be appropriate to account for an overage in the previous year.
Alternative 2. Within each species or species group within each of the three island groups (St. Croix, St. Thomas/St. John, Puerto Rico), reduce the ACL in the following calendar year by an amount determined to be appropriate to account for an overage in the previous year.
Alternative 3. Utilize a deliberative approach when determining accountability measures.

Discussion

Accountability measures (AMs) are management controls to prevent ACLs from being exceeded, and to correct overages of ACLs if they occur. Examples of inseason AMs are quota closures, trip or bag limit changes, or gear restrictions. Examples of postseason AMs are seasonal closures, reduced trip or bag limits, or shortening of the fishing season implemented in a subsequent year. AMs are necessary because they take action to correct the cause of the ACL overage as well as any resulting biological consequences, thus enhancing the effectiveness of the ACLs.

AMs are likely to vary considerably between different species and for different fishing sectors. This variability is a result of a number of factors, including the status of stocks, structure of the fishing industry, harvest regulations, ability to monitor catch levels, and biology of the different species (e.g. maximum age, growth rate, spawning age, etc).

The Council may choose to use different Sub alternatives from Alternative 2 of Action 10a for different species or species groups depending on the reliability and timeliness of the data reported for each fishery. If this is the case, additional alternatives would be developed so the Council can indicate that desire. At present, data suitable for evaluating catch levels may not become available for 1-2 years following the fishing year, so any accountability measures will not be applicable until at least one year following the overage. By that time, it may be irrelevant or even counter-productive to institute a pre-determined response. Instead, a deliberative approach that includes evaluation of the data, and any changes in fishing activity that may have influences changes in catch, may provide a more suitable and effective response to the apparent overage.

4.11 Action 11: Allowable Gear for Reef Fish

Alternative 1. No Action. Do not alter allowable gear in the U.S. Caribbean.
Alternative 2. Review the list of allowable gear under 50 CFR 600.725 and revise as appropriate.

Sub alternative A. Remove trawl from the list of allowable gears. (Prohibit the use of trawls in the EEZ (both recreational and commercial use) for reef fish, spiny lobster, queen conch and coral and reef resources.

Sub alternative B. Remove gillnet and trammel net from the list of allowable gears.

Sub alternative C. Remove powerheads from the list of allowable gears (Prohibit the use of powerheads in the Reef Fish, Coral and Queen Conch fisheries.)

Sub alternative D. Allow the harvest of reef fish with spearguns in the commercial fishery for reef fish.

Sub alternative E. Allow the commercial harvest of reef fish with the following gears: handline, bandit gear.

Discussion

Under Sub-alternative A, trawl gear would be prohibited in the EEZ. The most notable change that the table of allowable gears necessitates is the elimination of trawl under the commercial, non-FMP fishery. The importance of this change is that this gear would result in irreparable damage to the coral reefs and reefs in general (sponge biotopes, seagrasses, etc.). Trawls are not a traditional gear used in the U.S. Caribbean, there is no history of the use of this gear in the area. Trawl nets are prohibited in Puerto Rico state waters (Reglamento de Pesca 2004). The 'chinchorro' or beach seine has been used in shallow waters traditionally in Puerto Rico but the government banned its use in 2007, rescinding the prohibition for 1 month in 2009. In the list of allowable gears, trawl is allowed under the Commercial Fishery (Non-FMP).

Under Sub-alternative B, gillnet and trammel nets would be removed from the list of allowable gear. There have been modifications made to the gill and trammel nets and these have been used as hand-pulled trawls in shallow areas or have in used in combination with SUBA to herd the fish onto the nets. The Council prohibited the use of gill and trammel nets in the US Caribbean EEZ (SFA 2005), the USVI prohibited these gears in 2006. These gears are restricted in mesh size and length in Puerto Rico since 2004 These gears are listed as allowable in the Caribbean Pelagics Fishery (Non-FMP) and the Commercial Fishery (Non-FMP).

Under Sub-alternative C, powerheads would be removed from the list of allowable gears. These are prohibited in the Coral FMP since 1994 (prohibit explosives, including powerheads), in the Reef Fish FMP since 1985 and in the Spiny Lobster FMP since 1981. The Virgin Islands prohibited the use of explosive in 1972. In the list of allowable gears, powereheads are listed under the Recreational Fishery (Non-FMP).

Under sub-alternative D, spears would be allowed in the commercial harvest of reef fish. The commercial fishers traditionally use spears or spearguns while SCUBA or free diving to harvest reef fish. A Categorical Exclusion is currently being developed to add spear to the List of Authorized Fisheries and Gear (50 CFR 600.725).

Under sub-alternative E, bandit gear, vertical setline-multihook, "cala" would be allowed. These gears are used in the deep water snapper fishery and consist of hooks (varying numbers) weighted in a type of vertical longline and could be attached to a buoy. If buoyed it is often released and the sets are fished continuously pulled and re-deployed during the fishing trip. This gear is fish at depths greater than 50 fathoms. This gear would be allowed for commercial applications under the Reef Fish FMP.

4.12 Action 12: Establish Framework Measures for ACLs and AMs

Action 12a: Establish Framework Measures for ACLs and AMs in the queen conch FMP.

Alternative 1. No Action. Do not establish a framework for ACLs and AMs for queen conch within each of the three island groups (St. Croix, St. Thomas/St. John, Puerto Rico).

Alternative 2. Establish a framework procedure for setting and adjusting ACLs and AMs for queen conch within each of the three island groups (St. Croix, St. Thomas/St. John, Puerto Rico).

Action 12b: Establish Framework Measures for ACLs and AMs in the reef fish FMP.

Alternative 1. No Action. Do not establish a framework for ACLs and AMs for each reef fish species or species group within each of the three island groups (St. Croix, St. Thomas/St. John, Puerto Rico).

Alternative 2. Establish a framework procedure for setting and adjusting ACLs and AMs within each species or species group within each of the three island groups (St. Croix, St. Thomas/St. John, Puerto Rico).

Discussion

In order to modify regulations, the Council must follow a procedure which may take an extensive amount of time. However, sometimes the Council needs to make changes in a much faster time frame, which can be made through a regulatory action. In order to complete a regulatory action, a framework must be established for the FMP to which changes will be made.

The reef fish FMP currently has a framework established. However this framework only allows adjustments to size limits, closed seasons or areas, and fish trap mesh size, and the level of SSBR necessary to rebuild an overfished stock (CFMC, 1990). The current framework does not take into account ACLs and AMs. The queen conch FMP does not have any framework procedure established. This action will require modification of the existing framework procedure so that ACLs and AMs may be quickly altered as necessary through a regulatory action.

5.0 REFERENCES[TO BE COMPLETED]

CFMC, 1990. Amendment Number 1 to the fishery management plan for the shallow-water reeffish fishery, preliminary environmental assessment and regulatory impact review. Caribbean Fishery Management Council, May 1990, 30 pp. + appendices.

Hilborn, R.M. and R.M. Peterman, 1996. The development of scientific advice with incomplete information in the context of the precautionary approach. In: Precautionary approach to fisheries. Part 2: scientific papers. FAO Fisheries Technical Paper No. 350(2): 77-101.

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6.0 ALTERNATIVES CONSIDERED AND REJECTED [RESERVED]