WESTERN
PACIFIC
REGIONAL
FISHERY
MANAGEMENT
COUNCIL

Omnibus Amendment for the Western Pacific Region to Establish a Process for Specifying Annual Catch Limits and Accountability Measures

Including an Environmental Assessment

Amendment 1 to the Fishery Ecosystem Plan for the Pacific Remote Island Areas

Amendment 2 to the Fishery Ecosystem Plan for the American Samoa Archipelago

Amendment 2 to the Fishery Ecosystem Plan for the Mariana Archipelago

Amendment 3 to the Fishery Ecosystem Plan for the Hawaii Archipelago

Amendment 4 to the Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region

February 24, 2011

Omnibus Amendment for the Western Pacific Region
to Establish a Process for Specifying
Annual Catch Limits and Accountability Measures

Including an Environmental Assessment

Amendment 1 to the Fishery Ecosystem Plan for the Pacific Remote Island Areas
Amendment 2 to the Fishery Ecosystem Plan for the American Samoa Archipelago
Amendment 2 to the Fishery Ecosystem Plan for the Mariana Archipelago
Amendment 3 to the Fishery Ecosystem Plan for the Hawaii Archipelago
Amendment 4 to the Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region

February 24, 2011

Responsible Agency:
Pacific Islands Region
National Marine Fisheries Service (NMFS)
National Oceanographic and Atmospheric Administration (NOAA)
Honolulu, Hawaii

Responsible Official: Michael D. Tosatto
NMFS Regional Administrator
NOAA, NMFS, Pacific Islands Region

For Further Information Contact:
Michael D. Tosatto
NMFS Regional Administrator
1601 Kapiolani Blvd., #1110
Honolulu, HI 96814
(808) 944-2200

Responsible Council and Contact:
Kitty M. Simonds
Executive Director
Western Pacific Fishery Management Council
1164 Bishop St., Suite 1400
Honolulu, HI 96813
(808) 522-8220

Project No.: RIN 0648-AY93

Executive Summary

In 2006, the Magnuson-Stevens Fishery Conservation and Management Act (MSA) was reauthorized and included additional requirements to prevent and end overfishing, and rebuild overfished stocks. Under the MSA, Regional Fishery Management Councils (RFMC) are to amend their fishery management plans to include a mechanism for specifying annual catch limits (ACLs) for all fisheries at a level such that overfishing does not occur and to implement measures to ensure accountability (AM) for adhering to these limits. The MSA further directs that, unless otherwise provided for under an international agreement to which the U.S. participates, this mechanism must be established by 2010 for fisheries subject to overfishing, and by 2011 for all other fisheries. On January 16, 2009, the National Marine Fisheries Service (NMFS) published advisory guidelines under 50 CFR §600.310 (74 FR 3178) to assist RFMCs in implementing ACL and AM requirements.

To comply with the ACL and AM requirements, the Western Pacific Fishery Management Council (Council), in coordination with NMFS, prepared this omnibus amendment to the fishery ecosystem plans (FEP) for American Samoa, Hawaii, the Mariana Archipelago (Guam and the Commonwealth of the Northern Mariana Islands (CNMI)), Pacific Remote Island Areas, and Pacific Pelagic fisheries. This amendment describes the mechanism the Council will use to specify ACLs and AMs for each FEP fishery. Specifically, the proposed action described in this document consists of three components that would: 1) in each FEP, establish a mechanism the Council will use to determine ACLs and AMs , including a process for setting acceptable biological catch limits (ABCs); 2) adopt the ecosystem component (EC) species classification described in the NMFS advisory guidelines for National Standard 1 (NS1) so the Council can develop specific criteria for identifying EC species in subsequent amendments to the FEPs; and 3) identify pelagic management unit species that have statutory exceptions to the ACL and AM requirements. The ACL and AM mechanism is designed to ensure long term sustainability of the fishery resources under the Council's jurisdiction. If approved by NMFS, the Council will use this mechanism to determine ACL values and AMs, which NMFS must specify by rulemaking starting in fishing year 2011.

The mechanism described in this amendment was developed over the past four years and is informed by comment received from fishery scientists and managers, fishery policy analysts, representatives of fishery participants, as well as the general public. This omnibus FEP amendment was developed in accordance with the MSA and the National Environmental Policy Act (NEPA), as well as other applicable laws. Because the action described in this amendment does not implement any ACLs or AMs, the evaluation of environmental impacts is limited. This review indicated that environmental impacts, if any, are anticipated to be secondary in nature because environmental effects could result if a currently unrestrained fishery were to be restricted because a recommended ACL changes the conduct of the fishery. Until such time that specific ACL values and AMs are determined, however, the environmental impacts of actual specifications would be speculative and not appropriate for a full environmental evaluation. Accordingly, an environmental review will be conducted at the time that actual ACL and AM specifications and ecosystem component species designations are proposed.

The environmental assessment associated with this amendment includes a general discussion of the potential impacts of using ACLs and AMs in the affected fisheries. The integrated omnibus

FEP amendment and EA document is being made available to the public together with the draft proposed regulations.

NMFS is soliciting public comment on the omnibus FEP amendment including an EA, and the proposed rule. Instructions on how to comment on the document and the proposed rule can be found by searching on RIN 0648-AY93 at www.regulations.gov, or by contacting the responsible official or Council listed in this document.

Table of Contents

1.0 ***Introduction*** *12*

1.1 **Responsible agencies** **14**

1.2 **Public Review Process** **14**

1.3 **List of Preparers** **14**

1.4 **Summary of Western Pacific Fishery Ecosystem Plans** **15**

1.4.1 American Samoa Archipelago FEP 16
1.4.2 Hawaii Archipelago FEP 17
1.4.3 Mariana Archipelago FEP 17
1.4.4 Pacific Remote Island Areas FEP 18
1.4.5 Pacific Pelagic FEP 19

2.0 ***Purpose and Need for Action*** *21*

2.1 **Proposed Action** **21**

2.2 **Background on National Standard 1** **22**

2.2.1 Maximum Sustainable Yield, Overfishing Limit, and Status Determination Criteria 22
2.2.2 Acceptable Biological Catch 23
2.2.3 Annual Catch Limits, Annual Catch Targets, and Accountability Measures 23
2.2.4 Stocks Excepted from Annual Catch Limits and Accountability Measures 25

3.0 ***Description of the Alternatives*** *26*

3.1 **Action 1: Mechanism for Specifying ACLs, including ABCs and AMs** **26**

Alternative 1: No Action 27
Alternative 2: Establish a Mechanism for Specifying ACLs, including ABCs and AMs *(preferred)* 27
3.1.1 Calculation of the Acceptable Biological Catch 29
3.1.1.1 Tiered System of ABC Control Rules 29
3.1.1.2 Determining the Acceptable Probability of Overfishing used in the ABC Control Rule 32
Qualitative Analysis for Determining P* 32
3.1.2 Setting the Annual Catch Limit 34
Method 1: Qualitative Construct for Setting an ACL 34
Method 2: Percentage Buffer for Setting an ACL 35
Method 3: Setting an ACL when an ACT will be Utilized 35
3.1.3 Suite of Accountability Measures 36
3.1.4 Administrative Process for Setting the ABCs and ACLs 37

3.2 **Action 2: Ecosystem Component Classification** **38**

Alternative 1: No action 38
Alternative 2: Utilize the Ecosystem Component Classification *(preferred)* 38

3.3 **Action 3: Utilize Statutory Exceptions** **39**

Alternative 1: No action 39
Alternative 2: Utilize Statutory Exceptions *(preferred)* 39
Stocks Subject to International Fishery Agreements 40

4.0 ***Affected Environment and Impacts*** *48*

4.1 **Area of Potential Effect and Timing of the Specification** **48**

4.2 **Affected Fisheries** **48**

4.3 **Potential Effects of Proposed ACL Mechanism and Future Implementation on Federal Permits** **51**

4.4 **Affected Physical Environment and Impacts of the Proposed Mechanism** **51**

4.5 **Affected Target, Non-target, and Bycatch Species and Potential Impacts of the Proposed Mechanism** **51**

4.6 **Affected Protected Resources and Potential Impacts of the Proposed Mechanism** **52**
4.6.1 Special Resource Areas and Potential Impacts of the Proposed Mechanism 54
4.6.2 Candidates for Listing and Potential Critical Habitat Designations 55

4.7 **Affected Fishers and Fishing Communities and Potential Effects of the Proposed Mechanism** **56**

4.8 **Interaction with State and Territorial Fishery Regulations and Management** **56**

4.9 **Ability of Fishery Participants to Comply with ACLs and AMs** **57**

4.10 **Potential Impacts on the Economy** **58**

4.11 **Potential Impacts on Fishery Administration and Enforcement** **58**

4.12 **Potential Impacts on Environmental Justice** **59**

4.13 **Potential Impacts on Climate Change and Efficacy of ACLs and AMs in the Face of Climate Change** **60**

4.14 **Cumulative Effects of the Proposed Action** **60**

4.15 **Description of the Fisheries** **62**
4.15.1 Maximum Sustainable Yield, Optimum Yield, and Status Determination Criteria for Western Pacific Fisheries 62
4.15.2 American Samoa Archipelago FEP 62
4.15.2.1 Description of the American Samoa Bottomfish Fishery 62
4.15.2.2 Description of the American Samoa Crustacean Fishery 64
4.15.2.3 Description of the American Samoa Precious Coral Fishery 65
4.15.2.4 Description of the American Samoa Coral Reef Ecosystem Fishery 65
4.15.3 Hawaii Archipelago FEP 66
4.15.3.1 Description of the Hawaii Archipelago Bottomfish Fisheries 66
4.15.3.2 Description of the Hawaii Archipelago Crustacean Fisheries 68
4.15.3.3 Description of the Hawaii Archipelago Precious Coral Fisheries 71
4.15.3.4 Description of the Hawaii Archipelago Coral Reef Ecosystem Fisheries 72
4.15.4 Mariana Archipelago FEP 73
4.15.4.1 Description of the Bottomfish Fishery of the CNMI 73
4.15.4.2 Description of the Bottomfish Fishery of Guam 76
4.15.4.3 Description of the Crustacean Fishery of the CNMI 77
4.15.4.4 Description of the Crustacean Fishery of Guam 79
4.15.4.5 Description of the Precious Coral Fishery of the CNMI 80
4.15.4.6 Description of the Precious Coral Fishery of Guam 80
4.15.4.7 Description of the Coral Reef Ecosystem Fishery of the CNMI 80
4.15.4.8 Description of the Coral Reef Ecosystem Fishery of Guam 81
4.15.5 Pacific Remote Island Areas FEP 83
4.15.5.1 Description of the PRIA Bottomfish Fishery 83
4.15.5.2 Description of the PRIA Crustacean Fishery 84
4.15.5.3 Description of the PRIA Precious Coral Fishery 84
4.15.5.4 Description of the PRIA Coral Reef Ecosystem Fishery 85
4.15.6 Pacific Pelagic FEP 85
4.15.6.1 Description of the Pelagic Fisheries 85
4.15.6.1.1 American Samoa-based Pelagic Fisheries 86
4.15.6.1.2 CNMI-based Pelagic Fisheries 89
4.15.6.1.3 Guam-based Pelagic Fisheries 89
4.15.6.1.4 Hawaii-based Pelagic Fisheries 90

4.15.6.1.5 PRIA-based Pelagic Fisheries....93
4.15.6.1.6 Purse Seine Tuna Fishery 93
4.15.6.2 Stocks to be Classified as Ecosystem Components....94
4.15.6.3 Stocks Excepted from Annual Catch Limits and Accountability Measures....94
4.15.6.3.1 International Exception: Specification of MSY and SDC 101
4.15.6.3.2 One-Year Lifespan Exception: Specification of MSY, SDC, OY, ABC, ABC Control Rule103
4.15.6.4 Stocks Subject to Annual Catch Limits and Accountability Measures 104
4.15.6.4.1 ABC Control Rule 104
4.15.6.4.2 Mechanisms for Specifying Annual Catch Limits....104
4.15.6.4.3 Accountability Measures 104

5.0 Consistency with Applicable Laws 105

5.1 **Magnuson-Stevens Fishery Conservation and Management Act....105**
5.1.1 National Standards 106

5.2 **National Environmental Policy Act 109**

5.3 **Coastal Zone Management Act 111**

5.4 **Endangered Species Act.... 112**

5.5 **Marine Mammal Protection Act 112**

5.6 **Paperwork Reduction Act.... 112**

5.7 **Regulatory Flexibility Act.... 113**

5.8 **Administrative Procedures Act 113**

5.9 **Executive Order 12866.... 113**

5.10 **Executive Order 12898.... 114**

5.11 **Information Quality Act.... 115**

6.0 Draft Proposed Regulations.... 116

7.0 References 120

List of Figures

Figure 1. Relationship between OFL, ABC, ACL, and ACT. 22
Figure 2. Relationship of the expected values of the long-term average MSY, OFL, ABC, ACL and ACT. 26
Figure 3. Schematic of preferred method for specifying ABC, ACL and AMs, including ACTs. 28
Figure 4. Hawaii longline catch of opah (moonfish), wahoo, and oilfish from the Eastern Pacific Ocean, 2004-2007. Source: NMFS PIFSC. 41
Figure 5. American Samoa total bottomfish landings from 1982-2009 63
Figure 6. American Samoa estimated commercial bottomfish landings and revenue 64
Figure 7. Annual landings of spiny lobster in American Samoa from 1982 to 2009. 64
Figure 8. Landings of Kona crab in Hawaii 1994-2009, from State and Federal waters. 69
Figure 9. Landings of spiny lobster in Hawaii 1994-2009, from State and Federal waters. 69
Figure 10. Landings of slipper lobster in Hawaii 1994-2009, from State and Federal waters. 70
Figure 11. Landings of deep water *Heterocarpus* shrimp in Hawaii 1994-2009, from State and Federal waters. 70
Figure 12. Summary of black coral landings from 1985-2005 (WPFMC 2006).... 71

Figure 13. Mean annual black coral landings 1985-2005 (w/sd) (WPFMC 2008) 72
Figure 14. Shrimp landed annually in CNMI. 78
Figure 15. Lobster landings in the CNMI, 1995-2007..... 79
Figure 16. CNMI commercial reef fish landings by species group for 2000-2007 81
Figure 17. Coral reef commercial landings for Guam, 1980-2008..... 83
Figure 18. American Samoa annual inflation-adjusted revenue ($) through 2009 for tuna and non-tuna species. 88
Figure 19. CPUE time series for mahimahi in Western Pacific Region troll and longline fisheries. 97
Figure 20. CPUE time series for wahoo in western Pacific region troll (top) and longline fisheries (bottom)..... 98
Figure 21. CPUE time series for blue marlin in western Pacific region troll (top) and longline fisheries (bottom). 99
Figure 22. CPUE time series for striped marlin in Hawaii troll and longline fisheries..... 100
Figure 23. CPUE time series for moonfish in Hawaii and American Samoa and longline fisheries 100
Figure 24. CPUE time series for pomfrets in Hawaii and American Samoa and longline fisheries 101

List of Tables

Table 1. Western Pacific pelagic MUS with statutory exceptions from ACL requirements..... 42
Table 2. Existing harvest limits for fisheries in the western Pacific region. 50
Table 3. Most recent ESA Section 7 consultations for fisheries managed under western Pacific fishery ecosystem plans that will be subject to future ACL specifications. 53
Table 4. Current state and territorial fishing regulations websites. 57
Table 5. Annual MHI Deep 7 TAC specifications, opening and closing dates of the fishery and final reported landings 67
Table 6. NWHI 2005-2009 BMUS (x 1000 pounds) (Source: NMFS unpublished data)..... 67
Table 7. MHI Top Ten Catches of Coral Reef Associated Species 2000-2009 73
Table 8. CNMI commercial landings (in pounds) of bottomfishes 75
Table 9. Harvest of All Bottomfish Species (in pounds) for 1982-2008 in Guam. 77
Table 10. Total pelagic landings in pounds in the western Pacific region in 2008 85
Table 11. Total pelagic landings (PMUS only) in pounds in the Western Pacific Region in 2009 86
Table 12. American Samoa 2009 estimated total landings by pelagic species by gear type..... 87
Table 13. CNMI 2009 commercial pelagic landings..... 89
Table 14. Guam 2009 commercial pelagic landings..... 90
Table 15. Hawaii commercial pelagic landings, revenue, and average price by fishery..... 91
Table 16. Hawaii commercial pelagic catch information 2008-2009..... 92
Table 17. Classification of western Pacific PMUS in accordance with NS1 guidelines..... 94
Table 18. Specification of MSY for Pelagic MUS 101

Appendices

1. List of all management unit species for each fishery ecosystem plan
    1.0 American Samoa FEP MUS …… I
    1.1 Hawaii Archipelago FEP MUS …….….. XIII

1.2 Mariana Archipelago FEP MUS …… XXI
1.3 PRIA FEP MUS ……. XXX
1.4 Pacific Pelagic FEP MUS …….. XXXVII

2. National Standard 1 Guidance Final Rule – Federal Register Notice ……. XXXIX
3. Annex I of the United Nations Convention on Law of the Sea ……. XLI

List of Acronyms

ABC – acceptable biological catch
ACL(s) – annual catch limit(s)
ACT – annual catch target
AM(s) – accountability measure(s)
BET – bigeye tuna
CNMI – Commonwealth of the Northern Mariana Islands
DAR – Division of Aquatic Resources
DAWR – Division of Aquatic and Wildlife Resources of Guam
DFW – Division of Fish and Wildlife of the CNMI
DMWR – Department of Marine and Wildlife Resources of American Samoa
DOD – Department of Defense
EA – environmental assessment
EEZ – exclusive economic zone
EFH – essential fish habitat
EPA – Environmental Protection Agency
FEP – Fishery Ecosystem Plan
IATTC – Inter-American Tropical Tuna Convention
MPAs – marine protected areas
MSA – Magnuson Stevens Fishery Conservation and Management Act
MSP – marine spatial planning
MSRA – Magnuson Stevens Reauthorization Act
MSY – maximum sustainable yield
MUS – management unit species
NEPA – National Environmental Policy Act
NMFS – National Marine Fisheries Service
nm, nmi – nautical miles
NOAA – National Oceanic and Atmospheric Administration
NS1 – National Standard 1
OFL – overfishing limit
PRIA – Pacific Remote Island Areas
PIFSC – Pacific Islands Fishery Science Center
PIRO – Pacific Islands Regional Office
RFMO – Regional Fishery Management Organization
SDC – Status Determination Criteria
SSC – Science and Statistical Committee (of the Western Pacific Fishery Management Council)
USFWS – U.S. Fish and Wildlife Service
WCPFC – Western and Central Pacific Fisheries Commission

[This page left blank intentionally]

1.0 Introduction

In 2006, the Magnuson-Stevens Fishery Conservation and Management Act (MSA) was reauthorized and included additional requirements to prevent and end overfishing and rebuild overfished stocks. To comply with the additional statutory requirements, Regional Fishery Management Councils are to amend their fishery management plans to include a mechanism for specifying annual catch limits (ACL) for all fisheries at a level such that overfishing does not occur and to implement measures to ensure accountability (AM) for adhering to these limits. The MSA further directs that, unless otherwise provided for under an international agreement to which the U.S. participates, this mechanism must be established by 2010 for fisheries subject to overfishing, and by 2011 for all other fisheries.

In response to the additional statutory requirements, the Western Pacific Fishery Management Council (Council), in coordination with the National Marine Fisheries Service (NMFS) prepared this omnibus amendment to the fishery ecosystem plans (FEP) for American Samoa, Hawaii, the Mariana Archipelago (Guam and the Commonwealth of the Northern Mariana Islands (CNMI)), Pacific Remote Island Areas, and Pacific Pelagic fisheries. This omnibus amendment establishes the mechanism to specify ACLs and AMs for each fishery required to have an ACL in fishing year 2011. The mechanism incorporates methods of addressing scientific and management uncertainty when setting catch limits for the upcoming fishing year(s) and allows a suite of AMs to be applied to control catch (including both landings and discards) relative to those limits for each of the managed stocks or stock complexes subject to this requirement.

As part of the process to define a mechanism for determining ACLs and AMs, this omnibus amendment will:

(1) Establish a tier of acceptable biological catch (ABC) control rules that the Council's Science and Statistical Committee (SSC) will use to develop ABCs, which will be based on an analysis of fishery data, scientific uncertainty, and the probability or risk of overfishing;
(2) Establish a mechanism for the Council to determine ACLs at or below the SSC-recommended ABCs;
(3) Establish a suite of AMs the Council may apply to ensure fisheries do not exceed ACLs, or to account for overages of ACLs if they occur, including annual catch targets (ACTs);
(4) Describe the criteria that will be developed to designate stocks and stock complexes as ecosystem component species in the future;
(5) Identify stocks that are statutorily excepted from the ACL/AM requirement in 2011; and
(6) Describe the administrative processes and timelines the Council will follow to establish ABCs, ACLs and AMs.

If approved by NMFS, the Council will use this mechanism to determine ACL values and AMs, which NMFS will specify by rulemaking starting in fishing year 2011. The public will be notified of each specification annually. Additionally, the Council is proposing to amend the western Pacific Pelagic FEP to identify all Pelagic Management Unit species (PMUS) as stocks that qualify for statutory exceptions from the ACL/AM requirement on the basis that these

stocks/stock complexes are either subject to international management, or have an annual life cycle. The Council is also proposing to adopt the use of the ecosystem component (EC) classification so that it may develop criteria for identifying EC species in subsequent amendments to the FEPs. EC species are not targeted and generally not retained and, therefore, do not require an ACL or AM specification; however, EC species would remain in the respective FEPs for information gathering and other management purposes. Details of the three components of the proposed action are provided in section 3.0.

The mechanism described in this omnibus amendment was developed over the past four years and is informed by comments received from fishery scientists and managers, fishery policy analysts, representatives of fishery participants, and the general public. This amendment was developed in accordance with the MSA and the National Environmental Policy Act (NEPA), as well as other applicable laws. Because the action described in this amendment does not implement any specific ACL values or AMs, the evaluation of environmental impacts is limited. This review indicated that environmental impacts, if any, are anticipated to be secondary in nature because environmental effects could result if a currently unrestrained fishery were to be restricted because a recommended ACL changes the conduct of the fishery. Until such time that specific ACL values and AMs are determined for individual fisheries, the environmental impacts of actual specifications would be speculative and not appropriate for a full environmental evaluation. Accordingly, the environmental assessment includes a general discussion of the potential impacts of using ACLs and AMs in the affected fisheries.

1.1 ***Responsible agencies***

The Council was established by the MSA (originally the Fishery Conservation and Management Act, 1976) to develop management plans for U.S. fisheries operating in the U.S. Exclusive Economic Zone (EEZ) around American Samoa, Guam, Hawaii (including Midway Islands), CNMI, and the U.S. Pacific remote island areas (PRIA) which include Palmyra Atoll, Kingman Reef, Jarvis Island, Baker Island, Howland Island, Johnston Atoll, and Wake Island. Once a plan is approved by the Secretary of Commerce, it is implemented through federal regulations, which are enforced by the National Marine Fisheries Service (NMFS) and the U.S. Coast Guard, in cooperation with state, territorial and commonwealth agencies. For further information about the proposed action or about current fishery management in the western Pacific region, contact:

Kitty M. Simonds
Executive Director
Western Pacific Fishery Management Council
1164 Bishop St., Suite 1400
Honolulu, HI 96813
(808) 522-8220

Michael D. Tosatto
Regional Administrator
National Marine Fisheries Service
Pacific Islands Regional Office
1601 Kapiolani Blvd., Suite 1110
Honolulu, HI 96814
(808) 944-2200

1.2 ***Public Review Process***

The development of this ACL amendment has been discussed at each of the following Council meetings:

- 138th Council Meeting held June 19-22, 2007
- 139th Council Meeting held October 9-12, 2007
- 140th Council Meeting held March 10-14, 2008
- 141st Council Meeting held April 14, 2008
- 142nd Council Meeting held June 16-19, 2008
- 143rd Council Meeting held October 15-17, 2008
- 144th Council Meeting held March 24-26, 2009
- 145th Council Meeting held July 22-25, 2009
- 146th Council Meeting held October 20-23, 2009
- 147th Council Meeting held March 21-26, 2010
- 148th Council Meeting held June 29-July 1, 2010
- 149th Council Meeting held October 11-14, 2010

Additionally, this amendment document and EA will be available for public review and comment after publication of a Notice of Availability in the Federal Register.

1.3 ***List of Preparers***

This document was prepared by (in alphabetical order):

Paul Dalzell, Western Pacific Fishery Management Council
Phyllis Ha, NMFS Pacific Islands Regional Office
Tom Jagielo, Contractor for NMFS Pacific Islands Regional Office

Jarad Makaiau, NMFS Pacific Islands Regional Office
Sarah Pautzke, Western Pacific Fishery Management Council
Robert Skillman, Contractor for Western Pacific Fishery Management Council

1.4 Summary of Western Pacific Fishery Ecosystem Plans

Fisheries operating in U.S. EEZ waters of the western Pacific region are governed by one of five fishery ecosystem plans (FEP) developed by the Council and NMFS. The FEPs are archipelagic-based and include the American Samoa Archipelago FEP, the Hawaiian Archipelago FEP, the Mariana Archipelago FEP (which covers EEZ waters around Guam and CNMI), and the PRIA FEP. Additionally, highly migratory pelagic fishery resources such as tunas and billfish play an important role in the biological and socioeconomic environment of the western Pacific region and are managed separately through the Pacific Pelagic FEP. The FEPs, implemented in 2010 (75 FR 2198, January 14, 2010), provide a comprehensive ecosystem approach to fisheries management by managing all fishery resources of a geographic area under a single management framework, and by providing formal mechanisms for coordination and management among federal, state, and local agencies, the fishing industry, local communities, and the general public. The overall goal of the FEPs is to establish a framework under which the Council will improve its abilities to realize the purposes and policies of the MSA through the incorporation of ecosystem science and principles. To achieve this goal, the Council adopted the following ten objectives that apply to each of the FEPs:

Objective 1: To maintain biologically diverse and productive marine ecosystems and foster the long-term sustainable use of marine resources in an ecologically and culturally sensitive manner through the use of a science-based ecosystem approach to resource management.

Objective 2: To provide flexible and adaptive management systems that can rapidly address new scientific information and changes in environmental conditions or human use patterns.

Objective 3: To improve public and government awareness and understanding of the marine environment in order to reduce unsustainable human impacts and foster support for responsible stewardship.

Objective 4: To encourage and provide for the sustained and substantive participation of local communities in the exploration, development, conservation, and management of marine resources.

Objective 5: To minimize fishery bycatch and waste to the extent practicable.

Objective 6: To manage and co-manage protected species, protected habitats, and protected areas.

Objective 7: To promote the safety of human life at sea.

Objective 8: To encourage and support appropriate compliance and enforcement with all applicable local and federal fishery regulations.

Objective 9: To increase collaboration with domestic and foreign regional fishery management and other governmental and non-governmental organizations, communities, and the public at large to successfully manage marine ecosystems.

Objective 10: To improve the quantity and quality of available information to support marine ecosystem management.

To achieve these objectives, the FEPs rely on various fishery management tools appropriate to each particular fishery. A brief summary of each FEP is provided in the sections that follow.

1.4.1 **American Samoa Archipelago FEP**

Geographic area covered. The American Samoa Archipelago FEP was developed to regulate the harvest of non-pelagic marine resources in the U.S. EEZ around American Samoa (from 3nm to 200nm). The major inhabited islands are Tutuila, Aunuʻu, Ofu, Olosega, and Taʻu. The total land mass of American Samoa is about 200 square kilometers, and it is surrounded by an EEZ of approximately 405,945 square kilometers.

Fisheries managed. The American Samoa Archipelago FEP contains conservation and management measures for fisheries harvesting bottomfish, crustaceans, precious corals, and coral reef ecosystem species (See Appendix 1 for a complete listing of all management unit species). Pelagic species are managed under a separate Pacific Pelagic FEP, described in section 1.4.5 below.

The bottomfish and seamount groundfish fisheries are managed with gear restrictions, provisions for at-sea observer coverage, a framework for regulatory adjustments, and measures to minimize bycatch and bycatch mortality.

Federal permits and logbook reporting are required when fishing for crustacean species managed in the American Samoa EEZ. Gear restrictions, provisions for at-sea observer coverage, and framework procedures to revise management measures are also in place.

For the purposes of deep water precious coral fisheries management, the American Samoa Archipelago is defined as an Exploratory Precious Coral Permit Area. Management measures include seasons and quotas, along with size, gear, and area restrictions. A temporary moratorium on harvest of gold coral is currently in place.

Protection is afforded to coral reef ecosystem fisheries in American Samoa at Rose Atoll, a no-take Marine Protected Area (MPA). Extractive activities are prohibited in the Rose Atoll MPA, except for small harvests related to scientific research and related resource management. Additional management measures specified in the FEP include permit and reporting requirements, gear restrictions, bycatch measures, and a framework process to facilitate adjustments to management measures.

In 2009, the Rose Atoll was also designated as a marine national monument by Presidential Proclamation 8337 (74 FR 1577, January 12, 2009). The monument designation confers additional management and protection to resources of the area. The Council works with NMFS,

the U.S. Fish and Wildlife Service (USFWS), and the American Samoa government to ensure that fisheries management comports with monument requirements.

1.4.2 **Hawaii Archipelago FEP**

Geographic area covered. The Hawaii Archipelago FEP was developed to regulate the harvest of non-pelagic marine resources in the EEZ around the Hawaiian Islands (3-200 nautical miles offshore).

Fisheries managed. The Hawaii Archipelago FEP contains conservation and management measures for fisheries harvesting bottomfish and seamount groundfish, crustaceans, precious corals and coral reef ecosystems species (See Appendix 1 for a complete listing of all management unit species). Pelagic species are managed under a separate Pacific Pelagic FEP described in section 1.4.5 below.

Bottomfish fisheries in the main Hawaiian Islands (MHI) are managed through a total allowable catch limit (TAC), which is annually determined by the Council and specified by NMFS. In 2009, the Northwest Hawaiian Islands (NWHI) bottomfish fishery effectively ended through a voluntary effort reduction and compensation program following the designation of the area as the Papahanaumokuakea Marine National Monument in 2006 (71 FR 36443, June 26, 2006). Additional management measures for Hawaii Archipelago bottomfish include gear restrictions, provisions for at-sea observer coverage, bycatch management, and a framework process for regulatory adjustments.

The crustacean fisheries management program employs limited access (in NWHI), permit and reporting requirements, season, area, gear and size restrictions, and provisions for at-sea observer coverage, bycatch management, and a framework process for regulatory adjustments.

Hawaii's deep water precious coral fisheries are managed through bank-specific quotas and allow only selective harvesting techniques to be employed. Management measures for precious coral fisheries include: permit and reporting requirements, seasons and quotas, area, size and gear restrictions, bycatch measures, and a framework process for regulatory adjustments. A temporary moratorium on harvest of gold coral is currently in place.

The management program for coral reef ecosystem fisheries includes permit and reporting requirements, gear restrictions, bycatch measures, and a framework process for regulatory adjustments.

The Papahanaumokuakea Marine National Monument designation confers additional protection and management to resources of the NWHI. The Council works with NMFS, USFWS, and the State of Hawaii to ensure that fisheries management comports with monument requirements.

1.4.3 **Mariana Archipelago FEP**

Geographic area covered. The Mariana Archipelago FEP boundary includes all waters and associated non-pelagic marine resources within the EEZ surrounding CNMI and the Territory of Guam. Guam manages marine resources within waters 0–3 miles from its shoreline; however, in

CNMI, the submerged lands and marine resources from the shoreline to 200 miles are owned by the Federal government and subject to the Mariana Archipelago FEP, unless otherwise specified.

Fisheries managed. The Mariana Archipelago FEP contains conservation and management measures for fisheries harvesting bottomfish and seamount groundfish, crustaceans, precious corals, and coral reef ecosystems species (See Appendix 1 for a complete listing of all management unit species). Pelagic species are managed under the Pacific Pelagic FEP described in section 1.4.5 below.

Management measures for bottomfish include permit and reporting requirements, gear and area restrictions, certain anchoring restrictions, provisions for at-sea observer coverage, a framework for regulatory adjustments, and measures to minimize bycatch and bycatch mortality.

Management measures for crustacean fisheries include: permit and reporting requirements, gear restrictions, provisions for at-sea observer coverage, and framework procedures to modify management measures when needed.

Conservation and management measures for precious coral fisheries include: permit and reporting requirements, seasons and quotas for exploratory areas, area closures, size and gear restrictions, and framework procedures to revise management measures as required. A temporary moratorium on harvest of gold coral is currently in place.

Conservation and management measures for coral reef ecosystem fisheries include: permit and reporting requirements, gear restrictions, certain anchoring restrictions, measures to reduce the potential for bycatch, and a framework procedure to facilitate adjustments to management measures. In CNMI, the management area for the coral reef portion of the Marianas FEP covers the offshore area from 3-200 nm to allow CNMI the same ability to manage their coral reef inshore areas (0-3 nmi) as provided to Guam, American Samoa, and Hawaii.

In 2009, the three northern islands of CNMI and other areas of the EEZ around the Mariana Archipelago were designated as a marine national monument through Presidential Proclamation 8335 (74 FR 1557, January 12, 2009). The monument designation confers additional management and protection to resources of the areas. The Council works with NMFS, USFWS, and the CNMI government to ensure that fisheries management comports with monument requirements.

1.4.4 **Pacific Remote Island Areas FEP**

Geographic area covered. The PRIA FEP was developed to regulate the harvest of non-pelagic marine resources in the U.S. EEZ around the PRIA through an ecosystem-based approach. The PRIA includes Howland, Baker, Jarvis, and Wake Islands, Kingman Reef, and Johnston and Palmyra Atolls. For the purposes of fisheries management pursuant to the MSA, the PRIA FEP boundaries include all federal waters from the shoreline to 200 nmi surrounding each PRIA and overlay the National Wildlife Refuge boundaries asserted by the USFWS.

Fisheries managed. The PRIA FEP contains conservation and management measures for fisheries harvesting bottomfish, crustaceans, precious corals, and coral reef ecosystems species (See Appendix 1 for a complete listing of all management unit species). Pelagic species are managed under a separate Pacific Pelagic FEP described in section 1.4.5 below.

Management measures for bottomfish fisheries include: permit and reporting requirements, gear restrictions, provisions for at-sea observer coverage, a framework for regulatory adjustments, and measures to minimize bycatch quantity and mortality.

While there are currently no known crustacean fisheries operating in the PRIA, several vessels have been known to fish for crustaceans in federal waters on a small scale. Management measures for crustacean fisheries include: permit and reporting requirements, provisions for at-sea observer coverage, and a framework for regulatory adjustments.

There are no known precious coral beds in the PRIA nor are there known harvests of precious corals in the PRIA at this time. The management program for precious coral fisheries includes permit and reporting requirements, seasons and quotas, size and gear restrictions, a framework for regulatory adjustments, and measures to minimize bycatch and bycatch mortality. A temporary moratorium on harvest of gold coral is currently in place.

The management program for coral reef ecosystem fisheries incorporates two categories of MPAs: 1) no-take, and 2) low-use. From 0-50 fm, Baker Island, Howland Island, Jarvis Island, and Kingman Reef are no-take MPAs; Johnston Atoll, Palmyra Atoll, and Wake Island are low-use MPAs. Additional management measures include: permit and reporting requirements, gear restrictions, bycatch measures, and a framework process to facilitate adjustments to management measures.

In 2009, the Pacific Remote Island Areas (PRIA) were designated as a marine national monument through Presidential Proclamation 8336 (74 FR 1557, January 12, 2009). The monument designation confers additional management and protection to resources of the atolls and islands. The Council works with NMFS and USFWS to ensure that fisheries management comports with monument requirements.

1.4.5 **Pacific Pelagic FEP**

Geographic area covered. The Pacific Pelagic FEP encompasses all areas of pelagic fishing operations in the U.S. EEZ as well as on the high seas. Although the management area of the Pelagic FEP spatially overlaps with the boundaries of the Council's archipelagic FEPs for demersal fisheries, the Pacific Pelagic FEP specifically manages those resources and habitats associated with the pelagic ecosystem.

Fisheries managed. The Pacific Pelagic FEP contains conservation and management measures for fisheries harvesting highly migratory fish species which include tunas, billfishes, nine pelagic sharks, and other non-demersal fishery resources (See Appendix 1 for a complete listing of all management unit species). At present, pelagic fisheries are sizeable in American Samoa and Hawaii (comprising shallow-set (swordfish) and deep-set (tuna) longline fisheries and troll and handline fisheries), and smaller in scale in CNMI, Guam, and the PRIA.

The Council has taken a series of management actions to conserve pelagic species caught by fisheries in the Western Pacific Region. When the Pelagics FMP was originally implemented in 1986, the use of drift gill nets was banned in U.S. EEZ waters of the Western Pacific Region. Subsequent management measures have included: permit and reporting requirements, mandatory vessel monitoring for domestic longline vessels, area and season limitations, limited entry permit programs, vessel size limits, measures to reduce bycatch quantity and mortality, and recommendations for multilateral internationally coordinated management.

The Council also participates in meetings of regional fishery management organizations (RFMOs) that cover target species relevant to pelagic fisheries, including the Inter-American Tropical Tuna Commission (IATTC) and the Western and Central Pacific Fisheries Commission (WCPFC), which currently set harvest limits for bigeye tuna.

Comprehensive information on the target and non-target stocks, bycatch, protected species, and conservation and management measures for fisheries managed under each FEP can be found in the American Samoa Archipelago FEP (WPFMC 2009a), the Hawaiian Archipelago FEP (WPFMC 2009b), the Mariana Archipelago FEP (WPFMC 2009c), the Pacific Remote Island Areas FEP (WPFMC 2009d), and the Pacific Pelagic FEP (WPFMC 2009e).

2.0 Purpose and Need for Action

National Standard 1 (NS1) of the MSA requires conservation and management measures to prevent overfishing while achieving on a continuing basis, the optimum yield from each fishery for the United States fishing industry. In 2006, Congress amended the MSA to include additional provisions to enhance the ability of NMFS and the Regional Fishery Management Councils (RFMCs) to achieve the objectives of NS1. Specifically, the MSA mandates that each federal fishery of the United States be managed through annual catch limits (ACLs) set at a level such that overfishing does not occur in the fishery, and include measures to ensure accountability for adhering to the catch limits (accountability measures; AMs), unless excepted by NMFS advisory guidelines for NS1 due to management via an international fishery agreement in which the U.S. participates, or the fishery is for a species that has a life cycle of approximately one year. The MSA clarifies that these mechanisms must be established by 2010 for fisheries subject to overfishing, and by 2011 for all other fisheries. On January 16, 2009, NMFS published advisory guidelines under 50 CFR §600.310 (74 FR 3178) to assist RFMCs with implementing the requirements of NS1 of the MSA (see Section 2.2 and Appendix 2).

The purpose of this action is to amend each western Pacific fishery ecosystem plan (FEP) to include a mechanism the Council will use for determining ACLs and AMs. This action is necessary to comply with the MSA requirement for ACLs and AMs in a manner that is consistent with NMFS advisory guidelines for NS1.

2.1 Proposed Action

There are three major components to the proposed action. The first component would amend all five western Pacific FEPs to include a mechanism to develop ACLs and AMs for each fishery resource that requires them by the year 2011. Specifically, this mechanism would authorize the use of:

- A tier of control rules the Council's Science and Statistical Committee (SSC) will use to calculate an acceptable biological catch (ABC) for each fishery resource. The ABC will account for scientific uncertainty in the estimate of the overfishing limit (OFL) for the resource, and includes consideration of the probability or risk that catch equal to the ABC would exceed the OFL and result in of overfishing;
- A qualitative method for determining the acceptable probability or risk that a catch equal to the ABC would result in overfishing;
- ACLs for stocks/stock complexes in a fishery set at or below their respective ABC level; and
- A suite of accountability measures (AM) to prevent ACLs from being exceeded or to mitigate overages of an ACL if they occur, including use of annual catch targets (ACTs).

The second component of the federal action would amend the FEPs to include, for future use, an ecosystem component (EC) species classification consistent with the criteria set forth in NS1 guidelines. Species classified as EC species are not required to have annual catch limits, but will remain in the FEP for ecosystem considerations and data collection purposes.

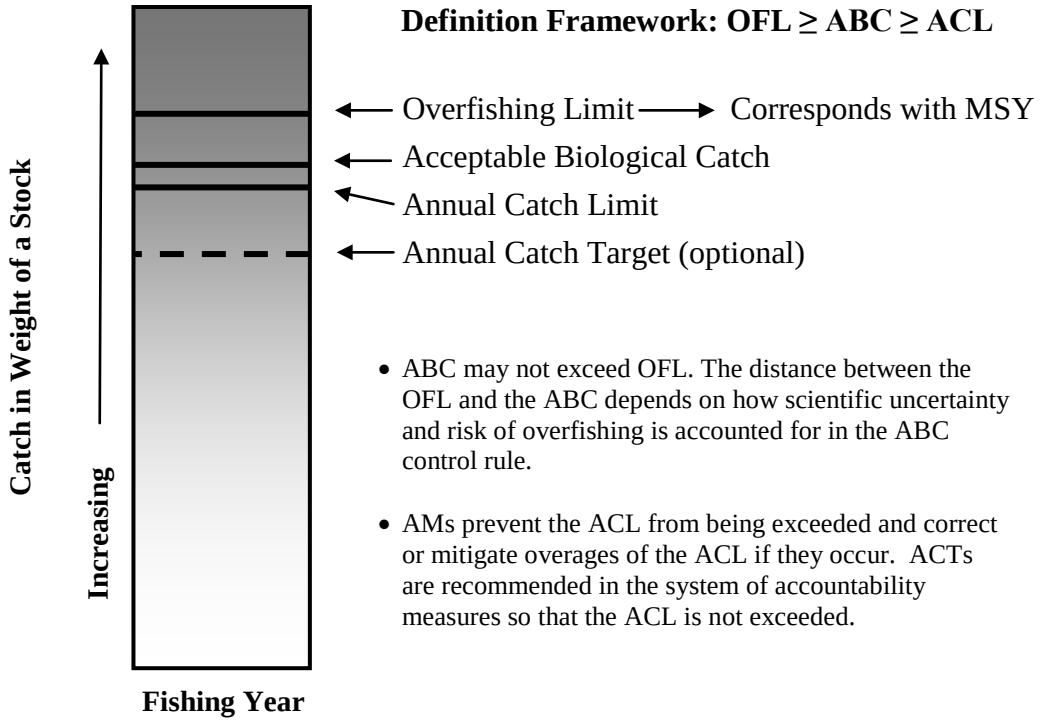
The third component of the federal action would amend the Pacific Pelagic FEP to identify the species that are subject to management under an international fishery agreement or have an annual life cycle. Under the MSA, species that meet either of these two criteria may be excepted from ACL and AM requirements.

The proposed action does not specify any ACL or implement a specific AM for any western Pacific fishery, and would not classify any EC species at this time. Therefore, the proposed action would not modify vessel operations or other aspects of any fishery. If approved by NMFS, the Council will use the established process to determine ACLs and AMs for each fishery that require them starting in fishing year 2011, and every fishing year thereafter. Future EC classifications would require an amendment to the applicable FEP.

2.2 ***Background on National Standard 1***

The MSA requires the Council and NMFS to ensure long-term fishery sustainability by ending and preventing overfishing, and by rebuilding overfished stocks. In developing the national advisory guidelines for complying with NS1, NMFS established an operational framework to explain the relationship between OFL, ABC, ACL, and ACT as they relate to maximum sustainable yield (MSY) and overfishing. Figure 1 illustrates the concepts and terminology discussed in this section.

Figure 1. Relationship between OFL, ABC, ACL, and ACT.



2.2.1 **Maximum Sustainable Yield, Overfishing Limit, and Status Determination Criteria**

Maximum sustainable yield (MSY) is the maximum catch that can be harvested from a fishery on a continuing basis under prevailing conditions. If a stock or stock complex in a fishery is

harvested on a continuing basis at MSY (F_{MSY}), its abundance will approach a long-term average biomass (B_{MSY}), at which it will fluctuate. MSY, F_{MSY} and B_{MSY} should be estimated for each stock based on the best scientific information available; however when such information is not available, these values should be estimated using proxies, to the extent possible.

Corresponding to the notions of MSY, F_{MSY} and B_{MSY}, three concrete operating reference points can be set: (1) maximum fishing mortality threshold (MFMT); (2) minimum stock size threshold (MSST); and (3) overfishing limit (OFL). These concrete reference points may actually differ from their notional counterparts because MSY, F_{MSY} and B_{MSY} may be poorly known; therefore, MFMT, MSST and OFL may be purposefully adjusted away from the notional counterparts for precautionary reasons. The concrete reference points of MFMT, MSST, and OFL are used to determine the status of a stock or stock complex. NMFS terms these reference points as status determination criteria (SDC). Overfishing occurs whenever fishing mortality is greater than MFMT or the annual catch is greater than OFL. A stock or stock complex is considered overfished when its biomass falls below MSST.

With respect to overfishing, NS1 requires each FEP to describe which of the two methods, MFMT or OFL, will be used to determined the overfishing status of a stock or stock complex. Currently, each western Pacific FEP utilizes MFMT as the SDC for overfishing and MSST for an overfished determination. Estimating MSY and setting the corresponding OFL is the responsibility of NMFS, as is determining the overfishing or overfished status of a stock or stock complex.

2.2.2 **Acceptable Biological Catch**

Because MSY and OFL are estimates, there is an inherent level of uncertainty in the accuracy of these estimates due to scientific uncertainty in the information that is used in their calculation. Therefore, NS1 requires that an acceptable biological catch (ABC) limit be established at or below the OFL through the use of an ABC control rule to account for this uncertainty. Additionally, given the inherent uncertainty in the estimates in OFL, there is a probability (P) that the value set for ABC may exceed the true (but not precisely known) value of OFL, thus catch at ABC could actually result in overfishing. Therefore, when possible, ABC should be set such that P is less than some acceptable risk of overfishing (P*), as determined by the Council. While the ABC is allowed to equal OFL, in most cases ABC will be set lower than OFL to decrease the probability that overfishing might occur in a year (Figure 2). According to NS1 guidelines, the probability that overfishing will occur cannot exceed 50 percent and should be a lower value. NS1 clarifies that it is the responsibility of the SSC to recommend the ABC to the Council. The SSC may recommend an ABC that differs from the result of the ABC control rule calculation (e.g., based on factors such as data uncertainty, recruitment variability, variability in prevailing conditions including fishery selectivity, and declining trends in population variables etc.), but must provide an explanation for its ABC recommendation.

2.2.3 **Annual Catch Limits, Annual Catch Targets, and Accountability Measures**

Once the OFL and ABC for a stock or stock complex are provided to the Council, it is the responsibility of the Council to determine the ACL. NS1 clarifies that the ACL may not exceed the ABC and may be set annually or on a multi-year basis. Under the NS1 guidelines, the ACL is

purposely set at or below the ABC to further reduce the likelihood that annual catch equal to the ACL will exceed the ABC and OFL, and thus result in overfishing. The guidelines allow the Council to divide an ACL for a fishery into sector-ACLs. Examples of sectors include the commercial sector and recreational sector, or various gear groups within a fishery.

The ACL is also the level of annual catch of a stock or stock complex that serves as the basis for invoking AMs. AMs are management controls to prevent ACLs from being exceeded and to correct or mitigate overages of the ACL if they occur. AMs should address and minimize both the frequency and magnitude of overages, and correct the problems that caused the overage in as short a time as possible. Two categories of AMs are: 1) in-season AMs and 2) AMs for situations where the ACL is exceeded.

In-season AMs

Whenever possible, FMPs should include in-season monitoring and management measures to prevent catch from exceeding ACLs. In-season AMs could include, but are not limited to: 1) an ACT, 2) the closure of a fishery, 3) the closure of specific areas, 4) changes in gear, 5) changes in trip size or bag limits, 6) reductions in effort, or 7) other appropriate management controls for the fishery. If final catch data are delayed, Councils should make appropriate use of preliminary data in implementing in-season AMs. Provisions for in-season fishery closure authority should be described for situations where it is evident that an ACL has been exceeded or is projected to be reached, and that closure of the fishery is necessary to prevent overfishing. For fisheries without in-season management controls to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL.

An ACT is an amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch to an amount that is at or below the ACL. Management uncertainty may include late catch reporting, misreporting, and underreporting of catches by fishery participants. The uncertainty is also affected by the ability of fishery managers to control the actual catch of a fishery. For example, a fishery that has in-season catch data available and in-season closure authority has better management control and precision than a fishery that does not have these features. Though not required by the NS1 guidelines, ACTs are recommended in the system of accountability measures to help ensure an ACL is not exceeded. If an ACT is specified as part of the AMs for a fishery, an ACT control rule should be utilized for setting the ACT.

AMs for situations where the ACL is exceeded

On an annual basis, the Council must determine as soon as possible after the fishing year if an ACL was exceeded. If an ACL was exceeded, AMs must be triggered as soon as possible to correct the operational issue that caused the ACL overage, as well as remedy any biological consequences resulting from the overage. These AMs could include, among other things, modifications of in-season AMs or overage adjustments. If catch exceeds the ACL for a given stock or stock complex more than once over a 4-year period, the system of ACLs and AMs should be re-evaluated and modified, if necessary, to improve its performance and effectiveness. A Council could choose a higher performance standard (e.g., a stock's catch should not exceed its ACL more often than once every five or six years) for a stock that is particularly vulnerable to

the effects of overfishing if the vulnerability of the stock has not already been accounted for in the ABC control rule.

AMs based on multi-year average data

Some fisheries have highly variable annual catches and lack reliable in-season or annual data on which to base AMs. If there are insufficient data upon which to compare catch to ACL, either in-season or on an annual basis, AMs could be based on comparisons of average catch to average ACL over a three-year moving average period (or another appropriate multi-year period, if supported by analysis). Councils should explain why basing AMs on a multi-year period is appropriate. Evaluation of the moving average catch to the average ACL must be conducted annually and AMs should be triggered if the average catch exceeds the average ACL. As a performance standard, if the average catch exceeds the average ACL for a stock or stock complex more than once in a four year period, the NS1 guidelines recommend the system of ACLs and AMs be re-evaluated and modified to improve the performance and effectiveness of the ACL and AM measures.

AMs for State-Federal fisheries

For stocks or stock complexes that have harvest in state or territorial waters, FMPs and FMP amendments must, at a minimum, have AMs for the portion of the fishery under Federal authority. Such AMs could include closing the EEZ when the Federal portion of the ACL is reached, or the overall stock's ACL is reached, or other measures.

2.2.4 **Stocks Excepted from Annual Catch Limits and Accountability Measures**

The MSA states that the ACL and AM requirements shall not apply to a fishery for species that have a life cycle of approximately 1 year unless the Secretary has determined the fishery is subject to overfishing. NS1 guidelines clarify that this exemption applies to a species for which the average length of time it takes for an individual to produce a reproductively active offspring is approximately 1 year and that the individual has only one breeding season in its lifetime. While exempt from the ACL and AM requirements, FEPs or FEP amendments for these stocks must have SDC, MSY, optimum yield (OY), ABC, and an ABC control rule. Additionally, the MSA provides an exception to the ACL requirement for stocks or stock complexes subject to management under an international agreement, which is defined as any bilateral or multilateral treaty, convention, or agreement that relates to fishing and to which the United States is a party. These excepted stocks still must have SDC and MSY specified.

3.0 **Description of the Alternatives**

This section describes the alternatives considered to implement the three major components to the proposed action described in Section 2.1.

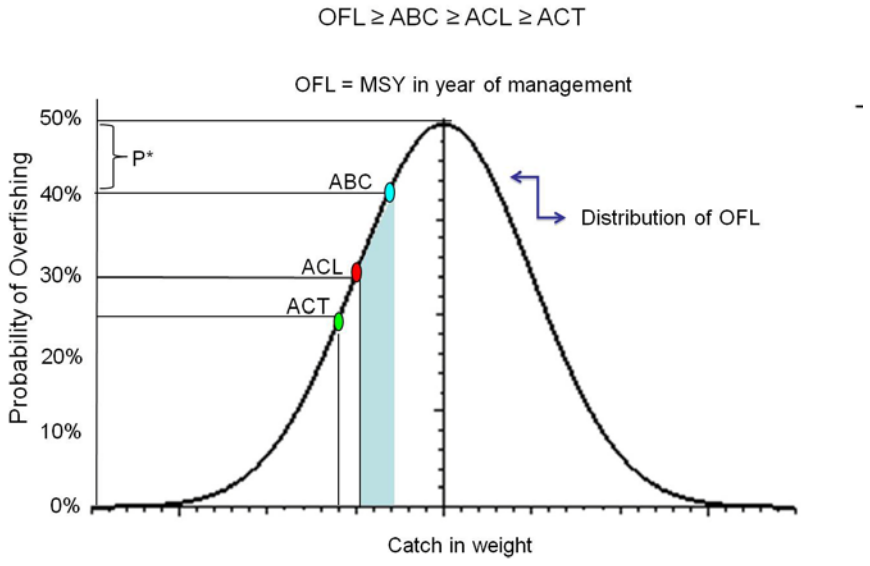
3.1 ***Action 1: Mechanism for Specifying ACLs, including ABCs and AMs***

There are three required elements in the mechanism for specifying ACLs. The first requires the calculation of an ABC that is set at or below the OFL. The ABC is determined by the SSC using an ABC control rule developed by the Council. The ABC control rule accounts for scientific uncertainty in the estimate of the OFL and when possible, an acceptable level of risk (as determined by the Council) that catch equal to the ABC could actually exceed the OFL and result in overfishing. NS1 guidelines clarify that the acceptable risk of overfishing, or P*, cannot exceed 50% and should be a lower value. If P* is considered, the Council must inform the SSC of the acceptable P* value which the SSC must apply in the ABC control rule to calculate the ABC that is recommended to the Council.

The second element requires the Council to determine an ACL that may not exceed the SSC-recommended ABC. An ACL set below its ABC further reduces the probability that actual catch will exceed the OFL and result in overfishing. NS1 guidelines do not mandate any specific approach or method for determining an ACL.

The third and final element in the ACL mechanism is the inclusion of AMs. AMs must be included in the ACL mechanism to prevent ACLs from being exceeded, and to correct or mitigate overages of ACLs if they occur. NS1 guidelines provide that annual catch targets (ACT) may be used in the system of AMs so that an ACL is not exceeded. The relationship between ABC, ACL and ACT are shown in relation to the probabilities of exceeding the OFL in Figure 2.

Figure 2. Relationship of the expected values of the long-term average MSY, OFL, ABC, ACL and ACT.



The OFL in Figure 2 is normally distributed for illustration, whereas in reality the distribution could be skewed, flatter, or more peaked. The percentages and corresponding ABC, ACL, and ACT presented on the graph are provided as an example and do not represent the values for any particular stock. It must also be noted that the probability of overfishing is only accounted for at the ABC step. ACL and ACT (which account for management uncertainty) are included on this distribution curve only to illustrate how the use of an ACL and ACT further decreases the probability that actual catch will exceed the OFL.

Alternative 1: No Action

Under this alternative, no western Pacific FEP would be amended and there would not be any mechanism developed for specifying ACLs, nor would methods be developed for calculating ABCs or setting ACLs and AMs for western Pacific fisheries.

Alternative 2: Establish a Mechanism for Specifying ACLs, including ABCs and AMs *(preferred)*

Under the preferred alternative, a mechanism for specifying ACLs would be established in the FEPs for American Samoa, Hawaii, the Mariana Archipelago, the Pacific Remote Island Areas, and western Pacific Pelagic fisheries. The ACL mechanism would include a tiered system of ABC control rules that the SSC will apply to calculate ABC. Included in this is a qualitative method the Council will employ to determine an appropriate P* value for each fishery. The ACL mechanism also includes methods for determining ACLs and AMs for stocks and stock complexes in the fishery. If approved by NMFS, ACLs and AMs developed by the Council will be specified by the agency prior to the start of each fishing year. Figure 3 illustrates the preferred method for specifying ACLs, including the procedures for calculating ABC and setting ACL and AMs that are all described in this section.

Figure 3. Schematic of preferred method for specifying ABC, ACL and AMs, including ACTs.

Fishery Data Quality:
(Determined by SSC)

Tier 1 Stock	Tier 2 Stock	Tier 3 Stock	Tier 4 Stock	Tier 5 Stock
Overfishing limit (OFL) and uncertainty in OFL are estimated from statistically-based stock assessment models and are considered reliable.	OFL and uncertainty in OFL are estimated from statistically based stock assessment models, but are not considered reliable.	OFL and uncertainty in OFL are estimated using DCAC-SRA and through re-sampling, and are not considered reliable.	OFL and uncertainty in OFL are unknown; MSY is known, but there is no current fishery for the stock.	OFL and uncertainty in OFL are unknown; MSY is also unknown, but catch data are available for the stock.

ABC Control Rule:
(Applied by SSC)

ABC = P_{P^*}(OFL)
Where:
- OFL is estimated as:
  $OFL = B_y \left[\frac{F_{MSY}}{F_{MSY}+M}\right] [1 - \exp(F_{MSY} + M)]$;
- B_y is forecasted estimate of B in year y, the year for which the harvest limit is set;
- M is natural mortality coefficient;
- P_{P^*} is the P^* percentile of the probability distribution of OFL such as in Figure 2;
- OFL is not necessarily normally distributed; and
- the shape and particularly the width of the distribution reflect the uncertainty in the estimate of OFL.

ABC = 0.70 F_{MSY}
(91% of MSY)

If median catch is > B_{MSY},
ABC = 1.0* median catch

If median catch is > MSST but below B_{MSY},
ABC = 0.67* median catch

If median catch is < MSST (overfished),
ABC = 0.33* median catch

ABC
(Calculated by SSC)

ACL Specification Methods to Choose:
(Applied by Council)

Method 1. Qualitative Construct: ACL = ABC reduced by Social, Economic, Ecological and Management (SEEM) considerations;
Method 2. Percentage Buffer: ACL = ABC reduced by a specified % based on management uncertainty; or
Method 3. Setting an ACL when an Annual Catch Target (ACT) is used:
Option 1: ACL may be set = ABC, but ACT must be used and set below ACL by ACT Control Rule or SEEM analysis (See ACT Control Rule below) or
Option 2: ACL maybe set < ABC using a modified Qualitative Construct (Method 1) which only considers Social, Economic and Ecological factors, but ACT must be used and set below ACL by ACT Control Rule.

Accountability Measures to Choose:
(Applied by Council)

1. In-season AMs;
2. Overage Adjustments; and
3. ACT
(More than one AM may be applied to a fishery)

ACT Control Rule

To be applied by Council if ACL Method #3 (see box, above) is applied:
a. ACT = the mean of the overages (either in pounds of fish or percentage of catch) of the ACL over a three-year period; or
b. ACT = percentage reduction from ACL based on SEEM considerations.

KEY: ABC = Acceptable Biological Catch; ACL = Annual Catch Limit; ACT = Annual Catch Target; B = Average Stock Biomass; B_{MSY}= Average Stock Biomass at MSY; Council = Western Pacific Fishery Management Council; F_{MSY} = Fishing mortality at MSY; MSY = Maximum Sustainable Yield; OFL = Overfishing Limit; MSST = Minimum Stock Size Threshold; SSC= Science and Statistical Committee.

3.1.1 **Calculation of the Acceptable Biological Catch**

This section describes how the ABC will be calculated and set compared to the OFL using ABC control rules that account for the level of scientific knowledge about the stock or stock complex, scientific uncertainty in the estimate of OFL, and other scientific information. This section also discusses how the acceptable risk of overfishing (P*) is factored into the ABC control rule and how P* is determined.

3.1.1.1 **Tiered System of ABC Control Rules**

Under the preferred alternative, for stocks and stock complexes required to have an ABC, the Council will utilize a five-tiered system of ABC control rules that allows for different levels of scientific information to be considered when calculating ABC. The control rules are organized from data rich down to data poor, with Tier 1 being the highest (data rich) and Tier 5 being the lowest (data poor). Tiers 1-2 involve data rich to data moderate situations and include levels of uncertainty derived from model-based stock assessments. Tiers 3-5 involve data poor situations and include levels of uncertainty derived from ad-hoc procedures including simulation models or expert opinion.

When calculating an ABC for a stock or stock complex, the SSC must first evaluate the information available for the stock and assign the stock or stock complex into one of the five tiers. The SSC must then apply the control rule assigned to that tier to determine the ABC. The SSC may recommend an ABC that differs from the result of the control rule calculation based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors determined relevant by the SSC, but must explain their rationale. The tiered system of ABC control rules are described below.

Tier 1. Model-Based Probabilistic Approach to Estimating ABCs

In this tier, the data used are reliable and complete enough to be able to utilize statistical-based stock assessment models (e.g., Stock Synthesis 2 (or 3), Multifan-CL (MFCL), C++ Algorithmic Stock Assessment Laboratory (CASAL), and Bayesian production models). From these stock assessments, reliable estimates of MSY, F_{MSY}, B_{MSY}, and B_t are available. Of special relevance to being included in this tier, measures of the uncertainty of F_{MSY}, B_t and B_{t+k} and OFL_{t+k} must be available directly.

In plain English:

> ABC is the maximum value for which the probability "p" of exceeding OFL is less than P*.

Or, in conceptual mathematical terms:

$$ABC = \max (x \mid p(x > OFL) < P^*)$$

Or, as commonly estimated:

$$ABC = P_{P^*}(OFL)$$

Where:

- OFL is estimated as ——— ;
- B_y is forecasted estimate of B in year y, the year for which the harvest limit is set;
- M is natural mortality coefficient;

- P_{P*} is the P* percentile of the probability distribution of OFL such as in Figure 2;
- OFL is not necessarily normally distributed; and
- the shape and particularly the width of the distribution reflect the uncertainty in the estimate of OFL.

The Council must advise the SSC on the acceptable P* (see section 3.1.1.2 for a discussion on determining P*) to use prior to calculating and recommending the ABC. If the SSC determines that the uncertainty of OFL is underestimated (due to underestimating the uncertainty of F_{MSY} and/or the forecasted estimated B_t), the SSC could appropriately rescale the width of the OFL distribution.

Tier 2. Quasi-Probabilistic Approach to Estimating ABCs

The key difference between assessments in Tier 1 and Tier 2 is that in Tier 2, measures of uncertainty of OFL are not as reliable or are not available from a single, integrated stock assessment model. Reliable data must still be available to be in included in this tier, but those used are obtained through some separate analysis or analyses. The methods often involve re-sampling or ad hoc methods. While the statistical-based model characteristic of Tier 1 can occur here, the common assessments are Yield-per-Recruit (Y/R) and Spawning-per-Recruit (SPR). Such assessments involve the use of F_{MSY} proxies, usually $F_{30\%}$ and $F_{60\%}$. The data in Tier 2 may not be as reliable or complete as in Tier 1, though still of sufficient quality to provide fully usable stock assessments.

$F_{30\%}$ = Fishing at the rate that reduces spawning biomass per recruit to 30% of the unfished value. Used as a substitute for F_{MSY} when using Y/R and SPR stock assessments. $F_{60\%}$, as well as others, has also commonly been used.

ABC is estimated using the equation in Tier 1 above, with the uncertainty estimates coming from re-sampling (i.e. method for estimating and re-estimating probability distributions such as bootstrapping). The Council must advise the SSC on the acceptable P* (see section 3.1.1.2 for a discussion on determining P*) to use prior to calculating and recommending the ABC.

Tier 3. Data-poor Probabilistic Approach to Setting ABCs

In this tier, the available data are not sufficient for the use of model-based assessment tools. Data are sufficient to apply the Depletion-Corrected Average Catch – Stock Reduction Analysis (DCAC-SRA) (McCall 2009) with information on the biology of the stock, or DCAC, in which there is some estimate of natural mortality (M), but other life history information is lacking. In these circumstances, the uncertainty of OFL (the probability distribution of OFL) can be estimated using the Monte Carlo simulation (i.e. a technique that uses algorithms that rely on repeated random sampling to compute results) . These tools are to be applied to long-lived species where the natural mortality coefficient M should be less than 0.20 and recruitment should not be highly episodic.

ABC is estimated using the equation in Tier 1 above, with the uncertainty estimates established by the Monte Carlo simulation. Again, the Council must advise the SSC on the acceptable P* (see section 3.1.1.2 for a discussion on determining P*) to use prior to calculating and recommending the ABC.

Tier 4. ABC Control Rule for Species without Current Harvest
This ABC control rule is for species or species assemblages with stock assessments and/or MSY estimates, but no current harvest, such as deepwater shrimp (*Heterocarpus*). The ABC is set at 0.70 F_{MSY} (= yield 91% OFL = 91% MSY = ABC; see Walters et al. 2005) as a precautionary measure to maximize yield while minimizing biomass impacts and accounting for scientific uncertainty. An alternative target fishing mortality value may be specified if additional data or modeling is available to support it, or the Council chooses to be more precautionary.

Walters et al. (2005) provided an example through the modeling tool, ECOSIM, in which k = 0.7 represents a precautionary factor in setting the target fishing mortality (F_{MSY}), which is predicted to have little impact on yield. When k = 0.7, the ECOSIM simulations implied a sustainable yield of around 0.9 MSY. "k" is a factor that a fishery modeler can vary to represent varying levels of precaution for F_{MSY} within the ECOSIM model. Similarly, NMFS Technical Guidance on implementing NS1 by Restrepo et al. (1998) recommended a default fishing mortality target of 25% below MFMT, or 0.75 F_{MSY}, which results in an equilibrium yield of 94% MSY or higher. This Tier 4 control rule adopted by the WPFMC is more precautionary than the control rule recommended by Restrepo et al. (1998) and in line with the results of Walters et al. (2005). As Tier 4 involves a fishery with no current harvest, this ABC control rule does not include consideration of P*; however if harvest occurs, the fishery may be moved into higher tier where P* would be need to be considered.

Tier 5. Data-poor Ad-hoc Approach to Setting ABCs
In this tier, catches may be small and/or the catch history may contain gaps or be too variable. Catch history may also be lacking in consistently stable periods or periods with consistent trends for using DCAC-SRA or DCAC. Hence, there is no basis for estimating a reliable MSY or OFL.

For these data poor fisheries, a multiplier of the long-term median catch history will be used. The multiplier will be determined by the biological knowledge of the stock or stock complex, in light of the guidance provided by Restrepo et al. *(Section 2.2.2: Data Poor Situations*). The guidance recommends that the default control rule be implemented by multiplying the average catch from a time period where there is no quantitative or qualitative evidence of declining abundance ("Recent Catch") by a factor based on a qualitative estimate of relative stock size. The following guidelines were provided:

Above B_{MSY}	Limit catch = 1.00*Recent Catch
Above MSST but below B_{MSY}	Limit catch = 0.67*Recent Catch
Below MSST (i.e. overfished)	Limit catch = 0.33*Recent Catch

However, Restrepo et al. (1998) advises that because it will probably not be possible to analytically determine stock status relative to B_{MSY} for data poor stocks, an approach based on informed judgment will be necessary. The authors further state (*Section 3.3.1: Data Poor Defaults*) that "in cases of severe data limitations, qualitative approaches may be necessary, including expert opinion and consensus-building methods." As Tier 5 involves data poor situations, this ABC control rule does not include consideration of P*.

3.1.1.2 **Determining the Acceptable Probability of Overfishing used in the ABC Control Rule**

The ABC control rule for Tier 1-3 fisheries requires the Council to advise the SSC on the acceptable probability of overfishing (P*) in order for the SSC to calculate and recommend the ABC. As discussed above, P* refers to the acceptable probability or risk that actual catch equal to the ABC would exceed the OFL and thus, result in overfishing. NS1 guidelines require that the probability that overfishing will occur cannot exceed 50% and should be a lower value. Consequently, the Council adopted a maximum P* value of 50%; however, under the preferred alternative, where adequate scientific information is available on the stock or stock complex, the Council will utilize a qualitative method for determining an appropriate P* that is lower than the maximum of 50%. This qualitative approach is described below.

Qualitative Analysis for Determining P*

The Council developed a process by which the risk of overfishing can be reduced from the 50% maximum P*. This approach, based on the approach developed by the South Atlantic FMC, is a qualitative method of determining P* that considers the amount of information available on the stock or stock complex, including scientific uncertainty, for the following dimensions: 1) assessment information, 2) assessment uncertainty, 3) stock status, and 4) productivity and susceptibility. Information on the four dimensions will be complied and analyzed by a team that may include Council and SSC members, Council staff, and other individuals knowledgeable in the fishery, including stock assessment experts. Team members will use their knowledge and expertise to assign a single score for each dimension based on the criteria below. The maximum value for each dimension is 12.5 and the sum of the four dimensions has a maximum value of 50. The scores for each dimension will be added together for a final score, then be reduced from the maximum risk of overfishing (P^*_{MAX}) of 50. The team's analysis will be vetted through the Council process with the Council ultimately deciding the final P* value. The Council-approved P* would then be utilized in the calculation of the recommended ABC. An example of the qualitative analysis is provided below, but the exact criteria and scoring values used may change as deemed appropriate by the team for each assessed stock.

1) Assessment Information

Criteria	Score	
Quantitative assessment provides estimates of exploitation and B; includes MSY-derived benchmarks	0.0	
Reliable measures of exploitation or B, no MSY benchmarks, proxy reference points	2.5	X
Relative measures of exploitation or B, absolute measures of stock unavailable, proxy reference points	5.0	
Reliable catch history	7.5	
Scarce or unreliable catch records	12.5	

2) Assessment Uncertainty

Criteria	Score	
Complete. Key determinant – uncertainty in both assessment inputs and environmental conditions included	0.0	
High. Key determinant – reflects more than just uncertainty in future recruitment	2.5	
Medium. Uncertainties are addressed using statistical techniques and sensitivities, but full uncertainty is not carried forward in projections	5.0	X
Low. Distributions of F_{MSY} and MSY are lacking	7.5	
None. Only single point estimates; no sensitivities or uncertainty evaluations	12.5	

3) Stock Status

Criteria	Score	
Neither overfished nor overfishing. Stock is at high B and low exploitation relative to benchmark values	0.0	
Neither overfished nor overfishing. Stock may be in close proximity to benchmark values	2.5	X
Stock is either overfished or overfishing is occurring	5.0	
Stock is overfished and overfishing is occuring	7.5	
Either status criterion is unknown	12.5	

4) Productivity and Susceptibility

Criteria	Score	
Low risk. High productivity, low vulnerability, low susceptibility	0.0	
Medium risk. Moderate productivity, vulnerability, and susceptibility	5.0	X
High risk. Low productivity, high vulnerability, high susceptibility	12.5	

SCORE SUMMARY

Dimensions	Score
Assessment information	2.5
Assessment uncertainty	5.0
Stock status	2.5
PSA	5.0
Total Score	**15.0**
Risk of overfishing: **(P*=50 minus Total Score, where 50 equals P^*_{MAX})**	**35**

In the example above, the resulting P* of 35 could then be used in the ABC control rule equations available for stocks in any of the tiers 1 through 3, presented in section 3.1.1.1. Benefits of this alternative include the following: 1) it brings together multiple experts to

determine the risk of overfishing based on their diverse knowledge; 2) it can be applied in both data rich and data poor situations, i.e. whether formal stock assessments can be conducted or not; and 3) it need not be repeated annually unless information suggests that circumstances have changed significantly.

Other Options Considered but Rejected for Determining P*

Two other methods for determining P* were discussed but ultimately rejected by the SSC and Council, including a graphical approach that plots B/B_{MSY} ratios against the probability of overfishing, and a tabular approach using catch from which the Council could see the resulting ABCs and the associated levels of risk. These two approaches were not agreed upon because they are more appropriate for tier 1 situations and possibly tier 2, but data quality may call into question the results in the 3rd tier.

3.1.2 **Setting the Annual Catch Limit**

NS1 guidelines require the Council to determine an ACL that may not exceed the SSC-recommended ABC; however, NS1 does not provide guidance on how to set an ACL below the SSC-recommended ABC. This section describes the methods the Council will use to set ACLs starting in 2011.

Under the preferred alternative, ACL will be set by the Council after considering the ABC provided by the SSC, as well as social and economic factors, pertinent ecological considerations, and management uncertainty. Management uncertainty stems from insufficient information about true catch (e.g. late reporting, underreporting and misreporting of landings), lack of management precision, and/or the ability to close a fishery before a catch limit is exceeded. NS1 guidelines suggest management uncertainty be accounted for during the establishment of AMs for a fishery, including ACTs; however, nothing precludes the Council from accounting for management uncertainty at the ACL step.

Method 1: Qualitative Construct for Setting an ACL

The ACL qualitative construct uses an approach similar to the P* qualitative construct outlined in Section 3.1.1.2. While the P* qualitative construct considers the amount of biological information (scientific uncertainty) available on the stock or stock complex, the ACL qualitative construct considers the amount of socio-economic information (management uncertainty) on the fishery that targets the stock or stock complex. Specifically, the dimensions that will be used for the ACL qualitative construct would include the following factors: 1) Social; 2) Economic; 3) Ecological; and 4) Management uncertainty (SEEM). Aspects of the SEEM dimensions could include the importance of the fishery both socially and economically; consideration of the ecological importance of the stock or stock complex targeted by the fishery (e.g., is the stock a key indicator species of ecological health of the ocean), and whether managers can effectively constrain catch to planned levels.

Information on the SEEM dimensions will be compiled and analyzed by a team that may include Council and SSC members, Council staff, and other individuals knowledgeable in the fishery. This team will also be responsible for developing the criteria and scoring values regarding the quality and completeness of the information for each dimension. Like the P* qualitative construct, the scores for each dimension will be added together so that the total score is

subtracted from a default value of 100% ABC (i.e., 100). Because SEEM analyses will be unique for each fishery, there are no specifics given at this time for the criteria or scoring values within the dimensions.

Method 2: Percentage Buffer for Setting an ACL

Under this method, the ACL would be set as a percentage of the ABC (e.g., ACL = 10% to 100% of the ABC) with the actual percentage dependent upon the amount of management uncertainty that exists in the fishery. For example, if management uncertainty is low, the ACL would be set close to 100% of the ABC. Alternatively, if management uncertainty is high, ACL would be set as a lower percentage. Factors that the Council will consider when selecting the percentage include late reporting, underreporting, and misreporting of landings in the fishery, as these factors contribute to the possibility that the true catch may actually exceed the ABC and ultimately the OFL of a fishery, thus resulting in overfishing. The justification for using this method over method 1 would need to be clearly identified by the Council when setting the ACL, as it is not a quantitative decision. However, it is useful to note that the ACL is a management decision for the Council to make, not necessarily a numerically-derived limit.

Method 3: Setting an ACL when an ACT will be Utilized

An ACT is an amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. When an ACT is used, it should be set lower than the ACL with a large enough buffer between the two reference points such that risk of exceeding the ACL is low. NS1 guidelines recommend ACTs in the system of accountability measures so that ACL is not exceeded. See Section 3.1.3 for a description of setting the ACT.

If the Council decides to use an ACT as a means to ensure an ACL is not exceeded, there are two options the Council may use in setting an ACL. Under the first option, the Council could simply set the ACL equal to the ABC. If this option is taken, management uncertainty will be accounted for at the ACT level using the ACT control rule described in Section 3.1.3. Under this option, in addition to management uncertainty, the Council could also consider social, economic and ecological factors to set the ACT and thus could apply the entire SEEM analysis described under Method 1 to set the ACT below the ACL. While NS1 guidelines do not require social, economic or ecological factors to be considered in setting the ACT, nothing precludes the Council from doing so, although the resulting ACT would be more precautionary than NS1 intends.

Under the second option, the Council would set the ACL less than the ABC using a modified Method 1 (Qualitative construct for setting ACLs) described above whereby the analysis for setting the ACL will only consider sociological, economic, and/or ecological factors. Under this option, management uncertainty will be accounted for at the ACT level using the ACT control rule (3-year running average) described in Section 3.1.3.

As a performance measure for all ACL managed fisheries, if landings exceed the ACL for any stock or stock complex more than once in a four year period, the Council will re-evaluate the system of ACLs and AMs for the fishery and modify the system as necessary to improve its performance and effectiveness.

3.1.3 **Suite of Accountability Measures**

In addition to ACLs, the MSA also requires NMFS and the Councils to implement AMs (MSA §303(a)(15)). NS1 guidelines (74 FR 3178; January 16, 2009) explain that AMs are management controls to prevent ACLs from being exceeded and to correct or mitigate overages of the ACLs if they occur. The guidelines recommend FMPs describe AMs and how those measures are triggered. NS1 guidelines also suggest that management uncertainty be accounted for in establishing the AMs for a fishery, including uncertainty in the ability of managers to constrain catch and uncertainty in quantifying the true catch amounts. Since the purpose of ACLs and other harvest controls is to prevent overfishing, AMs are triggered at the ACL level to ensure the ABC and OFL are not exceeded and overfishing does not occur.

Under the preferred alternative, in fisheries for which in-season monitoring of catch is possible (i.e. fisheries with federal logbook reporting and State of Hawaii commercial fisheries, including MHI bottomfish), tracking of catch landings towards the ACL would be initiated at the start of each fishing year. When the ACL is projected to be reached, the commercial and non-commercial fishery sectors will be closed in federal waters for the remainder of the fishing year. For fisheries that rely on non-federal creel survey programs conducted by local marine resource management agencies, in-season tracking of catch landings may not be fully possible because availability of catch data is dependent upon local agencies workload and priorities. For these fisheries, the Council may employ overage adjustments as an accountability measure. If the Council determines at the end of a fishing year that total catch has exceeded the specified ACL for any fishery, the Council may reduce the ACL for the subsequent fishing year by the percentage or absolute value of the overage. However, one crucial aspect of this is that overages are typically factored into the subsequent year's stock assessment, as are any underages. For this reason, the Council will need to decide whether to include an overage adjustment if the overage has already been considered in a stock assessment, although stock assessments are typically not performed annually. However, as a performance measure for all ACL managed fisheries, if landings exceed the ACL for any stock or stock complex more than once in a four year period, the Council will re-evaluate the system of ACLs and AMs for the fishery and may modify the system as necessary to improve its performance and effectiveness.

As explained in Section 3.1.2 in Method 3, ACTs may also be utilized as an accountability measure to ensure a fishery does not exceed its ACL. Under the preferred alternative, the Council has recommended two approaches for setting an ACT for western Pacific fisheries.

The first approach utilizes an ACT control rule based on a 3-year running average of overages of a specified catch limit (e.g. TAC, quota, ACL, or ACT). The percentage or absolute value of the overage of a catch limit over a three year period will be reduced from the ACL in the following year. With this approach, if an ACL is not exceeded, a zero (0) percentage or absolute value will be attributed for that year. For example, assuming a static ACL of 100,000 pounds has been set annually for three consecutive years, and total catch exceeded the ACL in year 1 by 2,000 pounds (or 2%), year 2 by 6000 pounds (6%), and in the third year was 3000 pounds short (or 97,000 pounds), the ACT reduction would be calculated as a percentage as follows (2% + 6% + 0%)÷3 = 2.67%. In this example, ACT will be reduced by 2.67% (or 2,667 pounds) from the next 100,000 ACL, resulting in an ACT of 97,330 pounds in that following year.

Alternatively, absolute values instead of a percentage could also be utilized. For example, using the same 100,000 pound ACL, the ACT would be calculated as follows: (2000 pounds + 6000 pounds + 0 pounds) ÷ 3 = 2,667 pounds, which results in that amount being reduced from the 100,000 pound ACL in the following year, or an ACT of 97,330 pounds. It is important to note, however, that assuming a static ACL for a number of years sequentially is unrealistic. More likely the ACL will vary annually due to fishery dynamics; therefore, using the percentage approach would likely be employed in these situations because this method allows the value of any overages to be standardized.

The second approach for setting an ACT is based on a percentage reduction from ACL using the SEEM analysis. This approach could be used regardless of whether an ACL is set equal to or less than the ABC. Under this approach, instead of applying the 3-year running average approach, the Council could apply the full SEEM analysis described under Method 1 to set the ACT below the ACL when the ACL equals the ABC. If ACL is set lower than the ABC because the social, ecological, and economic factors have already been taken into account, then the ACT can be set by using the 3-year running average approach described above or based on factors related to management uncertainty (i.e. the M part of the SEEM analysis).

3.1.4 **Administrative Process for Setting the ABCs and ACLs**

This section describes the administrative timelines and procedures for calculating ABCs, and specifying ACLs and AMs. For each stock or stock complex that requires an ACL, the Council and SSC shall compile relevant scientific information from the Pacific Islands Fishery Science Center and other scientific bodies, including but not limited to, Pelagic Fisheries Research Program, University of Hawaii, Western and Central Pacific Fisheries Commission (WCPFC), and the Inter-American Tropical Tuna Convention (IATTC) and local marine resource management agencies. The SSC will then evaluate the information and determine whether such data are the best available scientific information. Based on this information and with guidance from its SSC concerning which tier the stock qualifies for (described in section 3.1.1.1), the Council will form a team to conduct the qualitative analysis for determining P* (if the stock is in tiers 1-3) as described in Section 3.1.1.2. The resulting P* will be vetted through the Council's advisory bodies and if adopted by the Council, will be provided to the SSC. Upon receipt of the Council's recommended P* values, the SSC will apply the associated control rule from the appropriate tier to determine the ABC.

The SSC may also utilize any other information deemed useful to establish the ABC and may recommend an ABC that differs from the results of the control rule calculation based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors determined relevant by the SSC. However, the SSC must explain its rationale. The SSC shall recommend the ABC to the Council prior to the start of the fishing year with sufficient time for the Council to determine the ACL and AM(s).

Upon receipt of the SSC's recommended ABC, the Council will determine an ACL for the fishery that is equal to or less than the SSC's recommended ABC based on one of the methods described in Section 3.1.2 and whether an annual catch target (ACT) is also utilized. The specification of an ACL and AM(s) must be implemented by NMFS prior to the start of the fishing year. An ACL may remain valid for no longer than 4 years unless the ACL has been

exceeded more than once in that four year period, the Council chooses to revisit the ACL to improve performance and effectiveness of the fishery, or a stock assessment or best scientific information determines that the ACL is not sufficient to prevent overfishing.

3.2 ***Action 2: Ecosystem Component Classification***

The MSA requires each Council to prepare and submit a fishery management plan for each fishery that requires conservation and management. A Council determines which specific target stocks and/or non-target stocks to include "in the fishery" and must establish reference points, harvest controls, ACLs and AMs for all stocks included "in the fishery." In many cases, for data collection purposes and to integrate ecosystem considerations in the management operations, Councils have included stocks that are not generally targeted or retained in their FMPs. In the western Pacific, the management unit species (MUS) identified in each FEP include both target and non-target stocks, including species of fish that are incidentally caught but not generally retained. The Council chose to include these species in its FEPs for data collection purposes and to integrate ecosystem considerations in the management regime of the FEPs. For example, the Council recommended and NMFS approved the inclusion of all western Pacific coral reef ecosystem resources under the MSA as a proactive measure so that data could be collected on these resources should coral reef fisheries expand from local waters into the U.S. EEZ. While fishery management reference points have not been established for the vast majority of these species, their inclusion under National Standard 3 allows information to be collected so that reference points such as MSY may be developed should fisheries expand into the EEZ. As a default, NS1 treats all stocks included in a fishery management plan as "in the fishery" unless they are identified as Ecosystem Component (EC) species. Since EC species are not considered to be in the fishery, they do not require specification of reference points, ACLs, or AMs. Councils must show rationale for classifying stocks as an Ecosystem Component based on criteria specified in NS1 [50 CFR §600.310(d)(5)].

Alternative 1: No action

Under this alternative, all stocks or stock complexes in the FEPs (Appendix 1) would remain in the fishery and all will have ACLs and AMs specified (except those that qualify for statutory exceptions from the requirements as described in Section 3.3).

Alternative 2: Utilize the Ecosystem Component Classification ***(preferred)***

Under the preferred alternative, the Council would utilize the ecosystem component classification system, and in subsequent actions, would classify certain stocks listed in each FEP as EC species based on the criteria outlined in NS1 (§600.310(d)(5)). NS1 states that an EC species should be: 1) a non-target species; 2) a stock that is not determined to be subject to overfishing, approaching overfished, or overfished; 3) not likely to become subject to overfishing or overfished; and 4) generally not retained for sale or personal use. NS1 (§600.310(d)(5)(ii)) also clarifies that occasional retention of the species would not, in and of itself, preclude consideration of the species under the EC classification, and allows for species to be included in the EC classification for data collection purposes, for ecosystem considerations related to specification of OY for the associated fishery, and/or to address other ecosystem issues. EC species should be monitored such that if new pertinent scientific information becomes available to determine changes in their status or their vulnerability to the fishery and if necessary, they

may be reclassified "as in the fishery." Even if categorized as an ecosystem component, the stock/stock complexes will still be managed under the purview of the MSA.

While the Council intends to utilize the EC classification, specific criteria that are consistent with NS1 Guidelines would be developed when specific species are considered (in subsequent actions). Until the time when a stock/stock complex is categorized as an ecosystem component, it would remain in the fishery and subject to ACL/AM requirements (unless receiving a statutory exception (see Section 3.3)).

Various methods have been discussed thus far for categorizing species as ecosystem components. These include, but are not limited to, a state/federal split, percent of total catch, number of years occurring in catch, and combinations thereof. Particularly for coral reef species utilizing the EC classification will be essential.

3.3 Action 3: Utilize Statutory Exceptions

Unless identified by the Council as an EC species, NS1 guidelines require the mechanism for specifying ACLs and AMs described in Section 3.1 to be applied to all stocks and stock complexes listed in each FEP. However, the MSA provides two exceptions to these requirements. First, ACL and AM requirements shall not apply to a fishery for a species that has a life cycle of approximately one year unless the Secretary has determined the fishery for that species is subject to overfishing. Second, the requirements do not apply to stocks or stock complexes subject to management under an international agreement to which the United States is a party. NS1 guidelines requires the Council to describe the stocks or stock complexes listed in their fishery management plans that have statutory exceptions from ACLs.

Alternative 1: No action

Under this alternative, the Council would not identify any stocks or stock complexes that have statutory exceptions to ACLs and the mechanism for specifying ACLs would be applied to all stocks and stock complexes listed in each FEP in fishing year 2011.

Alternative 2: Utilize Statutory Exceptions ***(preferred)***

Under this alternative, the Council would identify those western Pacific MUS that have a life cycle of approximately one year or are subject to management under an international agreement to which the United States is a party. Although these stocks have statutory exceptions from ACLs, the MSA does not preclude the Council from determining ACLs or other catch limits to the stock, if such actions are deemed appropriate and consistent with MSA and other statutory mandates.

Stocks with an Annual Life Cycle

Upon examination of available life history information for western Pacific MUS, the Council has determined that only three FEP managed species have a life cycle of approximately one year. They are the diamondback squid (*Thysanoteuthis rhombus*), neon flying squid (*Ommastrephes bartrami*), and the purpleback flying squid (*Sthenoteuthis oualaniensis*). All three species are managed under the Pacific Pelagic FEP and their life history information is described in Amendment 15 to the Pelagic FMP (in Yatsu et al. 1997; Nigmatullin et al. 1995; and Nesis

1993) and incorporated into the Pacific Pelagic FEP. None of these pelagic squid species have been determined by the Secretary of Commerce to be subject to overfishing or overfished.

Stocks Subject to International Fishery Agreements

In the western Pacific, two international fishery agreements have been ratified by Congress and are applicable to pelagic species listed in the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific. The international fishery agreements are:

(1) The Convention on the Conservation and Management of Highly Migratory Species in the Western and Central Pacific (WPCFC); and

(2) The Inter-American Tropical Tuna Convention (IATTC).

Article 2 of the WCPFC Convention states **"The objective of this Convention is to ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stocks in the western and central Pacific ..."** Article 1 defines highly migratory fish stocks as **"all fish stocks of the species listed in Annex 1 of the 1982 Convention [United Nations Convention on Law of the Sea] occurring in the [WCPFC] Convention Area, and such other species of fish as the Commission may determine, except sauries"** (See Appendix 3 for a copy of Annex 1 of the United Nations Convention on Law of the Sea). Similarly, Article 1 of the IATTC Antigua Convention, which entered into force on August 27, 2010, defines fish stocks covered by this Convention as **"stocks of tunas and tuna-like species and other species of fish taken by vessels fishing for tunas and tuna- like species in the Convention Area."**

In evaluating the application of the criteria "subject to management under an international agreement," the Council considered the following factors:

- Whether the international agreement applies to the species and/or to vessels managed under the Pacific Pelagic FEP that fish for and retain tuna and tuna-like species;
- Whether there are relevant international conservation and management measures in place for the species;
- Whether there is an existing international stock assessment for the species; and
- Whether there is intent by the members of international agreement to undertake a stock assessment for the species.

Based on these factors, the Council has determined that all finfish listed under the Pacific Pelagic FEP meet the criteria for a statutory exemption from ACLs and AMs. Although the MSA does not preclude the Council from applying the ACL mechanism on just the U.S. portion of the catch of these stocks, the Council believes that doing so would unfairly penalize U.S. fishermen while having no beneficial impact to the conservation of these stocks throughout their range because the "relative impact" of vessels managed under the Pacific Pelagic FEP to the mortality of the stock is minimal when compared to contribution of international fishing fleets. This can be easily demonstrated by evaluating the relative impact of the U.S longline fleet on its primary target species, bigeye tuna. According to the WCPFC (CCM 2008-01), during the period between 2001 and 2004, the total average reported catch of bigeye tuna in the WCPFC Convention Area by all fishing nations was 97,294 mt. Of this amount, the U.S. contribution was just 4,181, or 4%, of the total mortality of the stock.

Table **1**Table 1 lists all species managed under the western Pacific Pelagic FEP and provides the rationale for applying the criteria for a statutory exception to ACLs for these species. As explained in Table 1, the vast majority of pelagic species fall under the management purview of the WCPFC except for opah, wahoo, and oilfish. However, these species would meet the criteria of stocks managed under the IATTC as these species are "taken by vessels fishing for tunas and tuna-like species in the Convention area of the IATTC." Figure 4 shows the catch from 2004 to 2007 of opah, wahoo, and oilfish. These three species are taken by the Hawaii longline fisheries, which target bigeye tuna and swordfish.

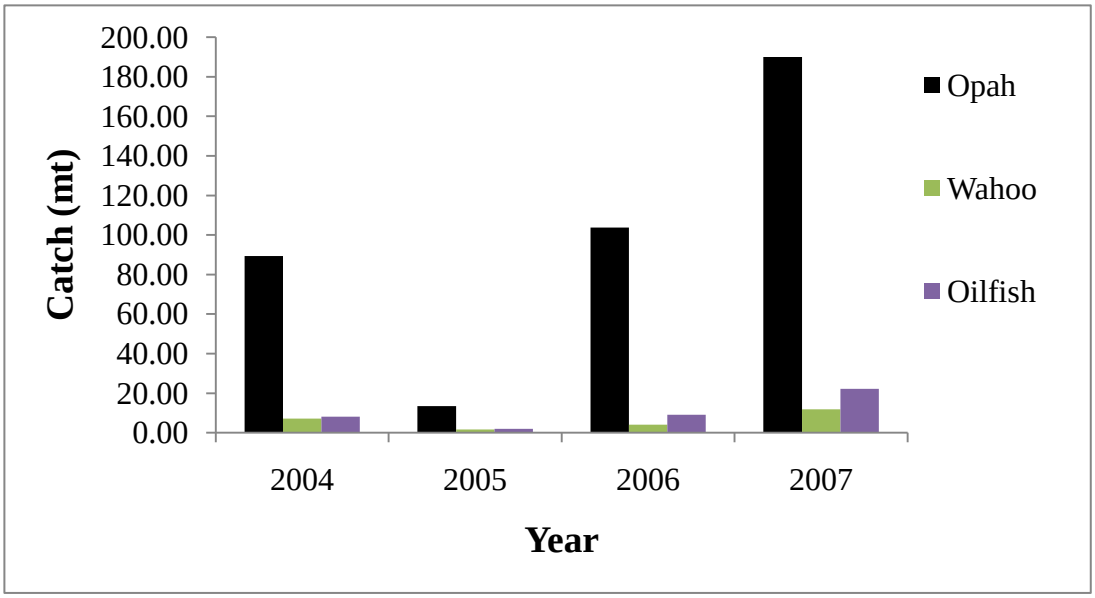


Figure 4. Hawaii longline catch of opah (moonfish), wahoo, and oilfish from the Eastern Pacific Ocean, 2004-2007. Source: NMFS PIFSC.

The Pacific Fishery Management Council (PFMC) took final action in June 2010 to apply the international exception to all MUS in its Highly Migratory Species Fisheries Management Plan (HMS FMP) after reclassifying selected MUS as EC species (Decisions of the PFMC, June 12-17, 2010). Applying the international exception to all western Pacific Pelagic MUS would be consistent with the PFMC's approach.

Currently no other western Pacific MUS (bottomfish, crustaceans, coral reef ecosystem species, precious corals) meet the statutory criteria for exceptions from ACLs and AMs. However, the United States is a Participating State in the negotiations to establish an international agreement for the management of high seas bottomfish fisheries in the northwestern Pacific Ocean. If any international agreement, convention, or treaty is established and ratified by the United States, other western Pacific MUS may meet the criteria for a statutory exemption from ACLs and AMs.

Table 1. Western Pacific pelagic MUS with statutory exceptions from ACL requirements

Scientific Name	Common Name	Rational for Applying Statutory Exception			
		Applicability of WCPFC or IATTC	***Conservation and Management Measure***	***Stock Assessment***	***Annual Life Cycle***
TUNAS					
Thunnus alalunga	albacore	Subject to WCPFC (Annex 1 listed)	WCPFC (CCM-2005-03 limited fishing effort for north Pacific albacore at 2005 levels	S. Pacific completed in 2009; N. Pacific completed in 2006; new assessment planned for 2011	Not Applicable
Thunnus obesus	bigeye tuna	Subject to WCPFC (Annex 1 listed)	WCPFC (CCM-2008-01) established an annual catch limit for bigeye tuna for 2009-2011.	WCPO completed in 2010 and EPO completed in 2009	Not Applicable
Thunnus albacares	yellowfin tuna	Subject to WCPFC (Annex 1 listed)	WCPFC (CCM-2008-01) requires no increase in fishing mortality for this species.	Completed in 2009 (WCPO)	Not Applicable
Thunnus thynnus [Note: species has been renamed by scientific community as *Thunnus orientalis*]	northern bluefin tuna	Subject to WCPFC (Annex 1 listed)	WCPFC (CCM-2009-07) limits fishing effort to the 2002-2004 levels for 2010 north of 20 degrees, including reduction of effort on juveniles.	Completed in 2009; new assessment planned for 2012	Not Applicable
Katsuwonus pelamis	skipjack tuna	Subject to WCPFC (Annex 1 listed)	None	WCPO and EPO completed in 2010	Not Applicable
Euthynnus affinis	kawakawa	Subject to WCPFC (Annex 1 listed)	None	None	Not Applicable

Scientific Name	Common Name	Rational for Applying Statutory Exception			
		Applicability of WCPFC or IATTC	***Conservation and Management Measure***	***Stock Assessment***	***Annual Life Cycle***
Auxis spp. *Scomber* spp. *Allothunus* spp.	other tuna relatives (bullet or frigate tuna, mackerels and slender tuna, respectively)	Subject to WCPFC (Annex 1 listed)	None	None	Not Applicable
BILLFISHES					
Tetrapturus audax [Note: species has been renamed by scientific community as *Kajikia audax*]	striped marlin	Subject to WCPFC (Annex 1 listed)	None	Completed in 2006; new assessment planned for 2011.	Not Applicable
Tetrapturus angustirostris	shortbill spearfish	Subject to WCPFC (Annex 1 listed)	None	None	Not Applicable
Xiphias gladius	swordfish	Subject to WCPFC (Annex 1 listed)	WCPFC (CCM-2009-03) established limit on the number of allowable swordfish vessels and establishing maximum total catch limit for the species south of 20 deg. S. lat.	Completed in 2010.	Not Applicable
Istiophorus platypterus	sailfish	Subject to WCPFC (Annex 1 listed)	None	None	Not Applicable

Scientific Name	Common Name	Rational for Applying Statutory Exception			
		Applicability of WCPFC or IATTC	***Conservation and Management Measure***	***Stock Assessment***	***Annual Life Cycle***
Makaira mazara [Note: species has been renamed by scientific community as *Makaira nigricans*]	blue marlin	Subject to WCPFC (Annex 1 listed)	None	Completed in 2002, new assessment planned for 2012	Not Applicable
M. indica [Note: species has been renamed by scientific community as *Istompax indica*]	black marlin	Subject to WCPFC (Annex 1 listed)	None	Taiwan to conduct assessment.	Not Applicable
SHARKS					
Alopias pelagicus	pelagic thresher shark	All species of the family *Alopiidae* are subject to WCPFC (Annex 1 listed)	WCPFC (CCM 2009-04) requires implementation of FAO International Plan of Action for the Conservation and Management of Sharks.	None	Not Applicable
Alopias superciliousus	bigeye thresher shark	All species of the family *Alopiidae* are subject to WCPFC (Annex 1 listed)	WCPFC (CCM 2009-04) requires implementation of FAO International Plan of Action for the Conservation and Management of Sharks.	None	Not Applicable

Scientific Name	Common Name	Rational for Applying Statutory Exception			
		Applicability of WCPFC or IATTC	***Conservation and Management Measure***	***Stock Assessment***	***Annual Life Cycle***
Alopias vulpinus	common thresher shark	All species of the family *Alopiidae* are subject to WCPFC (Annex 1 listed)	WCPFC (CCM 2009-04) requires implementation of FAO International Plan of Action for the Conservation and Management of Sharks.	None	Not Applicable
Carcharhinus falciformis	silky shark	All species of the family *Carcharhinidae* are subject to WCPFC (Annex 1 listed)	WCPFC (CCM 2009-04) requires implementation of FAO International Plan of Action for the Conservation and Management of Sharks.	None	Not Applicable
Carcharhinus longimanus	oceanic whitetip shark	All species of the family *Carcharhinidae* are subject to WCPFC (Annex 1 listed)	WCPFC (CCM 2009-04) requires implementation of FAO International Plan of Action for the Conservation and Management of Sharks.	None	Not Applicable
Prionace glauca	blue shark	Member of the *Carcharhinidae* family. All species of the family *Carcharhinidae* are subject to WCPFC (Annex 1 listed)	WCPFC (CCM 2009-04) requires implementation of FAO International Plan of Action for the Conservation and Management of Sharks.	Completed in 2009	Not Applicable

Scientific Name	Common Name	Rational for Applying Statutory Exception			
		Applicability of WCPFC or IATTC	***Conservation and Management Measure***	***Stock Assessment***	***Annual Life Cycle***
Isurus oxyrinchus	shortfin mako shark	All species of the family *Isurida* (aka *Lamnidae*) are subject to WCPFC (Annex 1 listed).	WCPFC (CCM 2009-04) requires implementation of FAO International Plan of Action for the Conservation and Management of Sharks.	None	Not Applicable
Isurus paucus	longfin mako shark	All species of the family *Isurida* (aka *Lamnidae*) are subject to WCPFC (Annex 1 listed).	WCPFC (CCM 2009-04) requires implementation of FAO International Plan of Action for the Conservation and Management of Sharks.	None	Not Applicable
Lamna ditropis	salmon shark	All species of the family *Isurida* (aka *Lamnidae*) are subject to WCPFC (Annex 1 listed).	WCPFC (CCM 2009-04) requires implementation of FAO International Plan of Action for the Conservation and Management of Sharks.	None	Not Applicable
OTHER PELAGIC FISHES					
Coryphaena spp.	mahimahi (dolphinfish)	Subject to WCPFC (Annex 1 listed)	None	None	Not Applicable
Lampris spp.	moonfish	This species is commonly taken by Hawaii longline tuna fishing vessels and thus is subject to IATTC.	None	None	Not Applicable

Scientific Name	Common Name	Rational for Applying Statutory Exception			
		Applicability of WCPFC or IATTC	***Conservation and Management Measure***	***Stock Assessment***	***Annual Life Cycle***
Acanthocybium solandri	wahoo	This species is commonly taken by Hawaii longline tuna fishing vessels and thus is subject to IATTC.	None	None	Not Applicable
Gempylidae	oilfish	Species in this family are commonly taken by Hawaii longline tuna fishing vessels and thus are subject to IATTC.	None	None	Not Applicable
Bramidae	pomfret	Subject to WCPFC (Annex 1 listed).	None	None	Not Applicable
SQUID					
Thysanoteuthis rhombus	diamondback squid	Not Applicable	None	None	One year life cycle. Source: Yatsu et. al (1997) in Amendment 15 to the Pelagic FMP
Ommastrephes bartrami	neon flying squid	Not Applicable	None	None	One year life cycle. Source: Nigmatullin et. al (1995) in Amendment 15 to the Pelagic FMP
Sthenoteuthis oualaniensis	purpleback flying squid	Not Applicable	None	None	One year life cycle. Source: Nesis (1993) in Amendment 15 to the Pelagic FMP

4.0 **Affected Environment and Impacts**

4.1 ***Area of Potential Effect and Timing of the Specification***

The requirement to manage fisheries using ACLs and AMs will affect federal fisheries of the western Pacific region and will be applied to all management unit species (MUS) in the Hawaii, Mariana Archipelago, American Samoa and PRIA FEPs. With possible rare exceptions, it is likely that the proposed ACL and AM mechanism will not be applied to species managed under the Pacific Pelagic FEP because all Pelagic MUS either have annual life cycles (e.g., squid) or are caught in conjunction with a tuna fishery and therefore are subject to international management. Species that fall into these two category are excepted from the ACL/AM requirement pursuant to MSA.

The species that are proposed to be statutorily excepted from the ACL and AM requirement are listed in Table 1 (Section 3.3) and Table 17 (Section 4.15.6.3). The application of the exception from ACLs to these species is an administrative action and would not result in a change to the way these species are currently monitored or how the fishery is conducted; therefore, there would be no environmental effect from the statutory exception designation of specific species. As described in Section 4.15.6.3.1, international regional fishery management organizations will continue to obtain fishery information on these species that can then be used for management purposes.

Non-pelagic federal fisheries in the western Pacific are conducted in U.S. EEZ waters; specifically, in the federal waters (from 3-200nmi) around Hawaii, American Samoa and Guam, and in federal waters (from 0-200nmi) around CNMI and the PRIA. Vessels associated with federal fisheries transit waters from the shoreline to the extent of the federal fishery activity in the U.S. EEZ. Approval of the mechanism would not affect the location of the pelagic or demersal fisheries because it is an administrative process.

4.2 ***Affected Fisheries***

Only federal demersal fisheries in each of the four archipelagic areas (American Samoa, Hawaii, Mariana Archipelago, and PRIA) would be subject to ACL and AM specifications; pelagic fisheries would be afforded statutory exception from ACL and AM requirements. The affected fisheries are summarized in Section 4.15. More detailed descriptions of the fisheries and their respective environmental settings can be found in the FEPs for each archipelagic area (WPFMC 2009a-d) and the Pacific Pelagic FEP (WPFMC 2009e). Current fishery management regulations may be found in 50 CFR §665. A brief overview of fishery performance is provided in Section 4.15.

Some of these fisheries currently have harvest limits (quotas) specified. The proposed mechanism will be used to develop ACLs and AMs, and these could result in different harvest limits than those currently specified. Although it is not known what the ACLs may be, the limits may be the same as current limits, or they could be lower or higher. Changes in the fishing limit would be the result of using a different method than the one that established the current limits. However, if after evaluation of the available data, the ABCs remain identical to the previously-established ABCs, under the proposed mechanism the Council would be within its management authority to recommend maintaining the current catch limit.

Although permits are required in most western Pacific fisheries, many currently do not operate under harvest limits (i.e. quotas). Stocks currently subject to harvest limits are shown in Table 2. For fisheries currently operating without harvest limits, management under ACLs and AMs will be a new management scheme. Additional environmental review and public input opportunities will be provided at the time that the specific ACL and AM recommendations are developed.

Table 2. Existing harvest limits for fisheries in the western Pacific region.

Areas	Species	Limit	Timeframe
Precious Corals Fisheries[1]			
All western Pacific FEP areas	Gold coral	0 (zero)	Moratorium expires June 30, 2013
Exploratory areas in Hawaii, American Samoa, Guam, and CNMI		1,000 kg per area (all species combined, except black coral)	Annual
Hawaii – Au Au Channel	Black coral	5,000 kg	Biennial
Hawaii – Makapuu	Pink coral Gold coral Bamboo coral	2,000 kg 0 kg 500 kg	Biennial
Hawaii – 180 Fathom Bank	Pink coral Gold coral[2] Bamboo coral	222 kg 67 kg 56 kg	Biennial
Hawaii – Brooks Bank	Pink coral Gold coral[2] Bamboo coral	444 kg 133 kg 111 kg	Annual
Hawaii – Kaena Point	Pink coral Gold coral[2] Bamboo coral	67 kg 20 kg 17 kg	Annual
Hawaii - Keahole	Pink coral Gold coral[2] Bamboo coral	67 kg 20 kg 17 kg	Annual
Hawaii – Westpac	All	Zero kg	Annual
Bottomfish Fisheries			
Hawaii – Main Hawaiian Islands	Deep 7 bottomfish	254,050 lbs	Annual
	All bottomfish – non-commercial	5 BMUS/trip per individual	Annual
Hawaii – Hancock Seamounts	Seamount groundfish and Bottomfish	0	Indefinite until moratorium lifted
Crustaceans Fisheries			
NWHI	Spiny/slipper lobsters	0	Annual
Pacific Pelagic			
Hawaii	Bigeye tuna	3,763 mt (2009-2011)	Triennial
American Samoa, Guam, and CNMI	Bigeye tuna	1,000-2,000 mt (proposed annual)	Annual

[1] Black corals and pink corals only have size limits, thus are not listed.
[2] Gold coral quotas listed are those applicable prior to the moratorium, but the current harvest level is 0 (zero).

4.3 Potential Effects of Proposed ACL Mechanism and Future Implementation on Federal Permits

The approval of a mechanism to be used by the Council to develop ACLs and AMs for federal fisheries would not affect existing permit requirements because it is an administrative action. The proposed mechanism will not require the Council to recommend changes to existing permits.

In the future, depending on the specific fishery, there could be new requirements regarding reporting to improve monitoring of ACLs. At this time, there are no new reporting requirements being considered by the Council. Should such requirements be recommended, a separate environmental review would be completed.

4.4 Affected Physical Environment and Impacts of the Proposed Mechanism

The federal fisheries of the western Pacific region that will be subject to management under future ACLs/AMs are demersal fisheries that take place in the waters of the U.S. EEZs across the western Pacific. The physical setting of the western Pacific regional fisheries is described for each area in detail in the FEPs (WPFMC 2009a-e).

Approval of a mechanism to be used by the Council to develop a scientifically based ABC, and a technically and scientifically based ACL/AM for each stock or stock complex in the fishery would not affect the environment because the approval of the mechanism, including the use of statutory exceptions and ecosystem species designations, is an administrative action.

In the future, the physical environment could be affected if the ACLs and AMs were to result in changes to how a particular fishery is conducted. Conceptually, ACLs and AMs are not expected to result in large changes to the manner in which the federal fisheries are conducted and therefore, large adverse impacts to the physical environment are not anticipated. Site specific and fishery specific impact evaluations will be undertaken in the future when ACLs and AMs are available.

4.5 Affected Target, Non-target, and Bycatch Species and Potential Impacts of the Proposed Mechanism

Target, non-target, and bycatch species of the western Pacific regional fisheries are described for each area in detail in the FEPs (WPFMC 2009a-e) as well as the associated Final Programmatic Environmental Impact Statement (WPFMC 2009f) associated with the FEPs.

The proposed mechanism will be used in the future to generate ACLs and AMs for stocks of each management unit species for western Pacific fisheries. No stocks or stock complexes would be directly affected by the approval of the proposed mechanism because it is administrative. No changes to current management are being considered at this time.

Under the proposed action, the fisheries of American Samoa, Guam, CNMI, and Hawaii will operate under ACL specifications unless the Council amends the controlling FEP to classify a stock or stock complex as an ecosystem component (EC) species. ACLs and AMs are not required for EC species. The proposed action includes a general discussion of the criteria that

will be used by the Council in determining which stocks/stock complexes will qualify as EC species, but specific designations and justifications will be provided at a later date.

Under the proposed action, which is administrative, no species managed under the Pacific Pelagic MUS are likely to require ACLs and AMs, as these species are either managed by international fishery management organizations or have an annual life cycle, and thus all qualify for statutory exceptions. Species proposed for statutory exceptions are identified in this amendment in Table 1 (Section 3.3). In the future, the Council may develop ACLs and AMs for statutorily excepted species if warranted; however, the Council is not proposing this at this time.

With the exception of armorhead on Hancock Seamounts, none of the stocks/stock complexes that would be subject to management under ACLs and AMs are overfished or subject to overfishing. Armorhead are overfished across their range due to international fisheries outside the U.S. EEZ. For the past 26 years, federal regulations have prohibited fishing for armorhead within the U.S. EEZ at Hancock Seamounts through several moratoria, which is the maximum protection that can be afforded to the species to aid its rebuilding. The fishing prohibition will remain in place until armorhead stock has been rebuilt. An ACL specification would not adversely affect the moratorium because it would not supplant the moratorium. ACLs and AMs will be specified in the future should fishing resume at Hancock Seamounts for armorhead.

The process ensures that ACL and AM specifications are developed with the best available scientific and management information. Considerations of stock status and the environmental background conditions will be taken into account at the time ACLs/AMs are specified, and at the time of periodic reviews (i.e., stock assessments and Stock Assessment Fisheries Evaluation (SAFE) reports). The mechanism contains precautionary buffers that account for scientific and management uncertainty and may, in some cases, require more intensive monitoring of fishery harvests. For these reasons, when ACLs and AMs are specified, they are expected to help ensure that fishing levels are sustainable over the long term; use of ACLs is intended to prevent overfishing and provide for long-term sustainability of affected stocks. Potential environmental impacts of specifying the ACLs and AMs for target, non-target, and bycatch stocks will be considered again in light of the actual specifications.

Classifying certain stocks and species as ecosystem components or utilizing the statutory exceptions is not expected to result in a change to fishery impacts on these stocks or species, and these classifications would not result in a reduction in management by the Council or international management organizations. The use of these categories is intended to allow the appropriate level of management to continue for those species that are either managed by other fishery management agencies, or that would not benefit from harvest limit management regime. These two proposed actions would not result in a change to the condition of stocks or fishery management information that would be available to fishery managers.

4.6 ***Affected Protected Resources and Potential Impacts of the Proposed Mechanism***

The protected species resources that may interact with federal fisheries include certain species of sea turtles, marine mammals, and seabirds, such as green, leatherback and loggerhead sea turtles,

humpback whales, false killer whales, and Laysan and black-footed albatross (see the FEPs, WPFMC 2009a-e, for a full list of protected resources). The fisheries of the western Pacific region have been evaluated for impacts on protected resources and are managed in compliance with the requirements of the MSA, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act, and other laws and policies. Detailed descriptions of potentially affected resources and interactions with federal fisheries can be found in each FEP (WPFMC 2009a-e) and the impacts of those fisheries on the resources are contained in biological opinions associated with fishery management actions (Table 3). The Council, through various management measures, has reduced the likelihood, number, and severity of interactions with protected resources.

Table 3. Most recent ESA Section 7 consultations for fisheries managed under western Pacific fishery ecosystem plans that will be subject to future ACL specifications.

Fishery	Consultation
American Samoa	
o Bottomfish	March 8, 2002, Biological Opinion
o Coral reef (no current fishery)	March 7, 2002, Letter of Concurrence
o Precious corals (no current fishery)	December 20, 2000, Letter of Concurrence
o Crustaceans (no current fishery)	September 28, 2007, Letter of Concurrence
Hawaii	
o Main Hawaiian Islands (MHI) bottomfish	March 18, 2008, Biological Opinion
o Northwestern Hawaiian Islands (NWHI) Mau Zone bottomfish	March 8, 2002, Biological Opinion
o NWHI Ho'omalu Zone bottomfish	March 8, 2002, Biological Opinion
o Coral reef	March 7 2002, Letter of Concurrence
o Precious corals	December 20, 2000, Letter of Concurrence
o MHI crustaceans	April 4, 2008, Letter of Concurrence
o NWHI crustaceans (no current fishery)	May 24, 1996, Biological Opinion
Mariana Islands	
o CNMI deep bottomfish	June 3, 2008, Letter of Concurrence
o CNMI shallow bottomfish	June 3, 2008, Letter of Concurrence
o CNMI coral reef	June 3, 2008, Letter of Concurrence
o CNMI precious corals	April 18, 2006, Letter of Concurrence
o CNMI crustaceans	September 28, 2007, Letter of Concurrence
o Guam deep bottomfish	June 3, 2008, Letter of Concurrence
o Guam shallow bottomfish	June 3, 2008, Letter of Concurrence
o Guam coral reef (no current fishery)	March 7, 2002, Letter of Concurrence
o Guam precious corals (no current fishery)	December 20, 2000, Letter of Concurrence
o Guam crustaceans	September 28, 2007, Letter of Concurrence
Western Pacific Pelagic Fisheries	
o Hawaii deep-set longline	October 4, 2005, Biological Opinion
o Hawaii shallow-set longline	October 15, 2008, Biological Opinion
o Hawaii pole-and-line	August 21, 2008, Letter of Concurrence
o American Samoa longline	September 16, 2010, Biological Opinion
o Western Pacific troll and handline	September 1, 2009, Biological Opinion
o Western Pacific squid jig	July 16, 2008, Letter of Concurrence

None of the affected fisheries are currently operating in areas designated as critical habitat for species that are listed as threatened or endangered under the ESA; however NMFS is currently working on proposed revisions to Hawaiian monk seal critical habitat. The agency has recently proposed listing of the false killer whale under the ESA and is also evaluating whether to revise the ESA listing status of the loggerhead sea turtle. Additionally, NMFS is also evaluating whether to list the bumphead parrotfish and a number of coral species under the ESA, although nothing specific has been proposed as of this date. If any species are listed, critical habitat could be designated in areas that may be affected by federal fisheries (NMFS PIRO Protected Resources Division, pers. comm. Dec. 12, 2010).

The proposed action would not have a direct effect on protected resources or existing critical habitat designations because the proposed action is administrative and will not result in changes to the way any fishery is conducted. No changes to current management are being considered at this time. Managing fisheries of the western Pacific region using ACLs and AMs will be an addition to the existing fishery management regime and is intended to provide for biologically-sustainable catch limits for fishery stocks. It is not anticipated that the ACLs and AMs will result in large changes to interactions between the fisheries and protected resources.

Because the western Pacific regional fisheries are currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because the future specification and use of ACLs/AMs is not expected to result in large changes to the demersal fisheries of the region, implementing fishery management that includes catch limits and accountability measures (e.g., in season closure upon attainment of ACL or downward ACL adjustments) is not expected to change the distribution, abundance, reproduction, or survival of listed species or increase interactions with protected resources. The environmental impacts of potential changes in the conduct of the fisheries on protected resources under specific ACLs and AMs will be evaluated at the time that they are recommended. If substantial changes to the conduct of the fisheries are projected to occur, the Council and NMFS will initiate additional consultations as required by existing laws.

Under both the status quo and proposed action, if at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if a fishery were found to be occurring in or near new critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

4.6.1 Special Resource Areas and Potential Impacts of the Proposed Mechanism

Special marine resource management areas that the federal fisheries operate in or near include areas designated as Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC) in accordance with the MSA. These areas are described in the respective FEPs (WPFMC 2009a-e). Other special resource areas that federal fisheries may operate in or near include marine national monuments (MNM), national marine sanctuaries (NMS), and national wildlife refuges (NWR). Federal marine protected areas in the vicinity of affected federal fisheries may include Rose Atoll MNM and NWR (American Samoa); the Hawaiian Islands Humpback Whale NMS, Papahanaumokuakea MNM and the Hawaiian Islands NWR in the Northwestern Hawaiian Islands (NWHI), and monk seal designated critical habitat (Hawaii);

Marianas Trench MNM in CNMI; and Pacific Remote Islands MNMs and various NWRs in the Pacific Remote Island Areas.

Fishing occurring in marine national monuments is conducted according to monument permits that ensure the activity is compatible with monument resource protection. Only fishing in the NWHI under a monument permit occurs near areas designated as critical habitat for the Hawaiian monk seal.

Fishing vessels may transit through or near to the following managed marine areas: Fagatele NMS, Rose Atoll NWR and MNM (American Samoa); State of Hawaii Bottomfish Fishing Restricted Areas (BRFAs); various State of Hawaii marine life conservation districts, and the Hawaiian Islands Humpback Whale NMS (Hawaii). Currently, fishing vessels are not known to adversely affect the qualities or management of these areas.

The approval of a mechanism to develop ACLs and AMs is administrative and would not affect fishing activities or the environment at this time, and there would be no impacts to EFH or HAPC or other special marine resource areas. In the future, managing fisheries with ACLs and AMs is not expected to change the conduct of fisheries unless fishing is constrained as the result of a lowered catch limit. Overall, improved management of fishery resources in the form of catch limits, fishery reporting, and monitoring of harvest is not likely to result in impacts to EFH, HAPC, or other special management areas including critical habitat, marine monuments, or other designated management areas, or the general marine environment. In the future, at the time specific ACLs and AMs are available, potential impacts of the proposed specifications on special resource areas will be considered.

4.6.2 **Candidates for Listing and Potential Critical Habitat Designations**

At present, federal fisheries of the western Pacific region do not occur in areas designated as critical habitat. Critical habitat designation is being considered in the main Hawaiian Islands for monk seals, but no specific areas are currently designated. NMFS is assessing the potential listing of up to 75 species of corals in the Pacific and the bumphead parrotfish under the Endangered Species Act, and is considering designation of critical habitat in association with any future listing action.

The proposed action will not have an impact on areas being studied for potential critical habitat nor would it affect the potential listing of candidate species as it is an administrative action. In the future, managing fisheries with specific harvest controls (ACLs/AMs) is not expected to change the conduct of fisheries to the extent that there would be a large and adverse impact on areas being studied as critical habitat or to listed species and their habitats. When specific ACLs/AMs are available, the effects of implementing the specifications on proposed critical habitat for monk seals in the MHI will be evaluated.

With regard to the 75 candidate species of corals in the Pacific and the bumphead parrotfish being considered for listing as endangered or threatened, the potential management of western Pacific fisheries using harvest controls is not expected to change the conduct of fisheries such that there would be an adverse impact to these species or their habitats, nor would this type of

management control be expected to affect the quality of the habitat for these species and change the likelihood of the habitat or the species qualifying for critical habitat or listing.

Both for status quo and the proposed action, should fishery management need to be refined in order to reduce impacts to rare coral reef species or their habitats, the Council would take separate action.

4.7 Affected Fishers and Fishing Communities and Potential Effects of the Proposed Mechanism

The primary fisheries potentially affected by the proposed action are the federal non-pelagic fisheries whose stocks are subject to the ACL/AM requirement. In American Samoa, Hawaii, and Guam, these federal fisheries occur beyond 3 nautical miles (nm). In CNMI, this includes nearshore areas as well because federal jurisdiction extends from the shoreline to 200 miles. There are generally no federal non-pelagic fisheries in the PRIAs, nor resident human communities defined under the FEPs as "fishing communities." For this reason, the PRIA social environment will not be considered further in this EA. Also, because all pelagic MUS are likely to be statutorily excepted from ACL and AM requirements, the social environment associated with the pelagic fisheries will not be considered further.

The proposed action for developing ACLs and AMs would not have an impact on the social environment of the remaining affected areas, including fishery participants and fishery communities or other marine resource users, as it is an administrative action. In the future, managing federal fisheries with ACLs and AMs is not expected to result in a large change to the way fisheries are conducted in any of the four populated areas.

Fishery participants in CNMI may be required to comply with more ACLs and AMs than residents of other areas because federal waters extend from the shoreline to the 200 nm boundary. It is not known how these individuals or communities will be affected by the new requirements. In general, however, preventing overfishing through harvest controls along with other management measures is expected to promote long-term sustainability of the fisheries without resulting in large changes to the way in which fishing occurs, which should have a general positive long-term effect on fishing communities; however, for under-utilized fishery resources, harvest controls such as ACLs set equal to current harvest limits may preclude fisheries from further development.

For all fisheries affected by the requirement, at the time ACLs and AMs are available, additional site- and fishery-specific impact reviews will be conducted to assess the potential effects ACLs and AMs would have on the fishery resources used by these communities, and any associated social, cultural and economic effects.

4.8 Interaction with State and Territorial Fishery Regulations and Management

All four populated areas have existing state, territorial, or commonwealth fishery and other marine resources conservation and management laws and requirements. These can be found on the State, Territorial, and CNMI websites provided in Table 4.

Table 4. Current state and territorial fishing regulations websites.

Location:	Applies to:	Local fishery management division:	Website:
Territory of American Samoa	Territorial waters	Department of Marine and Wildlife Resources (DMWR)	Title 24 of the the American Samoa Code, Chapter 03, Sections 24.0301-24.0312 (http://www.asbar.org/)
State of Hawaii	State Waters	Hawaii Dept. of Land and Natural Resources, Division of Aquatic Resources (DLNR-DAR)	Hawaii Administrative Rules, Title 13, Dept of Land and Natural Resources, Subtitle 4 Fisheries. http://hawaii.gov/dlnr/dar/admin_rules.html and http://capitol.hawaii.gov/site/HRS/HRS.htm
Territory of Guam	Territorial waters	Guam Dept. of Agriculture, Division of Aquatic and Wildlife Resources (GDAWR)	Fishing regulations can be found at: http://www.guamdawr.org/aquatics/fisheries2/
Commonwealth of the Northern Mariana Islands (CNMI)		Div. of Fish & Wildlife (DFW)	Fisheries information can be found at: http://www.dfw.gov/mp/#

The proposed mechanism for developing ACLs and AMs is not expected to have an impact on local fishing laws as it is an administrative action that, when used in the future, will result in ACLs and AMs that will apply to federal fisheries only. Local agencies are not compelled to match the harvest limits, although local resource agencies may voluntarily decide to do so.

In the future, when specific ACLs and AMs are developed, the Council will consider potential interactions between and among ACL and AM specifications and local resource laws. At that time, the Council or affected state, territory, or commonwealth government entity can make recommendations on measures that would enhance coordination and reduce any conflicts that might arise as a result of the ACL and AM requirements.

4.9 Ability of Fishery Participants to Comply with ACLs and AMs

The proposed action for developing ACLs and AMs will not have an impact on compliance as it is an administrative action. In general, compliance by fishery participants in fisheries that currently do not have catch limits may be slow as this is a new management approach. However, once ACLs are specified, compliance is not expected to be difficult if education and outreach efforts are included during ACL development and specification. In the MHI deep 7 bottomfish fishery, timely notification, outreach meetings, and informational materials have already helped fishermen comply with TAC limits and in-season closures.

The ACL and AM specifications produced in the future using the proposed mechanism will result in harvest limits and other requirements that will apply to federal fishery participants in most fisheries. The Council has been working with its constituents to promote an understanding of the reason for the change in fishery management. Participants in the various fisheries will

continue to have opportunities to learn about ACL and AM requirements, and to participate in the decision-making process at different points along the planning and implementation timeline.

The Council will develop ACL and AM specification recommendations at its public meetings, at which there will be opportunities for members of the public to comment on proposed specifications. ACLs and AMs will be published on Council, NMFS, and/or local government websites. Although no specific details are available about the methods to be used to communicate both the ACL and AM specifications, as well as any fishery changes that occur as a result of the harvest limit management requirement, in addition to Federal Register notices it is likely that the Council will use the internet and meetings supplemented with other forms of notification such as newsletters and, in some cases, direct mailings to inform interested and affected parties of the requirements and how to comply. Additional outreach efforts such as meetings, compliance guides, articles, press releases, radio shows, and website postings will communicate to affected parties and promote compliance with ACL requirements.

Additional environmental and socio-economic impact reviews will occur at the time ACL specifications are available, which will provide opportunities for the public to understand the proposed specifications, and for the Council to learn about issues that may inhibit compliance and address these issues in a timely manner.

4.10 ***Potential Impacts on the Economy***

Fisheries of the western Pacific region are managed in accordance with the MSA, which calls for consideration of both the sustainability of the nation's fishery resources, as well as the use of the nation's fishery resources for sustenance and economic prosperity. Proposed fishery regulations are considered in terms of complying with these provisions of the MSA. Currently, throughout the western Pacific region, fishing is managed sustainably and provides communities with opportunities for jobs and food.

The proposed action for developing ACLs and AMs will not have an impact on local or national economy as it is purely an administrative action. In the future, managing some fisheries with specific harvest controls (ACLs/AMs) could affect local economies, although the effects are generally not expected to be large or necessarily adverse, as commercial fishing is a small component of the economies of the western Pacific islands. The proposed action is intended to ensure that fish stocks are harvested sustainably, which would help provide for long-term economic viability.

Additional site-specific and fishery-specific economic review will be done at the time that specific ACLs and AMs are available and the impacts on fishermen, local, and national economies will be considered at that time.

4.11 ***Potential Impacts on Fishery Administration and Enforcement***

Fishery managers and administrators currently expend management resources on collecting and reviewing data, responding to data requests, analyzing fisheries data, and implementing fishery management measures intended to improve fishery conservation and management in the western Pacific region. Federal fishery regulations are currently enforced by NOAA Office of Law

Enforcement and the U.S. Coast Guard, with cooperation from local natural resource conservation law enforcement agencies.

The proposed action for developing ACLs and AMs will not have an immediate impact on fishery administration or enforcement as it is purely an administrative action. However, in the future, managing fisheries via ACLs and AMs is likely to affect fishery managers by requiring additional management effort to be expended. Specifically, substantial investment in resources, including personnel, will likely be required to collect and monitor catch. Furthermore, because the majority of federally managed fishery resources in the western Pacific fisheries have a state catch component, resources will be required to implement data collection systems that can account for the spatial resolution in the catch. Additional management efforts will also be required when reviewing fishery performance, implementing annual specifications and accountability measures, and conducting outreach and educational activities to inform the affected public of the ACL each fishing year. These activities will require the expenditure of public funds to pay for the new level of management activity. These are administrative activities and will not likely lead to environmental effects.

Management of the federal fisheries via ACLs and AMs will require changes to law enforcement, as agents will need to understand new requirements and will be tasked with enforcing any fishery closures or other accountability measures that are enacted in association with the ACLs and AMs. These activities will require the expenditure of public funds to pay for any activity above the current level of law enforcement conducted in the area. Changes to law enforcement are not currently projected to have environmental effects.

Additional site specific and fishery specific environmental reviews will be done at the time that specific ACLs and AMs are available; impacts on fishery administration and enforcement will also be considered at that time.

4.12 ***Potential Impacts on Environmental Justice***

Executive Order 12898 directs federal agencies to consider the potential for proposed actions to result in environmental impacts with disproportionately high and adverse impacts to members of environment justice populations (low-income and/or minority groups). Guam, CNMI, American Samoa, and Hawaii all have members of environmental justice populations (low-income and/or minority groups) that participate in fisheries or live in communities that participate in fisheries. There are currently no known high and adverse environmental impacts of ongoing fishery management in the western Pacific that are affecting any community members, including members of environmental justice populations.

The proposed action for developing ACLs and AMs will not have an impact on the environment or on members of environmental justice populations as it is an administrative action. In the future, managing fisheries with ACLs and AMs is not expected to result in a large change to the demersal fisheries such that there would be large and adverse environmental impacts. The management measure is intended to help ensure the continued sustainability of fish resources. It is expected to provide a higher level of management monitoring, which is expected to have overall beneficial environmental impacts because managers would be required to account for catches in all fisheries, not just those that are important economically. Additional site specific

and fishery specific environmental reviews will be done at the time that specific ACLs and AMs are available; impacts on environmental justice populations will also be considered at that time.

4.13 Potential Impacts on Climate Change and Efficacy of ACLs and AMs in the Face of Climate Change

Climate change has the potential to directly or indirectly impact target, non-target, and bycatch stocks, as well as affect protected resources that interact with fisheries. In general, climate change has the potential to improve or degrade the environmental conditions of the marine ecosystem and can affect species abundance, distribution, survival, reproduction, and migratory patterns. Climate change can result in changes to ocean temperatures, salinity, acidity, turbidity, oxygen, circulation patterns, nutritional and thermal gradients, and global weather patterns that affect the ocean and coastal environments. Sea level rise resulting from melting polar ice and thermal ocean expansion have the potential to result in the physical loss of coastal habitats and degradation of, or changes to, coastal or nearshore marine habitats that can adversely affect fisheries and wildlife and cause damage to coastal infrastructure. In some cases, the effects of global climate change, or even smaller scale climate patterns, may be detectable on short and long-term time scales and/or at local levels. In other cases, data may be lacking with which to determine local impacts. For these reasons, it is often difficult to understand the complex relationships among climate change impacts and the myriad ecological processes interacting in dynamic environments.

Climate change in fisheries will generally be observed directly in cases of coastal inundation and changes to local weather, and can be indirectly accounted for in stock assessments, fish abundance and distribution patterns, and other observed changes in the fishery. The effects of climate change on the status of stocks, stock complexes, protected resources, and the environment will continue to be part of the background environment that is considered in both ongoing management of fisheries of the western Pacific region and in considering the effectiveness and environmental impacts of future proposed fishery management actions.

The proposed action is administrative and will not have an environmental outcome, and therefore will not result in greenhouse gas emissions or be affected by climate change. Although there are no specific ACLs or AMs being recommended at this time, management of the affected fisheries using ACLs and AMs would require fisheries managers, scientists, and participants to monitor fishing activities with greater intensity, which would allow fishery managers to respond to any detectable changes in stock status or conditions in the environment to ensure a particular fishery is not having substantial adverse environmental effects on the marine environment. While ACLs and AMs may require increased monitoring, the proposed action is not expected to result in more intensive or extensive fishing activity.

At the time that specifications for ACLs and AMs are recommended, the Council will review proposed fishery outcomes for potential contributions to global climate change, and for impacts from climate change on the efficacy of the ACLs and AMs.

4.14 Cumulative Effects of the Proposed Action

Fisheries are dynamic activities that take place in a dynamic setting. The potential impacts of a proposal on the environment given past, present, and reasonably foreseeable actions by the same

agency or others is an important part of an impact analysis. The proposed action for developing ACLs and AMs will not have an impact on the environment as it is an administrative action.

Among the past and present actions, fisheries of the western Pacific region are currently considered sustainably managed, and no demersal stocks or stock complexes are currently overfished or being subject to overfishing with the single exception of armorhead, which is overfished due to international fishing outside of U.S. jurisdiction and is subject to moratorium in federal waters.

There are currently a number of proposed fishery management actions being considered by the Council. These include proposed gear modifications to reduce sea turtle interactions in the American Samoa longline fishery; proposed changes to longline participant entry requirements in American Samoa; proposed longline prohibited areas in CNMI and American Samoa; proposed purse seine prohibited areas in CNMI, Guam, and American Samoa; proposed changes to fish aggregation devices use by purse seiners in U.S. EEZs; a proposal to allow charter arrangements between territories and fishing groups to catch bigeye tuna in exchange for responsible fishery development in the territories; and proposed changes to managing deep-set tuna fishing in Hawaii to allow for increased retention of swordfish.

Activities by others that are currently occurring that generally may affect the same resources or occur in the same areas as demersal fisheries include the military expansion in Guam, military and merchant marine and other commercial vessel traffic in all four populated areas, ocean aquaculture, and ocean energy development.

Without specifications, it is not possible to consider interactions among activities to determine whether or not or how impacts of a particular ACL and/or AM might interact with other actions to affect the environment. In general, fishery management measures will continue to be discussed in public meetings with opportunities for interested and affected members of the community to have input on measures while they are being developed and before decisions are made. This will allow the Council and NMFS to determine when a particular ACL and/or AM might result in an interaction with other activities. The public process inherent in the MSA will also allow the Council to develop additional fishery management measures to reduce any large and adverse impacts of a proposed ACL and/or AM that might be projected to occur.

Conceptually, in view of proposed fishery management actions that are concurrently being considered, the management of domestic fisheries using ACLs developed under the proposed mechanism would not adversely affect the effectiveness of other proposed fishery management measures also being considered. It is not likely those proposals (even in the early stages) would affect the efficacy or impacts associated with using ACLs and AMs to control catch in demersal fisheries.

In the future, as specific ACLs and AMs become available, cumulative effects analyses will be done prior to a decision being made to implement the ACL and its corresponding AM.

4.15 ***Description of the Fisheries***

4.15.1 **Maximum Sustainable Yield, Optimum Yield, and Status Determination Criteria for Western Pacific Fisheries**

Maximum sustainable yield (MSY), optimum yield (OY), status determination criteria (SDC), and other reference points for the fisheries of the Western Pacific Region were described in the Coral Reef Ecosystems FMP (69 FR 8336; February 24, 2004), Amendment 4 to the Precious Corals FMP (64 FR 19067; April 19, 1999), Amendment 6 to the Bottomfish FMP (68 FR 46112; August 5, 2003), Amendment 8 to the Pelagics FMP (68 FR 46112; August 5, 2003), and Amendment 10 to the Crustaceans FMP (68 FR 46112; August 5, 2003). These reference points were also updated and incorporated into the FEPs for American Samoa, Hawaii, the Mariana Archipelago, the Pacific Remote Island Areas and western Pacific Pelagic fisheries. In some instances, MSY values were not actually specified for all species because there is a significant lack of data to warrant a reliable estimate or proxy. However, the FEPs include a method based on reproductive potential by which NMFS and the Council can estimate MSY for all managed stocks when data becomes available. Additionally, estimates of MSY for certain federally managed stocks are updated every few years by NMFS Pacific Islands Fisheries Science Center, the Western and Central Pacific Fisheries Commission, the Inter-American Tropical Tuna Commission, and/or the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean; these are then incorporated into amendments to the FEPs.

With regards to SDC and overfishing definitions, the FEPs utilize the maximum fishing mortality threshold (MFMT) as its SDC for overfishing because it is based on a long-term average, as opposed to an annual OFL value. The FEPs also utilize minimum stock size threshold (MSST) as the SDC for an overfished determination. The original references for MSY, OY, and SDC processes for western Pacific fisheries that were incorporated into the FEPs for American Samoa, Hawaii, the Mariana Archipelago, the Pacific Remote Island Areas and western Pacific pelagic fisheries are as follows:

Reference	Management Unit Species	Section Specifying MSY	Section Specifying OY	Type of SDC Utilized
WPFMC 2002	Bottomfish	4.1.2.2	4.1.1.2	MFMT & MSST
WPFMC 2002	Crustaceans	4.3.2.2	4.3.1.2	MFMT & MSST
WPFMC 2002	Pelagics	4.2.2.2	4.2.1.2	MFMT & MSST
WPFMC 2001	Coral Reef	4.3.3	4.3.3	MFMT & MSST
WPFMC 1998	Precious Corals	4.5.4	4.5.4	MFMT

4.15.2 **American Samoa Archipelago FEP**

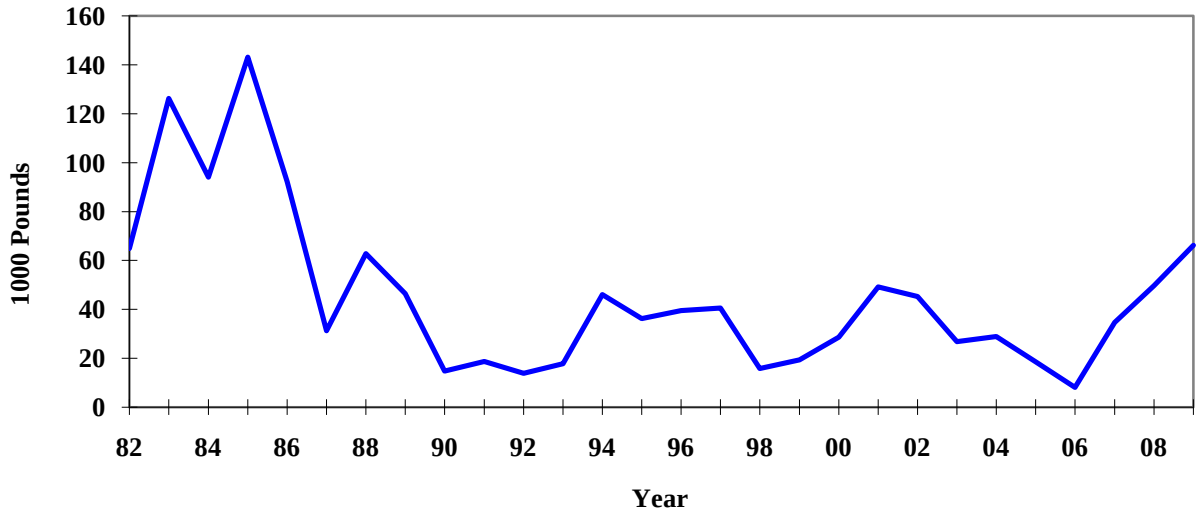
4.15.2.1 **Description of the American Samoa Bottomfish Fishery**

The following description is summarized from the American Samoa FEP (WPFMC 2009a), where the full description can be found as well as source material; additional citations below are not found in WPFMC 2009a. The bottomfish fishery of American Samoa consists of part-time vessels that typically jig overnight using skipjack tuna as bait. Most vessels are aluminum alia catamarans less than 30 foot length; many are outfitted with wooden hand reels for trolling and bottomfish fishing. Because few boats carry ice, they typically fish within 20 miles of shore. In

recent years, however, a growing number of fishermen in American Samoa have been acquiring larger (> 35 ft) vessels with capacity for chilling or freezing fish and a much greater fishing range.

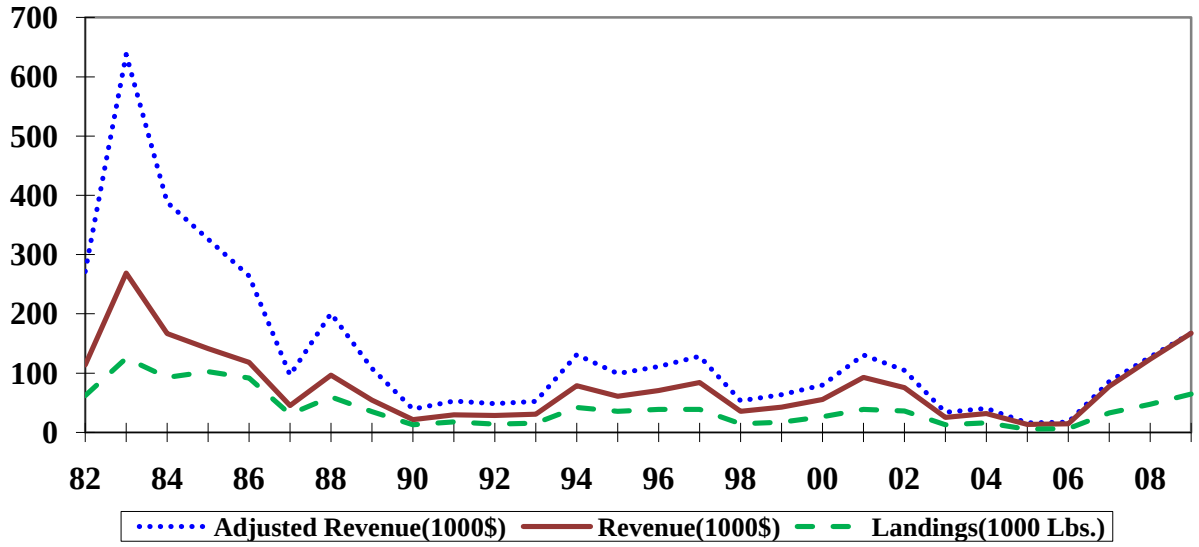
Commercial landings of bottomfish account for almost all of the total bottomfish catch; recreational or subsistence bottomfish catches were very small. Commercial catch of bottomfish has declined significantly since its peak in 1985 (Figure 5). The overall decline between 1985 and 2000 was due to five hurricanes that struck the territory, the departure of several highliners from the fishery, a shift by the fleet from bottomfish fishing to trolling for pelagic species, and increased competition from imports of bottomfish from Samoa and Tonga. In 2001, landings increased slightly, but declined steadily again through 2006 as fuel prices increased (WPFMC 2008c). There was an upturn in landings, however, from 2007 thru 2009. Landings in 2009 equaled 66,235 pounds; however, the tsunami of September 2009 destroyed almost the entire bottomfish fleet so there was virtually no bottomfishing for the remainder of the year. Consequently, bottomfish landings and revenues were 98% less than October 2008 (WPFMC 2010). Total revenue for the month of November has declined by 42% in 2009 compared to 2008, before the tsunami. Recovery of the bottomfish fishery is expected to occur as the fleet is replaced. Impacts to the participants are primarily from damaged or lost vessels and gear.

Figure 5. American Samoa total bottomfish landings from 1982-2009



Since 1998, some alias have returned to bottomfish fishing when longline catches and prices for pelagic species declined. In 2005 a total of 16 boats landed an estimated 20,255 pounds with 30% of this sold commercially for an estimated $14,521 revenue value. There have been no notable changes in per trip revenues since the 1990s with an average of approximately $300 per trip, although revenues and landings do appear to be increasing (Figure 6).

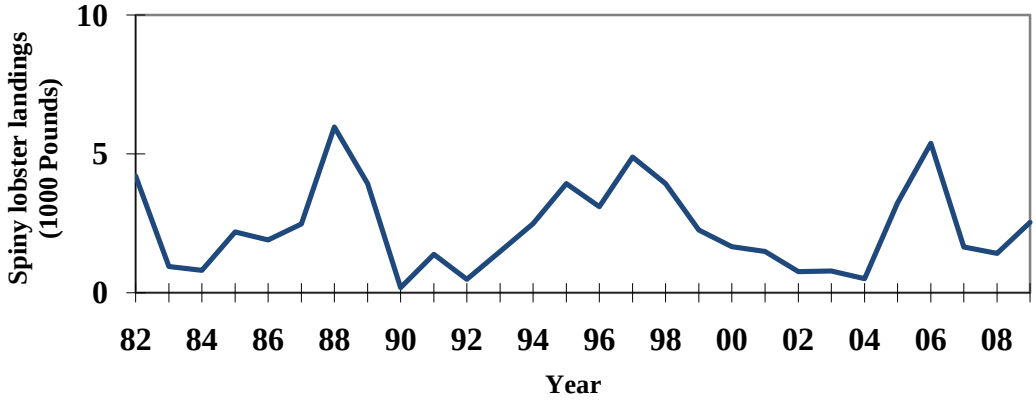
Figure 6. American Samoa estimated commercial bottomfish landings and revenue



4.15.2.2 **Description of the American Samoa Crustacean Fishery**

The following description is summarized from the American Samoa FEP (WPFMC 2009a), where the full description can be found as well as source material. In American Samoa, lobsters are the primary crustacean fishery. Spiny lobster (*Panulirus penicillatus*) is the main species speared by night near the outer slope by free divers while diving for finfish. Total landings (Figure 7) expanded from a market survey are estimated to average 1,271 pounds of spiny lobsters sold per year, without taking subsistence and recreational catches into account.

Figure 7. Annual landings of spiny lobster in American Samoa from 1982 to 2009.



No fishing for deepwater shrimp has been reported around American Samoa. In 1987, PIFSC fishery scientists conducted sampling at 10 shrimp trapping stations at depths ranging between 200 and 510 fathoms around American Samoa. While some *Heterocarpus* were found at every trapping station, some places may have more abundance than others.

4.15.2.3 **Description of the American Samoa Precious Coral Fishery**
A federal permit is required to harvest Precious Coral MUS in federal waters around American Samoa and permit holders are required to maintain Federal logbooks of their catch and effort. As described in the American Samoa FEP (WPFMC 2009a), this is an open access fishery but no federal permits had been issued. There are currently no defined precious coral beds or active precious coral fisheries in either federal or Territorial waters around American Samoa. However, because precious coral MUS are known to be in the waters around American Samoa, it is possible a future fishery may develop. If a fishery were to develop in the future, it would be subject to the existing annual harvest quota of 1,000 kg of all species combined (except black corals) in the federal waters around American Samoa. The fishery is also subject to a five-year moratorium on fishing for, taking, or retaining any gold coral in any precious coral permit area. This moratorium includes all waters of the U.S. EEZ of the Western Pacific Region and is in effect through June 30, 2013 (73 FR 47098, August 13, 2008).

4.15.2.4 **Description of the American Samoa Coral Reef Ecosystem Fishery**
The following section is summarized from WPFMC 2009a, where additional information and source material can be found. In American Samoa, coral reef fishes and invertebrates are harvested in subsistence and small-scale commercial fisheries by various gear types including hook and line, spear gun, and gillnets. The reef fish catch composition in American Samoa is dominated by six families: Acanthuridae (28%), Serranidae (12%), Holocentridae (12%), Lutjanidae (7%), Mugilidae (7%), and Scaridae (6%), although atule (*Selar crumenophthalmus*), a coastal pelagic species, seasonally accounts for a significant portion of the coral reef catch. The majority of the catch is believed to be from Territorial waters and thus not managed by the American Samoa FEP (WPFMC 2009a), but the ecosystem approach to fishery management would warrant consideration of inshore fisheries and stocks as they interrelate with those in federal waters.

Periodic declines in coral reef catches have been observed since the 1990s. The cause of declines in catches is thought to be attributed to a combination of several factors including fishing pressure, natural and anthropogenic habitat degradation (pollution, eutrophication and sedimentation from runoff), sociological changes associated with a shift from subsistence to a market economy, and a series of devastating hurricanes.

Average commercial reef fish catch in American Samoa was 29,500 pounds from 1982 to 2005. The lowest estimated commercial catches were during 1984, the early 1990s, and 2004 with peak estimated commercial catch occurring in 1997 corresponding with the SCUBA spear fishery. Since 2001, commercial reef fish catches are estimated to be below 20,000 pounds annually. Low catch years associated with hurricanes may be the result of fleet damage or fishermen being occupied with other work. The decline in commercial reef fish catches after 1997 may have resulted from increased enforcement of commercial license requirements between 1997 and 2000. In 2001, the use of SCUBA gear while fishing was prohibited to help reduce fishing pressure on the reefs.

4.15.3 **Hawaii Archipelago FEP**

4.15.3.1 **Description of the Hawaii Archipelago Bottomfish Fisheries**

The following description of Hawaii's bottomfish and seamount groundfish fisheries is summarized from the Hawaii Archipelago FEP (WPFMC 2009b), where additional information and source material can be found.

The deep-slope bottomfish fishery in Hawaii concentrates on species of eteline snappers (e.g., opakapaka), carangids (e.g., jacks), and a single species of grouper concentrated at depths of 30–150 fathoms. The primary target species which share this deepwater habitat have, for management purposes, been termed the "Deep 7" bottomfish species and include: onaga (*Etelis coruscans*), ehu (*Etelis carbunculus*), gindai (*Pristipomoides zonatus*), kalekale (*Pristipomoides sieboldii*), hāpuʻupuʻu (*Epinephelus quernus*), ʻōpakapaka (*Pristipomoides filamentosus*), and lehi (*Aphareus rutilans*). Other bottomfish species include: uku (*Aprion virscens*), taape (*Lutjanus kasmira*), kahala (*Seriola dumerili*), white ulua (*Caranx ignoblis*), black ulua (*Caranx lugubris*), butaguchi (*Pseudocaranx dentex)* and yellow kalekale (*Pristpomoides auricilla*).

The bottomfish fishery can be divided into two geographical areas: the inhabited main Hawaiian Islands (MHI) with their surrounding reefs and offshore banks, and the Northwestern Hawaiian Islands (NWHI), a chain of largely uninhabited islets, reefs and shoals extending 1,200 nmi across the North Pacific. For management purposes, the NWHI is divided into two zones, the Mau Zone that includes the portion of the U.S. EEZ waters around the Hawaii Islands Archipelago that lie between 161º 20' W. long and 165º W. long, and the Hoomalu Zone which includes the portion of EEZ waters located west of 165º W. long. Additionally, at the northern end of the NWHI is the Hancock Seamounts Ecosystem Management Area in which there is currently a moratorium on the harvest of armorhead, raftfish, alfonsin, and other seamount groundfish (75 FR 69015, November 10, 2010).

In the MHI, approximately 47 percent of the bottomfish habitat lies in state waters. Bottomfish fishing grounds within federal waters around the MHI include Middle Bank, most of Penguin Bank, and approximately 45 nmi of 100-fathom bottomfish habitat in the Maui–Lanai–Molokai complex. Specific bottomfish fishing locales favored by fishermen vary seasonally according to sea conditions and the availability and price of target species. Historically, Penguin Bank is one of the most important bottomfish fishing grounds in the MHI, as it is the most extensive shallow shelf area in the MHI and within easy reach of major population centers. Penguin Bank is particularly important for the MHI catch of uku, one of the few bottomfish species available in substantial quantities to Hawaii consumers during summer months.

In the small-boat bottomfish fishery that is active around the MHI, the distinction between recreational and commercial fishermen is difficult to define because many otherwise-recreational fishermen sell small amounts of their catch to cover trip expenses. With the exception of non-commercial fishing participants fishing in federal waters, the MHI bottomfish fishery is not subject to federal permit or reporting requirements; however, commercial fishermen are required to obtain commercial marine licenses (CML) and submit State catch reports reporting their monthly fishing activity. HDAR catch report forms do not differentiate between state and federal waters, therefore information about catches represents catch from both.

Since 2007, the MHI bottomfish fishery has been managed under a total allowable catch (TAC) limit. The TAC system was triggered by a 2005 review of the status of the fishery which indicated overfishing was occurring on the entire archipelagic-wide multi-stock complex; however, the review determined that the MHI was the area contributing most significantly to the problem, and therefore, where action should be focused. For this reason, the TAC applies only to the MHI bottomfish fishery and only on the component of the fishery that targets deep water species (i.e., the Deep 7 bottomfish). The TAC is set annually based on the best available scientific information and taking into account the associated risk of overfishing. Once the TAC is reached, both commercial and recreational fishing for Deep 7 bottomfish in the MHI is closed. There is no TAC limit for other bottomfish species. Table 5 lists MHI Deep 7 TAC for fishing years 2007-2010.

Table 5. Annual MHI Deep 7 TAC specifications, opening and closing dates of the fishery and final reported landings

Year	**TAC**	**Open**	**Close**	**Final Landing**
2007/2008	178,000 lbs [1]	Oct. 1, 2007	April 16, 2008	195,861 lbs
2008/2009	241,000 lbs [2]	Nov. 15, 2008	July 6, 2009	258,544 lbs
2009/2010	254,050 lbs [3]	Sept. 1, 2009	April 20, 2010	208,000 lbs
2010/2011	254,050 lbs [3]	Sept. 1, 2010	Ongoing	Yet to be determined

[1] Based on 2006 Stock Assessment/Amendment 14 (Moffitt et al. 2006)
[2] Based on 2008 Stock Assessment from PIFSC (Brodziak et al. 2008)
[3] Based 2009 Stock Assessment from PIFSC (Brodziak et al. 2009)

In the NWHI, the bottomfish fishery, when it operated, occurred exclusively in federal waters; between 2000 and 2005, the NWHI accounted for nearly one third of the bottomfish caught in the state of Hawaii. However, since the establishment of the Papahanaumokuakea Marine National Monument in 2006, bottomfish landings have continually declined as fishermen left the fishery. As of 2010, the NWHI portion of the fishery no longer exists due to completion of a voluntary capacity reduction program (74 FR 47119, September 15, 2009) created by Congress as a result of the establishment of the monument. However, there are areas outside of the monument where bottomfish habitat exists and fishing could be conducted when and if fishing regulations are changed to allow it. Table 6 lists total bottomfish landings from the NWHI during the last five years of the fishery.

Table 6. NWHI 2005-2009 BMUS (x 1000 pounds) (Source: NMFS unpublished data)

Species	2005	2006	2007	2008	2009
Onaga	28	30	31	35	3
Opakapaka	24	18	20	11	5
Ehu	10	6	4	4	>1
Uku	83	90	91	55	25
Hapuupuu	37	21	19	13	6
Butaguchi	12	9	11	5	3
White Ulua	1	2	4	1	>1
Other BMUS	6	4	5	3	1
TOTAL	**201**	**180**	**185**	**127**	**45**

Hawaii seamount groundfish are comprised of three species found primarily on Hancock Seamounts located in the NWHI and include pelagic armorhead (*Pseudopentaceros wheeleri*), alfonsin (*Beryx splendens*), and raftfish (*Hyperoglyphe japonica*). While no domestic fishery has ever targeted seamount groundfish, foreign vessels harvested pelagic armorhead prior to the passage of the MSA and depleted the stock throughout its range. To aid in the recovery of armorhead, the Council recommended and NMFS implemented a moratorium prohibiting fishing for all seamount groundfish and bottomfish at Hancock Seamounts. The moratorium has been in place since 1986 and will remain indefinitely until armorhead stocks are determined to be rebuilt (75 FR 69015, November 10, 2010).

4.15.3.2 **Description of the Hawaii Archipelago Crustacean Fisheries**

A detailed description of the crustacean fishery is summarized in the Hawaii Archipelago FEP (WPFMC 2009b) where additional information and source materials can be found. This has been supplemented here with more recent catch data. Catch information regarding crustaceans in state and federal waters around the MHI is limited to commercial catches, as there are no federal or state reporting requirements for recreational fishery participants.

Landings of Kona crabs, spiny and slipper lobsters, and deep water *Heterocarpus* shrimps are shown in Figures 8-11, segregated by landings from state and federal waters. Kona crab landings have ranged from around 6,000 – 31,000 pounds (mean = 17,000 pounds) with 30-75% of landings being made from the EEZ or federal waters. Between 30 and 78 commercial fishermen annually reported landing Kona crabs between 1994 and 2009. Spiny lobster and slipper lobsters catches were almost entirely confined to production from State waters between 1994 and 2009. Spiny lobster production ranged from just over 1,300 pounds to about 12,000 pounds (mean = 8,200 pounds) over this time period, while slipper lobster landings were modest, ranging from about 40-900 pounds (mean = 215 lb). Between 16 and 61 commercial fishermen reported landing spiny lobsters between 1994 and 2009, while 4-12 commercial fishermen reported slipper lobster landings in the same period. Two federal permits were also issued by NMFS for lobster fishing in EEZ waters around the MHI in 2007.

Eight species of deepwater shrimp in the genus *Heterocarpus* have been reported throughout the tropical Pacific (*Heterocarpus ensifer, H. laevigatus, H. sibogae, H. gibbosus, H. lepidus, H. dorsalis, H. tricarinatus and H. longirostris*). These shrimp are generally found at depths of 200 to 1,200 meters on the outer reef slopes that surround islands and deepwater banks. Species distribution tends to be stratified by depth with some overlap. The deepwater trap fisheries have primarily targeted *Heterocarpus ensifer* and *H. laevigatus*. Western Pacific commercial trap fisheries for deepwater shrimp are intermittent. There have been sporadic operations in Hawaii since the 1960s. The fisheries have been unregulated, and there has been no comprehensive collection of information about the fisheries. Most of these fishing ventures have been short-lived, probably as a result of sometimes-frequent loss of traps, a shrimp product with a short shelf life and history of inconsistent quality, and the rapid localized depletion of deepwater shrimp stocks leading to low catch rates.

Fishing for deepwater shrimp has been highly sporadic over the last several decades. In 1984, a total of 17 vessels reported catching approximately 159 tons of deepwater shrimp worth an estimated ex-vessel value of $780,000 across all western Pacific fisheries for *Heterocarpus*.

Hawaii landings have ranged from about 10,000 to 185,000 pounds between 1994 and 2009, with a mean of the years that fishing took place of about 56,200 pounds. Apart from one year (1997), production of deep water shrimps has been confined to the EEZ.

Figure 8. Landings of Kona crab in Hawaii 1994-2009, from State and Federal waters.
Source HDAR

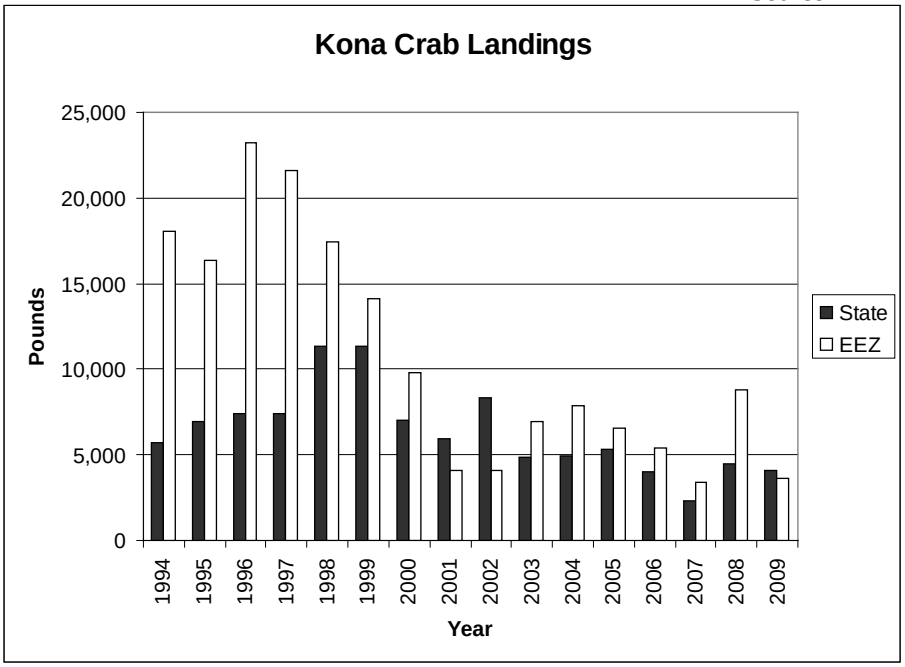


Figure 9. Landings of spiny lobster in Hawaii 1994-2009, from State and Federal waters.
Source HDAR

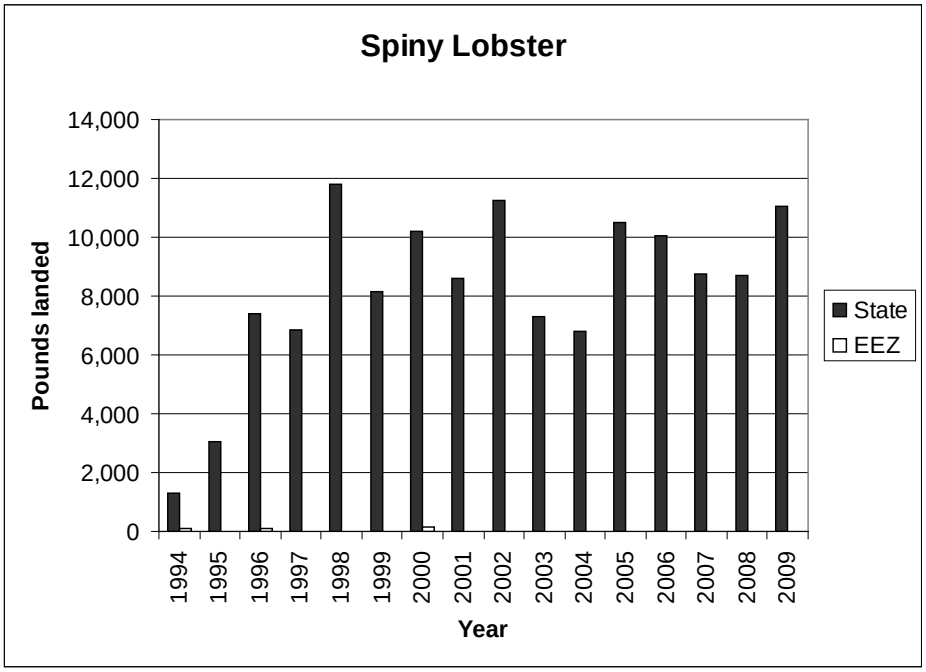
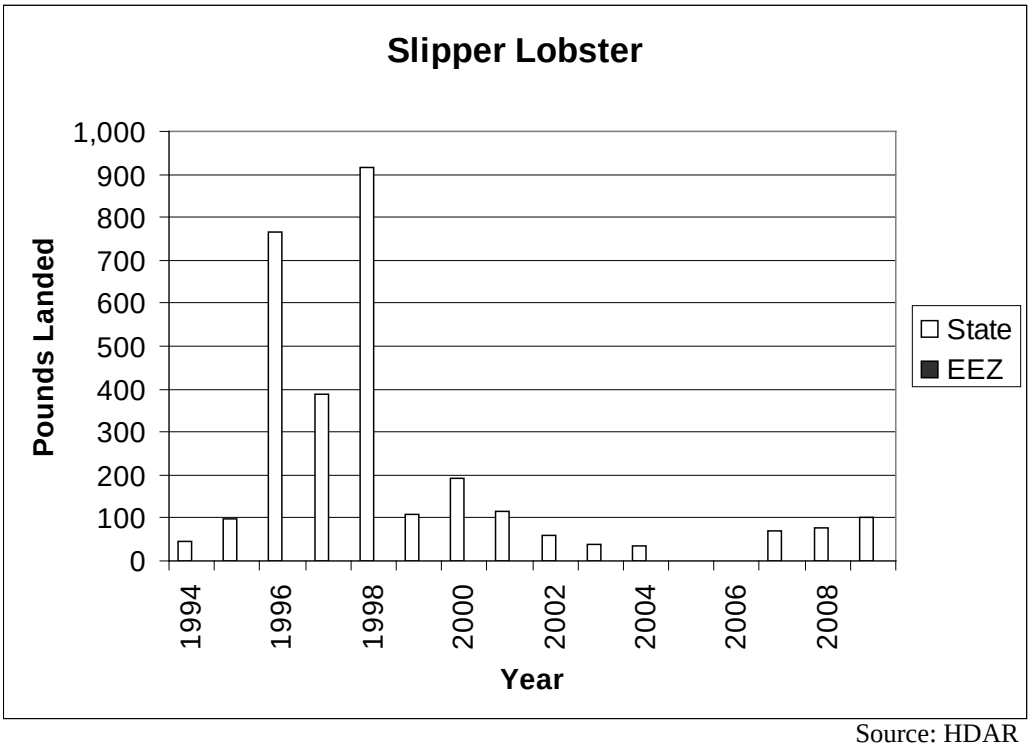


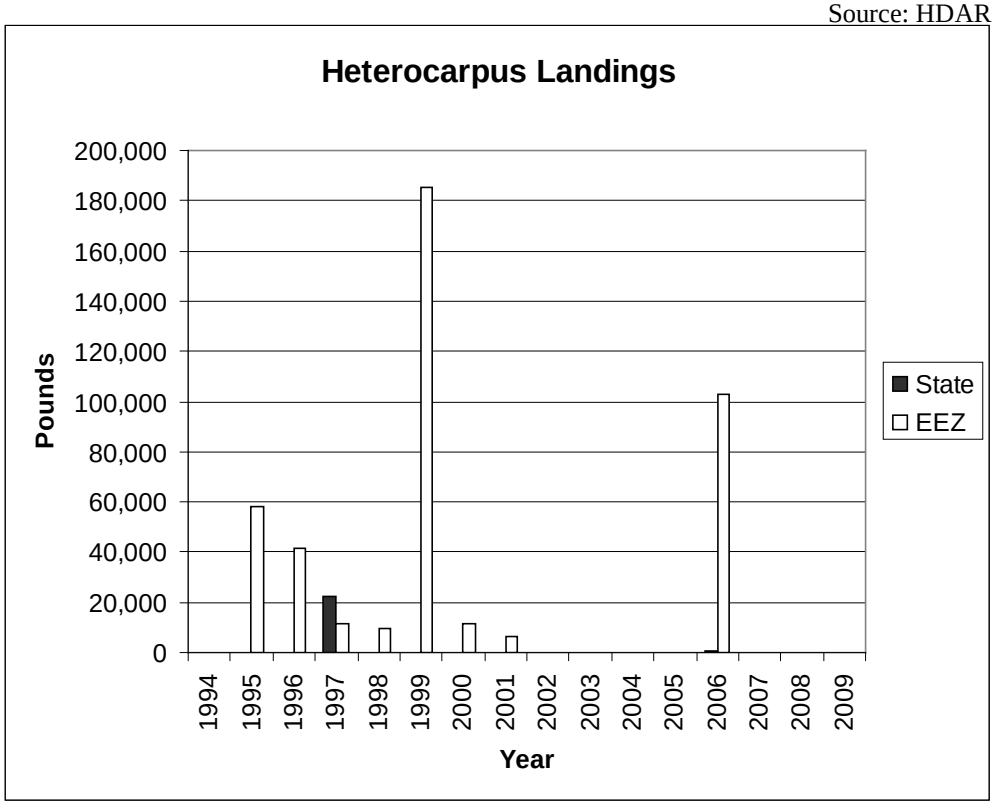
Figure 10. Landings of slipper lobster in Hawaii 1994-2009, from State and Federal waters.



Source: HDAR

Figure 11. Landings of deep water *Heterocarpus* shrimp in Hawaii 1994-2009, from State and Federal waters.

Source: HDAR



4.15.3.3 **Description of the Hawaii Archipelago Precious Coral Fisheries**

The following precious coral fishery description is summarized from the Hawaii Archipelago FEP (WPFMC 2009b). Source material for information and figures can be found in WPFMC 2009b; additional citations below are not found in WPFMC 2009b. The ongoing collection of black coral from depths of 30–100 meters by scuba divers has continued in Hawaii since the late 1950s, although harvest levels have fluctuated with changes in demand. Since 1980, virtually all of the black coral harvested around the Hawaiian Islands has been taken by hand from a bed located in the Auau Channel. Most of the harvest has come from State of Hawaii waters; however, a portion of the black coral bed in the Auau Channel is located in the EEZ. In 1999, concern about the potential for greater harvesting pressure on the black coral resources led the State of Hawaii to prohibit the harvest of black coral with a base diameter of less than 3/4 inches from state waters. Between 1990 and 1997, the annual harvest of black coral in Hawaii varied from a low of 864 pounds to a high of 6,017 pounds, with a yearly average of 3,084 pounds (Table 16). Landings and ex-vessel revenues of the black corals recently harvested in Hawaii cannot be presented due to the low number of active harvesting operations (less than three); however, current precious coral harvest is below MSY. For the years 1999-2005, the total harvest of black coral is between 52,000-55,000 pounds (Figure 12; WPFMC 2006) with average yearly landings of about 7,500 pounds (Figure 13; WPFMC 2006), which is below the 25% reduction on MSY described in Grigg (2004) (in WPFMC 2006). There has, however, been a doubling in landings from the prior 1992-1998 period attributed to increased demand, improved detailed bathymetric maps, and adoption of GPS (WPFMC 2006). There is no known recreational component to this fishery.

Figure 12. Summary of black coral landings from 1985-2005 (WPFMC 2006)

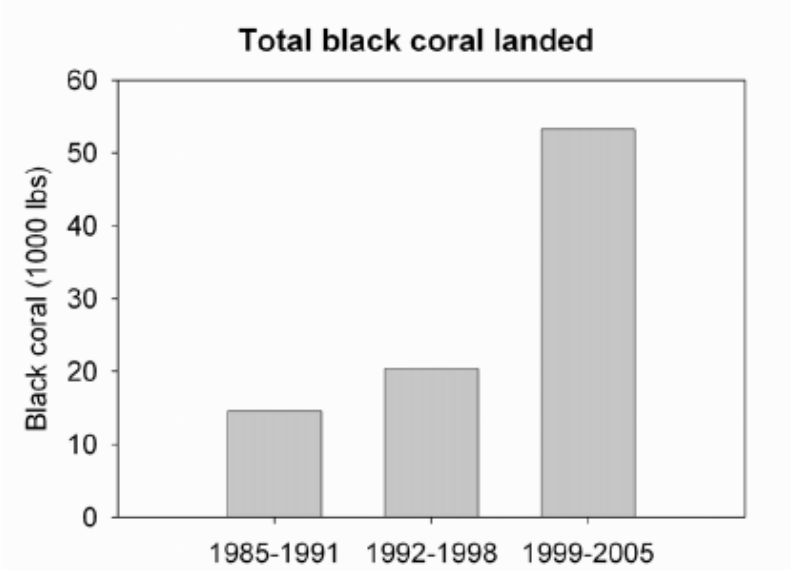
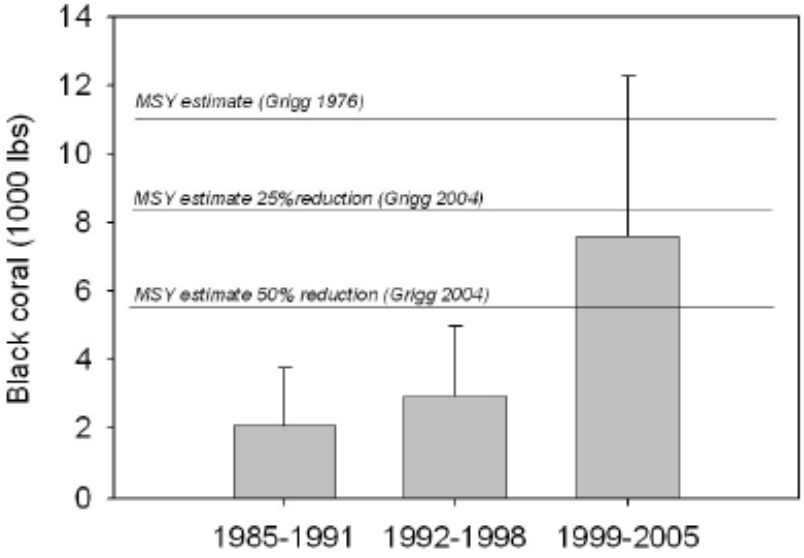


Figure 13. Mean annual black coral landings 1985-2005 (w/sd) (WPFMC 2008)



After two decades of minimal activity, the domestic fishery for pink, gold, and bamboo precious corals in the EEZ of Hawaii resumed in December 1999. One company used two one-man submersibles to survey and harvest pink and gold corals at depths between 400–500 meters during 1999 and 2001. However, they did not continue their operations after that time. As with black corals, actual harvests cannot be reported because there are less than three participants.

4.15.3.4 **Description of the Hawaii Archipelago Coral Reef Ecosystem Fisheries**

The following information is summarized from the Hawaii Archipelago FEP (WPFMC 2009b), where additional information and source material can be found. Coral reef taxa are currently harvested primarily in Hawaii State waters. No permits for collection of potentially-harvested coral reef taxa (PHCRT) in federal waters have yet been issued, thus there appears to be no fishery for PHCRT. Due to the establishment of the Papahanaumokuakea Marine National Monument, there are no active coral reef fisheries in the NWHI. The majority of the total commercial catch of inshore fishes, invertebrates, and seaweed comes from nearshore reef areas around the MHI; however, harvests of some currently-harvested coral reef taxa (CHCRT) also occur in federal waters (e.g., around Penguin Bank). As illustrated in Table 7, total catches of coral reef ecosystems species are dominated by bigeye scad and mackerel scad, and variations in their harvests have largely driven the downward trend observed in the 2000-2005 time period. Other species reported by commercial fishermen include surgeonfishes, goatfishes, squirrelfishes and parrotfishes.

In recent decades, there has been a reported decline in nearshore fishery resources in the MHI. Excessive fishing is considered to be one of the major causes of this decline. Coastal construction, sedimentation, and other effects of urbanization have also caused extensive damage to coral reefs and benthic habitat near the populated islands.

Because HDAR's catch forms use reporting grids that do not differentiate between state and federal waters, these data are for all (state and federal) waters surrounding the Hawaii Archipelago. Information on the number of fishery participants is unavailable. With the

exception of the FEP's special permit requirement, there are no reporting requirements for recreational and other non-commercial catches from waters around the Hawaii Archipelago, but creel surveys at Kaneohe, Hanalei, and Hilo Bays suggest that these catches are at least equivalent to the reported commercial catch, and may be two or three times greater. The majority of these catches is believed to be from State waters and would thus not be managed by the Hawaii Archipelago FEP; however, the ecosystem approach would warrant consideration of inshore fisheries and stocks as they interrelate with those in Federal waters.

Table 7. MHI Top Ten Catches of Coral Reef Associated Species 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Bigeye scad (akule)	1,105,273	729,985	614,306	501,220	743,052	656,434	556,865	736,172	358,582	302,342	92,708
Mackerel scad	269,799	215,010	331,939	365,707	260,362	232,714	318,454	358,642	262,082	315,511	60,593
Surgeon/ tangs	98,625	118,841	133,517	124,251	95,138	94,495	74,622	86,659	84,652	88,695	19,045
Goatfish	40,220	43,122	68,061	64,239	69,556	42,034	41,990	35,398	39,432	54,551	13,857
Squirrelfish	38,548	52,235	53,650	47,154	41,059	37,928	27,988	37,709	62,279	53,599	12,633
Parrotfish	29,084	26,656	50,174	70,363	35,374	33,111	31,606	44,878	46,904	51,911	8,204
Octopus	23,736	28,985	27,698	26,336	23,115	24,244	21,085	18,308	30,000	30,355	3,576
Rudderfish	14,004	16,313	32,102	24,214	23,573	20,417	36,162	32,859	38,198	18,305	1,794
Pig-lipped ulua*	43,900	36,204	35,836	27,454	29,092	14,959	10,609	13,955	10,662	6,321	313
Invertebrates	12,780	19,050	11,813	7,697	15,149	11,668	3,410	4,869	9,457	177	83
Algae	10,680	16,882	9,570	13,410	16,864	10,399	7,456	6,654	10,908	11,489	1,661

Source: WPacFin, accessed March 2007 (cited from WPFMC 2009b for 2000-2005). WPacFin, accessed January 2011 for 2006-2009 (http://www.pifsc.noaa.gov/wpacfin/hi/dar/Pages/hi_data_4.php).
*Also known as butaguchi

4.15.4 **Mariana Archipelago FEP**

The descriptions of the bottomfish, crustaceans, precious corals, and coral reef ecosystem fisheries for Guam and CNMI are summarized from the Marianas Archipelago FEP (WPFMC 2009c), where additional information and source documents can be found. Additional citations throughout the text are not cited in WPFMC 2009c.

4.15.4.1 **Description of the Bottomfish Fishery of the CNMI**

The Commonwealth of the Northern Mariana Islands' (CNMI) bottomfish fishery occurs primarily around the islands and banks from Rota Island to Zealandia Bank north of Sarigan. However, the data are limited to the catches landed on Saipan, which is by far the largest market. Landings (in pounds) and revenues are inflated by 30% to represent the CNMI as a whole (assuming a 60% coverage of the commercial sales on Saipan and that Saipan is 90% of the market).

The fishery is characterized by data collected through the Commercial Purchase Database, which indirectly records actual landings by recording all local fish sales to commercial establishments. This data collection system is dependent upon voluntary participation by first-level purchasers of local fresh fish to accurately record all fish purchases by species categories on specially designed

invoices. Division of Fish and Wildlife (DFW) staff routinely collected and distributed invoice books to around 30 participating local fish purchasers in 2009, which included the majority of the fish markets, stores, restaurants, hotels, government agencies, and roadside vendors (fish-mobiles). A reduction in the number of participants in the previous years is due to the economic down-turn in CNMI that forced a number of vendors and businesses to close.

Although this data collection system has been in operation since the mid-1970s, only data collected since 1983 are considered accurate enough to be comparable for most aspects of the fishery. The identification and categorization of fishes on the sales invoices has improved markedly in the last 10 years. Unfortunately, two inherent problems remain in the database. First, a number of the bottomfish MUS are not listed on the sales receipts. This was partially corrected by the addition of new taxa (but not all BMUS species) to the receipts (black jack, giant trevally, amberjack, ehu, blueline snapper, and kalikali were added to sales invoices in 2001). Moreover, for those BMUS species not specifically listed on the receipts, there remains some confusion regarding where they should be added to the receipts. Second, the commercial sales invoice is a voluntary program that not all vendors participate in.

CNMI's bottomfish fishery still consists primarily of small-scale local boats engaged in local commercial and subsistence fishing, although a few (generally <5) larger vessels (30–60 ft) usually participate in the fishery. The bottomfishery can be broken down into two sectors: deep-water (>500 ft) and shallow-water (100–500 ft) fisheries. The deep-water fishery is primarily commercial, targeting snappers and groupers, including members of the snapper genus *Etelis* and *Pristipomoides*, and the eight-band grouper (*Epinephelus octofasciatus*).

The shallow-water fishery, which targets the redgill emperor (*Lethrinus rubrioperculatus*), is mostly commercial but also includes subsistence fishermen. These fishermen are taking not only bottomfish, but many reef fishes (especially snappers and groupers) as well. Hand lines, home-fabricated hand reels, and electric reels are the commonly used gear for small-scale fishing operations, whereas electric reels and hydraulics are the commonly used gear for the larger operations in this fishery. Historically, some trips have lasted for more than a day, but currently, effort is defined and calculated on a daily trip basis. Fishing trips are often restricted to daylight hours, with vessels presumed to return before or soon after sunset, unless fishing in the northern islands.

In terms of participation, the bottomfish fleet consists primarily of vessels less than 30 ft long that are usually limited to a 50-mi radius from Saipan. The larger commercial vessels that are able to fish extended trips and that focus their effort from Esmeralda Bank to Zealandia Bank are presumed to have landed the majority of the deep-water bottomfish reported on the purchase receipt forms.

Bottomfish fishing requires more technical skill than pelagic trolling, including knowledge of the location of specific bathymetric features. Presently, bottomfish fishing can still be described as "hit or miss" for most of the smaller (12–29 ft) vessels. Without fathometers or nautical charts, the majority of fishermen utilizing smaller vessels often rely on land features for guidance to a fishing area. This type of fishing is inefficient and usually results in a lower catch-per-unit-effort (CPUE) in comparison with pelagic trolling. These fishermen tend to make multi-purpose trips—

trolling on their way to reefs where they fish for shallow-water bottomfish and reef fish. Larger sized (30-ft and larger) vessels typically utilize Global Positioning System (GPS), fathometers, and electric reels, resulting in a more efficient operation. In addition, reef fishes are now commanding a consistently higher price than in previous years. This appears to be reflected in an increased number of fishermen using small vessels focusing on reef and/or pelagic species over bottomfishes.

Fishermen targeting the deep-water bottomfish, if successful, tend to fish for 1-4 years before leaving the fishery, whereas the majority of fishermen targeting shallow-water bottomfish tend to leave the fishery after the first year. The overall participation of fishermen in the bottomfishery tends to be very short term (less than 4 years). The slight difference between the shallow-water fishermen and the deep-water fishermen likely reflects the greater skill and investment required to participate in the deep-water bottomfish fishery. In addition, these tend to be larger ventures that are more buffered from the vagaries of an individual's choices and are usually dependent on a skilled captain/fisherman. Overall, the long-term commitment to hard work, maintenance and repairs, and staff retention appear to be difficult, if not impossible for CNMI bottomfishermen to sustain more than a few years. The time series of CNMI bottomfish catch is shown in Table 8.

Table 8. CNMI commercial landings (in pounds) of bottomfishes

year	btm	bmus	btm_s	btm_d	onaga	grpr_d	lehi	paka	gindai	ehu	kali
1983	28,529	3,407	10,762	2,748	1,118	1,363	0	2,022	267	0	0
1984	42,664	3,463	15,089	4,965	1,026	3,141	0	1,639	798	0	0
1985	40,975	2,223	12,855	5,535	1,117	4,210	0	681	208	0	0
1986	29,912	3,822	10,431	3,965	1,598	1,494	0	987	874	0	0
1987	49,715	1,889	16,176	1,464	472	721	0	1,146	271	0	0
1988	47,313	2,413	3,078	2,086	2,001	0	0	326	85	0	0
1989	24,438	4,021	3,963	4,046	2,478	563	0	538	1,006	0	0
1990	12,927	1,273	4,021	1,348	253	703	0	628	393	0	0
1991	7,093	781	1,387	804	175	629	0	606	0	0	0
1992	10,598	607	3,125	1,794	21	1,773	0	136	0	0	0
1993	18,461	1,722	8,537	1,971	593	1,146	0	898	232	0	0
1994	25,470	5,476	3,055	8,589	4,578	3,953	0	824	58	0	0
1995	36,102	17,736	5,043	19,261	14,910	2,715	521	1,019	1,114	0	0
1996	66,388	32,446	13,839	38,133	19,093	12,409	3,179	6,570	3,452	0	0
1997	64,144	22,133	29,452	27,913	16,631	9,086	1,375	2,780	821	0	0
1998	59,023	27,593	18,278	30,665	15,158	7,864	6,028	2,729	1,295	197	124
1999	55,991	34,648	11,464	35,750	17,351	3,901	9,986	1,772	3,686	821	6
2000	45,258	14,968	13,582	16,592	10,199	3,474	2,659	1,633	214	45	0
2001	71,256	25,264	21,195	28,625	16,358	7,719	2,585	3,951	1,916	8	0
2002	46,766	24,518	11,003	26,113	12,655	6,149	3,479	3,932	3,157	263	410
2003	41,904	17,988	13,567	19,549	6,649	4,906	1,624	2,262	2,550	729	3,090
2004	54,474	12,872	22,403	10,391	3,160	1,073	737	849	1,042	1,137	3,242
2005	70,398	15,780	28,339	14,615	2,625	3,152	1,293	1,317	2,495	1,324	3,725
2006	29,340	10,491	10,885	9,674	2,025	1,317	324	1,482	1,990	989	3,005
2007	39,477	16,160	19,384	11,507	1,755	1,857	695	2,288	3,188	2,212	1,799
2008	42,073	16,965	17,716	12,398	2,620	2,932	640	4,013	2,461	1,911	1,832
2009	**37,916**	**18,009**	**16,846**	**12,685**	**3,517**	**768**	**1,042**	**3,898**	**2,393**	**2,572**	**2,393**

btm: Total bottomfish; bmus: Total bmus: BMUS species; btm_s: All shallow-water bottomfishes; btm_d: All deep-water bottomfishes; onaga: Onaga; grpr_d: Grouper; lehi: Silvermouth; paka: Opakapaka; gindai: Gindai; ehu: Ehu; and kali: Kalikali

Source: DAW, Saipan

4.15.4.2 **Description of the Bottomfish Fishery of Guam**

The bottomfish catches on Guam from 1982 to 2008 are shown in Table 9. There are two distinct bottomfish fisheries on Guam that can be separated by depth and species composition. The shallow water complex (< 500 feet) makes up a larger portion of the total bottomfish effort and harvest. Catch composition of the shallow-bottomfish complex (or coral reef species) is dominated by lethrinids. Other important components of the bottomfish catch include lutjanids, carangids, serranids, and sharks. Holocentrids, mullids, labrids, scombrids, and balistids are minor components. It should be noted that at least two of these species (*Aprion virescens* and *Caranx lugubris*) also range into deeper water and some of the catch of these species occurs in the deepwater fishery. The deepwater complex (> 500 feet) consists primarily of groupers and snappers of the genera *Pristipomoides*, *Etelis*, *Aphareus*, *Epinephelus*, and *Cephalopholis*.

Bottomfish fishing on Guam is a combination of recreational, subsistence, and small-scale commercial fishing. The majority of the participants in the bottomfish fishery operate vessels less than 25 feet long and primarily target the shallow-water bottomfish complex. The commercially-oriented highliner vessels are generally longer than 25 feet, and their effort is usually concentrated on the deep-water bottomfish complex.

Guam's bottomfish fishery can be highly seasonal, with effort significantly increasing when sea conditions are calm, generally during the summer months. During these periods, bottomfish fishing activity increases substantially on the offshore banks (in federal waters), as well as on the east side of the island (in territorial waters), a more productive fishing area that is inaccessible to small boats during most of the year due to rough seas.

Less than 20% of the total shallow-water marine resources harvested in Guam are taken outside 3 miles, primarily because the offshore banks are less accessible. Most offshore banks are deep, remote, subject to strong currents, and have high shark densities. Galvez Bank is the closest and most accessible and, consequently, fished most often. In contrast, the other banks (White Tuna, Santa Rose, Rota) are remote and can only be fished during exceptionally good weather conditions. The banks are fished using two methods: bottomfishing by hook-and-line and jigging at night for bigeye scad (*Selar crumenophthalmus*).

Charter fishing has been a substantial component of the fishery since 1995, accounting for about 15–20% of all bottomfish fishing trips from 1995 through 2004; however, charter harvest is a small proportion of the fishery, with harvest less than a half of 1% overall, less than 0.05% of the harvest of jacks and snappers, and less than 2% of the harvest of groupers and emperors. The boat-based charter harvest increased 27% in 2008 (455 pounds from 357 pounds; WPFMC 2008d). Larger vessels consistently fish in the same general area and release most of their catch, primarily small triggerfish, small groupers, and small goatfish. They occasionally keep larger fish and use a portion of the catch to serve as sashimi for their guests.

Table 9. Harvest of All Bottomfish Species (in pounds) for 1982-2008 in Guam.

Year	Total	Shore-Based	Boat-Based	Non-Charter	Charter
1982	24,520		24,520	24,520	
1983	38,915		38,915	38,915	
1984	16,626		16,626	16,626	
1985	46,923	34	46,889	46,744	146
1986	19,490	199	19,291	17,919	1,372
1987	28,384	64	28,320	28,320	
1988	44,507	1,368	43,139	42,778	361
1989	57,813	65	57,748	57,251	497
1990	42,654	1,541	41,113	40,955	159
1991	38,706	1,102	37,604	37,278	326
1992	51,467	1,862	49,605	49,125	480
1993	53,895	586	53,309	52,987	322
1994	48,317	245	48,072	47,768	304
1995	41,122	764	40,358	37,917	2,441
1996	53,205	1,154	52,051	49,794	2,257
1997	30,461	417	30,044	28,772	1,272
1998	37,139	187	36,952	34,724	2,228
1999	52,830	50	52,780	49,544	3,236
2000	66,434	576	65,858	64,428	1,431
2001	50,587	170	50,417	49,693	724
2002	25,783	1,906	23,877	22,613	1,264
2003	42,813	171	42,642	41,995	648
2004	37,185	311	36,874	36,511	363
2005	36,691	68	36,623	35,948	675
2006	38,088	245	37,843	37,531	312
2007	26,721	117	26,604	26,427	176
2008	**37,482**	**95**	**37,387**	**37,249**	**139**

Source: DAWR, Guam

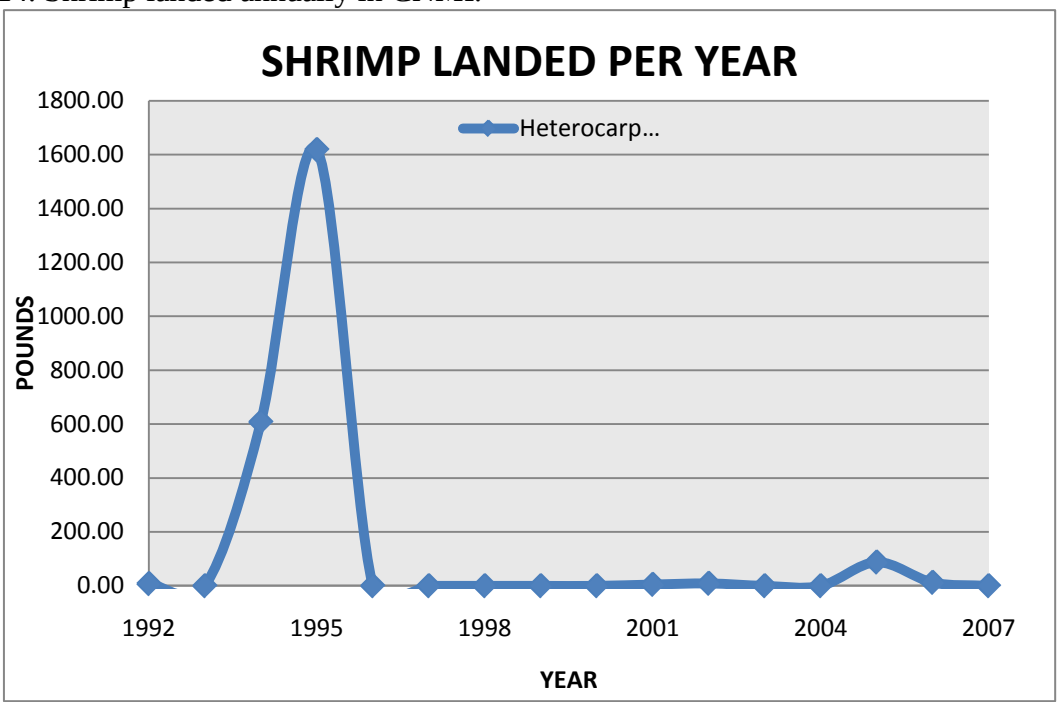
4.15.4.3 **Description of the Crustacean Fishery of the CNMI**

Lobsters around CNMI do not appear to go into traps and have not been found in waters deeper than 13 meters. The CNMI fishery primarily targets spiny lobster in nearshore waters with reported catches taken almost exclusively within the 0-3 nmi zone of the inhabited southern islands by hand harvesters with scuba or free diving. Beyond 3 nmi, the topography in most locations drops off steeply. These lobster habitats are relatively small and difficult to access.

Anecdotal information indicates that in the northern islands on the reef surrounding FDM, bottomfish fishermen that have anchored for the night occasionally dive for lobsters. Anchoring and diving at Farallon de Mendinilla (FDM) is primarily for personal consumption and occurs exclusively within 3 nmi.

A deepwater shrimp trap fishery was undertaken by two companies in the 1990s mostly around Saipan and Tinian on flat areas near steep banks at depths greater than 350 meters. While three species of pandalid shrimp are known to occur at varying depths in the waters around CNMI (*Heterocarpus ensifer* (366–550 m), *Heterocarpus laevigatus* (550–915 m), and *Heterocarpus longirostris* (> 915 m)), the most commercially valuable and subsequently targeted is the largest species, *Heterocarpus laevigatus*. Based on the graph below, shrimp is a pulse fishery that has not had any significant landings since 1995 (Figure 14). No landings have been reported since 2006.

Figure 14. Shrimp landed annually in CNMI.



Source: DFW Commercial Purchase Database

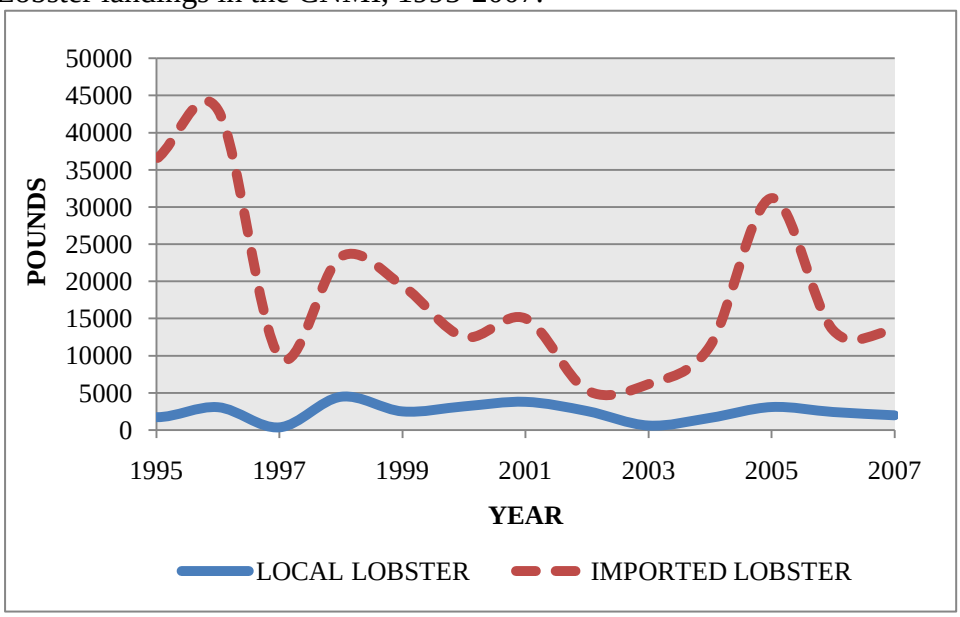
One CNMI company stopped fishing in 1995, citing loss of gear as the reason for exiting the fishery. The second company began in December 1995 and had fished 20 days by March 1996 when non-Commercial Purchase Database (CPD) data collection ceased. The second company experienced no trap losses in 61 sets and 1561 traps deployed. Strong currents, rough bottom topography, and the fishing depth all contribute to the potential for gear loss, which has been experienced by this fishery in the past. Throughout the Pacific, deep-water shrimp fisheries have been sporadic in nature due to gear loss, short shelf life and inconsistent quality, and local depletion. While other banks might have abundant stocks, unfamiliarity with them could lead to even greater gear loss.

Shrimp trapping was conducted at 22 islands and banks during the Resource Assessment Investigation of the Mariana Archipelago (RAIOMA) cruises in the early 1980s. Depth and area distribution were observed for the three major species of pandalid shrimp. Average size, size at maturity, reproductive cycles, and sex ratios were analyzed and determined. Growth and mortality were also calculated. From analysis of catch per unit effort, determination of suitable habitat and the above parameters, total biomass and sustainable yield were calculated. There is an estimated 676.6 tons of *Heterocarpus laevigatus* biomass and an exploitable sustainable yield of 162 tons (>357,000 pounds) per year for the combined EEZ waters around Guam and CNMI.

The CNMI Division of Fish and Wildlife (DFW) conducted a data collection project specifically for the deepwater shrimp fishery between May of 1994 and June of 1995. Catch and effort data was gathered for both types of traps, as well as bycatch data. Depth ranges for the fishery and depth of greatest abundance were recorded, and sex ratios and reproductive cycles were determined.

CNMI's commercial lobster fishery is small, with 2,948 pounds of commercial landings in 2004 worth an estimated $19,408. The catch for 2007, 2008, and 2009 was 1955 pounds, 1468 pounds, and 484 pounds, respectively, with the price dropping per pound every year from $5.31 in 2007 to $4.98 in 2009. Based on the graph below (Figure 15), clearly more lobster is imported than landed locally every year. Landings have always been below 5000 pounds.

Figure 15. Lobster landings in the CNMI, 1995-2007.



Source: DFW Commercial Purchase Database

4.15.4.4 **Description of the Crustacean Fishery of Guam**

Little is known about Guam's crustacean fisheries. Fishing for crustaceans around Guam mostly occurs in inshore territorial waters, usually in a subsistence or recreational context. It is estimated that a total of 1,159 and 1,240 pounds of lobsters were harvested in 2008 and 2009 (http://www.pifsc.noaa.gov/wpacfin/guam/dawr/Pages/gdawr_data_3.php), respectively, with a value of $4,299-4,585. There is no deepwater shrimp fishery in Guam.

4.15.4.5 **Description of the Precious Coral Fishery of the CNMI**
Little is known about the presence of precious corals in the waters around CNMI. The amount of habitat where precious corals can grow is limited throughout the archipelago because of the steep bathymetry. Black coral grows in relatively shallow waters of 30–100 meters, while pink, gold, and bamboo coral grows in deeper waters of 300 to 1,500 meters. Thus, precious corals could theoretically exist in both the nearshore waters (0–3 nmi) as well as in the offshore (3–200 nmi) waters.

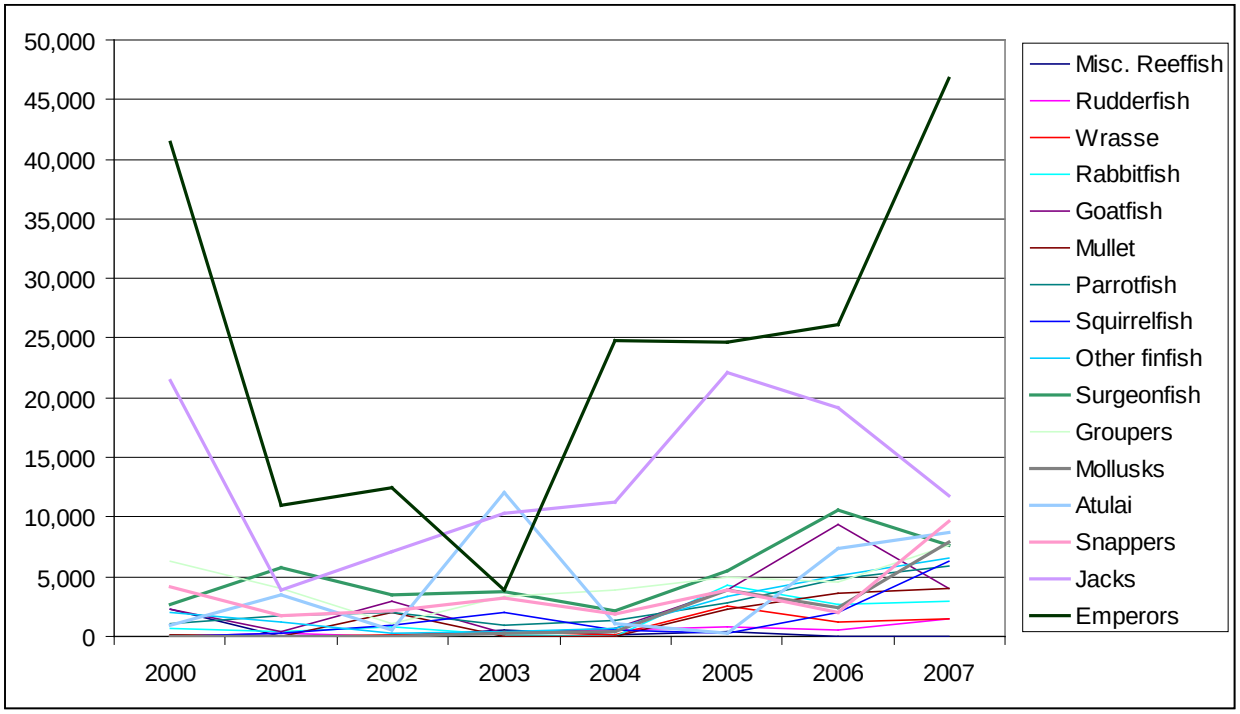
Reports of a fishery from pre–World War II suggest that large quantities of high-quality *Corallium* spp. were taken in waters north of Pagan Island. Since then, no known precious coral harvests have occurred within EEZ waters around CNMI.

4.15.4.6 **Description of the Precious Coral Fishery of Guam**
During the 1970s, waters surrounding Guam were surveyed for precious coral. The study focused on the presence of pink and red corals (*Corallium* spp.) and black coral (*Antipathes* spp.). Very little precious coral resources were found in these surveys. There is no precious coral fishery currently operating around Guam, nor have there been any reported; there are no observed landings of precious corals harvests from the EEZ around Guam.

There is sufficient domestic processing capacity to accommodate harvest. The U.S. imports semi-processed coral for finishing into jewelry. Under the FEP, domestic production could replace these imports.

4.15.4.7 **Description of the Coral Reef Ecosystem Fishery of the CNMI**
It is difficult to assess the total harvest of present-day coral reef fisheries in CNMI because of shortcomings in fisheries statistics. Coral reef fisheries in CNMI are mostly limited to nearshore areas, especially off the islands of Saipan, Rota, and Tinian. Finfish and invertebrates are the primary targets, but small quantities of seaweed are also taken. All of the recent data are for commercial landings. Commercial landings of coral reef fish were approximately 132,777 pounds in 2007, the majority of which were emperors, jacks, snappers, and atulai (Figure 16). Harvests of topshell (*Holothuria whitmaei*) are subject to closed seasons. Generally, coral reef fisheries in CNMI are believed to be in good condition, but local depletion likely occurs in some areas of Saipan.

Figure 16. CNMI commercial reef fish landings by species group for 2000-2007



Virtually no recent information is available for inshore subsistence and recreational catches of coral reef resources. This harvest is assumed to be substantial, especially in the more accessible areas like Saipan Lagoon. CNMI DFW is now reestablishing the inshore creel survey program at Saipan Lagoon to obtain this information. Also, little is known of the coral reef fisheries in the northern islands of CNMI, but the catch by domestic fishermen is believed to be minor. The exception was in 1995, when the nearshore reefs around six of the northern islands (especially Anatahan and Sarigan) were fished commercially for several months. During that time, these areas yielded a harvest of 15 metric tons of reef fish and 380 pieces of spiny lobster. Poaching by foreign fishing boats may occur in some places.

4.15.4.8 **Description of the Coral Reef Ecosystem Fishery of Guam**

Prior to the Second World War, inshore fishing was the subsistence base of the native Chamorros on Guam. All catch reports were of reef-associated species until 1956, when a pelagic species was included. Post–World War II wage work enabled some fishermen to acquire small boats with outboard engines and other equipment for offshore fishing. However, even as late as the 1970s, few people in Guam fished offshore because boats and deep-sea fishing equipment were too expensive.

In the late 1970s, a group of Vietnamese refugees living on Guam fished commercially on a large scale. The Guam Fishermen's Cooperative Association also began operations during that time, emphasizing wholesaling. Today, the co-op's membership includes over 160 full-time and part-time fishermen, and it processes and markets (retail and wholesale) an estimated 80 percent of the local commercial catch.

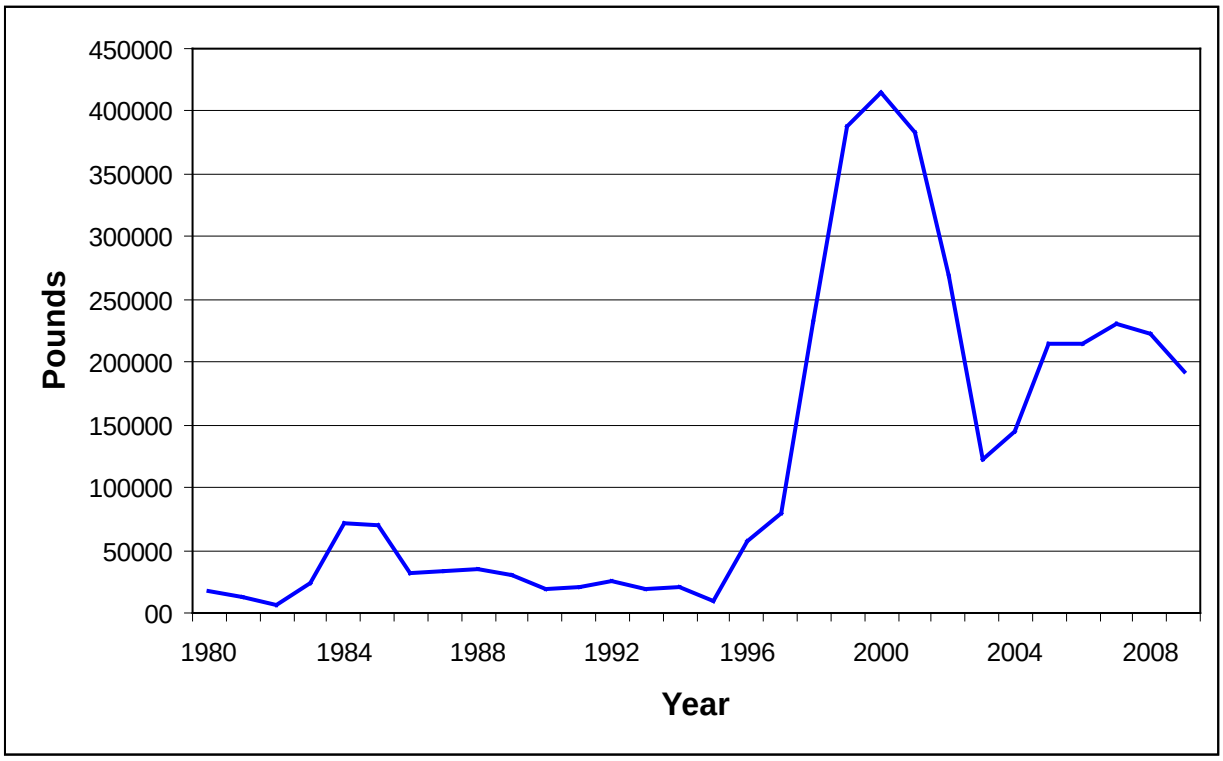
Since the late 1970s, the percentage of live coral cover on Guam's reefs and the recruitment of small corals has decreased. This trend has been attributed to poor recruitment by coral larvae, increased sedimentation of reef habitat, and domination of reef habitat by fleshy algae. Corals have also been affected by natural disturbances. Pervasive events include starfish predation between 1968 and 1970 and exposure of corals due to extreme tides during El Niño events. Heavy wave action associated with typhoons has had more localized effects.

Shore-based fishing accounts for most of the fish and invertebrate harvest from coral reefs around Guam. The coral reef fishery harvests more than 100 species of fish. Species from seven families (Acanthuridae, Mullidae, Siganidae, Carangidae, Mugilidae, Lethrinidae, and Scaridae) were consistently among the top ten species harvested in any given year from fiscal year 1991 to fiscal year 1995 and accounted for 45 percent of the annual fish harvest. Approximately 40 taxa of invertebrates are harvested by the nearshore fishery, including 12 crustacean taxa, 24 mollusc taxa, and four echinoderm taxa. Species that became rare on shallow reefs due to heavy fishing include bumphead parrotfish (*Bolbometopon muricatum*), humphead wrasse (*Cheilinus undulatus*), stingrays, parrotfish, jacks, emperors, and groupers.

Virtually no information exists on the condition of the reefs on offshore banks. On the basis of anecdotal information, most of the offshore banks are in good condition because of their isolation. Less than 20 percent of the total coral reef resources harvested in Guam are taken from the EEZ, primarily because the offshore banks are less accessible. Finfish make up most of the catch in the EEZ. Most offshore banks are deep, remote and subject to strong currents. For more information about the offshore banks and finfish caught there, see section 4.15.4.2.

Total coral reef fish landings for Guam in 2008 and 2009 were estimated at 221,892 pounds and 192,586 pounds (WPacFin; Figure 17), respectively, of which approximately 2 percent was bigeye scad. The majority of bigeye scad fishing occurs on the offshore banks in territorial waters, but also occasionally takes place in federal waters. Estimated annual offshore landings for this species since 1980 have ranged from 542 to 27,551 pounds (WPacFin), with no apparent trend; catches since 2002 have not exceeded 5,300 pounds and was 4,513 in 2009 (WPacFin). It is unclear how much of the offshore bigeye scad fishery has occurred in the EEZ.

Figure 17. Coral reef commercial landings for Guam, 1980-2008



Source: WPacFin

4.15.5 **Pacific Remote Island Areas FEP**

4.15.5.1 **Description of the PRIA Bottomfish Fishery**

The information here is summarized from the PRIA FEP (WPFMC 2009d), where source material and additional information can be found. While there are currently no known bottomfish fisheries operating in the PRIA, several vessels have been known to occasionally fish for bottomfish in federal waters around the PRIA. Low levels of commercial fishing have occurred at Palmyra Atoll and Kingman Reef; recreational fishing is offered at Palmyra through the Nature Conservancy. Hawai`i troll and handline vessels have, in the late 1990s, fished the EEZ waters around Palmyra and Kingman Reef targeting both pelagic and bottomfish species, including deep slope snappers, yellowfin and bigeye tuna, wahoo, mahimahi, and sharks. In 2006 and 2007, several PRIA troll/handline/bottomfish fishing permits were issued by NMFS, however, to date only one has been used. The catch and operations of this vessel cannot be revealed due to confidentiality requirements. However, over the last 20 years, only 19,095 pounds of non-pelagic fishes (including coral reef species, bottomfish, and crustaceans) have been removed from the PRIAs. Also, harvest from the PRIAs will be impacted by the implementation of the PRIA Marine National Monument, which restricts fishing to only subsistence and sustenance fishing out to 50 miles offshore; additionally, the Council recently recommended a fishery closure from the shoreline to 12 miles offshore, which NMFS is currently reviewing.

Very little bottomfish research has been conducted in the PRIA to date. Research cruises to Howland, Baker, and Jarvis Islands and to Palmyra Atoll and Kingman Reef were conducted in

2000-2004 to develop baseline assessements and perform monitoring on coral reef ecosystems. These continuing investigations are focusing on the status of the shallow-water habitat including percentage of live reef coverage, biodiversity, and reef species stock assessments. As the assessments are being conducted with towed-sled scuba techniques, the deep-water habitat, including that of many of the commercially valuable snappers, is still largely undescribed .

4.15.5.2 **Description of the PRIA Crustacean Fishery**

The information here is summarized from the Pacific Remote Islands Area FEP (WPFMC 2009d), where source material and additional information can be found. While there are currently no known crustacean fisheries operating in the PRIA, several vessels have been known to fish for crustaceans in federal waters on a small scale. At least two fishermen have attempted fishing for lobster in the PRIA. In 1999, one vessel explored the lobster fishery in Palmyra/Kingman waters. However, tropical lobsters (green spiny, *P. penicillatus*) are not harvestable with traps – no lobsters were caught in 800 traps. The fishermen caught 20 lobsters when diving on the reef, thus were not very successful. In addition, this vessel deployed traps at 300–800 meters to target deep-water shrimp and red crab around Palmyra and Kingman. Although there is a danger of losing gear when setting this deep, the operation did not lose many traps, and the catch-per-unit effort (CPUE) was very high, at approximately 30 kg/trap. However, over the last 20 years, only 19,095 pounds of non-pelagic fish (coral reef, bottomfish, and crustaceans) have been removed from the PRIAs. Also, harvest from the PRIAs will be impacted by the implementation of the PRIA Marine National Monument, which restricts fishing to only subsistence and sustenance fishing out to 50 miles offshore; additionally, the Council recently recommended a fishery closure from the shoreline to 12 miles offshore, which NMFS is currently reviewing.

There is virtually no research data regarding crustaceans in the PRIA. Detailed fishery data have been collected by the vessel mentioned above, which fished for deep-water shrimp around Palmyra in 1999.

4.15.5.3 **Description of the PRIA Precious Coral Fishery**

The information here is summarized from the PRIA FEP (WPFMC 2009d), where source material and additional information can be found. No precious corals harvester has received a federal permit to harvest corals from the EEZ surrounding the PRIA since the implementation of the Precious Corals FMP in 1980; however, this does not preclude any future permit issuance. The U.S. EEZ surrounding the PRIA has been defined, for the purposes of precious coral fisheries management, as an Exploratory Precious Coral Permit Area. There is a 1,000 kg quota limiting the amount of precious corals that may be taken in any precious corals permit area in EEZ waters around the PRIA during a fishing year, all species combined (except black corals). Only selective gear may be used to harvest precious corals and minimum sizes apply. Also, harvest from the PRIAs will be impacted by the implementation of the PRIA Marine National Monument, which restricts fishing to only subsistence and sustenance fishing out to 50 miles offshore; additionally, the Council recently recommended a fishery closure from the shoreline to 12 miles offshore, which NMFS is currently reviewing.

There are no known extensive precious coral beds in the PRIA nor are there known harvests of precious corals in the PRIA at this time, however, it is possible a future fishery may develop.

4.15.5.4 **Description of the PRIA Coral Reef Ecosystem Fishery**

The information here is summarized from the Pacific Remote Islands Area FEP (WPFMC 2009d), where source material and additional information can be found. No domestic coral reef fishery has ever occurred at Howland, Baker, Jarvis, or Kingman Reefs. Recreational fishing for bonefish has occurred at Palmyra through the Nature Conservancy and the USFWS; however, catch statistics are unavailable. No information is available on coral reef catches at Wake Island or Johnston Atoll. However, over the last 20 years, only 19,095 pounds of non-pelagic fish (coral reef species, bottomfish, and crustaceans) are reported to have been removed from the PRIAs. Also, harvest from the PRIAs will be impacted by the implementation of the PRIA Marine National Monument, which restricts fishing to non-commercial fishing out to 50 miles offshore; additionally, the Council recently recommended a fishery closure from the shoreline to 12 miles offshore, which NMFS is currently reviewing.

4.15.6 **Pacific Pelagic FEP**

4.15.6.1 **Description of the Pelagic Fisheries**

The Pelagics FEP is the management plan for regulating pelagic fisheries throughout the jurisdiction of the Council, including American Samoa, PRIAs, the Mariana archipelago, and the Hawaii archipelago, as well as on the high seas.

A summary of the total pelagic landings during 2008 and 2009 in the western Pacific and the percentage of each species landings compared to total pelagic landings are shown in Table 10 and 11, respectively.

Table 10. Total pelagic landings in pounds in the western Pacific region in 2008

Species	American Samoa	Guam	CNMI	Hawai`i	Total	% Total
Swordfish	14,889			4,303,000	4,317,889	10.7
Blue marlin	76,286	9,705	1,098	1,142,000	1,229,089	3.0
Striped marlin	1,582			1,023,000	1,024,582	2.5
Other billfish	3,751	283		567,000	571,034	1.4
Mahimahi	27,798	111,811	11,169	1,416,000	1,566,778	3.9
Wahoo	298,246	98,345	1,388	964,000	1,361,979	3.4
Opah (moonfish)	5,334			1,335,000	1,340,334	3.3
Sharks (whole weight)	1,300	497		416,000	417,797	1.0
Albacore tuna	7,804,550			873,000	7,677,550	19.0
Bigeye tuna	273,901			13,511,000	13,784,901	34.1
Bluefin Tuna				2,000	2,000	0.0
Skipjack tuna	358,700	295,250	157,708	1,266,000	2,077,658	5.1
Yellowfin tuna	741,123	19,887	16,344	3,478,000	4,255,354	10.5
Other pelagics	2,148	14,302	9,306	1,194,000	1,219,756	3.0
Total	9,609,608	550,080	197,013	31,490,000	40,446,701	

Note: Total Pelagic Landings are based on commercial reports and/or creel surveys. “Other pelagics” includes Dogtooth Tuna, Rainbow Runner, Barracudas, Kawakawa, Pomfrets, Oilfish, and miscellaneous pelagic fish categories

Table 11. Total pelagic landings (PMUS only) in pounds in the Western Pacific Region in 2009

Species	American Samoa	Guam	CNMI	Hawai`i	Total	% Total
Swordfish	27,361	0	0	3,975,000	4,002,361	14.3
Blue marlin	91,753	32,605	47	1,154,000	1,278,405	4.6
Striped marlin	7,981	0	0	644,000	651,981	2.3
Other billfish	11,079	904	162	296,000	308,145	1.1
Mahimahi	36,933	146,649	19,580	1,464,000	1,667,162	5.9
Wahoo	303,960	130,733	3,389	751,000	1,189,082	4.2
Opah (moonfish)	6,402	0	0	1,896,000	1,902,402	6.8
Oilfish	6,171	61	0	544,000	550,232	2.0
Pomfret	1,241	430	511	628,000	630,182	2.2
Sharks (whole weight)	2,473	0	0	373,000	375,473	1.3
Albacore tuna	8,604,024	0	0	678,000	9,282,024	33.1
Bigeye tuna	351,509	0	0	10,753,000	11,104,509	39.6
Bluefin Tuna	0	0	0	2,000	2,000	0.0
Skipjack tuna	344,410	331,063	129,176	1,098,000	1,902,649	6.8
Yellowfin tuna	867,571	50,279	25,113	2,844,000	3,786,963	13.5
Other pelagics	203	3,172	1,521	46,000	50,896	0.2
Totals		695,896	179,498	27,148,000	28,023,394	

4.15.6.1.1 **American Samoa-based Pelagic Fisheries**

The following two paragraphs are summarized from the report evaluating impacts of the September 2009 tsunami on the American Samoa fishing community and fishery (WPFMC 2010), where source material and additional information can be found. Subsistence fishing continues to the present, but the importance of pelagic fisheries as a source of income and employment is increasing. In 1995, small-scale longline fishing began in American Samoa. Commercial ventures are diverse, ranging from small-scale vessels having very limited range to large-scale vessels catching tuna in the EEZ and distant waters, and delivering their catches to canneries based in American Samoa. Currently the pelagic fisheries of American Samoa are based on supplying fresh or frozen albacore directly to a large tuna cannery in Pago Pago. These fisheries include small and large-scale longlining; a pelagic trolling and handline fishery; distant water purse seine fishery; and distant water jig albacore fishery.

In 2001 and 2002, American Samoa's active longline fleet increased from 21 mostly small alia to 75 vessels of a variety of sizes; American Samoans mostly own small vessels and non-American Samoans mostly own large vessels (WPFMC 2003). The rapid expansion of longline fishing effort within the EEZ waters around American Samoa prompted the Council to develop a limited entry system for the American Samoa pelagic longline fishery in which 60 permits were initially approved and issued by NMFS; this has been set as the cap.

Unpublished data prepared for the 2009 pelagics annual report showed that over 10.6 million pounds (Table 12) of pelagic species is estimated to have been landed by American Samoa vessels during 2009. This is an increase of about 1.0 million pounds from the 2008 landings. Tuna species account for about 94% of the total landings; albacore dominates (85%) tuna

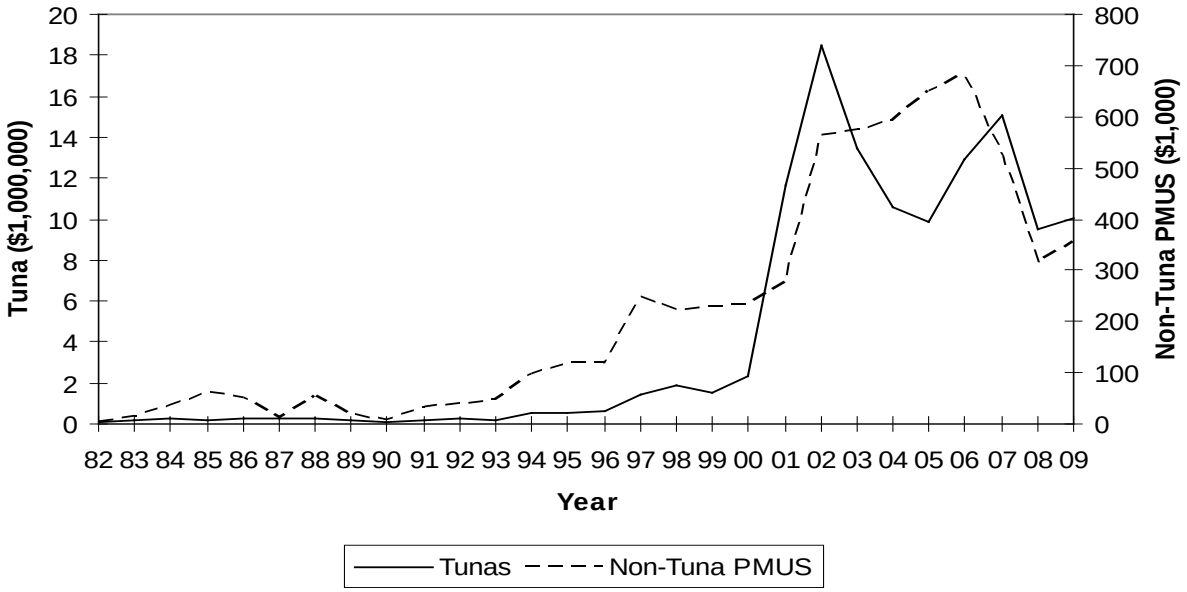
landings, followed by yellowfin (8%), bigeye (3.4%), and (3.3%) skipjack tunas. Tuna landings account for 80% percent of the total pelagic landings. Albacore landings in 2009 increased (10%) to about 8.6 million pounds from about 7.8 million in 2008. Non tuna and other pelagic species total about 500,000 pounds. Wahoo dominates (61%) the non tuna landings, and barracudas dominate the other pelagics. Of the total landings, commercial landings account for about 10.5 million pounds. Longline vessels over 50 feet dominate the American Samoa pelagic landings.

Table 12. American Samoa 2009 estimated total landings by pelagic species by gear type.

Species	LongLine Pounds	Troll Pounds	Other Pounds	Total Pounds
Skipjack tuna	341,829	2,582	0	344,410
Albacore tuna	8,604,024	0	0	8,604,024
Yellowfin tuna	865,012	2,560	0	867,571
Kawakawa	0	5	0	5
Bigeye tuna	351,509	0	0	351,509
Tunas (unknown)	198	0	0	198
TUNAS SUBTOTALS	10,162,572	5,146	0	10,167,717
Mahimahi	36,763	113	57	36,933
Black marlin	225	0	0	225
Blue marlin	91,753	0	0	91,753
Striped marlin	7,981	0	0	7,981
Wahoo	303,960	0	0	303,960
Sharks (all)	2,405	0	68	2,473
Swordfish	27,361	0	0	27,361
Sailfish	4,184	0	0	4,184
Spearfish	6,670	0	0	6,670
Moonfish	6,322	0	80	6,402
Oilfish	6,171	0	0	6,171
Pomfret	1,241	0	0	1,241
NON-TUNA PMUS SUBTOTALS	495,035	113	205	495,353
Barracudas	500	41	3,927	4,467
Rainbow runner	48	14	304	366
Dogtooth tuna	0	14	626	641
Pelagic fishes (unknown)	529	0	0	529
OTHER PELAGICS SUBTOTALS	1,077	69	4,857	6,003
TOTAL PELAGICS	**10,658,683**	**5,328**	**5,062**	**10,669,073**

Longline effort indicators – sets, hooks, trips – decreased in 2009 compared to 2008; the number of longline vessels decreased by two. The number of fishing trips decreased by 55% in 2009, but hours fished increased. About $10.36 million is recorded for 2009 from all pelagic species, an increase of 5% from 2008. Tuna sales are estimated at $10.1 million, which is 96% of the total value of $10.5 million (Figure 18). Albacore revenue was $8.6 million with an average price of $1/lb, accounting for 82% of the total commercial value.

Figure 18. American Samoa annual inflation-adjusted revenue ($) through 2009 for tuna and non-tuna species.



Longline fishing by large monohull vessels (>50ft) continues to dominate American Samoa's pelagic fishery. The alia longline fleet remains at one boat through the last three years. In September 2009, one of the two canneries in American Samoa shut down; however, data shows that the 2009 landings increase compared to 2008. Fishing effort and the number of fishing boats decreased, but the total landings were higher in 2009 than in 2008. Therefore, the closure of the Chicken of the Sea cannery appears to have had no negative impact on the total pelagic landings.

Distant-Water Purse Seine Fishery

The U.S. purse seine fleet operating in the central and western Pacific uses large purse-seine nets near the ocean surface to capture skipjack, yellowfin, and bigeye tuna in free-swimming schools, around fish aggregation devices (FADs) deployed by the fleet, or by setting on logs or other floating objects. These vessels often land their catches at canneries based in American Samoa. These large vessels (200–250 ft length) could not be economically operated for longline fishing, but some former participants in the U.S. purse seine fishery have acquired more suitable vessels and participated in the American Samoa-based longline fishery.

Distant-Water Jig Albacore Fishery

Domestic albacore jig vessels also supply tuna to the canneries in American Samoa. Since 1985, approximately 50–60 U.S. vessels have participated in the high-seas troll fishery for albacore. This fishery occurs seasonally (December through April) in international waters at 35°–40° S latitude. The vessels range in length from 50 to 120 feet, with the average length about 75 feet. They operate with crews of three to five and are capable of freezing 45–90 tons of fish.

4.15.6.1.2 **CNMI-based Pelagic Fisheries**

CNMI's pelagic fisheries occur primarily from the island of Farallon de Medinilla (FDM) south to the island of Rota; trolling is the primary fishing method. The pelagic fishing fleet consists primarily of vessels less than 24 feet in length, which usually have a limited 20-mile travel radius from Saipan. Annual landings ranged from 147,000-372,000 pounds between 1983-2009.

The primary target and most marketable species for the pelagic fleet is skipjack tuna (70 percent of 2009 commercial landings). Yellowfin tuna and mahimahi are also easily marketable species, but are seasonal. During their runs, these fish are usually found close to shore and provide easy targets for the local fishermen. In addition to the economic advantages of being near shore and their relative ease of capture, these species are widely accepted by all ethnic groups, which has kept market demand fairly high. It is estimated that in 2009, 44 fishery participants made 183,981 pounds of commercial landings of pelagic species. Table 13 provides summary of CNMI pelagic landings by species.

Table 13. CNMI 2009 commercial pelagic landings

Species	**Landing (Pounds)**
Skipjack Tuna	129,176
Yellowfin Tuna	25,113
Saba (kawakawa)	1,521
Tuna PMUS	**155,809**
Mahimahi	19,580
Wahoo	3,389
Blue Marlin	47
Sailfish	162
Sickle Pomfret	511
Non-tuna PMUS	**23,689**
Dogtooth Tuna	2,575
Rainbow Runner	1,759
Barracuda	24
Troll Fish (misc.)	125
Non-PMUS Pelagics	**4,483**
Total Pelagics	**183,981**

4.15.6.1.3 **Guam-based Pelagic Fisheries**

There are currently no large-scale pelagic fisheries based in Guam, although foreign longliners transship to Japan through the Port of Guam. Guam's pelagic fisheries consist of primarily small, recreational, trolling boats that are either towed to boat launch sites or berthed in marinas. They fish only within local waters, either within EEZ waters around Guam or on some occasions in the adjacent EEZ waters around CNMI. In 2006, the first Guam-based longline vessel became active.

The estimated annual pelagic landings have varied widely, ranging between 322,000 and 937,000 pounds in the 28-year time series, with about 720,000 pounds landed in 2009 (Table 14). Landings consisted primarily of five major species: mahimahi (*Coryphaena hippurus*),

wahoo (*Acanthocybium solandri*), bonita or skipjack tuna (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*), and Pacific blue marlin (*Makaira mazara*). Other minor species caught include rainbow runner (*Elagatis bipinnulatus*), kawakawa (*Euthynnus affinis*), dogtooth tuna (*Gymnosarda unicolor*), double-lined mackerel *(Grammatorcynus bilineatus*), and oilfish (*Ruvettus pretiosus*). Sailfish and sharks were also caught during 2009. However, these species were not encountered during offshore creel surveys and were not available for expansion in the 2009 Pelagic FEP fisheries annual report. While sailfish is kept, sharks are often discarded as bycatch. In addition to the pelagic species listed above, approximately half a dozen other species were caught and landed incidentally in 2009.

Table 14. Guam 2009 commercial pelagic landings

Species	Total Landing (lbs)	Non-Charter (lbs)	Charter (lbs)
Skipjack Tuna	331,063	322,682	8,381
Yellowfin Tuna	50,279	49,065	1,214
Kawakawa	3,143	2,567	576
Albacore	0	0	0
Bigeye Tuna	0	0	0
Other Tuna PMUS	29	0	29
Tuna PMUS	**384,514**	**374,314**	**10,200**
Mahimahi	146,649	124,061	22,588
Wahoo	130,733	121,698	9,035
Blue Marlin	32,605	20,411	12,194
Black Marlin	0	0	0
Striped Marlin	0	0	0
Sailfish	904	904	0
Shortbill Spearfish	0	0	0
Swordfish	0	0	0
Oceanic Sharks	0	0	0
Pomfrets	430	430	0
Oilfish	61	61	0
Moonfish	0	0	0
Misc. Longline Fish	0	0	0
Non-tuna PMUS	**311,382**	**267,565**	**43,817**
Dogtooth Tuna	3,265	3,265	0
Rainbow Runner	1,804	1,772	32
Barracudas	4,899	4,899	0
Oceanic Sharks	0	0	0
Misc. Troll Fish	14,027	14,027	0
Non-PMUS Pelagics	**23,995**	**23,963**	**32**
Total Pelagics	**719,891**	**665,842**	**54,049**

4.15.6.1.4 **Hawaii-based Pelagic Fisheries**

Hawaii's pelagic fisheries are small in comparison to other Pacific Ocean pelagic fisheries such as distant-water purse seine fisheries and other foreign pelagic longline fisheries, but they

comprise the largest fishery sector in the State of Hawaii. Tuna, billfish and other tropical pelagic species supply most of the fresh pelagic fish consumed in Hawaii and support popular recreational fisheries. Hawaii-based longline vessels are capable of traveling long distances to high-seas fishing grounds, while the smaller handline, troll, charter and pole-and-line fisheries—which may be commercial, recreational or subsistence —generally occur within 25 miles of land, with trips lasting only one day.

Hawaii's pelagic fisheries—which include the longline, Main Hawaiian Islands troll and handline, offshore handline, and the aku boat (pole and line) fisheries—are the State's largest and most valuable fishery sector (Table 15; unpublished data prepared for 2009 pelagics annual report). The majority of the commercial landings and revenue come from the longline fishery, although the majority of State Commercial Marine License (CML) holders (who are required to report all catch) are fishermen on small vessels using trolling gear.

Table 15. Hawaii commercial pelagic landings, revenue, and average price by fishery

	2008			**2009**		
Fishery	**Pounds Landed (1000 lbs)**	**Ex-vessel Revenue ($1000)**	**Average Price ($/lb)**	**Pounds Landed (1000 lbs)**	**Ex-vessel Revenue ($1000)**	**Average Price ($/lb)**
Longline	26,694	$73,769	$2.90	22,145	$57,918	$2.68
MHI trolling	2,971	$5,623	$2.48	2,958	$5,198	$2.39
MHI Handline	697	$1,447	$2.50	1,080	$1,860	$2.05
Offshore Handline	325	$595	$2.37	286	$569	$2.09
Aku boat	703	$889	$1.27	511	$679	$1.33
Other Gear	311	$680	$2.39	168	$316	$2.06
Total	**31,702**	**$83,003**	**$2.81**	**27,148**	**$66,541**	**$2.60**

The target species are tunas and billfishes, but a variety of other species are also important including mahimahi, ono (wahoo), opah (moonfish), and monchong (pomfret) among others. Table 16, prepared for the 2009 pelagics annual report, presents an overview of Hawaii's commercial pelagic landings and their values for 2008 and 2009. Collectively, in 2009, these pelagic catches amounted to landings of approximately 27 million pounds with an estimated ex-vessel value of nearly $66.5 million.

The largest component of pelagic catch in recent years is bigeye tuna. Swordfish was the largest component of the billfish catch in 2008 and 2009, followed by blue marlin. Mahimahi and opah were the largest components of the "other PMUS" category.

Table 16. Hawaii commercial pelagic catch information 2008-2009

	2008			2009		
Species	**Pounds Landed (1000 lbs)**	**Ex-vessel Revenue ($1000)**	**Average Price ($/lb)**	**Pounds Landed (1000 lbs)**	**Ex-vessel Revenue ($1000)**	**Average Price ($/lb)**
Tuna PMUS						
Albacore	874	$1,380	$ 1.72	678	$1,071	$ 1.65
Bigeye Tuna	13,571	$51,006	$ 3.81	10,753	$39,366	$ 3.66
Bluefin Tuna	1	$0	--	2	$0	--
Skipjack Tuna	1,279	$1,221	$ 1.34	1,098	$1,010	$ 1.42
Yellowfin Tuna	3,536	$8,891	$ 2.77	2,844	$6,249	$ 2.52
Tuna PMUS subtotal	**19,260**	**$62,497**	**$3.42**	**15,375**	**$47,696**	**$3.27**
Billfish PMUS						
Swordfish	4,316	$7,363	$ 1.92	3,975	$7,256	$ 1.89
Blue Marlin	1,161	$1,047	$ 1.14	1,154	$1,193	$ 1.16
Striped Marlin	1,023	$1,076	$ 1.05	644	$947	$ 1.47
Other Billfish	566	$386	$ 0.73	296	$295	$ 1.04
Billfish PMUS subtotal	**7,067**	**$9,872**	**$1.57**	**6,070**	**$9,691**	**$1.54**
Other PMUS						
Mahimahi	1,432	$3,268	$ 2.61	1,464	$2,853	$ 2.22
Ono (wahoo)	976	$2,296	$ 2.69	751	$1,673	$ 2.77
Opah (moonfish)	1,335	$2,225	$ 1.72	1,896	$2,376	$ 1.28
Oilfish	491	$942	$ 1.92	544	$704	$ 1.29
Pomfret	677	$1,709	$ 2.55	628	$1,381	$ 2.20
Sharks (whole weight)	416	$154	$ 0.45	373	$139	$ 0.47
Other Pelagics	47	$40	$ 1.11	46	$29	$ 1.15
Other PMUS subtotal	**5,375**	**$10,634**	**$2.15**	**5,703**	**$9,154**	**$1.75**
Total Pelagics	**31,702**	**$83,003**	**$2.81**	**27,148**	**$66,541**	**$2.57**

Recreational fishery

There are no state or federal permit or reporting requirements for recreational participants (those who do not sell a single fish during the year), therefore, catch rates and effort data are unknown. However, in 2001, NMFS in conjunction with HDAR resumed its voluntary Marine Recreational Fishing Statistics Survey (MRFSS) program in Hawaii. Also newly instituted are associated voluntary creel surveys (the Hawaii Marine Recreational Fishing Survey or HMRFS) to determine catch rates and species composition. The results from these two surveys are then combined to yield estimates of recreational catch and effort by both shore and land based fishermen. Limited final species specific estimates of recreational fishing have been informally released, although there is still some question as to whether or not these fishers are purely

recreational (fishing for sport or pleasure with no sales), "subsistence" (fishing primarily for food), or "expense" (selling just enough to cover trip costs).

The total number of recreational fishers in Hawaii is unknown, but there are about 14,300 small vessels in Hawaii; 90% of those are registered as "pleasure craft," of which 6,600 might be used for recreational fishing. The data indicate that little to no bigeye tuna is caught by recreational fishers, while yellowfin landings have been estimated to range between 2,270 and 5,050 tons, with a three year mean of 3,295 tons. Due to criticisms of the sampling methods and statistical algorithms employed to develop recreational catch totals, the Council has recommended that HMRFS catch estimates not be used for management purposes until the issues have been resolved.

Hawaii's charter fisheries primarily troll for billfish. Big game sportfishing rods and reels are used, with four to six lines trolled at any time with outriggers. Both artificial and natural baits are used. In addition to lures, trollers occasionally use freshly caught skipjack tuna and small yellowfin tuna as live bait to attract marlin, the favored landings for charter vessels, as well as yellowfin tuna.

Domestic High Seas Squid Jigging Fishery

This fishery has recently been conducted by a single operation which uses four catcher vessels and one large mothership. These vessels operate under HSFCA permits and visit ports at Honolulu, Hawaii and in Alaska. Each vessel carries 21-38 jigging machines and fishes primarily to the north of the Hawaiian Archipelago targeting neon flying squids (*Ommastrephes bartrami*) during the summer months. See the FEIS written for Amendment 12 to the Pelagic Fishery Plan for a detailed description of these squid and the fishery (NMFS 2005).

4.15.6.1.5 **PRIA-based Pelagic Fisheries**

There are no known pelagic fisheries based in the PRIA at this time. However, longline fishermen from Hawaii have reported landings from the EEZ waters surrounding the PRIA. For example, the EEZ around Palmyra is often visited by Hawaii-based longline vessels targeting yellowfin tuna, whereas at Johnston Atoll, albacore tuna is often caught in greater numbers than yellowfin or bigyeye tuna. Similarly, the U.S. purse seine fleet also targets pelagic species (primarily skipjack tuna) in the EEZs around some PRIA, specifically, the equatorial areas of Howland, Baker, and Jarvis Islands. The combined amount of fish harvested from these areas from the U.S. purse seine fleet on average is less than 5 percent of their total annual harvest.

The USFWS prohibits fishing within the Howland Island, Jarvis Island, and Baker Island National Wildlife Refuge (NWR) boundaries. The USFWS continues to manage Johnston and Palmyra Atoll as a National Wildlife Refuge, but allows some recreational pelagic fishing within the refuge boundaries.

4.15.6.1.6 **Purse Seine Tuna Fishery**

The following section is summarized from the 2008 Pelagics Annual Report (WPFMC 2008b). Currently the U.S. purse seine fleet in the Pacific is managed through international agreements with the Pacific Ocean RFMOs and is regulated by NMFS through the High Seas Fishing Compliance Act; however, the Council has developed and NMFS implemented management

measures applicable to the purse seine fishery in the Western Pacific Region. For example, in EEZ waters around American Samoa, vessels over 50 ft in length are prohibited from fishing within 50 nm of shore. The U.S. tropical tuna purse seine fleet has fished the central-western Pacific Ocean under the South Pacific Tuna Treaty since 1988.

In the WCPO, the number of vessels active in the U.S. purse seine fleet has been declining since 2001, decreasing from 32 active vessels to only 15 in 2005. Catches have followed suit with an approximate decline of 40% from 2001 (115,858 mt) to 2005 (74,287 mt) despite a slight increase from 2004 landings (67,419 mt). These purse seine vessels are usually based in American Samoa and offload catches to the cannery in Pago Pago.

In the EPO, the purse seine fishery is being restricted through time/area closures pursuant to the IATTC Resolution C-04-09, whereby the fishery for tunas by purse-seine vessels in the EPO shall be closed from either (1) August 1 to September 11; or (2) November 20 to December 31. This resolution also prohibits "landings, transshipments and commercial transactions in tuna or tuna products ... originating from fishing activities that contravene this resolution."

4.15.6.2 **Stocks to be Classified as Ecosystem Components**

There are no stocks classified as ecosystem components at this time as all pelagic stocks are subject to either the international or one-year lifespan exception. The Council may choose to classify stocks as EC species at a later date.

4.15.6.3 **Stocks Excepted from Annual Catch Limits and Accountability Measures**

The Council's recommended classification of the Pelagic Management Unit Species (PMUS) is shown in Table 17. All PMUS are *in the fishery*, but pelagic finfish species will be subject to an international exception per §600.310(h)(2)(ii) and all squid will be excepted under the 1-year lifespan exception per §600.310(h)(2)(iii).

Table 17. Classification of western Pacific PMUS in accordance with NS1 guidelines

Stock/Species	Common Name	Classification (Subject to ACLs, Excepted, or EC)
Thysanoteuthis rhombus	Diamondback squid	Exception: 1-year lifespan
Ommastrephes bartramii	Neon flying squid	Exception: 1-year lifespan
Sthenoteuthis oualaniensis	Purple-back flying squid	Exception: 1-year lifespan
Thunnus alalunga	Albacore tuna	Exception: International
Thunnus obesus	Bigeye tuna	Exception: International
Thunnus albacares	Yellowfin tuna	Exception: International
Katsuwonus pelamis	Skipjack tuna	Exception: International
Makaira nigricans	Blue marlin	Exception: International
Kajikia audax	Striped marlin	Exception: International
Xiphias gladius	Swordfish	Exception: International
Alopius superciliosus	Bigeye thresher shark	Exception: International
Isurus oxyrinchus	Shortfin mako shark	Exception: International
Prionace glauca	Blue shark	Exception: International
Coryphaena spp	Mahimahi	Exception: International

Stock/Species	Common Name	Classification (Subject to ACLs, Excepted, or EC)
Acanthocybium solandri	Wahoo	Exception: International
Lampris spp	Moonfish	Exception: International
Ruvettus pretiosus	Oilfish	Exception: International
Lepidocybium flavobrunneum	Escolar	Exception: International
Taractichthys steindachneri, *Eumegistus illustris*	Pomfrets	Exception: International
Thunnus orientalis	Pacific bluefin tuna	Exception: International
Euthynnus affinis	Kawakawa	Exception: International
Auxis spp, *Scomber* spp, *Allothunnus* spp	Other tuna relatives	Exception: International
Istiompax indica	Black Marlin	Exception: International
Tetrapturus angustirostris	Shortbill spearfish	Exception: International
Istiophorus platypterus	Sailfish	Exception: International
Alopias pelagicus	Pelagic thresher shark	Exception: International
Alopias vulpinus	Common thresher shark	Exception: International
Carcharhinus falciformis	Silky shark	Exception: International
Carcharhinus longimanus	Oceanic white-tip	Exception: International
Isurus paucus	Longfin mako shark	Exception: International
Lamna ditropis	Salmon shark	Exception: International
Other Gempylidae		Exception: International
Other Bramidae		Exception: International

Stock assessments have not been conducted for all PMUS. Table 1 lists the status of stock assessments completed or planned for all western Pacific PMUS. The following paragraphs provide background information about the various stocks.

These species range across the entire Pacific Ocean, and some have cosmopolitan distributions in the Indian, Atlantic and Pacific Oceans. Although population structure is unknown for all species, it is likely that where population structure exists, all species have broad population ranges like the tunas and billfish. For example, genetic studies on wahoo (Theisen et al. 2008) indicate that this species shows little population structure globally; it is the first example of a vertebrate with a single globally-distributed population. As such, setting a local catch limit for this species in the Western Pacific Region is unlikely to have any conservation benefit for the stock as a whole.

Stock assessments have been conducted for WCPO and EPO skipjack tuna, WCPO and EPO yellowfin tuna, WCPO and EPO bigeye tuna and North Pacific and South Pacific albacore. Additionally, stock assessments have been conducted on North Pacific and Southwest Pacific swordfish, North Pacific and Southwest Pacific striped marlin, North Pacific blue sharks. Stock assessments are planned for other Pacific pelagic sharks by the science provider to the WCPFC, the Secretariat of the Pacific Commission's Oceanic Fisheries Program (Manning et al. 2009). Manning et al. (2009) concluded that sufficient basic biological and fishery data exist to provide preliminary stock status advice of the key shark species (blue, oceanic whitetip, short- and

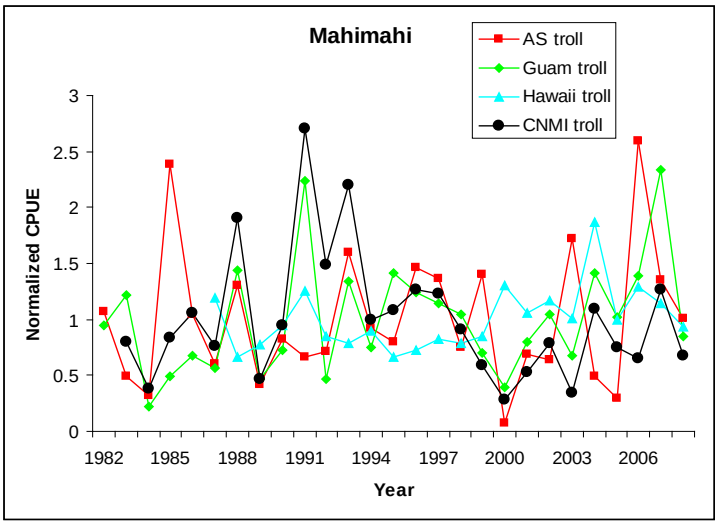
longfin mako, silky, bigeye, common, and pelagic thresher sharks). The salmon shark is only caught when the shallow-set longline fishery is operating at the extreme northerly edge of its range.

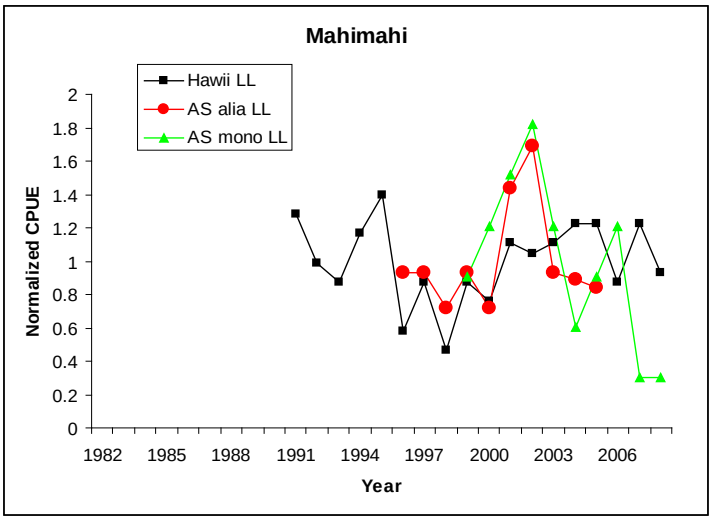
The WCPFC has implemented conservation and management measures on WCPO bigeye, yellowfin, South Pacific and North Pacific albacore, Southwest Pacific swordfish and striped marlin, western & central Pacific sharks, and Pacific bluefin tuna. New stock assessments are planned for blue and striped marlin, North Pacific swordfish, and opah. Although planned stock assessments will not cover all the species listed in Table 17, it is clear that there is intent by the tuna RFMOs to assess all economically important species and, where necessary, implement management measures. In this context, it is worth noting that the WCPFC conservation and management measures for sharks were implemented without stock assessments.

Mahimahi is targeted and landed in large quantities in CNMI and Guam; unfortunately there has been no stock assessment performed to date. Mahimahi is a popular sportfish in American Samoa, but there are no landings data. It is considered "in the fishery." Bigeye thresher and shortfin mako sharks are actively targeted by the U.S. drift gillnet fishery off the West Coast.

In the absence of stock assessments, the only source of information on stock status for pomfrets, moonfish, wahoo, mahimahi, and blue and striped marlins is from catch per unit effort (CPUE) trends. The CPUE trends of mahimahi, wahoo, blue marlin, striped marlin, moonfish, and pomfrets in the Western Pacific Region pelagic fisheries are shown in Figures 19 through 24. Mahimahi, wahoo, moonfish, and pomfret CPUEs are highly variable but do not demonstrate any consistent trends. The troll CPUEs for mahimahi show remarkable consistency between CNMI and Guam, and all four troll CPUE trends show an increasing trend since 2000.

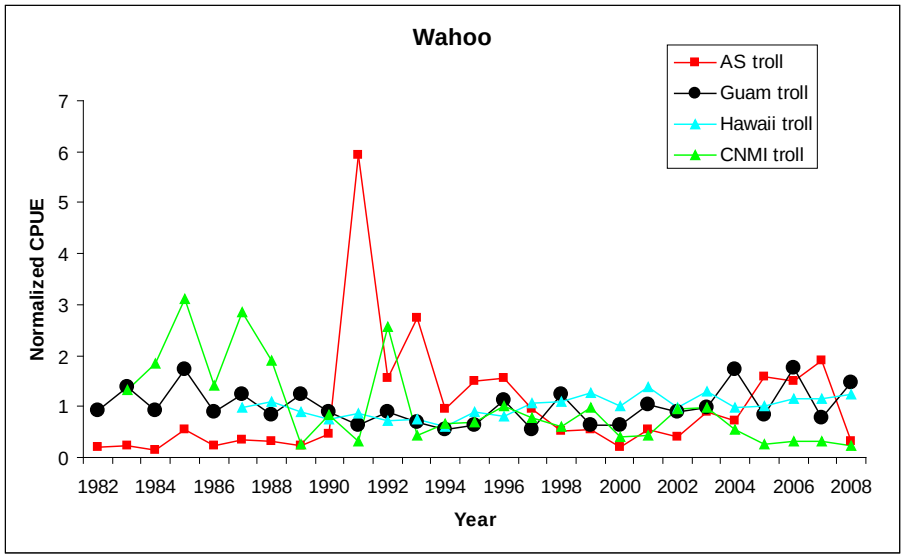
Figure 19. CPUE time series for mahimahi in Western Pacific Region troll and longline fisheries.

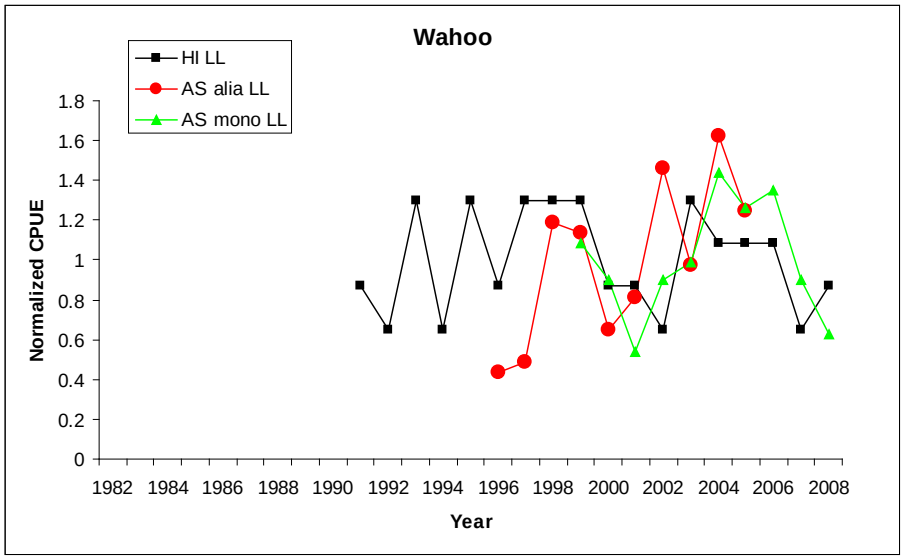




Wahoo troll and longline CPUEs (Figure 20) do not show any consistent trends and, like mahimahi, are highly variable from year to year.

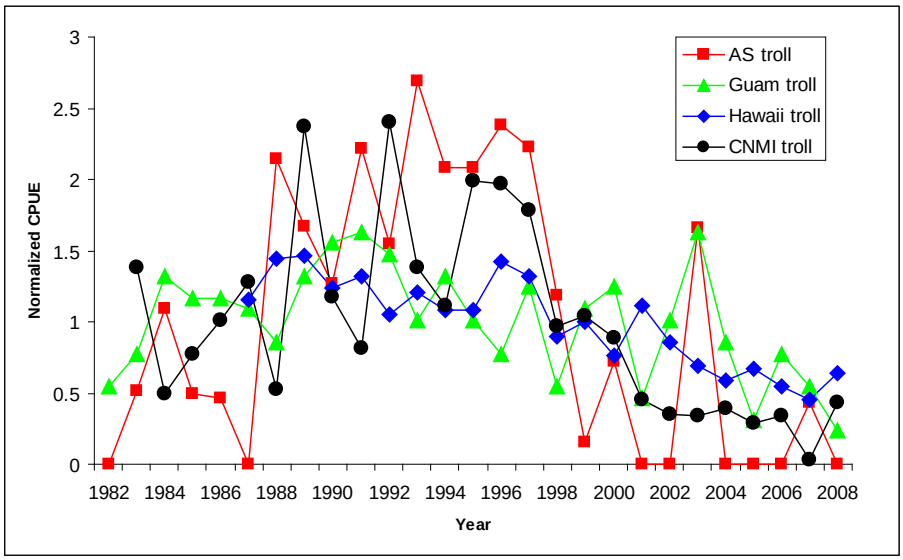
Figure 20. CPUE time series for wahoo in western Pacific region troll (top) and longline fisheries (bottom).

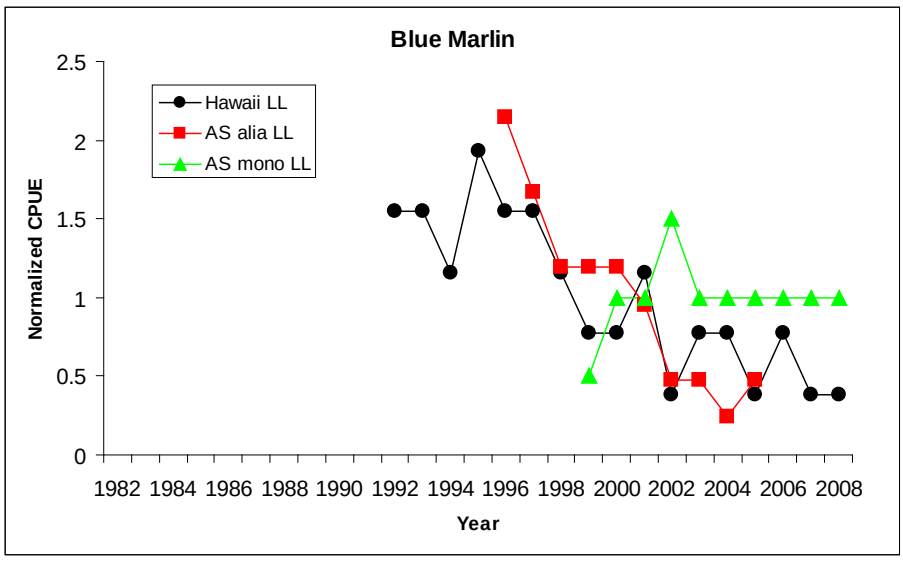




Blue marlin troll CPUE trends (Figure 21) are also highly variable but there is appears to be a consistent increasing trend during the 1980s to mid-1990s, with a general declining trend thereafter. The blue marlin Hawaii longline and American Samoa alia longline CPUE trends show a declining trend consistent with the latter half of the troll CPUEs, while the American Samoa monohull CPUEs are mostly flat.

Figure 21. CPUE time series for blue marlin in western Pacific region troll (top) and longline fisheries (bottom).





The Hawaii striped marlin longline and troll CPUEs (Figure 22) both show declining trends, although the longer troll time series shows relatively stable CPUE until the mid 1990s after which CPUE declines. Hawaii longline moonfish CPUE (Figure 23) has two stable phases in the 1990s and the 2000s, but a major decline between the two phases from 1999 to 2000. A similar decline happened in the American Samoa large vessel longline fishery in 2001 and 2002. Pomfret CPUE (Figure 24) has shown a variable and slightly rising trend in the Hawaii longline fishery and has been stable apart from one year in the American Samoa longline fishery.

Figure 22. CPUE time series for striped marlin in Hawaii troll and longline fisheries

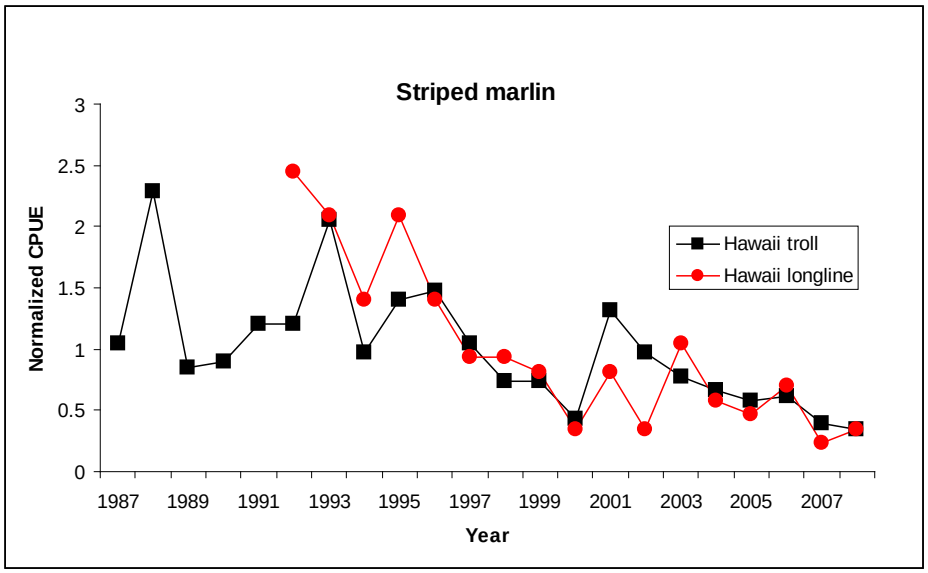


Figure 23. CPUE time series for moonfish in Hawaii and American Samoa and longline fisheries

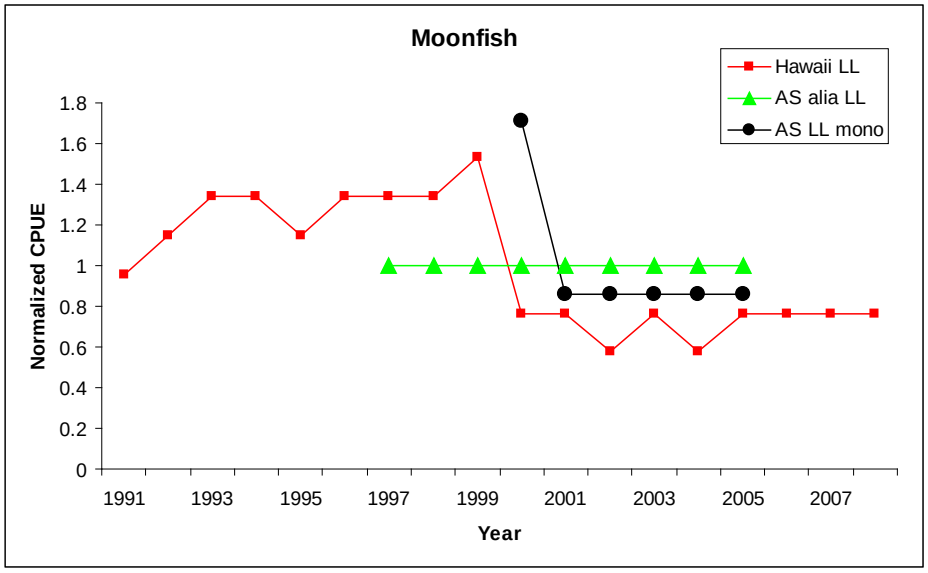
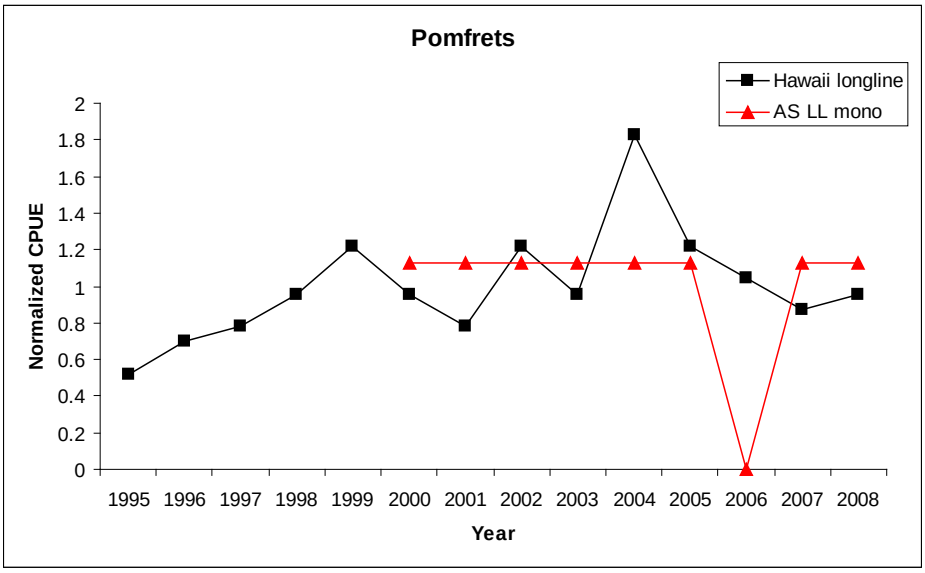


Figure 24. CPUE time series for pomfrets in Hawaii and American Samoa and longline fisheries



4.15.6.3.1 **International Exception: Specification of MSY and SDC**

The use of the international exception will not adversely reduce management of the Pelagic MUS that are proposed to be assigned to this category. The tuna regional fishery management organizations (RFMO) will likely conduct stock assessments on all species of importance other than tuna, including billfish and incidentally caught but economically important species such as mahimhi, wahoo, opah and monchong. Although stock assessments have yet to be conducted for the majority of these species (Table 18), the tuna RFMOs are collecting and improving the provision of catch information on all economically important pelagic species, and requiring member countries provide this information in their annual reports to the RFMOs. The NMFS guidelines require that even species subject to the international exception should have MSY, OFL, and SDC regardless of the fact that an ACL is not implemented. However, without a stock assessment for these stocks, it is not possible at this time to determine these values; these values will only be forthcoming as stock assessments are completed. The results will be included in the international fisheries module of the Council's Pelagic Fisheries Annual Report.

Table 18. Specification of MSY for Pelagic MUS

Pelagic MUS	MSY (by stock structure)	Source
Albacore tuna (*Thunnus alalunga*)	S. Pacific Ocean - Point estimate: 60,000 mt - Range: 58,683-121,855 mt	Hoyle and Davies (2009)
	N. Pacific Ocean = NA	ISC (2006)
Bigeye tuna (*Thunnus obesus*)	WCPO - Point estimate: 73,840 mt - Range: 67,800-95,680 mt	Harley et al. (2010)
	EPO - Point estimate: 83,615 mt - Range: 65,209-176,218 mt	Aires-da-Silva and Maunders (2010)

Pelagic MUS	MSY (by stock structure)	Source
Yellowfin tuna (*Thunnus albacares*)	WCPO - Point estimate: None - Range: 522,000-636,800 mt	Langley et al. (2009)
	EPO - Point estimate: 273,159 mt - Range: 267,222-327,475 mt	Maunders and Aires-da-Silva (2010)
Skipjack tuna (*Katsuwonus pelamis*)	WCPO - Point estimate: 1.38 million mt - Range: 1,200,800-1,767,600 mt	Hoyle et al. 2010
	EPO = NA	Maunders and Hartley (2005); Maunder 2010
Pacific bluefin tuna (*Thunnus orientalis*)	NA	ISC (2008); ISC (2010)
Kawakawa (*Euthynnus affinis*)	NA	No assessment conducted.
Other tuna relatives (*Auxis* spp., *Scomber* spp., *Allothunnus* spp.)	NA	No assessment conducted.
Black marlin (*Istiompax indica*)	NA	No assessment conducted.
Blue marlin (*Makaira nigricans*)	Pacific Ocean - Point estimate: 13,056 mt - Range: None	Kleiber et al. 2003
Striped marlin (*Kajikia audax*)	Southwestern Pacific Ocean - Point estimate: 2,610 mt - Range: 2,555-3,003 mt	Langley et al. (2006)
	EPO - Point estimate: None - Range: 3,700-9,200 mt	Hinton and Maunder (2004)
Swordfish (*Xiphias gladius*)	N. Pacific Ocean Point estimate: None Range: 17,500-19,100 mt	Brodziak and Ishimura (2010)
	Southeastern Pacific Ocean - Point estimate: None - Range: 13,000-14,000 mt	Hinton and Maunder (2007)
Shortbill spearfish (*Tetrapturus angustirostris)*	NA	No assessment conducted.
Sailfish (*Istiophorus platypterus*)	NA	No assessment conducted.
Bigeye thresher shark (*Alopius superciliosus*)	NA	No assessment conducted.
Shortfin mako shark (*Isurus oxyrinchus*)	NA	No assessment conducted.

Pelagic MUS	MSY (by stock structure)	Source
Blue shark (*Prionace glauca*)	N. Pacific Ocean 3.5 million sharks or approximately 60,000 mt	Kleiber et al. 2009; Kleiber pers. comm. Jan. 3, 2011
Pelagic thresher shark (*Alopias pelagicus*)	NA	No assessment conducted.
Common thresher shark (*Alopias vulpinus*)	NA	No assessment conducted.
Silky shark (*Carcharhinus falciformis*)	NA	No assessment conducted.
Oceanic white-tip (*Carcharhinus longimanus)*	NA	No assessment conducted.
Longfin mako shark (*Isurus paucus*)	NA	No assessment conducted.
Salmon shark (*Lamna ditropis*)	NA	No assessment conducted.
Mahimahi (*Coryphaena* spp.)	NA	No assessment conducted.
Wahoo (*Acanthocybium solandri*)	NA	No assessment conducted.
Moonfish (*Lampris* spp.)	NA	No assessment conducted.
Oilfish (*Ruvettus pretiosus*) Escolar (*Lepidocybium flavobrunneum*)	NA	No assessment conducted.
Pomfrets (*Taractichthys steindachneri, Eumegistus illustris*)	NA	No assessment conducted.
Other Gempylidae	NA	No assessment conducted.
Other Bramidae	NA	No assessment conducted.

NA= No MSY estimate available.

4.15.6.3.2 **One-Year Lifespan Exception: Specification of MSY, SDC, OY, ABC, ABC Control Rule**

There are no MSYs or other biological reference points established for the squid species, however the three pelagic squids (diamondback squid (*Thysanoteuthis rhombus*), neon flying squid (*Ommastrephes bartrami*), and the purpleback flying squid (*Sthenoteuthis oualaniensis*)) have a one-year life span and thus are excepted from ACLs. All are managed under the Pacific Pelagic FEP; their life history information is described in Amendment 15 to the Pelagic FMP after work by Yatsu et al. (1997); Nigmatullin et al. (1995); and Nesis (1993). None of these pelagic squid species have been determined by the Secretary to be subject to overfishing or overfished.

4.15.6.4 **Stocks Subject to Annual Catch Limits and Accountability Measures**

There are no species subject to ACLs and AMs under the Pelagics FEP due to most of them being managed internationally; the others receive the 1-year lifespan exception.

4.15.6.4.1 **ABC Control Rule**

There are no species subject to ACLs and AMs under the Pelagics FEP, thus there are no control rules identified here.

4.15.6.4.2 **Mechanisms for Specifying Annual Catch Limits**

There are no species subject to ACLs and AMs under the Pelagics FEP, thus there are no mechanisms for specifying ACLs identified here. However, should the Council choose to specify ACLs for any pelagic fisheries, the mechanisms are identified in Section 3.1.2 of this amendment to do so.

4.15.6.4.3 **Accountability Measures**

There are no species subject to ACLs and AMs under the Pelagics FEP, thus there are no accountability measures required.

5.0 **Consistency with Applicable Laws**

5.1 ***Magnuson-Stevens Fishery Conservation and Management Act***

Section 303(a) of the Magnuson-Stevens Act requires that any fishery management plan which is prepared by any Council or by the Secretary with respect to any fishery, include the following 15 elements listed below.

1. Description of Conservation and Management Measures
   This amendment will add a new conservation and management measure, which is a mechanism for establishing annual catch limits. Other conservation and management measures can be found in the FEPs.

2. Description of the Fishery
   Descriptions of the fisheries for the Western Pacific region can be found in Section 4.15.

3. Specification of MSY/OY
   The proposed action would not establish any new specification of MSY or OY for any western Pacific fishery. A description of MSY and OY can be found for federally managed stocks in the 5 FEPs. Council has clarified that the SDC it will utilize is maximum fishing mortality threshold, MFMT, to determine the overfishing status for all stocks and MSST for the overfished determination.

4. Specification of the Capacity to Harvest OY
   The proposed action would not establish any new specification of the extent to which fishing vessels will harvest OY for any western Pacific fisheries. A description of the capacity for U.S. vessels to harvest OY can be found in Chapter 4 of each western Pacific FEP.

5. Specification of Fishery Performance Information (Annual/SAFE Report Content)
   The proposed action would not change fishery performance because it is an administrative measure. In the future, ACLs and AMs may result in changes to fishery performance that would be evaluated at the time specific ACLs and AMs are proposed. The performance of the fisheries are contained in annual reports and in Section 4.15 of this amendment.

6. Temporary Adjustments to Fishery Access Due to Inclement Weather Conditions
   The proposed action would not establish any new temporary adjustments regarding access to fisheries as a result of weather or ocean conditions. Weather-related adjustments in fishery access are not currently established for any western Pacific fishery management program.

7. Designation of Essential Fish Habitat
   The proposed action would not establish any new EFH designations for any western Pacific fishery.

8. Specification of Scientific Data Necessary for Effective Implementation of the FMP
   Sections 3.0 and 4.0 of this amendment contain scientific information necessary for implementation of the annual catch limits and accountability measures required by the MSRA.

9. Fishery Impact Statement
   Section 4.7 includes an analysis on the impacts of the action on fishers and fishing communities. Because this amendment implements a mechanism to establish ACLs, but not the ACLs themselves, at this point there is no impact to the fishery participants or communities. In the future, ACLs and AMs are expected to promote long-term sustainability of fishery resources and this is likely to be beneficial to fishery participants and communities.

10. Specification of Status Determination Criteria (SDC)
    The proposed action would not establish any new criteria for identifying when a fishery is overfished or approaching an overfished condition. Status determination criteria, including MSY control rules and rebuilding plans can be found in the five FEPs. The Council elected to utilize maximum fishing mortality threshold (MFMT) as its SDC for the overfishing status and continues to utilize minimum stock size threshold (MSST) for overfished determination (see Section 4.15.1).

11. Bycatch Reporting
    The proposed action would not require any new provision to assess bycatch in any Western Pacific fisheries.

12. Conservation Measures for Catch and Release Fishery Management Program
    There are no catch and release fishery management programs authorized under any western Pacific FEP, nor are any proposed through this amendment.

13. Description of the Fishery Sectors
    A description of commercial, recreational, and charter fishing sectors of the fisheries can be found in the FEPs with pertinent updates provided in Section 4.15.

14. Fair and Equitable Harvest Allocation
    The proposed action would not reduce or allocate the overall harvest in any western Pacific fishery. Allocation of harvest among commercial, recreation or charter sectors is not currently utilized in any western Pacific fishery management program and approval of the proposed mechanism to be used to develop harvest limits and related management measures (ACLs and AMs) would not require or preclude the use of harvest allocations in the future.

15. ACLs and AMs
    The proposed action would establish a new mechanism by which the Council would establish annual catch limits and measures to ensure accountability for all fisheries in the western Pacific region subject to the requirement. It also specifies stocks that would be subject to statutory exceptions and authorizes the use of classifying some MUS as ecosystem component stocks. Specification of the ACLs and AMs will occur in subsequent management actions, as will utilization of the ecosystem component classification.

5.1.1 **National Standards**

Section 301 of the Magnuson-Stevens Act requires that regulations implementing any FMP or amendment be consistent with the ten national standards listed below.

National Standard 1 states that conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The proposed action is consistent with National Standard 1 because it establishes a mechanism to set ABCs, ACLs, and AMs, which are management control measures that are intended to prevent overfishing while allowing for a sustainable harvest that is consistent with optimum yield. In setting ACLs, scientific and management uncertainty, and social, economic, and ecological factors are considered. In addition, the amendment establishes a suite of accountability measures to prevent an ACL from being exceeded and to correct overages of the ACLs should they occur, thus minimizing the potential for overfishing to occur.

National Standard 2 states that conservation and management measures shall be based upon the best scientific information available.

The proposed action is consistent with National Standard 2 because the mechanism was not only developed by fishery scientists and managers in consideration of available fishery data, but was also based on an evaluation of the best scientific information available for each fisheries.

National Standard 3 states that, to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The proposed action is consistent with National Standard 3 because the ACL mechanism can be used to manage an individual stock of fish as a unit throughout its range, as well as any interrelated stocks of fish.

National Standard 4 states that conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The proposed action is consistent with National Standard 4 because it does not allocate fishing privileges among different states, and therefore does not discriminate between residents of different states. The proposed mechanism is based on scientific and management information and is an administrative process at this time. There is nothing inherent in the mechanism that would result in allocations. When specific ACLs and AMs are available in the future, any allocation or assignment of fishing privileges will be reviewed again for consistency with National Standard 4.

National Standard 5 states that conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The proposed action is consistent with National Standard 5 because ACLs and AMs do not allocate resources solely on an economic basis. Rather, ACLs and AMs are intended to ensure that resources are sustainably harvested, and available for future generations.

National Standard 6 states that conservation and management action shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources and catches.

The proposed action is consistent with National Standard 6 because ACLs will be developed for the various fisheries individually based on each fishery's characteristics within the Western Pacific region. Under the proposed action, catch limits will be specified on an annual basis and will allow managers to account for variations and natural fluctuations of fishery resources as well as the probability of overfishing through application of the acceptable biological catch control rule. As a contingency, the proposed action includes accountability measures to ensure the annual catch limits are not exceeded, and to correct or mitigate overages if they occur.

National Standard 7 states that conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The proposed action is consistent with National Standard 7 because it does not duplicate any management measures in place, nor does it require investment by the fisheries because this amendment solely implements a mechanism for determining ACLs and AMs. In the future, it is not anticipated that ACLs will result in large costs for compliance because an ACL does not impose any costs to fishery participants to comply. Also, in cases where a harvest limit already exists, the ACL mechanism will replace the previous methods used to establish such limits and this will avoid duplication.

National Standard 8 states that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

The proposed action is consistent with National Standard 8 because the importance to the fishing communities, both socially and economically, as described in Section 3.1, is incorporated into the determination of ACLs via a qualitative methodology that guides the reduction of ACL from ABC (or ACT from ACL) by taking social and economic factors into account.

National Standard 9 states that conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided minimize the mortality of such bycatch.

The proposed action is consistent with National Standard 9 because it maintains the conservation and management measures of the FEPs with respect to bycatch minimization.

National Standard 10 states that conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The proposed action is not expected to decrease safety of human life at sea because it solely is a mechanism by which ACLs and AMs will be developed.

5.2 ***National Environmental Policy Act***

NOAA Administrative Order (NAO) 216-6, Environmental Review Procedures, requires all proposed agency actions be reviewed with respect to environmental consequences on the human environment in accordance with the National Environmental Policy Act (NEPA). This proposed omnibus amendment to the Council's five FEPs has been written and organized to meet both the requirements of the Magnuson-Stevens Fisheries Conservation and Management Act and NEPA.

The environmental assessment (EA) contained in this Omnibus FEP amendment uses biological information from, and incorporates by reference, the affected environment described in the Council's Fishery Ecosystem Plans (FEPs) for the Hawaii Archipelago (WPFMC 2009a), the American Samoa Archipelago (WPFMC 2009b), the Mariana Archipelago (WPFMC 2009c), the Pacific Remote Island Areas (WPFMC 2009d), the Pacific Pelagic Fisheries of the Western Pacific Region (WPFMC 2009e); as well as in the Final Programmatic Environmental Impact Statement (PEIS): Toward an Ecosystem Approach for the Western Pacific Region (WPFMC 2009f).

Scope of the proposed action and fisheries affected

The affected environment section of the 2009 Final PEIS): Toward an Ecosystem Approach for the Western Pacific Region (WPFMC 2009f) describes the fisheries and area of impact in detail and this information is summarized in this document in sections 1.4 and 4.0. The proposed ACL mechanism will be applied to all fisheries of the western Pacific, although only certain fisheries will be required to operate under the ACL regime in 2011. Once certain stocks are approved to qualify for statutory exceptions and some designated as ecosystem component species (see proposed action in Section 2.1), the ACLs and AMs will primarily affect domestic non-pelagic fisheries of American Samoa, Hawaii, Guam, and CNMI occurring in the U.S. EEZs of these archipelagic areas. There is no non-pelagic fishing in the PRIAs, but there is ongoing development of appropriate non-commercial fishing opportunities with the PRIA marine national monuments. Additionally, all pelagic MUS are likely to qualify for statutory exception from the ACL/AM requirement under the international management exception or the short life cycle exception. The FEPs for the PRIA and Pacific Pelagic areas will be amended to include the mechanism; ACLs would be specified if the Council determined a need to implement catch limits for those areas.

Alternatives considered
The proposed mechanism for developing ACLs and AMs was developed to accord with guidelines of National Standard 1, taking into account the specific fishery conditions of the western Pacific region the Council manages. Over the course of time, after intensive work by the Council and with input from fishery scientists, managers, policy analysts, and in coordination with the general public, the proposed mechanism took several forms before the present version was approved by the Council in October of 2010. Two alternatives are considered in the EA; the proposed action and no action.

Summary of environmental impacts
Section 4.0 includes a description of the potential impacts of the proposed mechanism on topics of management concern as compared with the no-action baseline, and includes a general discussion of the potential environmental impacts of operating western Pacific fisheries under the required ACL/AM management regime To summarize here, approval of the proposed mechanism to be used to develop and specify ACLs and AMs is an administrative action that would not have an environmental impact. Once developed using the approved mechanism, ACLs and AMs are expected to promote sustainability in fishery resources by having greater management review of fishing and ensuring accountability in terms of ensuring fishing is within these biologically based limits. In the future, however, environmental impacts will need to be evaluated on a site- and fishery-specific basis once specific ACLs and AMs are available.

A conceptual environmental impact analysis was undertaken to consider the impacts of managing fisheries under ACLs. This conceptual impact study found that it is unlikely that fisheries would change in response to the ACLs and AMs, unless the ACLs were to constrain fishing to lower levels than is currently occurring. Without having specific ACL and AMs, the impacts on the environment cannot be determined at this time and the Council and NMFS will conduct environment impact reviews once the specific harvest limits are available.

Social and economic impacts were also considered conceptually. The proposed mechanism would not change fishing communities or the economics of fishing in any areas of the western Pacific region. In general, management of fisheries under ACLs and AMs is expected to provide for long-term sustainability of fish stocks and stock complexes, which would have a positive long term benefit on fishery participants, local economies, and local communities. Harvest controls in the form of ACLs and AMs are just one of many tools that can be used in fishery management to ensure that resources are sustainably managed and continue to allow fisheries participants to have social and economic benefits.

The EA is available for public review and is being distributed in association with rulemaking for the proposed FEP amendment. The analysis in the EA will be used by the Regional Administrator to make a determination on whether the proposed mechanism for developing ACLs and AMs and associated decisions regarding the use of statutory exceptions and designations of qualifying stocks and stock complexes as ecosystem component species would have a significant environmental effect that would require the preparation of an environmental impact statement. The EA will allow interested and affected parties to participate in the decision-making process.

Preparers
The environmental impact analysis for the proposed FEP amendment was prepared by NMFS staff in coordination with the Council staff:

NOAA Pacific Islands Regional Office, Sustainable Fisheries Division staff:
Ethan Brown, Resource Management Specialist, NEPA
Phyllis Ha, NEPA Specialist
Marilyn Luipold, NEPA Coordinator
Jarad Makaiau, Fishery Policy Analyst

Western Pacific Fishery Management Council staff:
Paul Dalzell, Senior Scientist
Sarah Pautzke, Fishery Analyst

Coordination with other agencies
The proposed action described in this amendment document was developed in coordination of with various federal and local government agencies that are represented on the Western Pacific Fishery Management Council. Specifically, agencies that have participated in the deliberations and development of the proposed management measures include:

American Samoa Department of Marine and Wildlife Resources
Guam Department of Agriculture, Division of Aquatic and Wildlife Resources
Hawaii Department of Land and Natural Resources, Division of Aquatic Resources
Northern Mariana Island Department of Land and Natural Resources, Division of Fish and Wildlife
U.S. Coast Guard
The U.S. Fish and Wildlife Service
U.S. Department of State

Public coordination
NMFS is soliciting public comment on the omnibus FEP amendment including an EA, and the proposed rule. Instructions on how to comment on the document and the proposed rule can be found by searching on RIN 0648-AY93 at www.regulations.gov, or by contacting the responsible official or Council listed in this document.

5.3 ***Coastal Zone Management Act***
The Coastal Zone Management Act (CZMA) requires a determination that a recommended management measure has no effect on the land, water uses, or natural resources of the coastal zone or is consistent to the maximum extent practicable with an affected state's enforceable coastal zone management program. A copy of this document has been submitted to the appropriate state government agencies in American Samoa, Guam, Hawaii and the Northern Mariana Islands for review and concurrence with the preliminary determination that the preferred alternatives are consistent, to the maximum extent practicable, with their respective coastal zone management programs. The proposed mechanism is administrative and will not result in changes to any fishery. When specifications are available in the future, the effects of the ACL/AM

specifications on the coastal zone of these areas will be evaluated and the specifications subject to additional coordination in accordance with the CZMA.

5.4 ***Endangered Species Act***

The Endangered Species Act (ESA) provides for the protection and conservation of threatened and endangered species. Section 7(a)(2) of the ESA requires federal agencies to ensure that any action authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

Pursuant to Section 7 of the ESA, NMFS has evaluated each fishery authorized and managed under the five western Pacific Fishery Ecosystem Plans and has determined that this action is not likely to jeopardize the continued existence of any listed species or adversely affect any of their critical habitats.

The proposed action does not specify annual catch limits or accountability measures for any western Pacific fishery, and would not modify vessel operations or other aspects of any fishery. Therefore, the proposed action is not likely to jeopardize the continued existence of any listed species or adversely affect any of their critical habitats. When annual catch limit specifications, accountability measures are proposed in the future, those actions would be subject to review for compliance with ESA and other applicable laws.

5.5 ***Marine Mammal Protection Act***

The Marine Mammal Protection Act (MMPA) prohibits, with certain exceptions, the take of marine mammals in the U.S. and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries that classifies U.S. commercial fisheries into one of three categories. These categories are based on the level of serious injury and mortality of marine mammals that occurs incidental to each fishery. Specifically, the MMPA mandates that each fishery be classified according to whether it has a frequent, occasional, or remote likelihood of-, or no-known, incidental mortality or serious injury of marine mammals. The 2011 List of Fisheries (LOF) published by NMFS on November 8, 2010 (75 FR 68468). The proposed action does not specify annual catch limits or accountability measures for any western Pacific fishery, and would not modify vessel operations or other aspects of any fishery. Therefore, the proposed action is not expected to affect any marine mammal population or habitats in a manner that has not been previously assessed and analyzed by NMFS.

5.6 ***Paperwork Reduction Act***

The purpose of the Paperwork Reduction Act is to minimize the paperwork burden on the public resulting from the collection of information by or for the Federal government. It is intended to ensure the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501(1)). The proposed action would not establish any new permitting or reporting requirements and therefore it is not subject to the provisions of the Paperwork Reduction Act.

5.7 ***Regulatory Flexibility Act***

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) requires government agencies to assess and present the impact of their regulatory actions on small entities including small businesses, small organizations, and small governmental jurisdictions. The assessment is done by preparing an Initial Regulatory Flexibility Analysis when impacts are expected. The purpose and need for action is described in Section 2.0. Section 3.0 describes the management alternatives considered to meet the purpose and need for action. Section 4.0 provides a description of the fisheries that may be affected by this action and Section 5.0 analyzes environmental impacts of the alternatives considered.

The proposed action is not expected to have any impact on small entities, organizations or government jurisdictions as the action is primarily administrative in nature and would only establish a mechanism for specifying annual catch limits for federal fishery resources. Similarly, authorizing the future use of the ecosystem classification system and identification of species with statutory exceptions to annual catch limits would not have any impacts on small entities, businesses, organizations or government jurisdictions. As a result, an initial regulatory flexibility analysis is not required and none has been prepared; however, when annual catch limit specifications, accountability measures and ecosystem component classifications are proposed in the future, these actions will be reviewed by NMFS to ascertain whether the proposal complies with all applicable laws, including any relevant impacts on small businesses, organizations and small government jurisdictions.

5.8 ***Administrative Procedures Act***

All federal rulemaking is governed under the provisions of the Administrative Procedures Act (APA) (5 U.S.C. Subchapter II) which establishes a “notice and comment” procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish notification of proposed rules in the Federal Register and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it becomes effective, with rare exceptions. This amendment complies with the provisions of the APA through the Council’s extensive use of public meetings, requests for comments, and consideration of comments. The notice of availability and proposed rule associated with this amendment will also include requests for public comments.

5.9 ***Executive Order 12866***

To meet the requirements of Executive Order 12866 (E.O. 12866), NMFS requires that a Regulatory Impact Review (RIR) be prepared for all regulatory actions that are of public interest. This review provides an overview of the problem, policy objectives, and anticipated impacts of regulatory actions, and ensures that management alternatives are systematically and comprehensively evaluated such that the public welfare can be enhanced in the most efficient and cost effective way.

The primary objective of the proposed action is implement a mechanism for specifying annual catch, at a level such that overfishing does not occur. The purpose and need for this action can be found in Section 2.0. Section 3.0 describes the management alternatives considered to meet the

purpose and need for action. Section 4.0 provides a description of the fisheries that may be affected by this action and Section 5.0 analyzes potential impacts of the proposed action on western Pacific fisheries and fishing communities. Due to the administrative nature of the proposed action, there are no economic impacts associated with establishing a mechanism for specifying annual catch limits, authorizing the future use of the ecosystem component (EC) species classification or identifying pelagic species that have statutory exceptions from annual catch limits. While future annual catch limits have the potential to result in economic impacts, it is not possible to predict any concrete impacts until specific catch limits are specified. Therefore, any analysis of potential impacts at this time would be speculative. When actual annual catch limit specifications are proposed in the future, an economic analysis of the expected effects of alternative catch limits, including net socio-economic benefits on affected communities would be provided.

In accordance with E.O. 12866, the following is set forth: (1) This rule is not expected to have an annual effect on the economy of more than $100 million or to adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety; or state, local or tribal governments or communities; (2) This rule is not likely to create any serious inconsistencies or otherwise interfere with any actions taken or planned by another agency; (3) This rule is not likely to materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; (4) This rule is not likely to raise novel or policy issues arising out of legal mandates, or the principles set forth in the Executive Order. Based on these findings, the proposed action is not likely to be significant under E.O. 12866.

5.10 ***Executive Order 12898***

E.O. 12898 requires that a federal agency incorporate environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Northern Mariana Islands. A memorandum by President Clinton, which accompanied E.O. 12898, made it clear that environmental justice should be considered when conducting NEPA analyses by stating the following: “Each federal agency should analyze the environmental effects, including human health, economic, and social effects of federal actions, including effects on minority populations, low-income populations, and Indian tribes, when such analysis is required by NEPA.”

The proposed action is not expected to disproportionately impact human health or the environment because the action is administrative in nature. While future ACL specifications are not expected to have any negative environmental impacts that result in a disproportionate impact on minority populations and low-income populations of the western Pacific, it is not possible to predict any concrete impacts until specific annual catch limits are determined.. When specific annual catch limits and accountability measures are proposed for any fishery, they will be subject to review for compliance with NEPA and other applicable laws, including E.O. 12898.

5.11 ***Information Quality Act***

The Information Quality Act requires federal agencies to ensure and maximize the quality, objectivity, utility, and integrity of information disseminated by federal agencies. To the extent feasible, the information in this document is current. Much of the information was made available to the public during the deliberative phases of developing the amendment during meetings of the Council over the past several years. The information was also improved based on the guidance and comments from the Council's advisory groups.

The document was prepared by Council and NMFS staff based on information provided by NMFS Pacific Islands Fisheries Science Center (PIFSC) and NMFS Pacific Islands Regional Office (PIRO) and after providing opportunities for members of the public to comment at the Council meetings listed in Section 1.2. Additional comments on the document may be received during the comment period for the proposed rule. The process of public review of this document provides an opportunity for comments on the information contained in this document, as well as for the provisions of additional information.

6.0 **Draft Proposed Regulations**

For the reasons set out in the preamble, 50 CFR part 665 is proposed to be amended as follows:

PART 665--FISHERIES IN THE WESTERN PACIFIC

1. The authority for part 665 reads as follows:

Authority: 16 U.S.C. 1801 et seq., 50 CFR part 600.310.

2. In part 665, add a new § 665.4 to read as follows:

§ 665.4 Annual Catch Limits.

(a) General. For each fishing year, the Regional Administrator shall specify an annual catch limit, including any overage adjustments, for each stock or stock complex of management unit species defined in Subparts B through F of this part, as recommended by the Council, and considering the best available scientific, commercial, and other information about the fishery for that stock or stock complex. The annual catch limit shall serve as the basis for invoking accountability measures in paragraph (f) of this section

(b) Overage adjustments. If landings of a stock or stock complex exceed the specified annual catch limit in a fishing year, the Council may recommend that the Regional Administrator reduce the annual catch limit for the subsequent year by the amount of the overage.

(c) Exceptions. The Regional Administrator is not required to specify an annual catch limit for a management unit species that is statutorily excepted from the requirement pursuant to 50 CFR 600.310(h)(2) or that the Council has identified as an ecosystem component species. The Regional Administrator will publish in the Federal Register the list of ecosystem component species, and will publish any changes to the list, as necessary.

(d) Annual Catch Target. For each fishing year, the Regional Administrator may also specify an annual catch target that is below the annual catch limit of a stock or stock complex, as

recommended by the Council. When used, the annual catch target, shall serve as the basis for invoking accountability measures in paragraph (f) of this section.

(e) Procedures and timing. (1) No later than 60 days before the start of a fishing year, the Council shall recommend to the Regional Administrator an annual catch limit for each stock or stock complex, including any overage adjustment. The recommended limit should be based on a recommendation by the SSC of the acceptable biological catch for each stock or stock complex. The Council may not recommend an annual catch limit that exceeds the acceptable biological catch recommended by the SSC. The Council may also recommend an annual catch target to be set below the annual catch limit.

(2) No later than 30 days before the start of a fishing year, the Regional Administrator shall publish in the Federal Register a notice of the proposed annual catch limit specification and any associated annual catch target, and request for public comment.

(3) No later than the start of a fishing year, the Regional Administrator shall publish in the Federal Register and use other methods to notify permit holders of the final annual catch limit specification and any associated annual catch target.

(f) Accountability measures. When any annual catch limit or annual catch target is projected to be reached, based on available information, the Regional Administrator shall publish a notice to that effect in the Federal Register and shall use other means to notify permit holders.

(1) The notice will include an advisement that fishing for that stock or stock complex will be restricted beginning on a specified date, which is not earlier than 7 days after the date of filing the notice for public inspection at the Office of the Federal Register. The restriction may include, but is not limited to, closure of the fishery, closure of specific areas, changes to bag limits, or restrictions in effort. The restriction will remain in effect until the end of the fishing year, except

that the Regional Administrator may, based on a recommendation from the Council, remove or modify the restriction before the end of the fishing year.

(2) It is unlawful for any person to conduct fishing in violation of the restrictions specified in the notification issued pursuant to paragraph (f)(1) of this section.

3. In § 665.12 add the definitions of "Ecosystem component species" and "SSC" in alphabetical order to read as follows:

* * * * *

Ecosystem component species means any western Pacific MUS that the Council has identified to be, generally, a non-target species, not determined to be subject to overfishing, approaching overfished, or overfished, not likely to become subject to overfishing or overfished, and generally not retained for sale or personal use.

* * * * *

SSC means the Scientific and Statistical Committee of the Western Pacific Fishery Management Council.

* * * * *

4. In § 665.15 add a new paragraph (u) to read as follows:

§ 665.15 Prohibitions.

* * * * *

(u) Fail to comply with the restrictions specified in the notification issued pursuant to § 665.4(f)(1), in violation of § 665.15(f)(2).

[This page left blank intentionally]

7.0 **References**

Aires-da-Silva, A. and M. Maunder. 2010. Status of Bigeye Tuna in the Eastern Pacific Ocean in 2008 and Outlook for the Future. Inter-Amer. Trop. Tuna Comm., Stock Assessment Report, 10: 116-228.

Brodziak, J. and G. Isimura. 2010. Stock Assessment of North Pacific Swordfish (*Xiphas gladius*) in 2009. Pacific Islands Fisheries Science Center, National Marine Fisheries Service, NOAA, Honolulu, HI 96822-2396. Pacific Islands Fisheries Science Center Administrative Report H-10-01, 37 p.

Brodziak, J., R. Moffitt, and G. DiNardo. 2009. Hawaiian Bottomfish Assessment Update for 2008. Pacific Islands Fish. Sci. Cent., Natl. Mar. Fish. Serv., NOAA, Honolulu, HI 96822-2396. Pacific Islands Fish. Sci. Cent. Admin. Rep. H-09-02.

Harley, S., S. Hoyle, P. Williams, J. Hampton, and P. Kleiber. 2010. Stock Assessment of Bigeye Tuna in the Western and Central Pacific Ocean. Western and Central Pacific Fisheries Commission, Scientific Committee, Sixth Regular Session, 10-19 August 2010, Nukualofa, Tonga. WCPFC-SC6-2010/SA-WP-4. 105 p.

Hinton, M. G. and M. N. Maunder. 2004. Status of Striped Marlin in the Eastern Pacific Ocean in 2002 and Outlook for 2003-2004. Inter-Amer. Trop. Tuna Comm., Stock Asses. Rep. 4: 287-310.

Hinton M. and Mark N. Maunder. 2007. Status of Swordfish Stock in the southeastern Pacific Ocean. Inter-Amer. Trop. Tuna Comm., Stock Asses. Rep. 7: 249-282.

Hoyle, S. and N. Davies. 2009. Stock Assessment of Albacore Tuna in the South Pacific Ocean. Western and Central Pacific Fisheries Commission, Scientific Committee, Fifth Regular Session, 10-19 August 2009, Port Villa Vanuatu. WCPFC-SC5/SA-WP-6. 133 p.

Hoyle, S., P. Kleiber, N. Davies, S. Harley, and J. Hampton. 2010 Stock Assessment of Skipujact Tuna in the Western and Central Pacific Ocean. Western and Central Pacific Fisheries Commission, Scientific Committee, Sixth Regular Session, 10-19 August 2010, Nukualofa, Tonga. WCPFC-SC6-2010/SA-WP-10 rev.1. 117 p.

International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC). 2006. Report of the Albacore Working Group Workshop. Annex 5. November 28-December 5, 2006. Shimizu, Japan. 72 p.

International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC). 2008. Report of the Pacific Bluefin Tuna Working Group Workshop. Annex 7. May 28-June 4, 2008. Shimizu, Japan. 67 p.

International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC). 2010. Report of the Pacific Bluefin Tuna Working Group Workshop. Annex 7. July 6-9, 2010. Nanaimo, Canada. 35 p.

Kleiber, P., M.G. Hinton, and Y. Uozumi. 2003. Stock assessment of Pacific blue marlin (Makaira nigricans) in the Pacific with MULTIFAN-CL. Mar. and Freshwater Res. 54(4):349-360.

Kleiber, P. S. Clarke, K. Bigelow, H. Nakano, M. McAllister, and Y. Takeuchi. 2009. North Pacific Blue Shark Stock Assessment. U.S. Department of Commerce, NOAA Tech. Memorandum, NOAA-TM-NMFS-PIFSC-17, 74 p.

Langley, A., S. Harley, S. Hoyle, N. Davies, J. Hampton, and P. Kleiber. 2009. Stock Assessment of Yellowfin Tuna in the Western and Central Pacific Ocean. Western and Central Pacific Fisheries Commission, Scientific Committee, Fifth Regular Session, 10-19 August 2009, Port Villa Vanuatu. WCPFC-SC5-2005/SA-WP-03. 121 p.

Langley, A. B. Molony, D. Bromhead, K. Yokawa and B. Wise. Stock Assessment of Striped Marlin (Terapturus audax) in the Southwest Pacific Ocean. Western and Central Pacific Fisheries Commission, Scientific Committee, Second Regular Session, 7-18 August 2006, Manila, Philippines. WCPFC-SC2-2006/SA-WP-6. 62 p.

Maunder, M.N. and Harley, S.J. 2005. Status of Skipjack Tuna in the Eastern Pacific Ocean in 2003 and Outlook for 2004. Inter-Amer. Trop. Tuna Comm., Stock Assessment Report, 5: 109-167.

Maunders, M. 2010. Updated Indicators of Stock Status for Skipjack Tuna in the Eastern Pacific Ocean. Inter-Amer. Trop. Tuna Comm., Stock Assessment Report, 10: 110-115.

Maunder, M. and A. Aires-da-Silva. 2010. Status of Yellowfin Tuna in the Eastern Pacific Ocean in 2008 and Outlook for the Future. Inter-Amer. Trop. Tuna Comm., Stock Assessment Report, 10: 3-109.

McCall, A.D. 2009. Depletion-Corrected Average Catch: a Simple Formula for Estimating Sustainable Yields in Data-Poor Situations. ICES Journal of Marine Science. 66: 2267-2271.

Moffitt R.B., J. Brodziak, Flores T. 2007. Status of the Bottomfish Resources of American Samoa, Guam, and Commonwealth of the Northern Mariana Islands, 2005. Pacific Islands Fish. Sci. Cent., Natl. Mar. Fish. Serv., NOAA, Honolulu, HI 96822-2396. Pacific Islands Fish. Sci. Cent. Admin. Rep. H-07-04, 52 p.

NMFS (National Marine Fisheries Service). 2005. Final Environmental Impact Statement: Seabird interaction avoidance methods and pelagic squid management. Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region. April 2005.

Nesis, K.N. 1993. Population Structure of Oceanic Ommastrephids, with Particular Reference to *Stenoteuthis oualaniensis*: A review. pp: 375-383 *In:* Okutani, T., R.K. O'Dor and T. Kubodera (Eds.) Recent Advances in Fisheries Biology. Tokai Univ. Press, Tokyo

Nigmatullin, C.M., A.I. Arkhipkin, and R.M. Sabirov. 1995. Age, Growth and Reproductive Biology of Diamond-shaped Squid *Thysanoteuthis rhombus* (Oegopsida: Thsanoteuthidae). Mar. Ecol. Prog. Ser. 124: 73-87.

Stocker, M. (ed). 2005. Report of the Nineteenth North Pacific Albacore Workshop. Nineteenth North Pacific Albacore Workshop, Nanaimo, B.C. Canada, November 25-December 2, 2004, Fisheries and Oceans, Canada, Pacific Biological Station, Nanaimo, B.C.

Theisen, T.C., B. W. Bowen, W. Lanier, and J. D. Baldwin. 2008. High Connectivity on a Global Scale in the Pelagic Wahoo, *Acanthocybium solandri* (tuna family Scombridae). Molecular Ecology, 17: 4233-4247.

Walters, C.J., V. Christensen, S.J. Martell, and J.F. Kitchell. 2005. Possible Ecosystem Impacts of Applying MSY Policies from Single-Species Assessments. ICES Journal of Marine Science, 62: 558-568.

WPFMC. 2009a. Fishery Ecosystem Plan for the American Samoa Archipelago. Western Pacific Fishery Management Council, Honolulu, Hawaii.

WPFMC. 2009b. Fishery Ecosystem Plan for the Hawaii Archipelago. Western Pacific Fishery Management Council, Honolulu, Hawaii.

WPFMC. 2009c. Fishery Ecosystem Plan for the Marianas Archipelago. Western Pacific Fishery Management Council, Honolulu, Hawai`i.

WPFMC. 2009d. Fishery Ecosystem Plan for the Pacific Remote Island Areas. Western Pacific Fishery Management Council, Honolulu, Hawaii.

WPFMC. 2009e. Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region. Western Pacific Fishery Management Council, Honolulu, Hawaii.

WPFMC. 2009f. Final Programatic Environmental Impact Statement. Toward an Ecosystem Approach for the Western Pacific Region: From Species-Based Fishery Management Plans to Place-Based Fishery Ecosystem Plans. Western Pacific Fishery Management Council, Honolulu, Hawaii.

WPFMC. 2008. Ecosystem-Based Fisheries Management in the Western Pacific: Proceedings from a Comprehensive Series of Workshops Convened by the Western Pacific Fishery Management Council. Compiled by: Impact Assessment, Inc. Western Pacific Fishery Management Council, Honolulu, Hawaii.

WPFMC 2008b. Pelagics Annual Report. Western Pacific Fishery Management Council, Honolulu, Hawaii.

WPFMC 2008c. American Samoa Bottomfish Annual Report. Western Pacific Fishery Management Council, Honolulu, Hawaii.

WPFMC 2008d. Guam Bottomfish Plan Team Report. Western Pacific Fishery Management Council, Honolulu, Hawaii

WPFMC 2006. 2006 Black Coral Science and Management Workshop Report. Sponsored by WPFMC and Hawaii Division of Aquatic Resources.

WPFMC 2002. Magnuson-Stevens Act Definitions and Required Provisions – Overfishing Provisions. Amendment 6 to the Bottomfish FMP, Amendment 8 to the Pelagics FMP, and Amendment 10 to the Crustaceans FMP of the Western Pacific Region. Western Pacific Fishery Management Council. Associated FR Notice: 68 FR 46112.

WPFMC 2001. Final Fishery Management Plan for the Coral Reef Ecosystems of the Western Pacific Region. Western Pacific Fishery Management Council. Associated FR Notice: 69 FR 8336.

WPFMC 1998. Magnuson-Stevens Act Definitions and Required Provisions. Amendment 4 to the Precious Corals FMP. Western Pacific Fishery Management Council. Associated FR Notice: 64 FR 19067.

Yatsu, A., K. Hiramatsu and S. Hayase. 1993. Outline of the Japanese squid driftnet fishery with notes on the bycatch. Bull. Int. North Pacific Fisheries Commission, 53: 5-24.

Appendix 1

Management Unit Species List for Western Pacific Fishery Ecosystem Plans

1.0 American Samoa FEP MUS

Table 1. American Samoa Archipelago Bottomfish Management Unit Species

Scientific Name	English Common Name	Samoan Name
*Aphareus rutilans**	red snapper/silvermouth	palu-gutusiliva
*Aprion virescens**	gray snapper/jobfish	asoama
*Caranx ignobilis**	giant trevally/jack	sapoanae
*C. lugubris**	black trevally/jack	tafauli
*Epinephelus fasciatus**	blacktip grouper	fausi
*Variola louti**	lunartail grouper	papa, velo
*Etelis carbunculus**	red snapper	palu malau
*E. coruscans**	red snapper	palu-loa
*Lethrinus amboinensis**	ambon emperor	filoa-gutumumu
*L. rubrioperculatus**	redgill emperor	filoa-paomumu
*Lutjanus kasmira**	blueline snapper	savane
*Pristipomoides auricilla**	yellowtail snapper	palu-i‘usama
*P. filamentosus**	pink snapper	palu-‘ena‘ena
*P. flavipinnis**	yelloweye snapper	palu-sina
*P. seiboldii**	pink snapper	palu
*P. zonatus**	snapper	palu-ula, palu-sega
*Seriola dumerili**	amberjack	malauli

palu = general name for *Etelis/Pristipomoides* spp.

*** Indicates a species for which there is an estimated MSY value.**

Table 2. American Samoa Archipelago Crustacean Management Unit Species

Scientific Name	English Common Name	Samoan Name
Panulirus marginatus	spiny lobster	ula
Panulirus penicillatus	spiny lobster	ula-sami
Family Scyllaridae	slipper lobster	papata
Ranina ranina	kona crab	pa‘a
Heterocarpus spp.	deepwater shrimp	NA

pa‘a = general name for crabs

Table 3. American Samoa Archipelago Precious Coral Management Unit Species

Scientific Name	English Common Name	Samoan Name
Corallium secundum [amu = general name for corals]	pink coral (also known as red coral)	amu piniki-mumu
Corallium regale	pink coral (also known as red coral)	amu piniki-mumu
Corallium laauense	pink coral (also known as red coral)	amu piniki-mumu
Gerardia spp.	gold coral	amu auro
Narella spp.	gold coral	amu auro
Calyptrophora spp.	gold coral	amu auro
Lepidisis olapa	bamboo coral	amu ofe
Acanella spp.	bamboo coral	amu ofe
Antipathes dichotoma	black coral	amu uliuli
Antipathes grandis	black coral	amu uliuli
Antipathes ulex	black coral	amu uliuli

Samoan names provide by Fini Aitaoto

Table 4. American Samoa Archipelago Coral Reef Ecosystem Management Unit Species (Currently Harvested Coral Reef Taxa)

Family Name	Scientific Name	English Common Name	Samoan Name
Acanthuridae	*Acanthurus olivaceus*	orange-spot surgeonfish	afinamea

Family Name	Scientific Name	English Common Name	Samoan Name
(Surgeonfishes) [pone = general name for *Acanthurus* spp.]	*Acanthurus xanthopterus*	yellowfin surgeonfish	**
	Acanthurus triostegus	convict tang	aanini
	Acanthurus dussumieri	eye-striped surgeonfish	**
	Acanthurus nigroris	blue-lined surgeon	ponepone, gaitolama
	Acanthurus lineatus	blue-banded surgeonfish	alogo
	Acanthurus nigricauda	blackstreak surgeonfish	pone-i‘usama
	Acanthurus nigricans	whitecheek surgeonfish	laulama
	Acanthurus guttatus	white-spotted surgeonfish	maogo
	Acanthurus blochii	ringtail surgeonfish	**
	Acanthurus nigrofuscus	brown surgeonfish	ponepone
	Acanthurus mata	elongate surgeonfish	**
	Acanthurus pyroferus	mimic surgeonfish	**
	Ctenochaetus strigosus [pone=genral name for *Ctenochaetus*]	yellow-eyed surgeonfish	pone
	Ctenochaetus striatus	striped bristletooth	pone, pala‘ia, logoulia
	Ctenochaetus binotatus	two-spot bristletooth	**
	Naso unicornus [ume = general name for *Naso* spp.]	bluespine unicornfish	ume-isu
	Naso lituratus	orangespine unicornfish	ili‘ilia, umelei
	Naso hexacanthus	black tongue unicornfish	**
	Naso vlamingii	bignose unicornfish	ume-masimasi
	Naso annulatus	whitemargin unicornfish	**
	Naso brevirostris	spotted unicornfish	ume-ulutao
	Naso thynnoides	barred unicornfish	**
Balistidae (Triggerfishes)	*Balistoides viridescens*	titan triggerfish	sumu, sumu-laulau
	Balistapus undulatus	orangstriped triggerfish	**

Family Name	Scientific Name	English Common Name	Samoan Name
[sumu = general name for triggerfishes]	*Melichthys vidua*	pinktail triggerfish	sumu-‘apa‘apasina, sumu-si‘umumu
	Melichthys niger	black triggerfish	sumu-uli
	Pseudobalistes fuscus	blue triggerfish	sumu-laulau
	Rhinecanthus aculeatus	picassofish	sumu-uo‘uo, sumu-aloalo
	Sufflamen fraenatum	bridled triggerfish	sumu-gase‘ele‘ele
	Selar crumenophthalmus	bigeye scad	atule
	Decapterus macarellus	mackerel scad	atuleau, namuauli
Carcharhinidae (Sharks) [malie = general name for sharks]	*Carcharhinus amblyrhynchos*	grey reef shark	malie-aloalo
	Carcharhinus albimarginatus	silvertip shark	aso
	Carcharhinus galapagensis	Galapagos shark	malie
	Carcharhinus melanopterus	blacktip reef shark	apeape, malie-alamata
	Triaenodon obesus	whitetip reef shark	malu
Holocentridae (Soldierfish/Squir-relfish [malau = general name for squirrelfishes]	*Myripristis berndti*	bigscale soldierfish	malau-ugatele, malau-va‘ava‘a
	Myripristis adusta	bronze soldierfish	malau-tui
	Myripristis murdjan	blotcheye soldierfish	**
	Myripristis amaena	brick soldierfish	**
	Myripristis pralinia	scarlet soldierfish	malau-mamo, malau-va‘ava‘a
	Myripristis violacea	violet soldierfish	malau-tuauli
	Myripristis vittata	whitetip soldierfish	**
	Myripristis chryseres	yellowfin soldierfish	**
Holocentridae (Soldierfish/Squirrelfish	*Myripristis kuntee*	pearly soldierfish	malau-pu‘u
	Myripristis hexagona	double tooth squirrelfish	**

Family Name	Scientific Name	English Common Name	Samoan Name
[malau = general name for squirrelfishes]	*Sargocentron melanospilos*	blackspot squirrelfish	**
	Sargocentron microstoma	file-lined squirrelfish	malau-tianiu
	Sargocentron tiereoides	pink squirrelfish	**
	Sargocentron diadema	crown squirrelfish	malau-tui, malau-talapu‘u, malau-tusitusi, malau-pauli
	Sargocentron punctatissimum	peppered squirrelfish	**
	Sargocentron tiere	blue-lined squirrelfish	**
	Sargocentron spiniferum	saber or long jaw squirrelfish	tamalu, mu-malau, malau-toa
	Neoniphon spp.	spotfin squirrelfish	**
Kuhliidae (Flagtails)	*Kuhlia mugil*	barred flag-tail	safole, inato
Kyphosidae (Rudderfish)	*Kyphosus cinerascens* *Kyphosus biggibus*	rudderfish	nanue, mata-mutu, mutumutu
	Kyphosus vaigienses	rudderfish	nanue
Labridae (Wrasses) [sugale = general name for wrasses]	*Cheilinus undulatus*	napoleon wrasse	lalafi, tagafa, malakea
	Cheilinus trilobatus	triple-tail wrasse	lalafi-matamumu
	Cheilinus chlorourus	floral wrasse	lalafi-matapua‘a
	Cheilinus fasciatus	harlequin tuskfish	lalafi-pulepule
	Oxycheilinus diagrammus	bandcheek wrasse	sugale
	Oxycheilinus arenatus	arenatus wrasse	sugale
	Xyrichtys aneitensis	whitepatch wrasse	sugale-tatanu
	Cheilio inermis	cigar wrasse	sugale-mo‘o
Labridae (Wrasses)	*Hemigymnus melapterus*	blackeye thicklip	sugale-laugutu, sugale-uli, sugale-aloa, sugale-lupe

Family Name	Scientific Name	English Common Name	Samoan Name
[sugale = general name for wrasses]	*Hemigymnus fasciatus*	barred thicklip	sugale-gutumafia
	Halichoeres trimaculatus	three-spot wrasse	lape, sugale-pagota
	Halichoeres hortulanus	checkerboard wrasse	sugale-a‘au, sugale-pagota, ifigi
	Halichoeres margaritaceus	weedy surge wrasse	sugale-uluvela
	Thalassoma purpureum	surge wrasse	uloulo-gatala, patagaloa
	Thalassoma quinquevittatum	red ribbon wrasse	lape-moana
	Thalassoma lutescens	sunset wrasse	sugale-samasama
	Novaculichthys taeniourus	rockmover wrasse	sugale-la‘o, sugale-taili, sugale-gasufi
Mullidae (Goatfishes)	*Mulloidichthys* spp.	yellow goatfish	i’asina, vete, afulu
	Mulloidichthys vanicolensis	yellowfin goatfish	vete
	Mulloidichthys flavolineatus	yellowstripe goatfish	afolu, afulu
	Parupeneus spp.	banded goatfish	afoul, afulu
	Parupeneus barberinus	dash-dot goatfish	tusia, tulausaena, ta’uleia
	Parupeneus bifasciatus	doublebar goatfish	matulau-moana
	Parupeneus heptacanthus	redspot goatfish	moana-ula
	Parupeneus cyclostomas	yellowsaddle goatfish	i‘asina, vete, afulu, moana
	Parupeneus pleurostigma	side-spot goatfish	matulau-ilamutu
	Parupeneus multifaciatus	multi-barred goatfish	i‘asina, vete, afulu
Mugilidae (Mullets) [anae = general name for mullets]	*Crenimugil crenilabis*	fringelip mullet	anae, aua. fuafua
	Neomyxus leuciscus	false mullet	moi, poi
Muraenidae	*Gymnothorax*	yellowmargin moray eel	pusi

Family Name	Scientific Name	English Common Name	Samoan Name
(Moray eels)	*flavimarginatus*		
	Gymnothorax javanicus	giant moray eel	maoa‘e
	Gymnothorax undulatus	undulated moray eel	pusi-pulepule
Octopodidae (Octopus)	*Octopus cyanea*	octopus	fe‘e
	Octopus ornatus	octopus	fe‘e
Polynemidae	*Polydactylus sexfilis*	threadfin	umiumia, i‘ausi
Pricanthidae (Bigeye) [matapula = general name for Priacanthus]	*Heteropriacanthus cruentatus*	glasseye	matapula
	Priacanthus hamrur	bigeye	matapula
Scaridae (Parrotfishes) [fuga = general name for parrotfishes]	*Calotomus carolinus*	stareye parrotfish	fuga
	Scarus spp.	parrotfish	fuga, galo-uluto‘i, fuga-valea, laea-mamanu
	Hipposcarus longiceps	Pacific longnose parrotfish	ulapokea, laea-ulapokea
Scombridae	*Gymnosarda unicolor*	dogtooth tuna	tagi
Siganidae (Rabbitfish)	*Siganus aregenteus*	forktail rabbitfish	loloa, lo
Sphyraenidae (Barracuda)	*Sphyraena helleri*	heller’s barracuda	sapatu
	Sphyraena barracuda	great barracuda	saosao
Turbinidae (turban shells/green snails	*Turbo* spp.	green snails	alili

Samoan names provided by Fini Aitaoto

Table 5. American Samoa Archipelago Coral Reef Ecosystem Management Unit Species (Potentially Harvested Coral Reef Taxa)

Scientific Name	English Common Name	Samoan Name
Labridae [sugale = general name for wrasses]	wrasses (Those species not listed as CHCRT)	sugale, sugale-vaolo, sugale-a‘a, lalafi, lape-a‘au, la‘ofia
Carcharhinidae Sphyrnidae	sharks (Those species not listed as CHCRT)	malie, apoapo, moemoeao
Dasyatididae Myliobatidae	rays and skates	fai

Scientific Name	English Common Name	Samoan Name
Ephippidae	batfishes	pe‘ape‘a
Haemulidae	sweetlips	mutumutu, misimisi, ava‘ava-moana
Echeneidae	remoras	talitaliuli
Malacanthidae	tilefishes	mo‘o, mo‘otai
Pseudochromidae	dottybacks	tiva
Plesiopidae	prettyfins	aneanea, tafuti
Caracanthidae	coral crouchers	tapua
Anomalopidae	flashlightfishes	##
Serrandiae [gatala = general name for groupers]	groupers (Those species not listed as CHCRT or BMUS)	gatala, ataata, vaolo, gatala-uli, gatala-sega, gatala-aleva, ateate, apoua, susami, gatala-sina, gatala-mumu
Carangidae	jacks and scads (Those species not listed as CHCRT or BMUS)	lupo, lupota, mamalusi, ulua, sapoanae, taupapa, nato, filu, atuleau, malauli-apamoana, malauli-sinasama, malauli-matalapo‘a, lai
Holocentridae	soldierfishes and squirrelfishes (Those species not listed as CHCRT)	malau
Mullidae	goatfishes (Those species not listed as CHCRT)	i‘asina, vete, afulu, afoul, ulula‘oa
Acanthuridae	surgeonfishes (Those species not listed as CHCRT)	pone, palagi
Clupeidae	herrings	pelupelu, nefu
Engraulidae	anchovies	nefu, file
Gobiidae [mano’o=general name for gobies]	gobies	mano’o, mano’o-popo, mano’o-fugafuga, mano’o-apofusami, mano’o-a’au.

Scientific Name	English Common Name	Samoan Name
Lutjanidae	snappers (Those species not listed as CHCRT or BMUS)	mu, mu-taiva, tamala, malai, feloitega, mu-mafalaugutu, savane-ulusama, matala'oa.
Balistidae [sumu=general name for triggerfishes]	trigger fishes (Those species not listed as CHCRT)	sumu, sumu-papa, sumu-taulau
Siganidae	rabbitfishes (Those species not listed as CHCRT)	lo
Kyphosidae	rudderfishes (Those species not listed as CHCRT)	nanue, matamutu, mutumutu
Caesionidae	fusiliers	ulisega, atule-toto
Lethrinidae	emperors (Those species not listed as CHCRT or BMUS)	filoa, mata'ele'ele, ulamalosi
Muraenidae Chlopsidae Congridae Moringuidae Ophichthidae	eels (Those species not listed as CHCRT)	pusi, maoa'e, atapanoa, u aulu, apeape, fafa, gatamea, pusi-solasulu
Apogonidae	cardinalfishes	fo, fo-tusiloloa, fo-si'umu, fo-loloa, fo-tala, fo-manifi, fo-aialo, fo-tuauli
Zanclidae	moorish idols	pe'ape'a, laulaufau
Chaetodontidae	butterfly fishes	tifitifi, si'u, i'usamasama, tifitifi-segaula, laulafau-laumea, alosina
Pomacanthidae	angelfishes	tu'u'u, tu'u'u-sama, tu'u'u-lega, tu'u'u-ulavapua, tu'u'u-matamalu, tu'u'u-alomu, tu'u'u-uluvela, tu'u'u-atugauli, tu'u'u-tusiuli, tu'u'u-manini

Scientific Name	English Common Name	Samoan Name
Pomacentridae	damselfishes	tu‘u‘u, mutu, mamo, tu‘u’u-lumane
Scorpaenidae	scorpionfishes	i‘atala, la‘otele, nofu
Blenniidae [mano’o = general name for blennies]	blennies	mano‘o, mano‘o-mo‘o, mano‘o-palea, mano‘o-la‘o.
Sphyraenidae	barracudas (Those species not listed as CHCRT)	sapatu
Cirrhitidae	hawkfishes (Those species not listed as CHCRT)	la‘o, ulutu‘i, lausiva
Antennariidae	frogfishes	la‘otale, nofu
Syngnathidae	pipefishes and seahorses	##
Pinguipedidae	sandperches	ta‘oto
Gymnosarda unicolor	dog tooth tuna	tagi
Aulostomus chinensis	trumpetfish	taoto-ena, taoto-sama, ‘au‘aulauti, taotito
Fistularia commersoni	cornetfish	taotao, taoto-ama
Tetradontidae [sue= general name for buffer fishes]	puffer fishes and porcupine fishes	sue, sue-vaolo, sue-va‘a, sue-lega, sue-mu, sue-uli, sue-lape, sue-afa, sue-sugale
Bothidae Soleidae	flounders and soles	ali
Ostraciidae	trunkfishes	moamoa
Echinoderms	sea cucumbers and sea urchins	fugafuga, tuitui, sava‘e
Heliopora	blue corals	amu
Tubipora	organpipe corals	amu
Azooxanthellates	ahermatypic corals	**
Fungiidae	mushroom corals	amu

Scientific Name	English Common Name	Samoan Name
	small and large coral polyps	amu
Millepora	fire corals	amu
	soft corals and gorgonians	amu
Actinaria	anemones	lumane, matalelei
Zoanthinaria	soft zoanthid corals	**
Mollusca	(Those species not listed as CHCRT)	##
Gastropoda	sea snails	sisi-sami
Trochus spp.		aliao, alili
Opistobranchs	sea slugs	sea
Pinctada margaritifera	black lipped pearl oyster	##
Tridacnidae	giant clam	faisua
Other Bivalves	other clams	pipi, asi, fatuaua, tio, pae, fole
Crustaceans	lobsters, shrimps/mantis shrimps, true crabs and hermit crabs (Those species not listed as Crustacean MUS)	ula, pa‘a, kuku, papata
Tunicates	sea squirts	##
Porifera	sponges	##
Stylasteridae	lace corals	amu
Solanderidae	hydroid corals	amu
Annelids	segmented worms (Those species not listed as CHCRT)	##
Algae	seaweed	limu
Live rock		##

Scientific Name	English Common Name	Samoan Name
All other coral reef ecosystem management unit species that are marine plants, invertebrates, and fishes that are not listed in the preceding table or are not bottomfish management unit species, crustacean management unit species, Pacific pelagic management unit species, precious coral or seamount groundfish.		

Samoan names provided by Fini Aitaoto

Key:

1. ** = no specific species Samoan name, but may use general group name provided.
2. ## = no specific Samoan name identified, as of the date of this compilation.
3. The extensive use of the hyphen mark in Samoan names reflects the general use of descriptive names where the word after the hyphen is usually a description of the color(s) or other characteristics. A single species/group sometimes has more than one Samoan name depending on the color(s) and size (pers. comm. Chief Mauala P. Seiuli). In several cases, one Samoan name has been traditionally used for several species/groups.

1.1 Hawaii Archipelago FEP MUS

Table 6: Hawaii Archipelago Bottomfish Management Unit Species

Scientific Name	English Common Name	Local Name
**Aphareus rutilans*	silver jaw jobfish	lehi
**Aprion virescens*	gray jobfish	uku
**Caranx ignobilis*	giant trevally	white papio/ulua au kea
**C. lugubris*	black jack	ulua laʻuli
**E. quernus*	sea bass	hāpuʻupuʻu
**Etelis carbunculus*	red snapper	ehu
**E. coruscans*	longtail snapper	onaga or ʻulaʻula koaʻe
**Lutjanus kasmira*	blue stripe snapper	taʻape
**Pristipomoides auricilla*	yellowtail snapper	kalekale
**P. filamentosus*	pink snapper	ʻōpakapaka
**P. seiboldii*	pink snapper	kalekale
**P. zonatus*	snapper	gindai
**Pseudocaranx dentex*	thicklip trevally	pig ulua, butaguchi
**Seriola dumerili*	amberjack	kahala
Seamount Groundfish		
Hyperoglyphe japonica	raftfish	NA
**Beryx splendens*	alfonsin	NA
**Pseudopentaceros wheeleri*	armorhead	NA

*** Indicates a species for which there is an estimated MSY value**.

Table 7: Hawaii Archipelago Crustaceans Management Unit Species

Scientific Name	English Common Name	Local Name
**Panulirus marginatus*	spiny lobster	ula
**Panulirus penicillatus*	spiny lobster	ula
Family Scyllaridae	slipper lobster	ula papapa
Ranina ranina	Kona crab	papa‘i kua loa
**Heterocarpus* spp.	deepwater shrimp	NA

*** Indicates a species for which there is an estimated MSY value.**

Table 8: Hawaii Archipelago Precious Corals Management Unit Species

Scientific Name	English Common Name	Local Name
**Corallium secundum*	pink coral (also called red coral)	NA
**Corallium regale*	pink coral (also called red coral)	NA
**Corallium laauense*	pink coral (also called red coral)	NA
**Gerardia* spp.	gold coral	NA
**Narella* spp.	gold coral	NA
**Lepidisis olapa*	bamboo coral	NA
**Antipathes dichotoma*	black coral	NA
**Antipathes grandis*	black coral	NA
**Antipathes ulex*	black coral	NA

Table 9: Hawaii Archipelago Coral Reef Ecosystem Management Units Species (Currently Harvested Coral Reef Taxa)

Family Name	Scientific Name	English Common Name	Local Name
Acanthuridae (Surgeonfishes)	*Acanthurus olivaceus*	orange-spot surgeonfish	na‘ena‘e
	Acanthurus xanthopterus	yellowfin surgeonfish	pualu
	Acanthurus	convict tang	manini

Family Name	Scientific Name	English Common Name	Local Name
Acanthuridae (Surgeonfishes)	*triostegus*		
	Acanthurus dussumieri	eye-striped surgeonfish	palani
	Acanthurus nigroris	blue-lined surgeon	maiko
	Acanthurus leucopareius	whitebar surgeonfish	maiko or maikoiko
	Acanthurus nigricans	whitecheek surgeonfish	NA
	Acanthurus guttatus	white-spotted surgeonfish	‘api
	Acanthurus blochii	ringtail surgeonfish	Pualu
	Acanthurus nigrofuscus	brown surgeonfish	mai‘i‘i
	Ctenochaetus strigosus	yellow-eyed surgeonfish	kole
	Ctenochaetus striatus	striped bristletooth	NA
	Naso unicornus	bluespine unicornfish	kala
	Naso lituratus	orangespine unicornfish	kalalei or umaumalei
	Naso hexacanthus	black tongue unicornfish	kala holo
	Naso annulatus	whitemargin unicornfish	kala
	Naso brevirostris	spotted unicornfish	kala lolo
	Naso caesius	gray unicornfish	NA
	Zebrasoma flavescens	yellow tang	lau‘ipala
Balistidae (Triggerfish)	*Melichthys vidua*	pinktail triggerfish	humuhumu hi‘ukole
	Melichthys niger	black triggerfish	humuhumu ‘ele‘ele
	Rhinecanthus aculeatus	picassofish	humuhumu nukunuku apua‘a
	Sufflamen fraenatum	bridled triggerfish	NA
Carangidae (Jacks)	*Selar crumenophthalmus*	bigeye scad	akule or hahalu
	Decapterus macarellus	mackerel scad	‘opelu or ‘opelu mama
Carcharhinidae (Sharks)	*Carcharhinus amblyrhynchos*	grey reef shark	manō
	Carcharhinus galapagensis	galapagos shark	manō

Family Name	Scientific Name	English Common Name	Local Name
	Carcharhinus melanopterus	blacktip reef shark	manō
	Triaenodon obesus	whitetip reef shark	manō lalakea
Holocentridae (Solderfish/ Squirrelfish	*Myripristis berndti*	bigscale soldierfish	menpachi or ‘u‘u
	Myripristis amaena	brick soldierfish	menpachi or ‘u‘u
	Myripristis chryseres	yellowfin soldierfish	menpachi or ‘u‘u
	Myripristis kuntee	pearly soldierfish	menpachi or ‘u‘u
	Sargocentron microstoma	file-lined squirrelfish	‘ala‘ihi
	Sargocentron diadema	crown squirrelfish	‘ala‘ihi
	Sargocentron punctatissimum	peppered squirrelfish	‘ala‘ihi
	Sargocentron tiere	blue-lined squirrelfish	‘ala‘ihi
	Sargocentron xantherythrum	hawaiian squirrelfish	‘ala‘ihi
	Sargocentron spiniferum	saber or long jaw squirrelfish	‘ala‘ihi
	Neoniphon spp.	spotfin squirrelfish	‘ala‘ihi
Kuhliidae (Flagtails)	*Kuhlia sandvicensis*	Hawaiian flag-tail	‘aholehole
Kyphosidae (Rudderfish)	*Kyphosus biggibus*	rudderfish	nenue
	Kyphosus cinerascens	rudderfish	nenue
	Kyphosus vaigiensis	rudderfish	nenue
Labridae (Wrasses)	*Bodianus bilunulatus*	saddleback hogfish	‘a‘awa
	Oxycheilinus unifasciatus	ring-tailed wrasse	po‘ou
	Xyrichtys pavo	razor wrasse	laenihi or nabeta
	Cheilio inermis	cigar wrasse	kupoupou
	Thalassoma purpureum	surge wrasse	ho‘u
	Thalassoma quinquevittatum	red ribbon wrasse	NA
	Thalassoma lutescens	sunset wrasse	NA
	Novaculichthys taeniourus	rockmover wrasse	NA
Mullidae	*Mulloidichthys* spp.	yellow goatfish	weke

Family Name	Scientific Name	English Common Name	Local Name
(Goatfishes)	*Mulloidichthys pfleugeri*	orange goatfish	weke nono
	Mulloidichthys vanicolensis	yellowfin goatfish	weke‘ula
	Mulloidichthys flavolineatus	yellowstripe goatfish	weke‘a or weke a‘a
	Parupeneus spp.	banded goatfish	kumu or moano
	Parupeneus bifasciatus	doublebar goatfish	munu
	Parupeneus cyclostomas	yellowsaddle goatfish	moano kea or moano kale
	Parupeneus pleurostigma	side-spot goatfish	malu
	Parupeneus multifaciatus	multi-barred goatfish	moano
	Upeneus arge	bandtail goatfish	weke pueo
Mugilidae (Mullets)	*Mugil cephalus*	stripped mullet	‘ama‘ama
	Neomyxus leuciscus	false mullet	uouoa
Muraenidae (Moray eels)	*Gymnothorax flavimarginatus*	yellowmargin moray eel	puhi paka
	Gymnothorax javanicus	giant moray eel	puhi
	Gymnothorax undulatus	undulated moray eel	puhi laumilo
	Enchelycore pardalis	dragon eel	puhi
Octopodidae (Octopus)	*Octopus cyanea*	octopus	he‘e mauli or tako
	Octopus ornatus	octopus	he‘e or tako
Polynemidae	*Polydactylus sexfilis*	threadfin	moi
Priacanthidae (Big-eyes)	*Heteropriacanthus cruentatus*	glasseye	‘aweoweo
	Priacanthus hamrur	bigeye	‘aweoweo
Scaridae (Parrotfish)	*Scarus* spp.	parrotfish	uhu or palukaluka
	Calotomus carolinus	stareye parrotfish	panuhunuhu
Sphyraenidae (Barracuda)	*Sphyraena helleri*	Heller’s barracuda	kawele‘a or kaku
	Sphyraena barracuda	great barracuda	kaku
Turbinidae	*Turbo* spp.	green snails turban shells	NA

Family Name	Scientific Name	English Common Name	Local Name
Zanclidae	*Zanclus cornutus*	moorish idol	kihikihi
Chaetodontidae	*Chaetodon auriga*	butterflyfish	kikakapu
	Chaetodon lunula	raccoon butterflyfish	kikakapu
	Chaetodon ephippium	saddleback butterflyfish	kikakapu
Sabellidae		featherduster worm	NA

Table 10: Hawaii Archipelago Coral Reef Ecosystem Management Unit Species (Potentially Harvested Coral Reef Taxa)

Scientific Name	English Common Name	Local Name
Labridae	Wrasses (Those species not listed as CHCRT)	hinalea
Carcharhinidae Sphyrnidae	sharks (Those species not listed as CHCRT)	manō
Dasyatididae Myliobatidae	rays and skates	hihimanu
Serrandiae	groupers, seabass (Those species not listed as CHCRT or in BMUS)	roi, hapu‘upu‘u
Malacanthidae	tilefishes	NA
Carangidae	jacks and scads (Those species not listed as CHCRT or in BMUS)	dobe, kagami, pa‘opa‘o, papa, omaka, ulua,
Holocentridae	solderfishes and squirrelfishes (Those species not listed as CHCRT)	‘u‘u
Mullidae	Goatfishes (Those species not listed as CHCRT)	weke, moano, kumu
Acanthuridae	Surgeonfishes (Those species not listed as CHCRT)	na‘ena‘e, maikoiko
Echeneidae	Remoras	NA
Muraenidae Congridae Ophichthidae	eels (Those species not listed as CHCRT)	puhi
Apogonidae	cardinalfishes	‘upapalu

Scientific Name	English Common Name	Local Name
Clupeidae	herrings	NA
Engraulidae	anchovies	nehu
Caracanthidae	Coral crouchers	NA
Gobiidae	gobies	‘o‘opu
Lutjanidae	snappers (Those species not listed as CHCRT or in BMUS)	to‘au
Aulostomus chinensis	trumpetfish	nunu
Fistularia commersoni	cornetfish	nunu peke
Zanclidae	moorish Idols	kihikihi
Chaetodontidae	butterflyfishes	kikakapu
Pomacanthidae	angelfishes	NA
Pomacentridae	damselfishes	mamo
Scorpaenidae	scorpionfishes, lionfishes	nohu, okoze
Blenniidae	blennies	pa o‘o
Sphyraenidae	Barracudas (Those species not listed as CHCRT)	kaku
Pinguipedidae	Sandperches	NA
Bothidae Soleidae Pleurnectidae	flounders and soles	paki‘i
Ostraciidae	Trunkfishes	makukana
Balistidae	trigger fishes (Those species not listed as CHCRT)	humu humu
Kyphosidae	Rudderfishes (Those species not listed as CHCRT)	nenue
Cirrhitidae	Hawkfishes (Those species not listed as CHCRT)	po‘opa‘a
Tetradontidae	puffer fishes and porcupine fishes	‘o‘opu hue or fugu
Antennariidae	Frogfishes	NA
Syngnathidae	pipefishes and seahorses	NA
Echinoderms	sea cucumbers and sea urchins	namako, lole, wana

Scientific Name	English Common Name	Local Name
Mollusca	(Those species not listed as CHCRT)	NA
Azooxanthellates	ahermatypic corals	ko‘a
Fungiidae	mushroom corals	ko‘a
	small and large coral polyps	ko‘a
	soft corals and gorgonians	NA
Actinaria	anemones	NA
Zoanthinaria	soft zoanthid corals	NA
Solanderidae	hydroid corals	NA
Stylasteridae	lace corals	ko‘a
Crustaceans	lobsters, shrimps, mantis shrimps, true crabs and hermit crabs (Those species not listed as CMUS)	ula, a‘ama, mo‘ala, ‘alakuma
Hydrozoans and Bryzoans		NA
Pinctada margaritifera	black lipped pearl oyster	NA
Other Bivalves	other clams	NA
Tunicates	sea squirts	NA
Porifera	sponges	NA
Cephalopods	octopi	tako, he‘e
Gastropoda	sea snails	NA
Opistobranchs	sea slugs	NA
Algae	seaweed	limu
Live rock		NA
Annelids	segmented worms (Those species not listed as CHCRT)	NA
All other coral reef ecosystem management unit species that are marine plants, invertebrates, and fishes that are not listed in the preceding tables or are not bottomfish management unit species, crustacean management unit species, Pacific pelagic management unit species, precious coral or seamount groundfish.		

1.2 Mariana Archipelago FEP MUS

Table 11. Mariana Archipelago Bottomfish MUS

Scientific Name	English Common Name	Local Name Chamorro/Carolinian
*Aphareus rutilans**	red snapper/silvermouth	lehi/maroobw
*Aprion virescens**	gray snapper/jobfish	gogunafon/aiwe
*Caranx ignobilis**	giant trevally/jack	tarakitu/etam
*C. lugubris**	black trevally/jack	tarakiton attelong/orong
*Epinephelus fasciatus**	blacktip grouper	gadao/meteyil
*Variola louti**	lunartail grouper	bueli/bwele
*Etelis carbunculus**	red snapper	buninas agaga/ falaghal moroobw
*E. coruscans**	red snapper	buninas/taighulupegh
*Lethrinus rubrioperculatus**	redgill emperor	mafuti/atigh
*Lutjanus kasmira**	blueline snapper	funai/saas
*Pristipomoides auricilla**	yellowtail snapper	buninas/falaghal-maroobw
*P. filamentosus**	pink snapper	buninas/falaghal-maroobw
*P. flavipinnis**	yelloweye snapper	buninas/falaghal-maroobw
*P. seiboldii**	pink snapper	NA
*P. zonatus**	snapper	buninas rayao amiriyu/ falaghal-maroobw
*Seriola dumerili**	amberjack	tarakiton tadong/meseyugh

*** Indicates a species for which there is an estimated MSY value.**

Table 12. Mariana Archipelago Crustaceans MUS

Scientific Name	English Common Name	Local Name
Panulirus penicillatus	spiny lobster	mahongang
Family Scyllaridae	slipper lobster	pa‘pangpang
Ranina ranina	Kona crab	NA
Heterocarpus spp.	deepwater shrimp	NA

Table 13. Mariana Archipelago Precious Corals MUS

Scientific Name	English Common Name	Local Name Chamorro/Carolinian
Corallium secundum	pink coral (also known as red coral)	NA
Corallium regale	pink coral (also known as red coral)	NA

Scientific Name	English Common Name	Local Name Chamorro/Carolinian
Corallium laauense	pink coral (also known as red coral)	NA
Gerardia spp.	gold coral	NA
Narella spp.	gold coral	NA
Calyptrophora spp.	gold coral	NA
Lepidisis olapa	bamboo coral	NA
Acanella spp.	bamboo coral	NA
Antipathes dichotoma	black coral	NA
Antipathes grandis	black coral	NA
Antipathes ulex	black coral	NA

Table 14. Mariana Archipelago Coral Reef Ecosystem MUS (Currently Harvested Coral Reef Taxa)

Family Name	Scientific Name	English Common Name	Local Name Chamorro/Carolinian
Acanthuridae (Surgeonfishes)	*Acanthurus olivaceus*	orange-spot surgeonfish	NA
	Acanthurus xanthopterus	yellowfin surgeonfish	hugupao dangulo/ mowagh
	Acanthurus triostegus	convict tang	kichu/limell
	Acanthurus dussumieri	eye-striped surgeonfish	NA
	Acanthurus nigroris	blue-lined surgeon	NA
	Acanthurus leucopareius	whitebar surgeonfish	NA
	Acanthurus lineatus	blue-banded surgeonfish	hiyok/filaang
	Acanthurus nigricauda	blackstreak surgeonfish	NA
	Acanthurus nigricans	whitecheek surgeonfish	NA
	Acanthurus guttatus	white-spotted surgeonfish	NA
	Acanthurus blochii	ringtail surgeonfish	NA
	Acanthurus nigrofuscus	brown surgeonfish	NA
	Acanthurus pyroferus	mimic surgeonfish	NA
	Zebrasoma flavescens	yellow tang	NA
Acanthuridae (Surgeonfishes)	*Ctenochaetus striatus*	striped bristletooth	NA
	Ctenochaetus binotatus	twospot bristletooth	NA
	Naso unicornus	bluespine unicornfish	tataga/igh-falafal
	Naso lituratus	orangespine unicornfish	hangon/bwulaalay
	Naso tuberosus	humpnose unicornfish	NA
	Naso hexacanthus	black tongue unicornfish	NA
	Naso vlamingii	bignose unicornfish	NA

Family Name	Scientific Name	English Common Name	Local Name Chamorro/Carolinian
	Naso annulatus	whitemargin unicornfish	NA
	Naso brevirostris	spotted unicornfish	NA
	Naso brachycentron	humpback unicornfish	NA
	Naso caesius	gray unicornfish	NA
Balistidae (Triggerfishes)	*Balistoides viridescens*	titan triggerfish	NA
	Balistoides conspicillum	clown triggerfish	NA
	Balistapus undulatus	orangstriped triggerfish	NA
	Melichthys vidua	pinktail triggerfish	NA
	Melichthys niger	black triggerfish	NA
	Pseudobalistes fuscus	blue triggerfish	NA
	Rhinecanthus aculeatus	Picassofish	NA
	Balistoides rectanulus	wedged Picassofish	NA
	Sufflamen fraenatus	bridled triggerfish	NA
Carangidae (Jacks)	*Selar crumenophthalmus*	bigeye scad	atulai/peti
	Decapterus macarellus	mackerel scad	NA
Carcharhinidae (Sharks)	*Carcharhinus amblyrhynchos*	grey reef shark	NA
	Carcharhinus albimarginatus	silvertip shark	NA
	Carcharhinus galapagensis	Galapagos shark	NA
	Carcharhinus melanopterus	blacktip reef shark	NA
	Triaenodon obesus	whitetip reef shark	NA
Holocentridae (Solderfish/ Squirrelfish	*Myripristis berndti*	bigscale soldierfish	saksak/mweel
	Myripristis adusta	bronze soldierfish	sagamelon
	Myripristis murdjan	blotcheye soldierfish	sagamelon
	Myripristis amaena	brick soldierfish	sagamelon
	Myripristis pralinia	scarlet soldierfish	sagamelon
	Myripristis violacea	violet soldierfish	sagamelon
	Myripristis vittata	whitetip soldierfish	sagamelon
	Myripristis chryseres	yellowfin soldierfish	sagamelon
	Myripristis kuntee	pearly soldierfish	sagamelon
	Sargocentron caudimaculatum	tailspot squirrelfish	sagamelon
	Sargocentron microstoma	file-lined squirrelfish	NA
	Sargocentron diadema	crown squirrelfish	chalak
	Sargocentron tiere	blue-lined squirrelfish	sagsag/leet
	Sargocentron spiniferum	saber or long jaw squirrelfish	sisiok
	Neoniphon spp.	spotfin squirrelfish	sagsag/leet

Family Name	Scientific Name	English Common Name	Local Name Chamorro/Carolinian
Kuhliidae (Flagtails)	*Kuhlia mugil*	barred flag-tail	NA
Kyphosidae (Rudderfish)	*Kyphosus biggibus*	rudderfish	guili
	Kyphosus cinerascens	rudderfish	guili/schpwul
	Kyphosus vaigienses	rudderfish	guilen puengi/reel
Labridae (Wrasses)	*Cheilinus chlorourus*	floral wrasse	NA
	Cheilinus undulates	napoleon wrasse	tangison/maam
	Cheilinus trilobatus	triple-tail wrasse	lalacha mamate/porou
	Cheilinus fasciatus	harlequin tuskfish or red-breasted wrasse	NA
	Oxycheilinus unifasciatus	ring-tailed wrasse	NA
	Xyrichtys pavo	razor wrasse	NA
	Xyrichtys aneitensis	whitepatch wrasse	NA
	Cheilio inermis	cigar wrasse	NA
	Hemigymnus melapterus	blackeye thicklip	NA
	Hemigymnus fasciatus	barred thicklip	NA
	Halichoeres trimaculatus	three-spot wrasse	NA
	Halichoeres hortulanus	checkerboard wrasse	NA
	Halichoeres margaritacous	weedy surge wrasse	NA
	Thalassoma purpureum	surge wrasse	NA
	Thalassoma quinquevittatum	red ribbon wrasse	NA
	Thalassoma lutescens	sunset wrasse	NA
	Hologynmosus doliatus	longface wrasse	NA
	Novaculichthys taeniourus	rockmover wrasse	NA
Mullidae (Goatfishes)	*Mulloidichthys* spp.	yellow goatfish	NA
	Mulloidichthys vanicolensis	yellowfin goatfish	satmoneti/wichigh
	Mulloidichthys flavolineatus	yellowstripe goatfish	ti‘ao (juv.) satmoneti (adult)
	Parupeneus spp.	banded goatfish	NA
	Parupeneus barberinus	dash-dot goatfish	satmonetiyo/failighi
	Parupeneus bifasciatus	doublebar goatfish	satmoneti acho/ sungoongo
	Parupeneus heptacanthus	redspot goatfish	NA
	Parupeneus ciliatus	white-lined goatfish	ti‘ao (juv.) satmoneti (adult)
	Parupeneus cyclostomas	yellowsaddle goatfish	ti‘ao (juv.) satmoneti (adult)
	Parupeneus pleurostigma		ti‘ao (juv.)

Family Name	Scientific Name	English Common Name	Local Name Chamorro/Carolinian
		side-spot goatfish	satmoneti (adult)
	Parupeneus multifaciatus	multi-barred goatfish	ti‘ao (juv.) satmoneti (adult)
	Upeneus arge	bantail goatfish	NA
Mugilidae (Mullets)	*Mugil cephalus*	striped mullet	aguas (juv.) laiguan (adult)
	Moolgarda engeli	Engel’s mullet	aguas (juv.) laiguan (adult)
	Crenimugil crenilabis	fringelip mullet	aguas (juv.) laiguan (adult)
Muraenidae (Moray eels)	*Gymnothorax flavimarginatus*	yellowmargin moray eel	NA
	Gymnothorax javanicus	giant moray eel	NA
	Gymnothorax undulatus	undulated moray eel	NA
Octopodidae (Octopus)	*Octopus cyanea*	octopus	gamsun
	Octopus ornatus	octopus	gamsun
Polynemidae	*Polydactylus sexfilis*	threadfin	NA
Pricanthidae (Bigeye)	*Heteropriacanthus cruentatus*	glasseye	NA
	Priacanthus hamrur	bigeye	NA
Scaridae (Parrotfishes)	*Bolbometopon muricatum*	humphead parrotfish	atuhong/roow
	Scarus spp.	parrotfish	palakse/laggua
	Hipposcarus longiceps	Pacific longnose parrotfish	gualafi/oscha
	Calotomus carolinus	stareye parrotfish	palaksin chaguan
Scombridae	*Gymnosarda unicolor*	dogtooth tuna	white tuna/ayul
Siganidae (Rabbitfish)	*Siganus aregentus*	forktail rabbitfish	hiting/manahok/llegh
	Siganus guttatus	golden rabbitfish	hiting
	Siganus punctatissimus	gold-spot rabbitfish	hiting galagu
	Siganus randalli	Randall’s rabbitfish	NA
	Siganus spinus	scribbled rabbitfish	hiting/sesyon/palawa
	Siganus vermiculatus	vermiculate rabbitfish	hiting
Sphyraenidae (Barracuda)	*Sphyraena helleri*	Heller’s barracuda	NA
	Sphyraena barracuda	great barracuda	NA
Turbinidae (turban /green snails	*Turbo* spp.	green snails turban shells	aliling pulan/aliling tulompu

Table 15. Mariana Archipelago Coral Reef Ecosystem MUS (Potentially Harvested Coral Reef Taxa)

Scientific Name	English Common Name	Local Name Chamorro/Carolinian
Labridae	wrasses (Those species not listed as CHCRT)	NA
Carcharhinidae Sphyrnidae	sharks	NA
Dasyatididae Myliobatidae	rays and skates	NA
Serrandiae	groupers (Those species not listed as CHCRT or BMUS)	NA
Carangidae	jacks and scads (Those species not listed as CHCRT or BMUS)	NA
Holocentridae	solderfishes and squirrelfishes (Those species not listed as CHCRT)	NA
Mullidae	goatfishes (Those species not listed as CHCRT)	NA
Acanthuridae	surgeonfishes (Those species not listed as CHCRT)	NA
Ephippidae	batfishes	NA
Monodactylidae	monos	NA
Haemulidae	sweetlips	NA
Echeneidae	remoras	NA
Malacanthidae	tilefishes	NA
Lethrinidae	emperors (Those species not listed as CHCRT)	NA
Pseudochromidae	dottybacks	NA
Plesiopidae	prettyfins	NA
Muraenidae Chlopsidae Congridae Ophichthidae	eels (Those species not listed as CHCRT)	NA

Scientific Name	English Common Name	Local Name Chamorro/Carolinian
Apogonidae	cardinalfishes	NA
Zanclidae	moorish idols	NA
Aulostomus chinensis	trumpetfish	NA
Fistularia commersoni	cornetfish	NA
Chaetodontidae	butterfly fishes	NA
Pomacanthidae	angelfishes	NA
Pomacentridae	damselfishes	NA
Scorpaenidae	scorpionfishes	NA
Caracanthidae	coral crouchers	NA
Anomalopidae	flashlightfishes	NA
Clupeidae	herrings	NA
Engraulidae	anchovies	NA
Gobiidae	gobies	NA
Blenniidae	blennies	NA
Sphyraenidae	barracudas (Those species not listed as CHCRT)	NA
Lutjanidae	snappers (Those species not listed as CHCRT or BMUS)	NA
Balistidae	trigger fishes (Those species not listed as CHCRT)	NA
Siganidae	rabbitfishes (Those species not listed as CHCRT)	NA
Pinguipedidae	sandperches	NA
Gymnosarda unicolor	dog tooth tuna	NA
Kyphosidae	rudderfishes (Those species not listed as CHCRT)	NA

Scientific Name	English Common Name	Local Name Chamorro/Carolinian
Bothidae Soleidae	flounders and soles	NA
Ostraciidae	trunkfishes	NA
Caesionidae	fusiliers	NA
Cirrhitidae	hawkfishes	NA
Antennariidae	frogfishes	NA
Syngnathidae	pipefishes and seahorses	NA
Tetradontidae	puffer fishes and porcupine fishes	NA
Heliopora	blue corals	NA
Tubipora	organpipe corals	NA
Azooxanthellates	ahermatypic corals	NA
Echinoderms	sea cucumbers and sea urchins	NA
Mollusca	(Those species not listed as CHCRT)	NA
Gastropoda	sea snails	NA
Trochus spp.		NA
Opistobranchs	sea slugs	NA
Pinctada margaritifera	black lipped pearl oyster	NA
Tridacnidae	giant clam	NA
Other Bivalves	other clams	NA
Fungiidae	mushroom corals	NA
	small and large coral polyps	NA
Millepora	fire corals	NA
	soft corals and gorgonians	NA
Actinaria	anemones	NA
Zoanthinaria	soft zoanthid corals	NA
Hydrozoans and Bryzoans		NA
Tunicates	sea squirts	NA

Scientific Name	English Common Name	Local Name Chamorro/Carolinian
Porifera	sponges	NA
Cephalopods	octopi	NA
Crustaceans	lobsters, shrimps/mantis shrimps, true crabs and hermit crabs (Those species not listed as CMUS)	NA
Stylasteridae	Lace corals	NA
Solanderidae	Hydroid corals	NA
Algae	Seaweed	NA
Annelids	Segmented worms	NA
Live rock		NA
All other coral reef ecosystem management unit species that are marine plants, invertebrates, and fishes that are not listed in the preceding tables or are not bottomfish management unit species, crustacean management unit species, Pacific pelagic management unit species, precious coral or seamount groundfish.		

1.3 PRIA FEP MUS

Table 16. PRIA Bottomfish Management Unit Species

Scientific Name	English Common Name
Aphareus rutilans	silver jaw jobfish
Caranx ignobilis	giant trevally
C. lugubris	black jack
Epinephelus fasciatus	blacktip grouper
E. quernus	sea bass
Etelis carbunculus	red snapper
E. coruscans	longtail snapper
Lethrinus rubrioperculatus	redgill emperor
Pristipomoides auricilla	yellowtail snapper
P. filamentosus	pink snapper
P. seiboldii	pink snapper
Variola louti	lunartail grouper

Table 17: PRIA Crustacean Management Unit Species

Scientific Name	English Common Name
Panulirus penicillatus	spiny lobster
Family Scyllaridae	slipper lobster
Ranina ranina	Kona crab
Heterocarpus spp.	deepwater shrimp

Table 18: PRIA Precious Corals Management Unit Species

Scientific Name	English Common Name
Corallium secundum	pink coral (also called red coral)
Corallium regale	pink coral (also called red coral)
Corallium laauense	pink coral (also called red coral)
Gerardia spp.	gold coral

Narella spp.	gold coral
Lepidisis olapa	bamboo coral
Antipathes dichotoma	black coral
Antipathes grandis	black coral
Antipathes ulex	black coral

Table 19: PRIA Coral Reef Ecosystem Management Unit Species (Currently Harvested Coral Reef Taxa)

Family Name	**Scientific Name**	**English Common Name**
Acanthuridae (Surgeonfishes)	*Acanthurus olivaceus*	orange-spot surgeonfish
	Acanthurus xanthopterus	yellowfin surgeonfish
	Acanthurus triostegus	convict tang
	Acanthurus dussumieri	eye-striped surgeonfish
	Acanthurus nigroris	blue-lined surgeon
	Acanthurus leucopareius	whitebar surgeonfish
	Acanthurus lineatus	blue-banded surgeonfish
	Acanthurus nigricauda	blackstreak surgeonfish
	Acanthurus nigricans	whitecheek surgeonfish
	Acanthurus guttatus	white-spotted surgeonfish
	Acanthurus blochii	ringtail surgeonfish
	Acanthurus nigrofuscus	brown surgeonfish
	Ctenochaetus strigosus	yellow-eyed surgeonfish
	Ctenochaetus striatus	striped bristletooth
	Ctenochaetus binotatus	twospot bristletooth
	Zebrasoma flavescens	yellow tang
	Naso unicornus	bluespine unicornfish
	Naso lituratus	orangespine unicornfish

Family Name	Scientific Name	English Common Name
	Naso hexacanthus	black tongue unicornfish
	Naso vlamingii	bignose unicornfish
	Naso annulatus	whitemargin unicornfish
	Naso brevirostris	spotted unicornfish
Labridae (Wrasses)	*Cheilinus undulatus*	Napoleon wrasse
	Cheilinus trilobatus	triple-tail wrasse
	Cheilinus chlorourus	floral wrasse
	Oxycheilinus unifasciatus	ring-tailed wrasse
	Oxycheilinus diagrammus	bandcheek wrasse
	Hemigymnus fasciatus	barred thicklip
	Halichoeres trimaculatus	three-spot wrasse
	Thalassoma quinquevittatum	red ribbon wrasse
	Thalassoma lutescens	sunset wrasse
Mullidae (Goatfishes)	*Mulloidichthys* spp.	yellow goatfish
	Mulloidichthys pfleugeri	orange goatfish
	Mulloidichthys flavolineatus	yellowstripe goatfish
	Parupeneus spp.	banded goatfish
Mullidae (Goatfishes)	*Parupeneus barberinus*	dash-dot goatfish
	Parupeneus cyclostomas	yellowsaddle goatfish
	Parupeneus multifaciatus	multi-barred goatfish
	Upeneus arge	bantail goatfish
Mugilidae (Mullets)	*Crenimugil crenilabis*	fringelip mullet
	Moolgarda engeli	Engel's mullet
	Neomyxus leuciscus	false mullet
Muraenidae (Moray eels)	*Gymnothorax flavimarginatus*	yellowmargin moray eel
	Gymnothorax javanicus	giant moray eel
	Gymnothorax undulatus	undulated moray eel
Octopodidae	*Octopus cyanea*	octopus
	Octopus ornatus	octopus

Family Name	Scientific Name	English Common Name
Pricanthidae (Bigeye)	*Heteropriacanthus cruentatus*	glasseye
Scaridae (Parrotfishes)	*Bolbometopon muricatum*	humphead parrotfish
	Scarus spp.	parrotfish
	Hipposcarus longiceps	pacific longnose parrotfish
	Calotomus carolinus	stareye parrotfish
Scombridae	*Gymnosarda unicolor*	dogtooth tuna
Sphyraenidae (Barracuda)	*Sphyraena barracuda*	great barracuda

Table 20: PRIA Coral Reef Ecosystem Management Unit Species (Potentially Harvested Coral Reef Taxa)

Scientific Name	English Common Name
Labridae	wrasses (Those species not listed as CHCRT)
Carcharhinidae Sphyrnidae	sharks (Those species not listed as CHCRT)
Myliobatidae Mobulidae	rays and skates
Serrandiae	groupers (Those species not listed as CHCRT or as BMUS)
Carangidae	jacks and scads (Those species not listed as CHCRT or as BMUS)
Holocentridae	solderfishes and squirrelfishes,(Those species not listed as CHCRT)
Mullidae	goatfishes,(Those species not listed as CHCRT)
Ephippidae	batfishes
Haemulidae	sweetlips
Echeneidae	remoras
Malacanthidae	tilefishes
Pseudochromidae	dottybacks
Plesiopidae	prettyfins
Acanthuridae	surgeonfishes (Those species not listed as CHCRT)
Lethrinidae	emperors (Those species not listed as CHCRT or as BMUS)

Scientific Name	English Common Name
Clupeidae	herrings
Gobiidae	gobies
Lutjanidae	snappers (Those species not listed as CHCRT or as BMUS)
Balistidae	trigger fishes (Those species not listed as CHCRT)
Siganidae	rabbitfishes (Those species not listed as CHCRT)
Muraenidae Chlopsidae Congridae Ophichthidae	eels (Those species not listed as CHCRT)
Apogonidae	cardinalfishes
Zanclidae	moorish idols
Chaetodontidae	butterfly fishes
Pomacanthidae	angelfishes
Pomacentridae	damselfishes
Scorpaenidae	scorpionfishes
Blenniidae	blennies
Sphyraenidae	barracudas (Those species not listed as CHCRT)
Pinguipedidae	sandperches
Kyphosidae	rudderfishes (Those species not listed as CHCRT)
Caesionidae	fusiliers
Cirrhitidae	hawkfishes (Those species not listed as CHCRT)
Antennariidae	frogfishes
Syngnathidae	pipefishes and seahorses
Bothidae	flounders and soles
Ostraciidae	trunkfishes
Tetradontidae	puffer fishes and porcupine fishes
Aulostomus chinensis	trumpetfish
Fistularia commersoni	cornetfish

Scientific Name	English Common Name
Heliopora	blue corals
Tubipora	organpipe corals
Azooxanthellates	ahermatypic corals
Fungiidae	mushroom corals
	small and large coral polyps
Millepora	fire corals
	soft corals and gorgonians
Actinaria	anemones
Zoanthinaria	soft zoanthid corals
Hydrozoans and Bryzoans	
Tunicates	sea squirts
Echinoderms	sea cucumbers and sea urchins
Mollusca	Those species not listed as CHCRT
Gastropoda	sea snails
Trochus spp.	
Opistobranchs	sea slugs
Pinctada margaritifera	black lipped pearl oyster
Tridacnidae	giant clam
Other Bivalves	other clams
Cephalopods	
Crustaceans	lobsters, shrimps/mantis shrimps, true crabs and hermit crabs (Those species not listed as CMUS)
Porifera	sponges
Stylasteridae	lace corals
Solanderidae	hydroid corals
Annelids	segmented worms
Algae	seaweed
Live rock	

Scientific Name	English Common Name
All other coral reef ecosystem management unit species that are marine plants, invertebrates, and fishes that are not listed in the preceding tables or are not bottomfish management unit species, crustacean management unit species, Pacific pelagic management unit species, precious coral or seamount groundfish.	

1.4 Pacific Pelagics FEP MUS

Table 21. Pacific Pelagic Management Unit Species (PMUS)

Scientific Name	English Common Name	Scientific Name	English Common Name
TUNAS		**BILLFISHES**	
*Thunnus alalunga**	albacore	*Tetrapturus audax**	striped marlin
*T. obesus**	bigeye tuna	*T. angustirostris*	shortbill spearfish
*T. albacares**	yellowfin tuna	*Xiphias gladius**	swordfish
T. thynnus	northern bluefin tuna	*Istiophorus platypterus*	sailfish
*Katsuwonus pelamis**	skipjack tuna	*Makaira mazara**	blue marlin
Euthynnus affinis	kawakawa	*M. indica*	black marlin
Auxis spp. *Scomber* spp. *Allothunus* spp.	other tuna relatives		
SHARKS		**OTHER PELAGICS**	
Alopias pelagicus	pelagic thresher shark	*Coryphaena* spp.	mahimahi (dolphinfish)
A. superciliousus	bigeye thresher shark	*Lampris* spp.	moonfish
A. vulpinus	common thresher shark	*Acanthocybium solandri*	wahoo
Carcharhinus falciformis	silky shark	*Gempylidae*	oilfish family
C. longimanus	oceanic whitetip shark	*Bramidae*	pomfret family
*Prionace glauca**	blue shark	*Ommastrephes bartamii*	neon flying squid
Isurus oxyrinchus	shortfin mako shark	*Thysanoteuthis rhombus*	diamondback squid
I. paucus	longfin mako shark	*Sthenoteuthis oualaniensis*	purple flying squid
Lamna ditropis	salmon shark		

*** Indicates a species for which there is an estimated MSY value.**

[This page left blank intentionally]

Appendix 2

National Standard 1 Guidelines Final Rule

Federal Register

Friday,
January 16, 2009

Part III

Department of Commerce

National Oceanic and Atmospheric Administration

50 CFR Part 600

Magnuson-Stevens Act Provisions; Annual Catch Limits; National Standard Guidelines; Final Rule

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 600

[Docket No. 070717348–81398–03]

RIN 0648–AV60

Magnuson-Stevens Act Provisions; Annual Catch Limits; National Standard Guidelines

AGENCY: National Marine Fisheries Service (NMFS); National Oceanic and Atmospheric Administration (NOAA); Commerce.

ACTION: Final rule.

SUMMARY: This final action amends the guidelines for National Standard 1 (NS1) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). This action is necessary to provide guidance on how to comply with new annual catch limit (ACL) and accountability measure (AM) requirements for ending overfishing of fisheries managed by Federal fishery management plans (FMPs). It also clarifies the relationship between ACLs, acceptable biological catch (ABC), maximum sustainable yield (MSY), optimum yield (OY), and other applicable reference points. This action is necessary to facilitate compliance with requirements of the Magnuson-Stevens Act to end and prevent overfishing, rebuild overfished stocks and achieve OY.

DATES: Effective February 17, 2009.

ADDRESSES: Copies of the Regulatory Impact Review (RIR)/Regulatory Flexibility Act Analysis (RFAA) can be obtained from Mark R. Millikin, National Marine Fisheries Service, 1315-East-West Highway, Room 13357, Silver Spring, Maryland 20910. The RIR/RFAA document is also available via the internet at *http://www.nmfs.noaa.gov/msa2007/catchlimits.htm*. Public comments that were received can be viewed at the Federal e-Rulemaking portal: *http://www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: Mark R. Millikin by phone at 301–713–2341, by FAX at 301–713–1193, or by *e-mail: Mark.Millikin@noaa.gov.*

SUPPLEMENTARY INFORMATION:

Table of Contents

I. Overview of Revisions to the NS1 Guidelines
II. Major Components of the Proposed Action
III. Major Changes Made in the Final Action
IV. Overview of the Major Aspects of the Final Action
A. Stocks in the Fishery and Ecosystem Component Species
B. Definition Framework for OFL, ABC, and ACL
C. Accountability Measures (AMs)
D. SSC Recommendations and Process
E. Management Uncertainty and Scientific Uncertainty
V. Response to Comments
VI. Changes from Proposed Action
VII. References Cited
VIII. Classification

I. Overview of Revisions to the NS1 Guidelines

The MSA serves as the chief authority for fisheries management in the U.S. Exclusive Economic Zone (EEZ). The Act provides for ten national standards (NS) for fishery conservation and management, and requires that the Secretary establish advisory guidelines based on the NS to assist in the development of fishery management plans. Guidelines for the NS are codified in subpart D of 50 CFR part 600. NS1 requires that conservation and management measures ''shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.''

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSRA) amended the MSA to include new requirements for annual catch limits (ACLs) and accountability measures (AMs) and other provisions regarding preventing and ending overfishing and rebuilding fisheries. To incorporate these new requirements into current NS1 guidance, NMFS initiated a revision of the NS1 guidelines in 50 CFR 600.310. NMFS published a notice of intent (NOI) to prepare an environmental impact statement (EIS) and commenced a scoping period for this action on February 14, 2007 (72 FR 7016), and proposed NS1 guidelines revisions on June 9, 2008 (73 FR 32526). Further background is provided in the above-referenced **Federal Register** documents and is not repeated here. The proposed guidelines provided a description of the reasons that overfishing is still occurring and the categories of reasons for overfishing likely to be addressed by new MSA requirements combined with the NS1 guidelines. The September 30, 2008 NMFS Quarterly Report on the Status of U.S. Fisheries indicates that 41 stocks managed under Federal FMPs are undergoing overfishing.

NMFS solicited public comment on the proposed NS1 guidelines revisions through September 22, 2008, and during that time, held three public meetings, on July 10, 2008 (Silver Spring, Maryland), July 14, 2008 (Tampa, Florida), and July 24, 2008 (Seattle, Washington), and made presentations on the proposed revisions to each of the eight Regional Fishery Management Councils (Councils). NMFS received over 158,000 comments on all aspects of the proposed NS1 guidelines revisions. Many of the comment letters were form letters or variations on a form letter. In general, the environmental community supported the provisions in the proposed action but commented that they needed to be strengthened in the final action. Alternatively, comments from the fishing industry and some of the Councils said the proposed revisions were confusing, too proscriptive or strict, and lacked sufficient flexibility.

II. Major Components of the Proposed Action

Some of the major items covered in the proposed NS1 guidelines were: (1) A description of the relationship between MSY, OY, overfishing limits (OFL), ABC, ACLs, and annual catch targets (ACT); (2) guidance on how to combine the use of ACLs and AMs for a stock to prevent overfishing when possible, and adjust ACLs and AMs, if an ACL is exceeded; (3) statutory exceptions to requirements for ACLs and AMs and flexibility in application of NS1 guidelines; (4) ''stocks in the fishery'' and ''ecosystem component species'' classifications; (5) replacement of MSY control rules with ABC control rules and replacement of OY control rules with ACT control rules; (6) new requirements for scientific and statistical committees (SSC); (7) explanation of the timeline to prepare new rebuilding plans; (8) revised guidance on how to establish rebuilding time targets; (9) advice on action to take at the end of a rebuilding period if a stock is not yet rebuilt; and (10) exceptions to the requirements to prevent overfishing.

III. Major Changes Made in the Final Action

The main substantive change in the final action pertains to ACTs. NMFS proposed ACT as a required reference point that needed to be included in FMPs. The final action retains the concept of an ACT and an ACT control rule, but does not require them to be included in FMPs. After taking public comment into consideration, NMFS has decided that ACTs are better addressed as AMs. The final guidelines provide that: ''For fisheries without inseason management control to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL.''

In response to public comment, this final action also clarifies text on ecosystem component species, OFL, OY specification, ABC control rule and specification, SSC recommendations, the setting of ACLs, sector-ACLs, and AMs, and makes minor clarifications to other text. Apart from these clarifications, the final action retains the same approaches described in the proposed guidelines with regard to: (1) Guidance on how to combine the use of ACLs and AMs for a stock to prevent overfishing when possible, and adjust ACLs and AMs, if an ACL is exceeded; (2) statutory exceptions to requirements for ACLs and AMs and flexibility in application of NS1 guidelines; (3) ''stocks in the fishery'' and ''ecosystem component species'' classifications; (4) new requirements for SSCs; (5) the timeline to prepare new rebuilding plans; (6) rebuilding time targets; (7) advice on action to take at the end of a rebuilding period if a stock is not yet rebuilt; and (8) exceptions to the requirements to prevent overfishing. Further explanation of why changes were or were not made is provided in the ''Response to Comments'' section below. Detail on changes made in the codified text is provided in the ''Changes from Proposed Action'' section.

IV. Overview of the Major Aspects of the Final Action

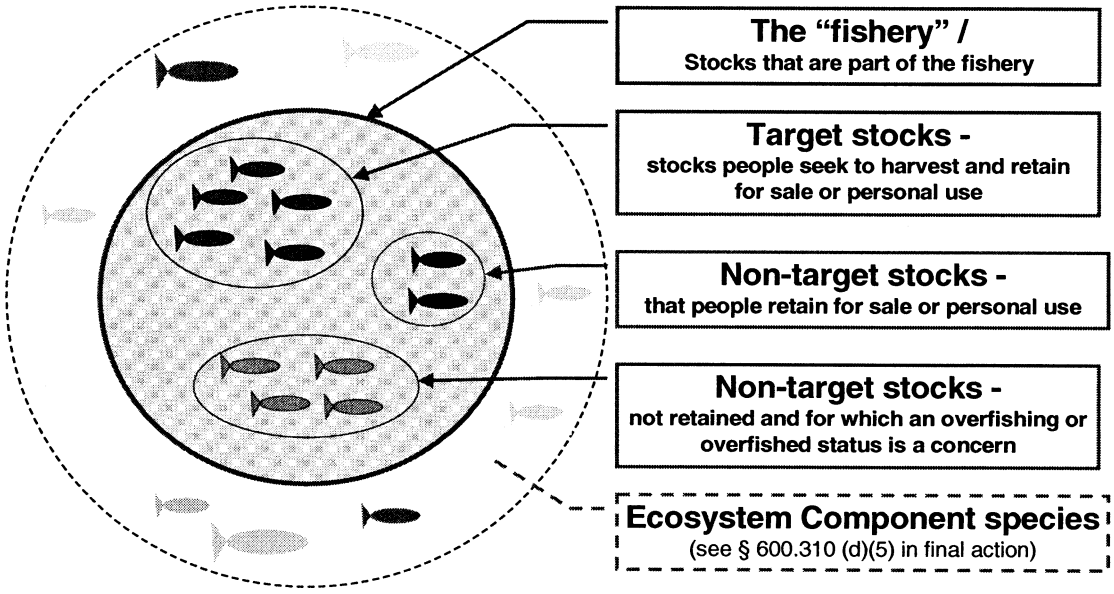
A. Stocks in the Fishery and Ecosystem Component Species

The proposed NS1 guidelines included suggested classifications of ''stocks in the fishery'' and ''ecosystem component (EC) species.'' *See* Figure 1 for diagram of classifications. Public comments reflected confusion about this proposal, so NMFS has clarified its general intent with regard to these classifications. More detailed responses to comments on this issue are provided later in this document.

The classifications in the NS1 guidelines are intended to reflect how FMPs have described ''fisheries,'' and to provide a helpful framework for thinking about how FMPs have incorporated and may continue to incorporate ecosystem considerations. To that end, the proposed NS1 guidelines attempted to describe the fact that FMPs typically include certain target species, and sometimes certain non-target species, that the Councils and/or the Secretary believed required conservation and management. In some FMPs, Councils have taken a broader approach and included hundreds of species, many of which may or may not require conservation and management but could be relevant in trying to further ecosystem management in the fishery.

NMFS wants to encourage ecosystem approaches to management, thus it proposed the EC species as a possible classification a Council or the Secretary could—but is not required to—consider. The final NS1 guidelines do not require a Council or the Secretary to include all target and non-target species as ''stocks in the fishery,'' do not mandate use of the EC species category, and do not require inclusion of particular species in an FMP. The decision of whether conservation and management is needed for a fishery and how that fishery should be defined remains within the authority and discretion of the relevant Council or the Secretary, as appropriate. NMFS presumes that stocks or stock complexes currently listed in an FMP are ''stocks in the fishery,'' unless the FMP is amended to explicitly indicate that the EC species category is being used. ''Stocks in the fishery'' need status determination criteria, other reference points, ACL mechanisms and AMs; EC species would not need them. NMFS recognizes the confusion caused by wording in the proposed action and has revised the final action to be more clear on these points.

Figure 1. General Framework for "Stocks in the Fishery" versus "Ecosystem Component Species." This figure describes the kind of stocks or stock complexes that might fall into the two classifications, but should not be viewed as requiring FMPs to include specific stocks or stock complexes in either category.

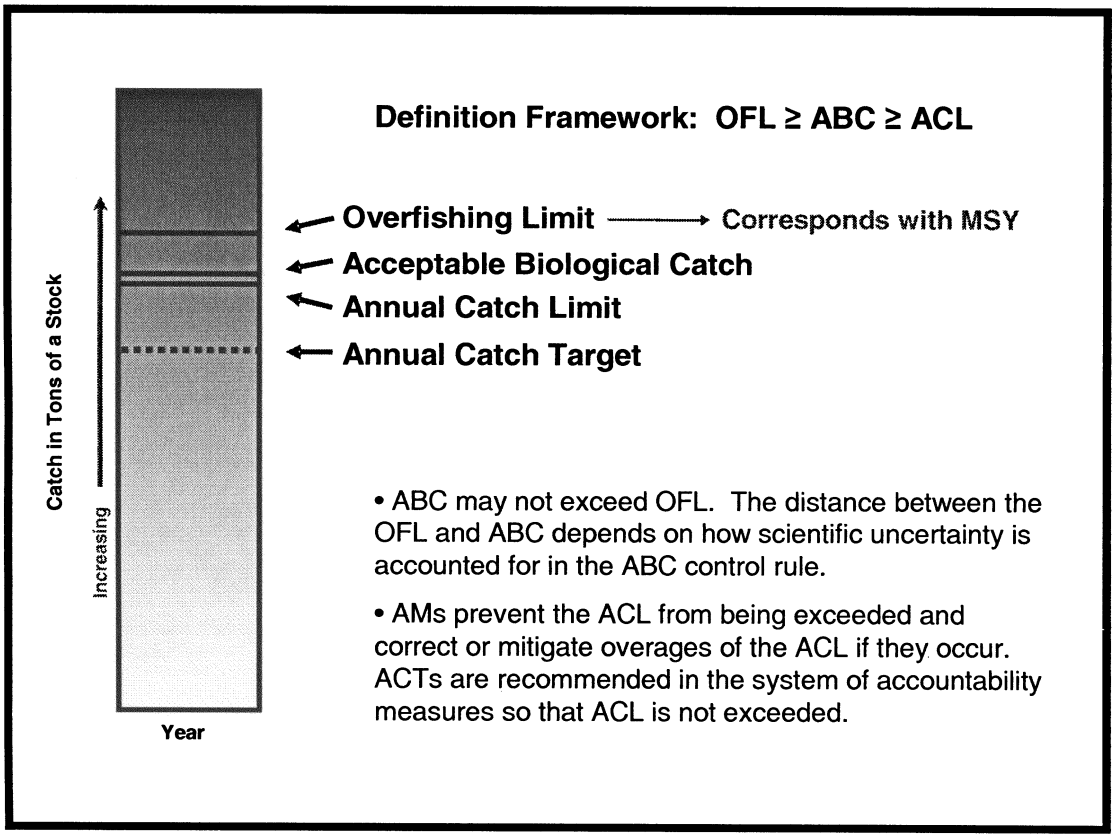


B. Definition Framework for OFL, ABC, and ACL

The MSRA does not define ACLs, AMs, and ABC, so NMFS proposed definitions for these terms in the proposed action. NMFS also proposed definitions for the terms OFL and ACT because it felt that they would be useful tools in helping ensure that ACLs are not exceeded and overfishing does not occur. The proposed NS1 guidelines described the relationship between the terms as: OFL ≥ ABC ≥ ACL ≥ ACT. In response to public comment, the final action revises the definition framework as: OFL ≥ ABC ≥ ACL. As described above, NMFS has retained ACT and the ACT control rule in the NS1 guidelines, but believes that they are more appropriate as AMs. NMFS believes ACTs could prove useful as management tools in fisheries with poor management control over catch (i.e., that frequently exceed catch targets).

NMFS received many comments on the definition framework, and some commenters stated that it should be revised as: OFL > ABC > ACL. Having considered public comment and reconsidered this issue, NMFS has decided to keep the framework as: OFL ≥ ABC ≥ ACL. However, NMFS believes there are few fisheries where setting OFL, ABC, and ACL all equal to each other would be appropriate. While the final action allows ABC to equal OFL, NMFS expects that in most cases ABC will be reduced from OFL to reduce the probability that overfishing might occur in a year. NMFS has added a provision to the final NS1 guidelines stating that, if a Council recommends an ACL which equals ABC, and the ABC is equal to OFL, the Secretary may presume that the proposal would not prevent overfishing, in the absence of sufficient analysis and justification for the approach. See figure 2 for an illustration of the relationship between OFL, ABC, ACL and ACT. Further detail on the definition framework and associated issues is provided in the ''Response to Comments'' section below.

Figure 2: Relationship between OFL, ABC, ACL and ACT



C. Accountability Measures (AMs)

Another major aspect of the revised NS1 guidelines is the inclusion of guidance on AMs. AMs are management controls to prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur. NMFS has identified two categories of AMs, inseason AMs and AMs for when the ACL is exceeded. As described above, ACTs are recommended in the system of AMs so that ACLs are not exceeded. As a performance standard, if catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness.

D. SSC Recommendations and Process

Section 302(h)(6) of the MSA provides that each Council is required to ''develop annual catch limits for each of its managed fisheries that may not exceed the fishing level recommendations of its scientific and statistical committee or the peer review process established under subsection (g).'' MSA did not define ''fishing level recommendations,'' but in section 302(g)(1)(B), stated that an SSC shall provide ''recommendations for acceptable biological catch, preventing overfishing, maximum sustainable yield, and achieving rebuilding targets,'' and other scientific advice.

NMFS received a variety of public comments regarding interpretation of ''fishing level recommendations.'' Some commenters felt that the SSC's ''fishing level recommendations'' that should constrain ACLs is the overfishing limit (OFL); other commenters stated that ''fishing level recommendations'' should be equated with MSY. NMFS does not believe that MSA requires ''fishing level recommendations'' to be equated to the OFL or MSY. As described above, the MSA specifies a number of things that SSCs recommend to their Councils. Of all of these things, ABC is the most directly relevant to ACL, as both ABC and ACL are levels of annual catch.

The preamble to the proposed NS1 guidelines recommended that the Councils could establish a process in their Statement of Organization, Practices and Procedures (SOPPs) for: establishing an ABC control rule, applying the ABC control rule (i.e., calculating the ABC), and reviewing the resulting ABC. NMFS believes that this may have caused confusion and that some commenters misunderstood the intent of this recommendation. NMFS received comment regarding inclusion of the ABC control rule in the SOPPs, and wants to clarify that the actual ABC control rule should be described in the FMP. NMFS believes it is important to understand how the Councils, SSC, and optional peer review process work together to implement the provisions of the MSA and therefore recommends that the description of the roles and responsibilities of the Council, SSC, and optional peer review process be included in the SOPPs, FMP, or some other public document. The SSC recommends the ABC to the Council whether or not a peer review process is utilized.

E. Management Uncertainty and Scientific Uncertainty

A major aspect of the revised NS1 guidelines is the concept of incorporating management and scientific uncertainty in using 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). Recreational fisheries generally have late reporting because of the method of surveying catches and the lack of an ability for managers to interview only marine recreational anglers. NMFS is addressing management uncertainty in the recreational fishery by implementing a national registry of recreational fishers in the Exclusive Economic Zone (EEZ) (see proposed rule published in the **Federal Register** (73 FR 33381, June 12, 2008)) and a Marine Recreational Implementation Program that will, in part, revise the sampling design of NMFS's marine recreational survey for fishing activity.

Management uncertainty also exists because of the lack of management precision in many fisheries due to lack of inseason fisheries landings data, lack of inseason closure authority, or the lack of sufficient inseason management in some FMPs when inseason fisheries data are available. The final NS1 guidelines revisions provide that FMPs should contain inseason closure authority that gives NMFS the ability to close fisheries if it determines, based on data that it deems sufficiently reliable, that an ACL has been exceeded or is projected to be reached, and that closure of a fishery is necessary to prevent overfishing. NMFS believes that such closure authority will enhance efforts to prevent overfishing. Councils can derive some idea of their overall extent of management uncertainty by comparing past actual catches to target catches to evaluate the magnitude and frequency of differences between actual catch and target catch, and how often actual catch exceeded the overfishing limit for a stock.

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. Stock assessment models have various sources of scientific uncertainty associated with them and many assessments have shown a repeating pattern that the previous assessment overestimated near-future biomass, and underestimated near-future fishing mortality rates (i.e., called retrospective patterns).

V. Response to Comments

NMFS received many comments about the proposed definition framework (OFL ≥ ABC ≥ ACL ≥ ACT), especially regarding the ACT and ACT control rule. Some commenters suggested that the ACT and ACT control rule should not be required, while others supported their use. NMFS also received comments expressing: That the proposed terminology should not be required; OFL should always be greater than ABC; and concern that too many factors (i.e., management and scientific uncertainty, and ACT) will reduce future target catches unnecessarily. Some commenters felt additional emphasis should be placed on T_{min} in the rebuilding provisions. Councils, for the most part, are very concerned about the challenge of implementing ACLs and AMs by 2010, and 2011, as required. Some commenters felt the international fisheries exception to ACLs is too broad. Several commenters stated that an EIS should have been or should be prepared and two commenters stated an Initial Regulatory Flexibility Analysis under the Regulatory Flexibility Act should be prepared. NMFS also received many comments regarding the mixed-stock exception.

NMFS received many comments expressing support for the proposed revisions to the Magnuson-Stevens Act National Standard 1 guidelines. Comments included: This good faith effort to implement Congress' intent will work to end overfishing and protect the marine ecosystem; these guidelines reduce the risk of overfishing and will work to rebuild depleted stocks through the use of science based annual catch limits, accountability measures, 'buffers' for scientific and management uncertainty, and protections for weak fish stocks; and this solid framework will ensure not only healthy stocks but healthy fisheries.

Comment 1: Several comments were received regarding NMFS's decision to not prepare an environmental impact statement or environmental assessment for this action. Some supported the decision, while others opposed it and believed that a categorical exclusion under the National Environmental Policy Act (NEPA) is not appropriate.

Response: NMFS believes a categorical exclusion is appropriate for this action. Under §§ 5.05 and 6.03c.3(i) of NOAA's Administrative Order (NAO) 216–6, the following types of actions may be categorically excluded from the requirement to prepare an EA or EIS: ''* * * policy directives, regulations and guidelines of an administrative, financial, legal, technical or procedural nature, or the environmental effects of which are too broad, speculative or conjectural to lend themselves to meaningful analysis and will be subject later to the NEPA process, either collectively or case-by-case. * * *''

In this instance, a Categorical Exclusion is appropriate for this action, because NMFS cannot meaningfully analyze potential environmental, economic, and social impacts at this stage. This action revises NS1 guidelines, which are advisory only; MSA provides that NS guidelines ''shall not have the force and effect of law.'' MSA section 301(b). *See Tutein* v. *Daley*, 43 F. Supp.2d 113, 121–122 (D. Mass. 1999) (reaffirming that the guidelines are only advisory and holding that the national standards are not subject to judicial review under the

MSA). The NS1 guidelines are intended to provide broad guidance on how to comply with new statutory requirements. While the guidelines explain in detail how different concepts, such as ACL, ABC, MSY, and OY, should be addressed, the guidelines do not mandate specific management measures for any fishery. It is not clear what Councils will or will not do in response to the NS1 guidelines. Thus, it is not possible to predict any concrete impacts on the human environment without the necessary intervening actions of the Councils, e.g., consideration of best available scientific information and development of specific conservation and management measures that may be needed based on that information. Any analysis of potential impacts would be speculative at best.

None of the exceptions for Categorical Exclusions provided by § 5.05c of NAO 216–6 apply. While there is controversy concerning the NS1 guidelines revisions, the controversy is primarily related to different views on how new MSA requirements should be interpreted, rather than potential environmental consequences. The NS1 guidelines would not, in themselves, have uncertain environmental impacts, unique or unknown risks, or cumulatively significant or adverse effects upon endangered or threatened species or their habitats. Moreover, this action would not establish a precedent or decision in principle about future proposals. As noted above, the guidelines provide broad guidance on how to address statutory requirements but do not mandate specific management actions.

Comment 2: One commenter criticized NMFS' approach as placing unnecessary burden on the Councils to conduct the NEPA analysis.

Response: No change was made. One of the Councils' roles is to develop conservation and management measures that are necessary and appropriate for management of fisheries under their authority. NMFS believes that Councils should continue to have the discretion to determine what measures may be needed in each fishery and what alternatives should be considered and analyzed as part of the fishery management planning process. Councils routinely incorporate NEPA into this process, and the actions to implement ACLs in specific fisheries must address the NEPA requirements, regardless of the level of analysis conducted for the guidelines. Therefore, having reviewed the issue again, NMFS continues to find that a categorical exclusion is appropriate for this action.

Comment 3: Two commenters stated that NMFS should have prepared an initial regulatory flexibility analysis under the RFA for this action. They said it was not appropriate to certify under the RFA because in their opinion, this action will have significant economic impacts on a substantial number of small entities.

Response: No change was made. The final NS1 guidelines will not have significant economic impacts on a substantial number of small entities. The guidelines are advisory only; they provide general guidance on how to address new overfishing, rebuilding, and related requirements under the MSA. Pursuant to MSA section 301(b), the guidelines do not have the force and effect of law. When the Councils/Secretary apply the guidelines to individual fisheries and implement ACL and AM mechanisms, they will develop specific measures in their FMPs and be able to analyze how the new measures compare with the status quo (e.g., annual measures before the MSRA was signed into law and the NS1 guidelines were revised) with respect to economic impacts on small entities. At this point, any analysis of impacts on small entities across the range of diverse, Federally-managed fisheries would be highly conjectural. Therefore, a certification is appropriate.

Comment 4: Several comments were received that the guidelines are too complex and they contain guidance for things, such as the ACT that are not required by the MSA. They suggested removing these provisions from the guidance, or only providing guidance for terms specifically mentioned in the statute.

Response: NMFS agrees that the guidelines can appear complex. However, the purpose of the guidelines is not simply to regurgitate statutory provisions, rather it is to provide guidance on how to meet the requirements of the statute. As discussed in other comments and responses, MSRA includes new, undefined terms (ABC and ACL), while retaining other long-standing provisions, such as the national standards. In considering how to understand new provisions in light of existing ones, NMFS considered different ways to interpret language in the MSA, practical challenges in fisheries management including scientific and management uncertainty, the fact that there are differences in how fisheries operate, and public comment on proposed approaches in the NS1 guidelines. MSA does not preclude NMFS from including additional terminology or explanations in the NS1 guidelines, as needed, in order to facilitate understanding and effective implementation of MSA mandates. In the case of NS1, conservation and management measures must prevent overfishing while achieving, on a continuing basis, the optimum yield. This is inherently challenging because preventing overfishing requires that harvest of fish be limited, while achieving OY requires that harvest of fish occur. In developing the guidelines, NMFS identified the reasons that overfishing was still occurring in about 20 percent of U.S. Fisheries, and wrote the guidelines to address the primary causes. These include:

(1) Setting OY too close to MSY,

(2) Failure to consider all sources of fishing mortality,

(3) Failure to adequately consider both uncertainty in the reference points provided by stock assessments (scientific uncertainty) and uncertainty in management control of the actual catch (management uncertainty),

(4) Failure to utilize best available information from the fishery for inseason management, and

(5) Failure to identify and correct management problems quickly.

NMFS believes that the guidelines address these causes and appropriately provide practical guidance on how to address them, while providing sufficient flexibility to acknowledge the differences in fisheries. NMFS believes that Congress intended that the ACLs be effective in ending and preventing overfishing. Simply amending the FMPs to include ACL provisions is not enough—the actual performance of the fishery is what ultimately matters. NMFS believes that all of the provisions in the guidelines are essential to achieving that goal, and that if the guidelines are followed, most of the problems that have led to continued overfishing will be addressed. NMFS has made changes in the final action to clarify the guidelines and simplify the provisions therein, to the extent possible. One specific change is that the final guidelines do not require that ACT always be established. Instead, NMFS describes how catch targets, such as ACT, would be used in a system of AMs in order to meet the requirements of NS1 to prevent overfishing and achieve OY. More details on these revisions are covered in responses pertaining to comments 8, 32, 44, 45, and 48.

Comment 5: Several commenters stated that Councils' workloads and the delay of final NS1 guidelines will result in some Councils having great difficulty or not being able to develop ACLs and AMs for overfishing stocks by 2010, and all other stocks by 2011.

Response: The requirements in MSA related to 2010 and 2011 are statutory; therefore ACLs and AMs need to be in place for those fishing years such that overfishing does not occur. NMFS understands that initial ACL measures for some fisheries have been developed before the NS1 guidelines were finalized in order to meet the statutory deadline, and thus may not be fully consistent with the guidelines. ACL mechanisms developed before the final guidelines should be reviewed and eventually revised consistent with the guidelines.

Comment 6: Several commenters stated that certain existing FMPs and processes are already in compliance with the ACL and AM provisions of the MSA and consistent with the proposed guidelines. One commenter stated that NMFS should bear the burden of determining whether current processes are inconsistent with the MSA, and indicate what action Councils should take. Another commenter stated that Congress intended Total Allowable Catch (TAC), which is already used in some fisheries, to be considered to be an ACL. NMFS also received comments stating that certain terms have had longstanding use under FMPs, and changing the terminology could cause too much confusion.

Response: NMFS believes that some existing FMPs may be found to need little or no modification in order to be found to be consistent with the MSA and NS1 guidelines. In general, these are fisheries where catch limits are established and the fishery is managed so that the limits are not exceeded, and where overfishing is not occurring. NMFS agrees that, in some fisheries, the TAC system currently used may meet the requirements of an ACL. However, there are a wide variety of fisheries that use the term TAC, and while some treat it as a true limit, others treat it simply as a target value on which to base management measures. Therefore, NMFS does not agree that the use of a TAC necessarily means the fishery will comply with the ACL and AM provisions of the MSA. NMFS will have to review specific FMPs or FMP amendments. In addition, upon request of a Council, NMFS can provide input regarding any changes to current processes that might be needed for consistency with the MSA and guidance in the NS1 guidelines.

Regarding the comment about terminology, the preamble to the proposed action provided that Councils could opt to retain existing terminology and explain in a proposed rule how the terminology and approaches to the FMPs are consistent with those set forth in the NS1 guidelines. NMFS has given this issue further consideration and believes that a proposed rule would not be necessary or appropriate. Instead, a Council could explain in a **Federal Register** notice why its terminology and approaches are consistent with the NS1 guidelines.

Comment 7: Some commenters thought that before requiring implementation of a new management system, it should first be demonstrated that the current management system is not effective at preventing overfishing or rebuilding stocks that are overfished, and that a new management system would be more effective. Changing a management system that is effective and responsive would not be productive.

Response: While NMFS understands that current conservation and management measures prevent overfishing in some fisheries, the MSA requires a mechanism for specifying ACLs and AMs in all fisheries, including those that are not currently subject to overfishing, unless an exception applies. There is no exception to the requirement for ACLs and AMs for fisheries where other, non-ACL management measures are preventing overfishing. NMFS is required by the MSRA to implement the new provisions in all FMPs, unless an exception applies, even on those whose current management is preventing overfishing. NMFS believes the guidance provides the tools for Councils to implement ACLs in these fisheries that will continue to prevent overfishing without disrupting successful management approaches. The guidelines provide flexibility to deviate from the specific framework described in the guidelines, if a different approach will meet the statutory requirements and is more appropriate for a specific fishery (*see* § 600.310(h)(3) of the final action).

Comment 8: Some commenters supported the use of ACT to address management uncertainty in the fishery. Others did not support ACTs, and commented that ACTs are not required under the MSA and that inclusion of ACTs in the guidelines creates confusion and complexity. One commenter stated that the proposed guidelines were ''out of line'' with NMFS's mandate and authority provided under the MSA because the guidelines for ACTs and associated control rules completely undermine the clear directive Congress provides in National Standard 1 to achieve optimum yield on an ongoing basis.

Response: The proposed guidelines stressed the importance of addressing scientific and management uncertainty in establishing ACL and AM mechanisms. Scientific uncertainty was addressed in the ABC control rule, and management uncertainty was addressed in the ACT control rule. Use of catch targets associated with catch limits is a well-recognized principle of fishery management. The current NS1 guidelines call for establishment of limits, and targets set sufficiently below the limits so that the limits are not exceeded. The revised guidelines are based on this same principle, but, to incorporate the statutory requirements for ABC and ACLs, are more explicit than the current guidelines. While MSA does not refer to the term ACT, inclusion of the term in the NS1 guidelines is consistent with the Act. The NS1 guidelines are supposed to provide advice on how to address MSA requirements, including how to understand terminology in the Act and how to apply that terminology given the practical realities of fisheries management. In developing the proposed guidelines, NMFS considered a system that used ABC as the limit that should not be exceeded, and that required that ACL be set below the ABC to account for management uncertainty. This had the advantage of minimizing the number of terms, but would result in the ACL having been a target catch level. NMFS decided, that since Congress called for annual catch limits to be set, that the ACL should be considered a true limit—a level not to be exceeded. ACT was the term adopted for the corresponding target value which the fishery is managed toward so that the ACL is not exceeded.

Taking public comment into consideration, NMFS has decided to retain ACTs and ACT control rules in the final guidelines, but believes they are better addressed as AMs for a fishery. One purpose of the AMs is to prevent the ACL from being exceeded. Setting an ACT with consideration of management uncertainty is one way to achieve this, but may not be needed in all cases. In fisheries where monitoring of catch is good and in-season management measures are effective, managers may be able to prevent ACLs from being exceeded through direct monitoring and regulation of the fishery. Therefore, the final guidelines make ACTs optional, but, to prevent ACLs from being exceeded, Councils must adequately address the management uncertainty in their fisheries using the full range of AMs.

NMFS disagrees that ACTs undermine NS1. NS1 requires that conservation and management measures prevent overfishing while achieving, on a continuing basis, the OY. The MSA describes that OY is based on MSY, as reduced based on consideration of

several factors. In some cases, the amount of reduction may be zero, but in no case may the OY exceed MSY. Therefore, if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

The amount of fishing mortality that results in overfishing is dictated by the biology of the stock and its environment, and establishes a limit that constrains fisheries management. However, the specification of OY and the conservation and management measures for the fishery are both set by fishery managers. To achieve the dual requirements of NS1, Councils must specify an OY and establish conservation and management measures for the fishery that can achieve the OY without overfishing. The closer that OY is set to MSY, the greater degree of control over harvest is necessary in order to meet both objectives. The choice of conservation and management measures for a fishery incorporates social and economic considerations. For example, a Council may prefer to use effort controls instead of hard quotas to have a year-round fishery without a ''race for fish,'' and to provide higher average prices for the fishermen. However, compared to hard quotas, management with effort controls gives more uncertainty in the actual amount of fish that will be caught. Because of this increased uncertainty, the OY needs to be reduced from MSY so that overfishing does not occur. Thus the social and economic considerations of the choice of management measures should be considered in setting the OY.

In cases where the conservation and management measures for a fishery are not capable of achieving OY without overfishing occurring, overfishing must be ended even if it means the OY is not achieved in the short-term. Overfishing a stock in the short term to achieve OY jeopardizes the capacity of the stock to produce OY in the long term, and thus cannot be sustained. Preventing overfishing in a fishery on an annual basis is important to ensure that a fishery can continue to achieve OY on a continuing basis. The specification of OY and the associated conservation and management measures need to be improved so that OY can be achieved without overfishing occurring. In a fishery where the NS1 objectives are fully met, the OY specification will adequately account for the management uncertainty in the associated conservation and management measures. Overfishing will not occur, and the OY will be achieved.

Comment 9: Commenters stated that the designation of the Virgin Islands Coral Reef Monument was not being taken into account in the Caribbean Council's FMPs.

Response: NMFS does not believe any revision of the NS1 guidelines is necessary in response to this comment but will forward the comment to the Council for its consideration.

Comment 10: NMFS received comments in support of the flexibility given to councils to manage stocks for which ACLs are not a good fit, such as management of Endangered Species Act listed species, stocks with unusual life history characteristics, and aquaculture operations. Commenters noted that Pacific salmon should be treated with flexibility under the NS1 guidelines, because they are managed to annual escapement levels that are functionally equivalent to ACLs, and there are accountability, review, and oversight measures in the fishery.

Response: NMFS agrees that flexibility is needed for certain management situations, and clarifies that § 600.310(h)(3) provides for flexibility in application of the NS1 guidelines but is not an exception from requirements of MSA section 303(a)(15) or other sections.

Comment 11: Congress did not mandate that all fisheries be managed by hard quotas, and so NMFS should include guidance for the continuation of successful, non-quota management systems, such as that used to successfully manage the Atlantic sea scallop fishery.

Response: NMFS agrees that the conservation and management measures for a fishery are not required to be ''hard quotas.'' However, NMFS believes that the ACL was intended by Congress to be a limit on annual catch. Therefore, conservation and management measures must be implemented so that the ACL is not exceeded, and that accountability measures must apply whenever the ACL is exceeded. Congress did not exempt any fisheries from the ACL requirement on the basis that current management was successful. If the current conservation and management measures are effective in controlling harvest of sea scallops such that the ACL is not regularly exceeded, the ACL would have little effect on the fishery. If the current management measures are not effective in keeping catch from exceeding the ACL, then consistent with the ACL requirement in the MSA, additional management action should be taken to prevent overfishing.

Comment 12: The summary list of items to be included in FMPs should be ''as appropriate'' (see § 600.310(c) of the final action).

Response: No change was made. NMFS believes that if any item does not apply to a particular fishery, the Council can explain why it is not included, but believes that ''as appropriate'' would create further confusion as there is no clear definition of what appropriate means in this context.

Comment 13: The list of items to include in FMPs related to NS1 is extremely long, and it is unclear whether each item on the list needs to be addressed for all stocks that are ''in the fishery,'' which is a very broad term. Including the extra information is unlikely to materially improve management.

Response: As a default, all the stocks or stock complexes in an FMP are considered ''in the fishery'' (see § 600.310(d)(1)), unless they are reclassified as ecosystem component stocks through an FMP amendment process. Further explanation of these classifications is provided below in other comments and responses. The benefit of including this list of items is to provide transparency in how the NS1 guidelines are being met. In addition, Councils should already have some of the items in their FMPs (ex: MSY, status determination criteria (SDC), and OY). The other items are new requirements of the MSA or a logical extension of the MSA.

Comment 14: NMFS received several comments both supporting and opposing the proposed ''stocks in a fishery'' and ''ecosystem component species'' (EC) classifications of stocks in a FMP. Comments included: EC species are not provided under the MSA and should not be required in FMPs; EC species classification is needed but may lead to duplication in different FMPs; support for the distinction between ''stocks in a fishery'' and EC species; and clarify how data collection only species should be classified.

Response: NMFS provided language for classifying stocks in a FMP into two categories: (1) ''Stocks in the fishery'' and (2) ''ecosystem component species.'' MSA requires that Councils develop ACLs for each of their managed fisheries (see MSA sections 302(h)(6) and 303(a)(15)), but Councils have had, and continue to have, considerable discretion in defining the ''fishery'' under their FMPs. As a result, some FMPs include one or a few stocks (*e.g.* , Bluefish FMP, Dolphin-Wahoo FMP) that have been traditionally managed for OY, whereas others have begun including hundreds of species (e.g., Coral Reef Ecosystem of the Western Pacific Region FMP) in an

effort to incorporate ecosystem approaches to management.

While EC species are not explicitly provided in the MSA, in the MSRA, Congress acknowledged that certain Councils have made significant progress in integrating ecosystem considerations, and also included new provisions to support such efforts (*e.g.*, MSA section 303(b)(12)). As noted in the preamble of this action, NMFS wants to continue to encourage Councils to incorporate ecosystem considerations, and having classifications for ''stocks in the fishery'' versus ''ecosystem component species'' could be helpful in this regard. Thus, the final guidelines do not require Councils or the Secretary to change which species are or are not included in FMPs, nor do the guidelines require FMPs to incorporate the EC species classification. NMFS has revised the final guidelines to state explicitly that Councils or the Secretary may—but are not required to—use an EC species classification.

In developing the text regarding EC species and ''stocks in the fishery,'' NMFS examined what existing FMPs are already doing and utilized that in its description of these classifications. For example, based on existing FMPs, the guidelines envision that species included for data collection and other monitoring purposes could be considered EC species (assuming they meet the criteria described in § 600.310(d)(5)(i)). However, such species could also be ''stocks in the fishery,'' as described under the NS3 guidelines (§ 600.320(d)(2)). NMFS recognizes the desire for greater specificity regarding exactly which species could or could not be considered EC species, but does not believe that further detail in the guidelines could clarify things definitively. Determining whether the EC category is appropriate requires a specific look at stocks or stock complexes in light of the general EC species description provided in the NS1 guidelines as well as the broader mandates and requirements of the MSA. If Councils decide that they want to explore potential use of the EC species classification, NMFS will work closely with them to consider whether such a classification is appropriate.

Comment 15: NMFS received several comments regarding the level of interaction that would be appropriate for the EC classification. Comments included: *de minimis* levels of catch should be defined to clarify the difference between ''stocks in a fishery'' and EC species; all stocks that interact with a fishery should be included as ''stocks in a fishery''; requiring non-target stocks to be considered part of the fishery as written supersedes NS9; guidelines should clarify that EC species do not have significant interaction with the fishery; and, bycatch species should not be included as ''stocks in a fishery.''

Response: NMFS is revising the final guidelines to clarify preliminary factors to be taken into account when considering a species for possible classification as an EC species. Such factors include that the species should: (1) Be a non-target species or non-target stock; (2) not be determined to be subject to overfishing, approaching overfished, or overfished; (3) not likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and (4) not generally retained for sale or personal use. Factors (2) and (3) are more relevant to species that are currently listed in FMPs and that have specified SDCs. With regard to factor (4), the final guidelines add new language in § 600.310(d)(5)(i)(D)—''not generally retained for sale or personal use''—in lieu of ''*de minimis* levels of catch'' and clarify that occasional retention of a species would not, in itself, preclude consideration of a species in the EC classification. The NS1 guidelines provide general factors to be considered, as well as some examples of possible reasons for using the EC category. However, the decision of whether to use an EC classification requires consideration of the specific fishery and a determination that the EC classification will be consistent with conservation and management requirements of the MSA.

Under the MSA, a Council prepares and submits FMPs for each fishery under its authority that requires conservation and management, and there is considerable latitude in the definition of the fishery under different FMPs. The definition of ''fishery'' is broad, and could include one or more stocks of fish treated as a unit for different purposes, as well as fishing for such stock (see MSA section 3(13)(B)). While some comments encouraged inclusion of all species that might interact with a fishery, all bycatch species, or all species for which there may be ''fishing'' as defined in MSA section 3(13)(B), NMFS does not believe that MSA mandates such a result. MSA does not compel FMPs to include particular stocks or stock complexes, but authorizes the Councils or the Secretary to make the determination of what the conservation and management needs are and how best to address them. Taking the broader approaches noted above would interfere with this discretion and also could result in overlapping or duplicative conservation and management regimes in multiple FMPs under different Council jurisdictions. As National Standard 6 requires that conservation and management measures, where practicable, minimize costs and avoid unnecessary duplication, NMFS believes that Councils should retain the discretion to determine which fisheries require specific conservation and management measures. With regard to bycatch, regardless of whether a species is identified as part of a fishery or not, National Standard 9 requires that FMPs, to the extent practicable, minimize bycatch and to the extent it cannot be avoided minimize bycatch mortality. Additional protections are afforded to some species under the Endangered Species Act, regardless of whether they are listed as stocks in a fishery. Further, as a scientific matter, NMFS disagrees that every bycatch species would require conservation and management measures to protect the species from becoming overfished, because some bycatch species exhibit high productivity levels (*e.g.*, mature early) and low susceptibilities to fishery (*e.g.*, rarely captured) that preclude them from being biologically harmed or depleted by particular fisheries.

Comment 16: NMFS received several comments requesting that the guidelines include a description of vulnerability and how it should be determined, since it is referenced throughout the guidelines.

Response: NMFS agrees, and has added § 600.310(d)(10) to the final action, to define vulnerability. In general, to determine the vulnerability of a species/stock becoming overfished, NMFS suggests using quantitative estimates of biomass and fishing rates where possible; however, when data are lacking, qualitative estimates can be used. NMFS is currently developing a qualitative methodology for evaluating the productivity and susceptibility of a stock to determine its vulnerability to the fishery, and anticipates the methodology to be finalized by February 2009. The methodology is based on the productivity-susceptibility analysis (PSA) developed by Stobutzki *et al.* (2001), which was suggested by many commenters. Stocks that have low susceptibilities (*e.g.*, rarely interact with the fishery, no indirect impacts to habitat, etc.) and high productivities (*e.g.*, mature at an early age, highly fecund, etc.) are considered to have a low vulnerability of becoming overfished, while stocks that have low productivities and high susceptibilities

to the fishery are considered highly vulnerable to becoming overfished.

Comment 17: Some commenters noted that the EC classification could be used to avoid reference point specification.

Response: NMFS believes that the guidelines provide mechanisms to address this issue. As a default, NMFS presumes that all stocks or stock complexes that Councils or the Secretary decided to include in FMPs are ''stocks in the fishery'' that need ACL mechanisms and AMs and biological reference points. Whether it would be appropriate to include species in the EC category would require consideration of whether such action was consistent with the NS1 guidelines as well as the MSA as a whole. If a Council or the Secretary wishes to add or reclassify stocks, a FMP amendment would be required, which documents rationale for the decision. However, the guidelines have been modified to note that EC species should be monitored to the extent that any new pertinent scientific information becomes available (*e.g.*, catch trends, vulnerability, etc.) to determine if the stock should be reclassified.

Comment 18: With regard to ecological, economic, and social (EES) factors related to OY, some commenters requested more specific guidance in incorporating the factors, and others commented that accounting for the factors is too time consuming. Other commenters expressed support for the reference to forage fish species and suggested including text on maximum economic yield and fish health.

Response: The NS1 guidelines generally describe OY as the long-term average amount of desired yield from a stock, stock complex, or fishery. OY is prescribed on the basis of MSY as reduced by EES factors (MSA section 3(33)). The NS1 guidelines set forth examples of different considerations for each factor, and NMFS believes the examples provide sufficient guidance on EES factors. NMFS has not made substantive changes from the proposed action, but has clarified that FMPs must address each factor but not necessarily each example.

Comment 19: NMFS received several comments in support of using stock complexes as a management tool in data poor situations and other comments that expressed concern about the use of stock complexes and indicator species. Comments included: stock complexes should only be used when sufficient data are lacking to generate species-specific SDCs and related reference points; there is little ecological basis for using indicator species to set ACLs for stock complexes (see Shertzer and Williams (2008)) as stocks within a stock complex exhibit different susceptibilities to the fishery; if used, stock complexes should be managed using the weakest or most vulnerable stock within the complex as a precautionary approach to management; it would be helpful to have examples of how a data poor stock could be periodically examined to determine if the stock is overfished or subject to overfishing.

Response: NMFS agrees that where possible Councils should generate stock-specific SDCs and related reference points for stocks in fishery; however, there are other circumstances in which stock complex management could be used. NMFS notes in § 600.310(d)(8) of the final action that stocks may be grouped into complexes for various reasons, including: where stocks in a multispecies fishery cannot be targeted independent of one another and MSY can not be defined on a stock-by-stock basis (see § 600.310(e)(1)(iii) of the final action); where there is insufficient data to measure their status relative to SDC; or when it is not feasible for fishermen to distinguish individual stocks among their catch.

NMFS believes that the guidelines sufficiently addressed the issue that stock complexes should be managed using the most vulnerable stock within the complex. In § 600.310(d)(9) of the final action the guidelines note that ''if the stocks within a stock complex have a wide range of vulnerability, they should be reorganized into different stock complexes that have similar vulnerabilities; otherwise the indicator stock should be chosen to represent the more vulnerable stocks within the complex. In instances where an indicator stock is less vulnerable than other members of the complex, management measures need to be more conservative so that the more vulnerable members of the complex are not at risk from the fishery.'' Additionally, these guidelines address the concerns of Shertzer and Williams (2008), by recommending that both productivity and susceptibility of the stock (*i.e.*, vulnerability to the fishery) is considered when creating or re-organizing stock complexes.

Lastly, NMFS agrees and has modified the phrase in § 600.310(d)(9) of the proposed action ''Although the indicator stock(s) are used to evaluate the status of the complex, individual stocks within complexes should be examined periodically using available quantitative or qualitative information to evaluate whether a stock has become overfished or may be subject to overfishing'' to provide examples of quantitative or qualitative analysis.

Comment 20: NMFS received comments regarding the process for specifying the ACL for either a stock complex or for a single indicator species. The commenters were concerned that the proper data will not be utilized to determine whether the ACL should be set for the stock complex or for single indicator species. They feel that the use of single indicator species would not represent the stock's abundance, especially in the St. Thomas/St. John and St. Croix fisheries.

Response: NMFS understands the concern, but does not believe the guidelines need to be revised. NMFS will refer this comment to the Council.

Comment 21: NMFS received comments stating that the final action should clarify how SDCs and ACLs should be applied to stocks that are targeted in one fishery and bycatch in another, as well as circumstances where the stock is targeted by two or more FMPs that are managed by different regional councils.

Response: NMFS believes that the guidelines sufficiently addressed this issue in § 600.310(d)(7) of the final action, which notes ''* * * Councils should choose which FMP will be the primary FMP in which management objectives, SDC, the stock's overall ACL and other reference points for the stock are established.'' NMFS believes that the Councils should continue to have the discretion to make such determinations. NMFS, however, suggests that the primary FMP should usually be the FMP under which the stock is targeted. In instances where the stock is targeted in two or more FMPs (*e.g.*, managed by two or more Councils), Councils should work together to determine which FMP is the primary.

Comment 22: Several commenters requested further clarification on how prohibited species should be classified under the proposed classification scheme (see § 600.310(d)) because they felt it was unclear whether a species for which directed catch and retention is prohibited would be classified as ''in the fishery'' or as an ''ecosystem component''.

Response: NMFS believes that the information in § 600.310(d) provides a sufficient framework in which decisions can be made about how to classify a prohibited species under an FMP. Prohibition on directed catch and/or retention can be applied to either a stock that is ''in the fishery'' or an ''ecosystem component'' species. Managers should consider the classification scheme outlined in § 600.310(d) of the final action as well

as MSA conservation and management requirements generally. If a stock contains one of the ''in the fishery'' characteristics, then it belongs ''in the fishery'', regardless of the management tools that will be applied to it (*e.g.*, prohibition, bag limits, quotas, seasons, etc.). Also, if the intent is to prohibit directed fishing and retention throughout the exclusive economic zone (EEZ) for which a Council has jurisdiction, then the stock would, most likely, be identified in an FMP as ''in the fishery'' rather than as an ecosystem component of one particular FMP.

Comment 23: Several commenters asked at what level an ACL would be specified for a species for which directed catch and retention is prohibited. Setting the ACL at zero would not be logical because if even one was caught incidentally then AMs would be triggered. Setting it higher would also not be logical because the point is to ensure little to no catch of the stock.

Response: Prohibiting retention is a management measure to constrain the catch to a minimal amount. If listed as a stock in the fishery, the reference points for the species, such as OFL and ABC, should be set based on the MSY for the stock, or, if ESA listed, would be set according to the associated ESA consultation's incidental take statement, regardless of the management approach used. The ACL may not exceed the ABC, but should be set at a level so that the mortality resulting from catch and discard is less than the ACL.

Comment 24: NMFS received a comment stating that the specification of MSY must incorporate risk, be based on gear selectivity and support a healthy, functioning ecosystem. The commenter supported revisions to § 600.310(e)(1) of the proposed action but suggested that it should be strengthened to address ecosystem principles. The commenter cited NOAA Tech Memo NMFS–F/SPO–40 in contending that the concept of MSY contains inherent risks that must be addressed in establishing reference points. Other commenters stated that: Councils establish management measures with high probabilities of success (*e.g.*, 80 percent); ''fishery technological characteristics'' should be re-evaluated every two years; and MSY values normally equate to fishing down a population to forty percent of historic abundance and this may not be consistent with ecosystem based management.

Response: NMFS agrees that ecological conditions and ecosystem factors should be taken into account when specifying MSY and has added additional language to § 600.310(e)(1)(iv) of the final action to highlight this point. Such factors might include establishing a higher target level of biomass than normally associated with the specific stock's B_{msy}. In addition, ecological conditions not directly accounted for in the specification of MSY can be among the ecological factors considered when setting OY below MSY. Regarding the comment about establishing management measures with a high probability of success, this is addressed in comment #63. NMFS does not believe that the NS1 guidelines need to be revised to require that fishery technological characteristics be evaluated every 2 years; such characteristics would be routinely updated with each stock assessment. The MSA bases management of fishery resources on MSY, but provides that OY can be reduced from MSY for ecological factors. NMFS believes the guidelines are consistent with the MSA and allow Councils to implement ecosystem approaches to management.

Comment 25: Several comments requested the guidelines state that specification of reference points should not be required for a stock ''in the fishery'' if its directed catch and retention is prohibited because managers applied the prohibition in an effort to prevent overfishing.

Response: Prohibition of retention does not necessarily mean that overfishing is prevented. Even though the species cannot be retained, the level of fishing mortality may still result in overfishing. Many stocks for which prohibitions are currently in place are considered data-poor. NMFS acknowledges that specifying reference points and AMs will be a challenge for such stocks, but reiterates the requirement to establish ACLs and AMs for all managed fisheries, unless they fall under the two statutory exceptions (see § 600.310(h)(2) of the final action), and also the need to take into consideration best scientific information available per National Standard 2.

Comment 26: NMFS received comments voicing a concern about the NMFS process of determining the overfishing status of a fishery, because fishery management measures have been implemented to end overfishing, but stocks are still listed as subject to overfishing and require ACLs by 2010. The commenters felt that several species under the Caribbean Fishery Management Council's protection should currently be removed from the overfished species list.

Response: NMFS agrees that this is an important issue. Due to the process inherent in determining the status of a stock there is inevitably a lag time between implementation of management measures and a new assessment of the stock's status under those measures. NMFS is required by the MSA to establish new requirements to end and prevent overfishing through the use of ACLs and AMs. The fisheries subject to overfishing, including several in the Caribbean, are required to have ACLs by 2010, and all other fisheries must have ACLs by 2011. The Council's Comprehensive Amendment that implemented the Sustainable Fisheries Act in 2006 included measures designed to end overfishing. Although these measures may have ameliorated fishing pressure for some fishery resources in the U.S. Virgin Islands, the Council will need to evaluate the existing fishery management measures to determine whether they are sufficient to meet the new statutory requirements for ACLs and AMs.

Comment 27: Several commenters stated that NMFS should not include the OFL as the basis for overfishing SDC. Specific comments included: (1) The MSA does not define or require OFL, so NMFS should not use it in the guidelines; (2) catch-based SDC are inconsistent with the Magnuson-Stevens Act intent and SDC should only be based on the fishing mortality rate as it relates to a stock or stock complex's capacity to achieve MSY on a continual basis; (3) the Magnuson-Stevens Act does not require use of the long term average OFL as MSY; (4) NMFS increases the risk of overfishing when theoretical catch estimates or a constant fishing mortality rate (F) are used to manage a fishery especially when a retrospective pattern exists in a stock or stock complex.

Response: The term, OFL, is not defined in the MSA. However, OFL is directly based on requirements of the MSA, including the concept of MSY, and the requirement to prevent overfishing. NMFS does not believe that lack of a definition in the MSA precludes definition and use of OFL in order to meet the objectives of the MSA. The MSA defines overfishing as a rate or level of fishing mortality that jeopardizes the capacity of the stock to produce MSY. This mortality rate is defined by NMFS as the MFMT. The OFL for a year is calculated from the MFMT and the best estimate of biomass for a stock in that year, and thus is simply the MFMT converted into an amount of fish. The OFL is an annual level of catch that corresponds directly to the MFMT, and is the best estimate of the catch level above which overfishing is occurring. OFL is in terms

of catch, and thus is in the same units as ABC and ACL. NMFS believes, therefore, that comparing catch to OFL is a valid basis for determining if overfishing has occurred that year. The relationship of MSY to OFL is that MSY is the maximum yield that the stock can provide, in the long term, while OFL is an annual estimate of the amount of catch above which overfishing is occurring. The annual OFL varies above and below the MSY level depending on fluctuations in stock size. Since both MSY and OFL are related to the highest fishing mortality rate that will not result in overfishing, it is expected that the long-term average of OFLs would equate to MSY, provided that the stock abundance is high enough to support MSY.

The NS1 guidelines give the Councils flexibility to determine if overfishing occurs by using either MFMT (F > MFMT) or actual annual catch (catch > OFL) as the criteria for overfishing determinations. There are advantages and disadvantages of using either measure. The advantages of using OFL as a SDC are that catch can be easily understood by constituents, a determination can be made as soon as catch totals are available, and there is no retrospective problem with setting the SDC itself. Use of OFL might not be appropriate for stocks with highly variable recruitment that can not be predicted and therefore incorporated into the forecast of stock condition on which OFL is based. The advantage of using MFMT to determine if overfishing is occurring is because F is based on a stock assessment analyzing the past performance of the fishery. This means that the MFMT method is less sensitive than the OFL method to recent fluctuations in recruitment. However, F cannot not be calculated until an assessment has been updated, which may lag the fishery by several years. Therefore, a status determination based on MFMT could be less current than a determination based on OFL and catch, and reflects past, rather than current, fishery performance. Also, if there is a retrospective pattern in the assessment, then the hindsight estimate of F for a particular year used for the SDC will be different than the forecast estimate of stock condition used when setting target catch levels and management measures for that same year. The choice of SDC for a stock should consider things like the frequency of stock assessments, the ability to forecast future stock size, and any known retrospective patterns in the assessment. If the SDC are appropriately chosen, NMFS does not believe that one method necessarily presents more risk that overfishing will occur.

Comment 28: NMFS received one comment which proposed that instead of being required to choose between OFL or MFMT as the SDC, that Councils should have the flexibility to use both. The comment implied that this would allow Councils to use MFMT as the SDC in years in which there is an assessment and OFL in years in which there is not an assessment.

Response: The NS1 guidelines require documentation for the rationale a Council uses to select the SDC within the FMP including defining overfishing status in terms of the MFMT (*i.e.*, fishing mortality rate) or OFL (*i.e.*, annual total catch) in such a way that overfishing can be monitored and determined on an annual basis. A Council could develop SDC based on both criteria, if sufficient rationale is provided.

Comment 29: NMFS received two comments in opposition to the ''overfished'' definition used by NMFS in the proposed rule. They point out that the current overfished definition could include stocks that are ''depleted'' due to changing environmental conditions not caused by fishing pressure. They propose that NMFS should revise the definition of ''overfished'' and create a ''depleted'' category for stocks that have declined below the minimum stock size threshold (MSST) due to changing environmental conditions.

Response: The overfished definition used by NMFS is consistent with the MSA. NMFS acknowledges that factors other than fishing mortality can reduce stock size below the MSST but NMFS believes the definition of overfished should not be altered. For stocks in a FMP, the MSA requires the Councils to rebuild the stock to a level consistent with producing the MSY regardless of the contributing factors. In most cases, the variation in relative contribution of environmental and fishing factors from year to year in reducing stock abundance is not known. When specifying SDC the Council is required to provide an analysis of how the SDC were chosen and how they relate to the reproductive potential of the stock. Specifically, the MSST should be expressed in terms of reproductive potential or spawning biomass. Furthermore, the stock assessment process can adjust the B_{msy} estimates and associated SDC due to environmental and ecological factors or changes in the estimates of reproductive potential, size/age at maturity, or other biological parameters.

Comment 30: Several comments suggested that NMFS should strike § 600.310(e)(2)(iii)(B) from the proposed action as it contradicts § 600.310(e)(2)(iii)(A) and could increase fishing pressure on a depleted stock by attributing low stock abundance to environmental conditions. Commenters criticized the requirement at § 600.310(e)(2)(iii)(B) that Councils ''must'' take action to modify SDC, and stated that there is little scientific evidence to show linkages between stock size and environmental conditions (citing to Restrepo *et al.* 1998 and NMFS. 2000. Endangered Species Act—Section 7 Consultation Biological Opinion and Incidental Take Statement). Commenters asserted that there is no statutory basis for this provision in the MSA and the legal standard for the word ''affect'' is vague and inadequate for ending overfishing. The comments stated that, in a time of anthropogenic climate change, stock dynamics are likely to change and by establishing this provision in the final action NMFS will undermine the statute's mandate to end overfishing. Commenters asserted that fisheries managers have and will respecify SDC to justify circumventing rebuilding targets, and the final guidelines should establish a high burden of proof to modify SDC due to changing environmental conditions or ''regime change'' (citing Fritz & Hinckley 2005).

Response: Section 600.310(e)(2)(iii) of this final action is essentially the same as text at § 600.310(d)(4) in the current NS1 guidelines, except for clarifications noted below. There is no change in the usage of ''must'' between the current guidance and this final NS1 guidance at § 600.310(e)(2)(iii). NMFS believes that the requirement of NS2, that conservation and management measures be based on the best available science, applies to the establishment of SDC. Therefore, in cases where changing environmental conditions alter the long-term reproductive potential of a stock, the SDC must be modified. As stocks and stock complexes are routinely assessed, long-term trends are updated with current environmental, ecological, and biological data to estimate SDCs. NMFS allows for flexibility in these provisions to account for variability in both environmental changes and variation in a stock's biological reaction to the environment.

The guidelines include language requiring a high standard for changing SDC that is consistent with NMFS Technical Guidance (Restrepo *et al.* 1998). NMFS outlines the relationship of SDC to environmental change in both the short and long-term in

§ 600.310(e)(2)(iii) of the final action. Total mortality of fish stocks includes many factors other than fishing mortality. Short-term environmental changes may alter the size of a stock or complex, for instance, by episodic recruitment failures, but these events are not likely to change the reproductive biology or reproductive potential of the stock over the long-term. In this case the Council should not change the SDC. Other environmental changes, such as some changes in ocean conditions, can alter both a stock's short-term size, and alter long-term reproductive biology. In such instances the Councils are required to respecify the SDC based on the best available science and document how the changes in the SDC relate to reproductive potential. In all cases, fishing mortality must be controlled so that overfishing does not occur. NMFS notes that, depending on the impact of the environmental change on the stock, failure to respecify SDC could result in overfishing, or could result in failure to achieve OY. In both cases, the fishery would not meet the requirements of NS1.

One change from § 600.310(d)(4) of the current NS1 guidelines occurs in § 600.310(e)(2)(iii)(A) of this final action. NMFS clarified that SDC ''should not'' rather than ''need not'' be changed if the long-term reproductive potential of a stock has not been affected by a changing environment. NMFS feels that this is consistent with setting a high standard for changing the SDC due to environmental changes. In addition, this action changes the phrase ''long-term productive capacity'' from the current NS1 guidance to ''long-term reproductive potential.'' NMFS believes the latter phrase is clearer and more accurately reflects the language in MSA section 303(a)(10).

Any changes to SDC are subject to Secretarial approval (§ 600.310(e)(2)(iv) of the final action), and the NS1 guidelines set a high standard for respecification of SDC due to environmental change. The Council must utilize the best available science, provide adequate rationale, and provide a basis for measuring the status of the stock against these criteria, and the SDC must be consistent with § 600.310(e)(2)(iii) of the final action. If manmade environmental changes are partially responsible for the overfished condition, the Council should recommend restoration of habitat and ameliorative programs in addition to curtailing fishing mortality.

Comment 31: NMFS received several comments that state that by requiring reference points to be point estimates NMFS is not acknowledging the uncertainty inherent in fishery management science. The comments expressed that the best way to incorporate uncertainty was to express SDCs as ranges and not point estimates.

Response: NMFS believes that uncertainty in SDC, OFL, and other fishing level quantities is best dealt with by fully analyzing the probability that overfishing will occur and that the stock might decline into an overfished condition, but we recognize that such a full analysis is not possible in many data-limited situations. When using a probability based approach, the distribution of probabilities includes a point estimate and it extends along a range. A probability based approach is already used in many rebuilding plans, for example, what fishing level will provide at least a 70% chance that the stock will be rebuilt in 10 years. NMFS scientists are working on a technical document that will describe some of the currently available methods to do such calculations, as well as some proxy approaches that could be used in situations where available data and methods do not allow calculation of the probability distributions.

Comment 32: NMFS received a number of comments regarding the proposed description of the relationship between ACT and OY—that achieving the ACT on an annual basis would, over time, equate to the OY. Comments requested more clarification, or did not agree with the described ACT–OY relationship.

Response: NMFS has revised the final action to remove the requirement that ACT be established, and instead discussed how targets, including ACT, function within the system of AMs to prevent the ACL from being exceeded. NMFS has also removed the discussion about the relationship of ACT to OY, based on the comments received. The full range of conservation and management measures for a fishery, which include the ACL and AM provisions, are required to achieve the OY for the fishery on a continuing basis. NMFS interprets the phrase ''achieving, on a continuing basis, the optimum yield for each fishery'' to mean producing from each stock or stock complex or fishery a long-term series of catches such that the average catch is equal to OY, overfishing is prevented, the long-term average biomass is near or above B_{msy}, and overfished stocks and stock complexes are rebuilt consistent with timing and other requirements of section 304(e)(4) of the MSA and § 600.310(j) of the final NS1 guidelines. NMFS notes that for fisheries where stock abundance is below the level that can produce the OY without the fishing mortality rate exceeding the MFMT, the annual yield will be less than the long-term OY level. In the case of an overfished fishery, ''optimum'' with respect to yield from a fishery means providing for rebuilding to a level consistent with producing the MSY in such fishery. When stock abundance is above B_{msy}, a constant fishing mortality control rule may allow the annual catch to exceed the long-term average OY without overfishing occurring, but frequent stock assessments need to be conducted to update the level of stock abundance.

Comment 33: One commenter stated that ''OY equates with the acceptable biological catch (''ABC''), which in turn is the level at which ACL should be set.'' Another commenter stated that, in specifying ACLs, a Council should not exceed MSY, because MSY—as opposed to ABC—is the ''fishing level recommendation'' that should not be exceeded per MSA 302(h)(6).

Response: MSA includes the terms ''fishing level recommendations,'' ''acceptable biological catch,'' and ''annual catch limits'' but does not define them. As such, NMFS has considered how to interpret these provisions in light of the statutory text and taking into consideration public comment during scoping and in response to the proposed NS1 guidelines. NMFS believes that ABC refers to a level of ''catch'' that is ''acceptable'' given the ''biological'' characteristics of the stock or stock complex. As such, OY does not equate with ABC. The specification of OY is required to consider a variety of factors, including social and economic factors, and the protection of marine ecosystems, which are not part of the ABC concept. The Councils determine the ACL, which may not exceed the fishing level recommendations of its science advisors. Of the several required SSC recommendations (MSA 302(g)(1)(B)), the ABC is most directly applicable as the constraint on the Council's ACL. Although MSY and ABC are both derived from a control rule, the ABC is the appropriate constraint on ACL because it is the annualized result of applying that control rule (thus is responsive to current stock abundance) whereas the MSY is the expected long-term average from a control rule. The Council should generally set the ACL lower than the ABC to take into account other factors related to preventing overfishing or achieving OY, or it may set the ACL equal to the ABC and take these additional factors into account when setting an ACT below the ACL.

Comment 34: Several commenters stated that NMFS's definition

framework for ACLs contains buffers that are not required by the Magnuson-Stevens Act and reduce or prevent the likelihood that OY can be achieved for a stock (Reducing a stock's OFL for scientific and management uncertainty, and OY factors results in too many reductions and makes it too difficult to achieve OY).

Response: NMFS believes that fisheries managers cannot consistently meet the requirements of the MSA to prevent overfishing and achieve, on a continuing basis, OY unless they address scientific and management uncertainty. The reductions in fishing levels that may be necessary in order to prevent overfishing should be only the amount necessary to achieve the results mandated by the MSA. Properly applied, the system described in the guidelines does not result in ''too many deductions,'' but rather, sets forth an approach that will prevent overfishing, achieve on a continuing basis OY, and incorporate sufficient flexibility so that the guidelines can be applied in different fisheries.

Comment 35: Several commenters suggested that NMFS clarify language to ensure that all aspects of fishing mortality (e.g., dead discards and post-release mortality) are accounted for in the estimates of ABC or when setting the ACL, and that all catch is counted against OY. NMFS also received comments that accounting for bycatch mortality in data poor situations should not be required.

Response: NMFS agrees that all sources of fishing mortality, including dead discards and post-release mortality from recreational fisheries must be accounted for, but believes that language in § 600.310(e)(3)(v)(C), (f)(2)(i) and (f)(3)(i) in both the proposed and final action sufficiently explains that catch includes fish that are retained for any purposes, mortality of fish that have been discarded, allocations for scientific research, and mortality from any other fishing activity. NMFS, however, disagrees that, when bycatch data is lacking, managers could ignore this known source of fishing mortality. Ignoring a known source of fishing mortality because data are lacking leads to underestimating catch. Unless this is factored in—for instance, as increased uncertainty leading to more conservative ABC and appropriate AMs (including ACT control rules)—overfishing could occur. NMFS's National Bycatch Report (due to be published in late 2008 or early 2009) provides comprehensive estimates of bycatch of fish, marine mammals, and non-marine mammal protected resources in major U.S. commercial fisheries. For instances where the National Bycatch Report does not provide bycatch data, NMFS suggests developing proxies based on National Bycatch Report bycatch ratios in similar fisheries until better data are available. For more information on the National Bycatch Report, *see http://www.st.nmfs.noaa.gov/st4/nop/Outreach/NBR_Factsheet_Final.pdf*. However, the decision about the best methodology for estimating bycatch should be made by the Council in consultation with its SSC, considering the best available scientific information.

Comment 36: One commenter requested clearer guidance for the specification of ABC and ultimately an ACL in cases where scientific uncertainty ''overwhelms'' the SSC's ability to make a valid ABC recommendation.

Response: The NS1 Guidelines recognize that precise quantitative assessments are not available for all stocks and some stocks do not have sufficient data for any assessment beyond an accounting of historical catch. It remains important to prevent overfishing in these situations, even though the exact level of catch that causes overfishing is not known. The overall guidance is that when stocks have limited information about their potential yield, harvest rates need to be moderated until such information can be obtained. Possible approaches include setting the ABC as 75% of recent average catch; see NMFS' Technical Guidance in Restrepo *et al.* (1998). NMFS is currently working on a report on control rules that will provide additional examples of possible approaches for data-limited situations as well as approaches that can use a better set of information.

Comment 37: ABC and ACT control rules should be revised to require consideration of life history characteristics (e.g., productivity, geographic range, habitat preferences, etc.) of a stock when setting control rules or catch limits.

Response: NMFS agrees that the productivity of stock, as well as the stocks susceptibility to the fishery should be considered when developing the ABC control rule. NMFS refers to these factors together as the vulnerability of stock, which is defined in § 600.310(d)(10) of the final action. The ABC control rule (see § 600.310(f)(4) of the final action) is based on scientific knowledge about the stock, which includes a stock's vulnerability to the fishery.

Regarding the ACT control rule, the final guidelines do not require that ACTs always be established, but provide that ACTs may be used as part of a system of AMs. When used, ACT control rules address management uncertainty, which is not related to the productivity of the stock. As noted in § 600.310(g)(3) of the final action, however, a Council could choose a higher performance standard (e.g., a stock's catch should not exceed its ACL more often than once every five or six years) for a stock that is particularly vulnerable to the effects of overfishing. In considering the performance standard, a Council should consider if the vulnerability of the stock has been accounted for in the ABC control rule, so as not to double count this type of uncertainty and provide unduly cautious management advice.

Comment 38: NMFS received comments requesting that text in § 600.310(f) of the proposed action be modified to clarify that ABC may not equal or exceed OFL; Councils are required to establish ABC control rules; the ABC and ACT control rules must stipulate the stock level at which fishing will be prohibited; and ACL cannot equal or exceed the ABC.

Response: NMFS does not agree that the guidelines should prohibit ABC from being equal to OFL, or ACL from being equal to ABC. NMFS has added text to the guidelines (§ 600.310(f)(3) and (f)(4)) to clarify that it believes that ABC should be reduced from OFL in most cases, and that if a Council recommends an ACL which equals ABC, and the ABC is equal to OFL, the Secretary may presume that the proposal would not prevent overfishing, in the absence of sufficient analysis and justification for the approach. NMFS agrees that an ABC control rule is required. NMFS does not agree, however, that the ABC and ACT control rules must stipulate the level at which fishing is prohibited. Here it is important to distinguish between setting an annual level of catch equal to zero because the stock biomass is low, from prohibiting landings for the remainder of a fishing year because the ACL has already been achieved. For the first type of prohibition, an ABC control rule could stipulate the level at which fishing is prohibited due to low stock biomass, but such a low level of biomass is likely to be below the MSST which will invoke development of a rebuilding plan with associated modification of the ABC control rule for the duration of the plan. NMFS, however, disagrees that the ACT control rule should have a similar stipulation as the primary function of this control rule is to account for management uncertainty and to serve as the target for inseason management actions.

Comment 39: NMFS received several comments that spatial-temporal management of ACLs should be employed as an integral part of effective catch-limit management. The commenters noted that apportioning ACLs by seasons and areas could reduce bycatch, protect sensitive habitats, reduce competition among fishery sectors, avoid localized and serial depletions of stocks, and ensure geographic and seasonal availability of prey to key predators.

Response: NMFS acknowleges that spatial and temporal considerations of fishery removals from a stock can be important. Many fisheries currently incorporate spatial and temporal considerations. However, in the context of NS1, these considerations would be relevant only if the overfishing definition or the OY definition for a stock included spatial or temporal divisions of the stock structure. NMFS believes the guidelines give Councils flexibility to consider spatial and temporal issues in establishing ACLs for a stock, and does not agree that the NS1 guidelines need to specifically address this issue. Apportioning ACLs by seasons and areas could be considered as Councils develop conservation and management measures for a fishery to meet the full range of MSA requirements, including the NS for basing conservation and management measures upon the best scientific information available (NS2); taking into account the importance of fishery resources to fishing communities to provide sustained participation and minimize adverse economic impacts (NS8); minimizing bycatch (NS9); and allocating fishing privileges among various U.S. fishermen that are fair and equitable, reasonably calculated, and carried out in such a manner that no particular entity acquires an excessive share of the catch (NS4).

Comment 40: NMFS received several comments about the role of the SSC in specifying ABC. Several commenters stated that the final ABC recommendation should be provided by the SSC (i.e., final peer review process), rather than an additional peer review process. Some commenters expressed concern that both the SSC and peer review process would recommend an ABC, leaving the Council to use the lower of the two recommended ABC values. One comment stated that the SSC should have the discretion to recommend an ABC that is different from the result of the control rule calculation in cases where there was substantial uncertainty or concern relating to the control rule calculated ABC.

Response: NMFS agrees that the SSC should provide the final ABC recommendation to their Council. In the preamble of the proposed NS1 revisions, NMFS acknowledged that the statutory language could be subject to different interpretations (*see* p. 32532 of 73 FR 32526; June 9, 2008). MSA refers to not exceeding fishing level recommendations of ''scientific and statistical committee or peer review process'' in one place and SSC recommendations for ABC and MSY in another place. Compare MSA sections 302(h)(6) and 302(g)(1)(B). Section 302(g)(1)(E) of the MSA provides that the Secretary and a Council may, but are not required to, establish a peer review process. NMFS feels that the Council should not receive ABC recommendations from two different sources (SSC and peer review). In order to avoid confusion, and in consideration of the increased role of SSCs in the MSA, NMFS believes that the SSC should provide the ABC recommendation and Councils should establish a clear process for receiving the ABC recommendation (as described in § 600.310(f)(3) of this action). The advance notice of proposed rulemaking (ANPR) (73 FR 54132; September 18, 2008) for potential revision of the National Standard 2 Guidelines includes consideration of the relationship between SSCs and peer review processes. NMFS believes the roles of the peer review process and the SSC complement each other. For example, a peer review process may conduct an extensive technical review of the details of each stock assessment. The SSC can then use the assessment document and its peer review, consider unresolved uncertainties, seek consistency with assessment decisions made for other stocks in the region, and arrive at an ABC recommendation. In addition, NMFS agrees that SSCs could provide an ABC recommendation that differed from the result of the ABC control rule calculation based on the full range of scientific information available to the SSC. The SSC would have explain why the recommendation differed from the calculated value. NMFS has added clarifying language into § 600.310(f)(3) of this action.

Comment 41: NMFS received a variety of comments on the role of the SSC and suggestions that the SSC role should be clarified. Comments included: There should be a mandatory peer review of significant SSC recommendations; the SSC should be directed to draw information and recommendations from the broadest possible range of scientific opinion; the SSC recommendation should include a discussion of alternative recommendations that were considered and alternative methodologies that were explored; what is the role of the SSC in providing recommendations for achieving rebuilding targets?; what is the SSC's role in providing ''reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures and sustainability of fishing practices''?; the rule should clarify that the SSC is not charged with actually collecting the data and writing reports; the guidelines should specify the appropriate qualifications and membership of the SSCs and peer review process; the guidelines should specify the relative roles of the SSCs, peer review process, and Councils in establishing ACLs; the guidelines should specify the relative roles of NMFS, the Councils, the SSCs and the peer review process in selecting and evaluating AMs; NMFS should establish formal criteria for SSC membership, including formal training and/or experience in fisheries and/or ecological science or economics; NMFS should create oversight mechanisms and responsibility within NMFS to ensure that members are both qualified and acting in the public interest rather than representing stakeholders; NMFS should provide adequate training programs so that new members are well-prepared to meet these challenges; and NMFS should provide a mechanism for SSC members to identify and challenge political interventions, including potentially the development of a new scientific appeal function, staffed by a board of objective, external expert scientists.

Response: In developing the NS1 guidelines, NMFS focused on the SSC recommendation of the ABC as it is an important reference point for the Councils to use when developing ACLs. NMFS feels that the NS1 guidelines as proposed are clear in that the SSC provides the ABC recommendation and the Councils establish the ACLs. Both the ABC control rules and the ACT control rules could be developed with input from the SSC, Council, and peer review process as appropriate. NMFS believes that the NS1 guidelines adequately address the requirements for SSC recommendations that pertain to NS1. NMFS believes that other specific roles of the SSC would be more appropriately addressed in the National Standard 2 (NS2) guidelines.

Comment 42: Some commenters supported the proposed guidelines regarding the SSC, its relation to the Council, and provision of science advice such as ABC, but requested that the

guidelines further emphasize that managers follow the advice of their scientific advisors in all cases when setting catch limits. Other commenters opposed the provisions and stated that accounting for scientific uncertainty is a matter of policy, not science and therefore should be delegated to the Council. Instead, the commenters proposed that the SSC should be recommending the OFL and that the Council may not set an ACL in excess of the OFL as determined by the SSC.

Response: NMFS believes that determining the level of scientific uncertainty is not a matter of policy and is a technical matter best determined by stock assessment scientists as reviewed by peer review processes and SSCs. Determining the acceptable level of risk of overfishing that results from scientific uncertainty is the policy issue. The SSC must recommend an ABC to the Council after the Council advises the SSC what would be the acceptable probability that a catch equal to the ABC would result in overfishing. This risk policy is part of the required ABC control rule. The Council should use the advice of its science advisors in developing this control rule and should articulate the control rule in the FMP. In providing guidance on establishing a control rule for the ABC, NMFS recognizes that all estimates of the OFL are uncertain, and that in order to prevent overfishing with more than a 50 percent probability of success, the ABC must be reduced from the OFL. The guidance is clear that the control rule policy on the degree of reduction appropriate for a particular stock is established by the Council. To the extent that it results in the ABC being reduced from the OFL, the SSC is carrying out the policy established by the Council. NMFS disagrees that the SSC should recommend OFL and not ABC. The MSA specifies a number of things that make up the recommendations that SSCs provide to their Council including recommendations for ABC, preventing overfishing, MSY, achieving rebuilding targets, reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures, and sustainability of fishing practices. Of these, the ABC is directly relevant as the fishing level recommendation that constrains the ACL.

Comment 43: One comment expressed that Councils must be allowed to specify information needed in the SAFE report.

Response: NMFS agrees. NMFS has removed the following sentence from § 600.310(b)(2)(v)(B) of the final action: ''The SSC may specify the type of information that should be included in the Stock Assessment and Fishery Evaluation (SAFE) report (see § 600.315).''

The contents of the SAFE report fall under the purview of the National Standard 2 (NS2) guidelines. NMFS is currently considering revising the NS2 guidelines, including modification of the language describing the content and purpose of SAFE reports. NMFS recently published an advance notice of proposed rulemaking (73 FR 54132; September 18, 2008) to revise the NS2 guidelines and encourages the public to provide comment.

Comment 44: One commenter believed the ACT should be a suggested component of a fishery management plan rather than a mandated component of an FMP. Although the ACT may clearly distinguish management uncertainty from other sources of uncertainty, adding a target does not fundamentally improve the process. It is more important to correctly adjust the ACL based on actual performance data than to create a separate target or ACT control rule based on theory to account solely for management uncertainty.

Response: The final guidelines do not require that ACTs always be established, but provide that ACTs may be used as part of a system of AMs. NMFS disagrees that a target does not fundamentally improve the process. ACL is to be treated as a limit—an amount of catch that the fishery should not exceed. The purpose of utilizing an ACT is so that, given uncertainty in the amount of catch that will result from the conservation and management measures in the fishery, the ACL will not be exceeded. Whether or not an ACT is explicitly specified, the AMs must address the management uncertainty in the fishery in order to avoid exceeding the ACL. ACLs are subject to modification by AMs.

Comment 45: One comment stated that the purpose of an ACT is to address ''management uncertainty'' which seems to be a very abstract and unquantifiable concept that the Councils are likely to struggle with.

Response: NMFS disagrees that management uncertainty is an abstract concept. It relates to the difference between the actual catch and the amount of catch that was expected to result from the management measures applied to a fishery. It can be caused by untimely catch data that usually prevents inseason management measures from being effective. Management uncertainty also results from underreporting, late reporting and misreporting and inaccurate assumptions about discard mortality of a stock in commercial and recreational fisheries. One way to estimate management uncertainty is to examine a set of annual actual catches compared to target catches or catch quotas for a stock. If all or most of the catches fall closely around their target catches and don't exceed the OFL then management uncertainty is low; if actual catches often or usually result in overfishing then the management uncertainty is high and should be accounted for when establishing the AMs for a fishery, which may include setting an ACT.

Comment 46: NMFS received several comments regarding scientific and management uncertainty. In general these comments included: Clarify the meaning of scientific uncertainty; clarify that some types of uncertainty may not be considered in the ABC control rule process; increase research efforts in order to deal with scientific uncertainty; provide flexibility in the guidelines regarding how the Councils deal with uncertainty; and recognize that recreational fisheries are unduly impacted by the guidelines due to delayed monitoring of catch.

Response: Scientific uncertainty occurs in estimates of OFL because of uncertainty in calculations of MFMT, projected biomass amounts, and estimates in F (i.e., confidence intervals around those parameter estimates). In addition, retrospective patterns in estimates of future stock biomass and F (i.e., biomass may be overestimated and F underestimated on a regular basis) occur in some stock assessments and should be accounted for in determining ABC. NMFS revised the guidelines to make clear that all sources of scientific uncertainty—not just uncertainty in the level of the OFL—must be considered in establishing the ABC, and that SSCs may incorporate consideration of uncertainty beyond that specifically accounted for in the ABC control rule, when making their ABC recommendation. Management uncertainty should be considered primarily in establishing the ACL and AMs, which could include ACTs, rather than in specification of the ABC.

Comment 47: The definition of ABC in § 600.310(f)(2)(ii) of the proposed rule provides that ABC is a level of catch ''that accounts for scientific uncertainty in the estimate of OFL'' and is specified based on the ABC control rule. Scientific uncertainty is not and should not be limited to the estimate of OFL. That restriction would make it more difficult to implement other appropriate methods for incorporating scientific uncertainty in other quantities such as distribution of long term yield.

Response: NMFS agrees. NMFS has revised §§ 600.310(f)(2)(ii), (f)(2)(iii),

and (f)(4) of the action to state that ABC accounts for scientific uncertainty in the estimate of OFL and other scientific uncertainty.

Comment 48: Several commenters stated that buffers, or margins of safety, need to be required between the overfishing level and annual catch limits to account for uncertainty, and that the final action should require the use of such buffers to achieve a high probability that overfishing does not occur. NMFS received comments suggesting that buffers between limit and target fishing levels reduce the chance that overfishing will occur and should be recognized as an accountability measure. Other commenters thought that the provision for setting ACT less than ACL meant that a Council has no discretion but to establish buffers. They said that while buffers may be appropriate in certain circumstances, they may also prevent achievement of OY in some circumstances.

Response: As noted elsewhere, NMFS has revised the final guidelines: they do not require that ACTs always be established, but provide that ACTs may be used as part of a system of AMs. The guidelines are intended only to provide Councils with direction on how the requirements of NS1 can be met, incorporating the requirement for ACLs and AMs such that overfishing does not occur. To prevent overfishing, Councils must address scientific and management uncertainty in establishing ABC, ACLs, and AMs. In most cases, some reduction in the target catch below the limit will result. NMFS does not believe that requiring buffers is appropriate, as there may be circumstances where that is not necessary to prevent overfishing. However, the guidelines require that AMs in a fishery be adequate to prevent ACLs from being exceeded, and that additional AMs are invoked if ACL is exceeded.

Comment 49: Some commenters stated that Councils needed flexibility to effectively tailor fishery management plans to the unique conditions of their fisheries, and that Councils should also have flexibility in how to account for scientific and management uncertainty.

Response: NMFS agrees that Councils should have flexibility, so long as they meet the requirements of the statute. ACLs to prevent overfishing are required, and management and scientific uncertainty must be considered and addressed in the management system in order to achieve that objective. NMFS also believes that Councils should be as transparent and explicit as possible in how uncertainty is determined and addressed, and believes the guidelines provide a good framework to meet these objectives.

Comment 50: One commenter supported NMFS' attention to scientific and management uncertainty, but thought that the better approach to deal with uncertainty is to reduce uncertainty. They stated that to accomplish this objective NMFS must increase its support for agency scientific research specific to stock assessments and ecosystem science.

Response: NMFS agrees. However, the processes proposed in the guidelines will address the current levels of uncertainty and accommodate reduced uncertainty in the future, as improvements in data are made.

Comment 51: Some commenters said that implementing ACLs would lead to economic disruption, particularly in the recreational fishing sector, because of a large degree of management uncertainty. One commenter cited difficulties in obtaining timely and accurate data, particularly for recreational fisheries, and asked if recreational allocations would have to be reduced due to delays in obtaining recreational harvest estimates.

Response: Preventing overfishing is a requirement of the MSA. The ACL mechanisms and AMs for a fishery must be adequate to meet that requirement, and in some cases, reductions in catch levels and economic benefits from a fishery may result. The specific impacts of implementing ACLs in a fishery will be analyzed when the ACLs are established in an FMP.

Comment 52: One commenter stated that the guidelines would require reducing catches well below existing OY levels, and that many species are known to be fished at low levels which are highly unlikely to lead to overfishing. They stated that this is inconsistent with responsible marine management and seems unlikely to represent the intent of Congress.

Response: Nothing in the guidelines would require a reduction in fishing if, in fact, the stocks are fished at low levels which are highly unlikely to lead to overfishing, and this conclusion is supported by science.

Comment 53: One commenter asked if OY could be specified for a fishery or a complex, or if the guidelines would require specification of OY for each species or complex.

Response: The guidelines provide that OY can be specified at the stock, stock complex or fishery level.

Comment 54: NMFS received several comments both supporting and opposing the use of inseason AMs (§ 600.310(g) of the proposed action). The commenters that supported the use of inseason AMs typically suggested that the Councils and NMFS improve their capability to use inseason AMs and/or that NMFS must make inseason closure authority a required element of FMPs. Opponents of inseason AMs commented that it is more reasonable to implement AMs after reviewing annual fishery performance data; there is no requirement in the law to impose inseason measures; inseason closures without individual transferable quotas will generate derby fisheries; and the requirement to use inseason AMs whenever possible would be difficult where monitoring data is not available.

Response: MSA provides for ACLs to be limits on annual catch, thus it is fully appropriate and consistent with the Act that available data be utilized to prevent ACLs from being exceeded. Conservation and management measures for a fishery should be designed so that ACLs are not routinely exceeded. Therefore, FMPs should contain inseason closure authority giving NMFS the ability to close fisheries if it determines, based on data that it deems sufficiently reliable, that an ACL has been exceeded or is projected to be reached, and that closure of the fishery is necessary to prevent overfishing. NMFS believes that the alternative result, which is that data are available inseason that show an ACL is being exceeded, but no management action is taken to prevent overfishing, would not meet the intent of the MSA. The MSA requires ACLs in all fisheries. It does not provide an exemption based on a concern about derby fishing. NMFS has modified the language in § 600.310(g)(2) of this action to indicate that ''For fisheries without inseason management control to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL.''

Comment 55: NMFS received some comments that generally expressed that AMs will be difficult to implement and that the provisions need to be clarified. Comments included: if an ACL is exceeded, a review by the Council must occur before implementation of the AMs; the Council must examine the ''problem'' that caused the overage—which means nothing will happen quickly; and it is not clear what ''biological consequences'' means in § 600.310(g)(3) of the proposed action.

Response: As proposed, AMs are management measures designed to prevent an ACL from being exceeded, as well as measures to address an overage of an ACL if it does occur. NMFS recommends that, whenever possible, Councils implement AMs that allow inseason monitoring and adjustment of

the fishery. The AMs should consider the amount of time required for a Council to conduct analyses and develop new measures. In general, AMs need to be pre-planned so they can be effective/available in the subsequent year, otherwise, there could be considerable delay from the time that an overage occurs to the time when measures are developed to address the overage. Not all overages may warrant the same management response. Consider hypothetically the example of a fishery for which a 3 fish bag limit with 16 inch minimum size is expected to achieve the target catch level without exceeding the ACL. For such a fishery, the Council might implement AMs such that, if the catch was under the ACL or exceeded it by less than 5 percent, the same bag and size limits would apply the following year. If the ACL was exceeded by 5–25 percent, the bag limit the following year would be reduced to 2 fish, and if the ACL was exceeded by more than 25 percent the bag limit would be reduced to 1 fish. The AMs could also address a situation where catch was below the target level, indicating that the initial measures might be too strict. The objective is to have pre-planned management responses to ACL overages that will be implemented in the next season, so that flawed management measures do not result in continuing overages for years while Councils consider management changes. An FMP must contain AMs (see § 600.310(c)(5) of the final action). However, NMFS believes that the FMP could contain more general framework measures and that specific measures, such as those described hypothetically above, could be implemented through harvest specifications or another rulemaking process.

By ''biological consequences,'' NMFS means the impact on the stock's status, such as its ability to produce MSY or achieve rebuilding goals. For example, if information was available to indicate that, because of stronger than expected recruitment, a stock was above its B_{msy} level and continued to grow, even though the ACL was exceeded for the year, that could indicate that the overage did not have any adverse biological consequences that needed to be addressed through the AM. On the other hand, if the ACL for a long lived stock with low reproductive potential was exceeded by 100 percent, AMs should be responsive to the likelihood that some long-term harm to the stock may have been caused by the overage.

Comment 56: One commenter expressed concern about the term ''re-evaluated'' in §§ 600.310(g)(3) and (g)(4) in the proposed action. They stated that this could imply that Councils simply have to increase ACLs when they have ACL exceedances, and suggested that, if catch exceeds ACL more than once in last four years, there should be automatic buffer increases in setting ACL below OFL to decrease likelihood of exceeding ACL.

Response: If the performance standard is not met, the Councils must re-evaluate the system of ACLs and AMs, and modify it if necessary so that the performance standard is met. Since the ACL cannot exceed the ABC recommended by the SSC, NMFS does not believe that the scenario described by the commenter would arise. NMFS also does not believe that the guidelines should recommend automatic buffer increases in this case. The specific factors that caused the performance standard to not be met need to be analyzed and addressed. NMFS also notes that, in addition to this re-evaluation of the system of ACLs and AMs, AMs themselves are supposed to prevent and address ACL overages.

Comment 57: Several comments were received related to accountability measures for when catch exceeds the ACL. Some comments supported the concept that a full payback of ACL overages should be required for all stocks. Comments included: Overage deductions should be normal business for rebuilding and healthy stocks alike; NMFS should require all overages to be accounted for in full for all managed fisheries no later than when the ACL for the following fishing year is determined; and overage deductions must be viewed as an independent requirement from actions geared to preventing overages from occurring in the future, such as modifications of management measures or changes to the full system of ACLs, ACTs, and AMs.

Response: MSRA is silent with regard to mandatory payback of ACL overages. However, in developing the ACL provisions in the MSRA, it appears that Congress considered mandatory paybacks and did not include that requirement in the MSRA. NMFS believes that paybacks may be an appropriate AM in some fisheries, but that they should not be mandated, but rather considered on a case by case basis for stocks and stock complexes that are not in a rebuilding plan.

Comment 58: Several comments opposed the concept of an overage adjustment when catch exceeds the ACL for stocks that are in rebuilding plans (§ 600.310(g)(3) of the proposed action). Comments included: The MSA does not require this, this provision was removed from the drafts of the MSRA, and a full ''payback'' the following year may be unnecessary. Other comments supported the concept but wanted to strengthen § 600.310(g)(3) of the guidelines to remove text that stated: ''unless the best scientific information available shows that a reduced overage adjustment, or no adjustment, is needed to mitigate the effects of the overages.''

Response: NMFS believes that more stringent requirements for AMs are necessary for stocks in rebuilding plans. MSA 304(e)(3) provides that, for overfished stocks, an FMP, FMP amendment, or proposed regulations are needed to end overfishing immediately in the fishery and rebuild overfished stocks. There are a number of examples where failure to constrain catch to planned levels early in a rebuilding plan has led to failure to rebuild and the imposition of severe catch restrictions in later years in order to attempt to meet the required rebuilding timeframe. Thus, for rebuilding stocks, NMFS believes that an AM which reduces a subsequent year's ACL by the amount of any overage is appropriate, and will help prevent stocks failing to rebuild due to annual rebuilding targets being exceeded. NMFS does provide that if there is an analysis to show that all or part of the deduction is not necessary in order to keep the stock on its rebuilding trajectory, the full overage payback is not necessary. For example, an updated stock assessment might show that the stock size has increased faster than expected, in spite of the overage, and that a deduction from the subsequent ACL was not needed. For most rebuilding stocks, assessments cannot be updated annually, and in the absence of such analytical information, NMFS believes that the guideline provision is necessary to achieve rebuilding goals for overfished stocks.

Comment 59: Some commenters expressed support for the AMs as proposed and agreed that AMs should prevent catch from exceeding the ACL and address overages if they should occur. Other commenters suggested that AMs should be tied to overfishing or that AMs should be triggered when catch exceeds the ABC (as opposed to the ACL). Some commenters expressed that the MSA does not require the application of AMs if the ACL is exceeded.

Response: In developing the guidelines, NMFS considered using OFL or ABC as a point at which mandatory AMs should be triggered. However, NMFS believes that Congress intended the ACL to be a limit, and as such, it should not be exceeded. In addition, ''measures to ensure accountability'' are required in association with the ACL in MSA section 303(a)(15). Therefore, it is

most appropriate to apply AMs if the ACL is exceeded. In addition, the purpose of ACLs is to prevent overfishing, and AMs triggered at the ACL level should be designed so that the ABC and OFL are not exceeded.

Comment 60: Several comments were received regarding the proposed performance standards. The performance standard that NMFS proposed in the proposed action stated that: ''If catch exceeds the ACL more than once in the last four years, the system of ACLs, ACTs and AMs should be re-evaluated to improve its performance and effectiveness.'' In cases where AMs are based on multi-year average data, the proposed performance standard stated: ''If average catch exceeds the average ACL more than once in the last four years, then the ACL, ACT and AM system should be re-evaluated.'' The commenters that supported the proposed performance standard suggested that it would allow the Council more flexibility in the management of their fisheries with ACLs. Commenters that disliked the proposed performance standard suggested that the Councils should have more flexibility in determining the performance standards, expressed concerns that the performance standard may not be precautionary enough, or expressed that it was arbitrary.

Response: NMFS believes it is important to establish a performance standard to establish accountability for how well the ACL mechanisms and AMs are working that is consistent across all Councils and fisheries. NMFS believes that ACLs are designed to prevent overfishing and that it is important to prevent catches from exceeding ACLs. NMFS also believes that, given scientific and management uncertainty, it is possible that catch will occasionally exceed ACL for a given stock or stock complex. However, it would be unacceptable to allow catch to continually exceed ACL. Therefore, NMFS proposed the performance standard to allow for some flexibility in the management system but also prevent overfishing. It should not limit a Council from establishing stronger performance measures, or from reevaluating their management measures more often. Notwithstanding the performance standard, if, at any time, a Council determines that the conservation and management measures for a fishery are not achieving OY while preventing overfishing, it should revise the measures as appropriate.

Comment 61: Several comments were received that suggested that fishery managers should or be required to re-evaluate the system of ACLs, ACT and AMs every time catch exceeds ACL. In addition, some expressed that NMFS should make clear that the ''reevaluation'' called for in the proposed action does not authorize simply raising ACLs or other numeric fishing restrictions in order to avoid the inconvenient fact that they have been exceeded.

Response: NMFS does not agree that a re-evaluation of the entire system of ACLs and AMs should be required every time an ACL is exceeded. If catch exceeds ACL in any one year, or if the average catch exceeds the average ACL, then AMs will be implemented and they should correct the operational issues that caused the overage, as well as any biological consequences resulting from the overage. Councils should be allowed the opportunity to see if their AMs work to prevent future overages of the ACL.

Comment 62: NMFS received comments that requested clarification or changes to the proposed performance standard. For example, one commenter suggested that NMFS should require a higher performance standard for vulnerable stocks. Two commenters expressed that the performance standard should apply at the stock or stock complex level as opposed to the fishery or FMP level. Another commenter questioned if the performance standard was if catch exceeds the ACL more than once in the last four years or if average catch exceeds the average ACL more than once in the last four years. NMFS also received some comments about the phrase ''to improve its performance and effectiveness'' in paragraph § 600.310(g)(3) of the proposed action. Those comments included: The phrase does not make sense in this context, because simply re-evaluating a system cannot improve its performance or effectiveness (only changing a system can do so); and use of this phrase in § 600.310(g)(3) is inconsistent with a similar sentence in paragraph § 600.310(g)(4) of the proposed action, where the same requirement is expressed, but this phrase does not appear.

Response: NMFS stated in the preamble of the proposed guidelines that a Council could choose a higher performance standard for a stock that is particularly vulnerable to the effects of overfishing. While NMFS agrees that a higher performance standard could be used for a stock or stock complex that is particularly vulnerable, NMFS believes the discretion to use a higher performance standard should be left to the Council. To reiterate this point, NMFS is adding additional language in § 600.310(g)(3) of the final action. NMFS intended that the performance standards would apply at the stock or stock complex level and is adding additional clarifying language in the regulatory text. The National Standard 1 guidelines as proposed offered two performance standards, one applies when annual catch is compared to the ACL for a given stock or stock complex, as described in paragraph § 600.310(g)(3) of this action, the other performance standard applies in instances when the multi-year average catch is compared to the average ACL, as described in § 600.310(g)(4) of this action. NMFS intended that in both scenarios, if the catch exceeds the ACL more than once in the last four years, or if the average catch exceeds the average ACL more than once in the last four years, then the system of ACLs and AMs should be re-evaluated and modified if necessary to improve its performance and effectiveness. NMFS has modified language to § 600.310(g)(3) and (4) of this action to clarify this issue.

Comment 63: NMFS received several suggestions to require a specific and high probability of success in either preventing overfishing, preventing catch from exceeding the ACL, or achieving the ACT. Comments included: The rule should make clear that management measures must have a high probability of success in achieving the OY or ACT; we recommend a probability of at least eighty percent of achieving the OY or ACT; NMFS should establish a performance standard that defines low risk, as well as an acceptable probability of successfully managing catch levels of 90 percent; National Standard guidelines should explicitly define the maximum acceptable risk of overfishing. One commenter cited to several court cases (NRDC v. Daley, Fishermen's Dock Coop., and Coastal Conservation Ass'n) and stated that the ACT control rule should be revised to state that the risk of exceeding the ACL due to management uncertainty is no greater than 25 percent.

Response: Considering and making appropriate allowances for uncertainty in science and management is emphasized in the NS1 guidelines. NMFS believes that, if this is done, ACLs will not often be exceeded, and when they are, the overages will typically be small and will not jeopardize the status of the stock. Fisheries where ACLs are exceeded regularly or by large amounts should be quickly modified to improve the measures.

During the initial scoping period, NMFS received many comments on the topic of setting a specific probability of success; some commenters expressed that a 50 percent probability of success is all that is legally required, while other

commenters expressed that the probability of success should be higher (e.g. 75 or 100 percent). When developing the definition framework of OFL, ABC, ACL, and ACT, NMFS considered including specific probabilities of success regarding preventing overfishing or preventing catch from exceeding ACL. NMFS did not specify a particular probability in the NS1 guidelines, for a number of reasons. NMFS did not believe it had a basis for picking a specific probability number that would be appropriate for all stocks and stock complexes in a fishery. Councils should analyze a range of alternatives for the probability that ACL will not be exceeded or that overfishing will not occur. NMFS recognizes that fisheries are different and that the biological, social and economic impacts of managing at a specific probability will differ depending on the characteristics of the fishery. NMFS also recognizes that it is not possible to calculate a probability of success in many fisheries, due to data limitations.

NMFS does not believe that MSA and relevant case law require use of specific probabilities. However, a 50 percent probability of success is a lower bound, and NMFS believes it should not simply be used as a default value. Therefore, in § 600.310(f)(4) of the final action, NMFS states that the determination of ABC should be based, when possible, on the probability that catch equal to the stock's ABC would result in overfishing, and that this probability cannot exceed 50 percent and should be a lower value.

To determine if the system of ACLs was working adequately, NMFS decided to establish a performance standard in terms of the frequency that ACLs were exceeded. The comparison of catch to an ACL is a simpler task than calculating a probability of success, and can be applied to all fisheries, albeit some fisheries have more timely catch data than others. This does not preclude the Councils from using the probability based approach to setting limits and targets in their fisheries if they are able to do so.

Comment 64: Several comments were received urging NMFS to either require or encourage the use of sector ACLs and AMs and hold each sector accountable. Comments expressed that to provide the right incentives for conservation, catch reductions and increases must be tied to compliance and performance in adhering to ACLs. One commenter stated that MSA 303(a)(14) compels distinct ACLs and AMs for each sector due in part to the variation in management uncertainty among sectors. Sector management should be required in FMPs to ensure equitable treatment for all stakeholder groups including harvest restrictions and benefits to each sector.

Response: Separate ACLs and AMs for different fishery sectors may be appropriate in many situations, but the Councils should have the flexibility to determine this for each fishery. The decision to use sectors should be at the discretion of each Council. NMFS agrees that, if Councils decide to use sectors, each sector should be held accountable if catches for a sector exceed sector-ACLs. In addition, the NS1 guidelines provide that the ACL/AM system must protect the stock or stock complex as a whole. NMFS does not believe that MSA necessarily compels use of sector ACLs and AMs, thus the final action does not require their use. However, in developing any FMP or FMP amendment, it is important to ensure consistency with MSA 303(a)(14), NS 4, and other MSA provisions. Section 303(a)(14) pertains to allocation of harvest restrictions or recovery benefits fairly and equitably among commercial, recreational, and charter fishing sectors. NS 4, in part, pertains to fair and equitable allocations.

Comment 65: Some commenters expressed that managing recreational fisheries with ACLs and AMs will be difficult as they typically lack timely data. Comments included: The initiative to set ACLs and AMs for any fishery that has a recreational component cannot be done and any attempt will be arbitrary at best; in-season management is impractical in most recreational fisheries; current data collection programs used to evaluate recreational fishing activity do not offer a level of confidence to fisheries managers or fishermen to implement ACL in the recreational sector; and NMFS should improve recreational data collection to a level where inseason management is possible.

Response: NMFS acknowledges that recreational fisheries often do not have timely catch data and that is why NMFS suggested the multi-year averaging provision for AMs. NMFS and the Council still need to meet the mandate of the MSA and have ACLs for all fisheries. NMFS is developing a new data collection program for recreational fisheries to improve the data needed to implement the new provisions of the MSA.

Comment 66: Some commenters suggested that for recreational fisheries, catch limits should be expressed in terms of fishing mortality rates or in terms of numbers of fish instead of pounds of fish.

Response: NMFS intends that ACLs be expressed in terms of weight or numbers of fish. In fact, the definition of ''catch'' in the proposed guidelines indicates that catch is measured in weight or numbers of fish. NMFS disagrees that ACL can be expressed in terms of fishing mortality rates. While conservation and management measures for a fishery can be designed to achieve a target fishing mortality rate, the fishing mortality rates that are achieved can only be estimated by performing a stock assessment. Stock assessments usually lag the fishery by a year or more, and are not suitable as the basis for ACL accountability measures.

Comment 67: One commenter suggested that when recreational fisheries account for a significant portion of the catch, the buffers should be correspondingly larger to account for the management uncertainty.

Response: NMFS believes that management uncertainty should be addressed in all fisheries. Accountability measures may include an ACT set below the ACL based on the degree of uncertainty that the conservation and management measures will achieve the ACL. This applies to all fisheries, commercial or recreational.

Comment 68: NMFS received a few comments expressing that Councils should have flexibility when specifying AMs.

Response: NMFS agrees and believes that the guidelines provide this flexibility.

Comment 69: AMs should be approved by the Secretary of Commerce, should be subject to regular scientific review, and should provide opportunities for public comment; performance must be measurable and AMs must be modified if not working; AMs should be reviewed annually as part of the catch specification process.

Response: AMs will be implemented through public processes used for amending FMPs and implementing regulations. There is no need for additional guidance in the NS1 guidelines.

Comment 70: NMFS received comments that support the use of AMs based on comparisons of average catch to average ACL, if there is insufficient data to compare catch to ACL, either inseason or on an annual basis. In recreational fisheries, the use of a three-year rolling average ACL would moderate wild swings in ACLs due to variable fishing conditions and participation from year to year. Flexibility, such as the use of a multi-year average for the recreational sector, is needed due to limitations in the data collection. However, some commenters

expressed concerns about using the multi-year averaging approach and stated that it should be used rarely. In order to use such an approach, Councils should provide clear and compelling reasons in their FMPs as to why the use of multi-year average data are necessary and a plan for moving the fishery to AMs based on annual data. The guidelines should make it clear that AMs will be triggered annually in cases where the average catch exceeds the average ACL. NMFS should engage its quantitative experts in an investigation of the performance of using multi-year averages for managing highly variable fisheries with poor inseason data. Until such results are available, NMFS should use annual statistics for management of all fisheries, including those involving highly variable stocks or catch limits.

Response: Use of AMs based on comparison of average catch to average ACL is only appropriate in a limited number of fisheries, such as fisheries that have high variability in the estimate of total annual catch or highly fluctuating annual catches and no effective way to monitor and control catches inseason. NMFS intends that a comparison of the moving average catch to the average ACL would be conducted annually and that AMs would be implemented if average catch exceeds the average ACL. If the average catch exceeds the average ACL more than once in the last four years, then the system of ACLs and AMs should be re-evaluated and modified if necessary to improve its performance and effectiveness. NMFS agrees that the Council should analyze and explain why they are basing AMs on multi-year averaged data. NMFS has added clarifying language to § 600.310(g)(4) of the final action to make these points clear. Future improvements in data and management approaches should also be pursued so that true annual accountability for catch can be achieved. In addition, NMFS believes that AMs such as the use of ACT may be appropriate in fisheries that use the multi-year averaging approach.

Comment 71: Several comments were received regarding ACLs and AMs for fisheries that occur partly in state waters. Some comments stated that accountability measures for State-Federal fisheries could use further elaboration and should specifically address fisheries where management had been delegated to the state. Some commenters supported separate ACLs and AMs for Federal and state portions of the fishery, while others wanted combined overall ACLs and AMs. Some comments disagreed that closure of Federal waters while fishing continues in non-Federal waters is a preferred option, and that efforts should be made to undertake cooperative management that allows coordinated responses.

Response: When stocks are co-managed by Federal, state, tribal, and/or territorial fishery managers, the goal should be to develop collaborative conservation and management strategies to prevent overfishing of shared stocks and ensure their sustainability. NMFS encourages collaboration with state managers to develop ACLs and AMs that prevent overfishing of the stock as a whole. As FMPs currently consider whether overfishing is occurring for a stock or stock complex overall, NMFS thinks it is appropriate to specify an overall ACL for the stock or stock complex. This ACL could be subdivided into state and Federal ACLs, similar to the approach used for sector-ACLs. However, NMFS recognizes that Federal management authority is limited to that portion of the fishery under Federal jurisdiction and therefore the NS1 guidelines only require AMs for the Federal fishery. The AMs could include closing the EEZ when the Federal portion of the ACL is reached, closing the EEZ when the overall stock or stock complex's ACL is reached, or other measures. NMFS recognizes the problem that may occur when Federal fisheries are closed but fishing continues in state waters. NMFS will continue to work with states to ensure consistency and effectiveness of management measures. If Councils delegate management under an FMP to the states, the FMPs still need to meet the requirements of the MSA, including establishment of ACLs and AMs.

Comment 72: One commenter asked, in the case where ACLs are exceeded because of the regulatory failures of one state, if other states in the Council's or the Atlantic States Marine Fisheries Commission's (ASMFC) area of jurisdiction be affected through mandatory AMs. Barring state-by-state allocations for all species (as with summer flounder), the proposed regulations could punish commercial fishermen and anglers in all states in a region.

Response: The guidelines acknowledge that NMFS and the Councils cannot mandate AMs on state fisheries. However, NMFS encourages collaboration between state and Federal managers to develop ACLs and AMs to prevent overfishing for the stock as a whole. In cases where there is collaboration, accountability measures for the fishery should be designed to address this issue. Specific AMs that may be needed would have to be evaluated and addressed on a case-by-case basis.

Comment 73: NMFS received a question regarding the meaning of the phrase ''large majority'' in § 600.310(g)(5) of the proposed action. NMFS had stated that: ''For stocks or stock complexes that have a large majority of harvest in state or territorial waters, AMs should be developed for the portion of the fishery under Federal authority and could include closing the EEZ when the Federal portion of the ACL is reached, or the overall stock's ACL is reached, or other measures.'' The commenter stated that the meaning of the term ''large majority'' and its importance is not clear and should therefore be eliminated.

Response: NMFS agrees that ACL and AMs need to be established for all stocks and stock complexes in Federal fisheries regardless of the whether a large majority of harvest occurs in state waters. NMFS agrees the amount, *i.e.*, ''large majority,'' is not pertinent to this provision. Therefore, § 600.310(f)(5)(iii) and (g)(5) have been revised in the final action.

Comment 74: NMFS received several comments noting that NMFS should require or recommend the use of limited access privilege programs (LAPPs) or catch shares by Councils in the final rule. Many commenters referenced an article on catch shares (Costello *et al.* 2008).

Response: The article cited above and other articles note the potential benefits of LAPPs. NMFS supports use of LAPPs, and believes they can be a beneficial approach to use in implementing effective ACLs. However, while ACLs are required in all fisheries, under the MSRA, LAPPs are optional and at the discretion of each Council. NMFS does not have authority to require Councils to use LAPPs, but is currently developing guidelines on LAPPs that will be published for public comment in the future.

Comment 75: One comment requested that NMFS expand the concept of accountability measures to include effective catch monitoring, data collection and analysis, and enforcement. The commenter suggested that for accountability measures that are not LAPPs, managers should demonstrate how the measures will ensure compliance with the ACLs as well as improve data and enforcement, reduce bycatch, promote safety, and minimize adverse economic impacts at least as well as LAPPs.

Response: NMFS agrees that catch monitoring, data collection and analysis, and enforcement are all important to consider in developing

AMs for a fishery and believes the guidelines are adequate. Under § 600.310(i) of the final action, FMPs, or associated documents such as SAFE reports, must describe data collection methods. In addition, § 600.310(g)(2) of the final action, states that whenever possible, inseason AMs should include inseason monitoring and management measures to prevent catch from exceeding ACLs. NMFS believes the guidelines are clear that catch monitoring data is very important to consider when Councils establish their AMs. Councils are already directed to: minimize adverse economic impacts under National Standard 8; minimize bycatch and bycatch mortality under National Standard 9; and promote safety of human life at sea under National Standard 10. *See* MSA 301(a)(8), (9), and (10) (setting forth specific requirements of the national standards).

Comment 76: NMFS received comments expressing concern about establishing ACL and AM mechanisms in FMPs. One commenter expressed concern that if ACL and AM mechanisms were located in the FMP, it would require a multi-year process to change any measure. They instead suggested that Councils should have the ability to framework the mechanisms and establish an annual or multi-year process for making adjustments. Another commenter suggested that Councils should be required to modify their SOPPs to incorporate a mechanism for specifying ACLs and reviewing AMs annually through regular catch specification procedures. NMFS received another comment that disagreed with the idea that the Council's SOPPs are the proper place to describe the process for establishing ABC Control Rules, including the role of SouthEast Data Assessment and Review (SEDAR) and the SSC. This commenter recommended instead that ABC Control Rules be included in Fishery Management Plans and have the ability to refine management through framework actions.

Response: The FMP needs to contain the ACL mechanisms and AMs, as they are part of the conservation and management measures for the fishery. The ACL mechanisms and AMs can contain framework provisions and utilize specification processes as appropriate. NMFS does not agree that the ACL and AM mechanisms should be established in the SOPPs. Also, NMFS never intended that ABC control rules would be described in the SOPPs and agrees that the ABC control rules should be described in the Fishery Management Plans. However, it is important to understand how the Councils, SSC, and peer review process work together to implement the provisions of the MSA, and that can be explained in the SOPPs, FMP, or some other document.

Comment 77: NMFS received several comments supporting the exception to the ACL rule for stocks with a life cycle of approximately one year. Commenters asked for a list of species which fit the exception, specific guidance on how to set ACLs for these stocks if they become overfished, and expansion of the exception to species with a two year life cycle.

Response: Due to their unique life history, the process for setting ACLs does not fit well for stocks which have a life cycle of approximately one year. The exception for species with an annual life cycle allows flexibility for Councils to use other management measures for these stocks which are more appropriate for the unique life history for each stock and the specifics of the fishery which captures them. NMFS believes that the final guidance should not include a list of stocks which meets these criteria; this is a decision that is best made by the regional Councils. Even though ACLs are not required for these stocks, Councils are still required to estimate other biological reference points such as SDC, MSY, OY, ABC and an ABC control rule. However, the MSA limits the exception and clearly states that if overfishing is occurring on the stock, the exception can not be used, therefore ACLs would be required. MSA only provided for a 1-year life cycle exception, thus NMFS cannot expand the exception to two years. Section (h)(3) of the final action acknowledges that there may be circumstances when flexibility is needed in applying the NS1 guidelines. Whether such flexibility is appropriate for certain two year life cycle species would have to be considered on a case-by-case basis.

Comment 78: NMFS received many comments expressing different interpretations of the MSA's ACL international exception. Some commented that the exception only pertains to the 2010/2011 timing requirement. If fisheries under international agreements were intended to be exempt from ACLs, Congress could have drafted the exception to say that ACLs ''shall not apply'' to such fisheries, similar to language used in the one-year life cycle exception. Several comments stated that by requiring ACLs for U.S. fishermen, the U.S. would be in a better bargaining position in international fora by taking the ''higher ground.'' Others agreed with the exception as set forth in the proposed guidelines but requested clarification. For example, one comment was that the exception should be expanded to cover the US/Canada Resource Sharing Understanding and other arrangements that may not be formal international agreements. Other suggestions included clarifying that the exception applied where a regional fishery management organization had approved a stock assessment, where there were conservation and management measures under an international agreement, or where there were annual catch limits established under international agreement consistent with MSA overfishing and rebuilding requirements.

Response: The ACL international exception is set forth in an uncodified note to MSA section 303. MSRA, Public Law 109–479 section 104(b)(1). The text is vague, and NMFS has spent considerable time looking at different possible interpretations of this text in light of the plain language of the text, public comments, and other relevant MSA provisions. NMFS agrees that one possible interpretation, in light of the text of the one-year life cycle exception (MSRA section 104(b)(2)), is that stocks under international management are only exempt from timing requirements. However, Congress added significant new requirements under the MSRA regarding international fisheries, thus NMFS has tried to interpret the exception in light of these other statutory provisions.

In many fisheries, the U.S. unilaterally cannot end overfishing or rebuild stocks or make any measurable progress towards those goals, even if it were to stop all U.S. harvest. Thus, it has signed onto various treaties and negotiates binding, international conservation and management measures at regional fishery management organizations (RFMOs) to try to facilitate international efforts to end overfishing and rebuild overfished stocks. MSRA acknowledged the challenges facing the United States in international fisheries by, among other things, including a new ''International Overfishing'' section (MSA section 304(i)) that refers domestic regulations to address ''relative impact'' of U.S. vessels; changes to highly migratory species provisions (MSA section 102(b)–(c)); and amendments to the High Seas Driftnet Fishing Moratorium Protection Act, 16 U.S.C. 1826h–1826k, to encourage strengthening of RFMOs and establish a process for identification and certification of nations whose vessels engage in illegal, unreported or unregulated (IUU) fishing and bycatch of protected living marine resources.

While NMFS actively communicates and promotes MSA requirements regarding ending overfishing and rebuilding overfished stocks at the international level (*see*, *e.g.*, MSA section 102(c)), it is unlikely that RFMOs will adopt ACL/AM mechanisms as such mechanisms are understood and required in the context of U.S. domestic fisheries. Given the practical problem of ensuring the U.S. could negotiate such mechanisms, and Congress' clear recognition of U.S. fishing impact versus international fishing effort, NMFS believes that a reasonable interpretation of the exception is that it should apply to the ACL requirement, not just the effective date. If ACLs were required, a likely outcome is that U.S. fishermen may be subject to more restrictive measures than their foreign counterparts, *e.g.*, each country may be assigned a catch quota but the U.S. portion may be subject to further restriction below the assigned amount. Further, requiring ACLs may raise potential conflicts with implementing legislation for some of the international fishery agreements.

NMFS believes that the intent of MSRA is to not unfairly penalize U.S. fishermen for overfishing which is occurring predominantly at the international level. In many cases, applying ACL requirements to U.S. fishermen on just the U.S. portion of the catch or quota, while other nations fished without such additional measures, would not lead to ending overfishing and could disadvantage U.S. fishermen. The guidance given for the international exception allows the Councils to continue managing the U.S. portion of stocks under international agreements, while the U.S. delegation works with RFMOs to end overfishing through international cooperation. The guidelines do not preclude Councils or NMFS from applying ACLs or other catch limits to stocks under international agreements, if such action was deemed to be appropriate and consistent with MSA and other statutory mandates.

NMFS considered different suggestions on how the exception might be clarified, *e.g.*, exception would only apply where there is an approved stock assessment, conservation and management measures, annual catch limits consistent with MSA overfishing and rebuilding requirements, etc. Regardless of how the exception could be revised, establishing ACL mechanisms and AMs on just the U.S. portion of the fishery is unlikely to have any impact on ending overfishing and rebuilding. For these reasons, and taking into consideration possible statutory interpretations and public comment, NMFS has decided not to revise the international exception.

With regard to whether an arrangement or understanding is an ''international agreement,'' it will be important to consider the facts and see if the arrangement or understanding qualifies as an ''international agreement'' as understood under MSA section 3(24) (defining ''international fishery agreement'') and as generally understood in international negotiation. The Case-Zablocki Act, 1 U.S.C. 112b, and its implementing regulations provide helpful guidance on interpreting the term ''international agreement.''

Comment 79: With regard to fisheries data (§ 600.310(i) of NS1 guidelines), comments included: data collection guidelines are burdensome, clarification is needed on how the Councils would implement the data collection requirements, and that data collection performance standards and real-time accounting are needed.

Response: NMFS believes that § 600.310(i) of the final action provides sufficient guidance to the Councils in developing and updating their FMPs, or associated public documents such as SAFE reports, to address data needed to meet the new requirements of the MSRA. There is a close relationship between the data available for fishery management and the types of conservation and management measures that can be employed. Also, for effective prevention of overfishing, it is essential that all sources of fishing mortality be accounted for. NMFS believes that detailing the sources of data for the fishery and how they are used to account for all sources of fishing mortality in the annual catch limit system will be beneficial. NMFS revised the final guidelines to clarify that a SAFE report, or other public document adopted by a Council, can be used to document the required fishery data elements.

Comment 80: NMFS received several comments requesting that better data be used when creating conservation and management measures.

Response: NMFS agrees that improvements in fishery data can lead to more effective conservation and management measures, including ACLs. NMFS is aware of the various gaps in data collection and analysis for FMPs in U.S. fisheries, and has ongoing and future plans to improve the data needed to implement the new provisions of the MSRA. NMFS programs and initiatives that will help produce better quality data include the: Marine Recreational Information Program (MRIP), National Permits System, and Fisheries Information and National Saltwater Angler Registry.

Comment 81: Some comments recognized the ongoing programs to improve data, but were concerned that the time that it would take to implement and fold these new data into the management process could cause overly restrictive measures when implementing ACLs on fisheries that are data poor (*e.g.* recreational fisheries).

Response: ACLs must be implemented using the best data and information available. Future improvements in data will allow corresponding improvements in conservation and management measures. This is an incremental process. NMFS believes that Councils must implement the best ACLs possible with the existing data, but should also look for opportunities to improve the data and the ACL measures in the future. It is important that the ACL measures prevent overfishing without being overly restrictive. In data poor situations, it is important to monitor key indicators, and have accountability measures that quickly adjust the fishery in response to changes in those indicators.

Comment 82: Some commenters noted they want more transparency in the data being used to manage fisheries.

Response: NMFS believes the NS1 guidelines provide sufficient guidance to the Councils in developing and updating their FMPs, or associated public documents such as SAFE reports, to address data needed to meet the new requirements of the MSRA. NMFS agrees that transparency in the Council process and NMFS decision process in regard to data and data analysis is critical to the public and user groups understanding of how fisheries are managed. NMFS is aware of this issue and will continue to seek improvements in such processes.

Comment 83: NMFS received several comments about the timing associated with submitting a rebuilding plan. Commenters asked for clarification on when the clock started for the implementation of the plan, stated that Councils should have two years to submit the plan to the Secretary, and suggested that a 6-month review/implementation period be used instead of a 9-month period. Commenters noted that MSA provides for specific time periods for Secretarial review.

Response: Ending overfishing and rebuilding overfished stocks is an important goal of the MSA and the performance of NMFS is measured by its ability to reach this goal. Currently, the Council has 12 months to submit an FMP, FMP amendment, or proposed

regulations to the Secretary, but there is no time requirement for implementation of such actions. MSA section 304(e)(3), which is effective July 12, 2009, requires that a Council prepare and implement an FMP, FMP amendment, or proposed regulations within 2 years of the Secretary notifying the council that the stock is overfished or approaching a condition of being overfished. The guidelines provide that such actions should be submitted to the Secretary within 15 months so NMFS has 9 months to review and implement the plan and regulations. NMFS recognizes that there are timing requirements for Secretarial review of FMPs and regulations (MSA section 304(a),(b)). The 15-month period was not intended to expand the time for Secretarial review, but rather, to address the new requirement that actions be implemented within two years. NMFS believes the timing set forth in the guidelines is appropriate as a general rule: it would continue to allow for 60 days for public comment on an FMP, 30 days for Secretarial review, and 6 months for NMFS to implement the rebuilding plan. However, in specific cases NMFS and a Council may agree on a schedule that gives the Council more time, if the overall objective can still be met.

Comment 84: NMFS received many comments in support of the language regarding ending overfishing immediately. One comment, however, stated that intent of the MSA is to end all overfishing, not just chronic overfishing, as described in the preamble.

Response: NMFS agrees that the intent of the MSA is to end overfishing, and in the context of a rebuilding plan, overfishing must be ended immediately. However, as long as fishing is occurring, there always is a chance that overfishing may occur given scientific and management uncertainty. The guidelines explain how to incorporate scientific and management uncertainty so that fishing may continue but with an appropriately low likelihood of overfishing. The term ''chronic overfishing'' is used to mean that annual fishing mortality rates exceed the MFMT on a consistent basis over a period of years. The MSA definition of overfishing is ''* * * a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis.'' NMFS believes that the best way to ensure that overfishing does not occur is to keep annual fishing mortality rates below the MFMT. However, exceeding the MFMT occasionally does not necessarily jeopardize the capacity of a fishery to produce the MSY on a continuing basis. The more frequently MFMT is exceeded, the more likely it becomes that the capacity of a fishery to produce the MSY on a continuing basis is jeopardized. Thus, NMFS believes that ACLs and AMs should be designed to prevent overfishing on an annual basis, but that conservation and management measures need not be so conservative as to prevent any possibility that the fishing mortality rate exceeds the MFMT in every year.

Comment 85: NMFS received several comments regarding what happens when a rebuilding plan reaches T_{max} but the stock is not fully rebuilt. Commenters supported the approach in the proposed action that provided that the rebuilding F should be reduced to no more than 75 percent of MFMT until the stock or stock complex is rebuilt. One commenter suggested clarifying the final guidelines text to provide: ''If the stock or stock complex has not rebuilt by T_{max}, then the fishing mortality rate should be maintained at $F_{rebuild}$ or 75% of the MFMT, whichever is less.'' Other commenters stated that 75 percent MFMT is not precautionary enough and that 50 percent MFMT (or less) should be used.

Response: This new language in the guidelines fills a gap in the current guidelines which did not prescribe how to proceed when a stock had reached T_{max} but had not been fully rebuilt. NMFS believes that requiring that F does not exceed $F_{rebuild}$ or 75 percent MFMT, whichever is lower, is an appropriate limit, but Councils should consider a lower mortality rate to meet the requirement to rebuild stocks in as short a time as possible, pursuant to the provisions in MSA section 304(e)(4)(a)(i). NMFS agrees that the suggested edit would clarify the provision, and has revised the guidelines.

Comment 86: NMFS received many comments on the relationship between T_{min}, T_{target} and T_{max}. Some comments supported the proposed guidelines and others stated that the guidelines should be modified. Comments included: T_{min} is inconsistent with MSA's requirement to take into account needs of fishing communities and should include those needs when evaluating whether rebuilding can occur in 10 years or less; management measures should be designed to achieve rebuilding by the T_{target} with at least a 50% probability of success and achieve T_{max} with a 90% probability of success; as in the 2005 proposed NS1 guidelines revisions, T_{max} should be calculated as T_{min} plus one mean generation time for purposes of determining whether rebuilding can occur in 10 years or less; per *NRDC* v. *NMFS,* 421 F.3d 872 (9th Cir. 2005), T_{target} should be as close to T_{min} as possible without causing a short-term disaster; rebuilding timeframes should only be extended above T_{min} where ''unusually severe impacts on fishing communities can be demonstrated, and where biological and ecological implications are minimal;'' rebuilding times for stock complexes must not be used to delay recovery of complex member species; and the ''generation time'' calculation for T_{max} should refer to generation time of the current population.

Response: In developing the guidance for rebuilding plans, NMFS developed guidelines for Councils which, if followed, are strong enough to rebuild overfished stocks, yet flexible enough to work for a diverse range of fisheries. The timeline for a rebuilding plan is based on three time points, T_{min}, T_{target} and T_{max}. T_{min} is the amount of time, in the absence of any fishing mortality, for the stock to have a 50% probability of reaching the rebuilding goal, B_{msy}. T_{min} is the basis for determining the rebuilding period, consistent with section 304(e)(4)(A)(ii) of the MSA which requires that rebuilding periods not exceed 10 years, except in cases where the biology of the stock of fish, other environmental conditions, or management measures under an international agreement in which the United States participates dictate otherwise. T_{min} provides a biologically determined lower limit to T_{target}. Needs of fishing communities are not part of the criteria for determining whether a rebuilding period can or cannot exceed 10 years, but are an important factor in establishing T_{target}.

Just as T_{min} is a helpful reference point of the absolute shortest time to rebuild, T_{max} provides a reference point of the absolute longest rebuilding period that could be consistent with the MSA. T_{max} is clearly described in the guidelines as either 10 years, if T_{min} is 10 years or less, or T_{min} plus one generation time for the stock if T_{min} is greater than 10 years. NMFS agrees that this calculation can cause a discontinuity problem when calculating T_{max}, and proposed revisions to the NS1 guidelines in 2005 that would have addressed the issue by basing T_{max} on T_{min} + one generation time in all cases, which would have removed the requirement that T_{max} is 10 years in all cases where T_{min} was less than 10 years. NMFS did not finalize those revisions, but proposed the same changes to the MSA in the Administration's proposed MSA reauthorization bill. However,

when MSRA was passed, Congress did not accept the Administration's proposal and chose to keep the existing provision. NMFS has, therefore, not revised this aspect of the NS1 guidelines.

The generation time is defined in the guidelines as ''the average length of time between when an individual is born and the birth of its offspring.'' Typically this is calculated as the mean age of the spawners in the absence of fishing mortality (per Restrepo *et al.,* 1998), but the exact method is not specified in the guidance.

T_{max} is a limit which should be avoided. When developing a rebuilding plan, it is good practice for Councils to calculate the probability of the potential management alternatives to achieve rebuilding by T_{max}, in order to inform their decision.

T_{target} is bounded by T_{min} and T_{max} and is supposed to be established based on the factors specified in MSA section 304(e)(4). Section 600.310(j)(3) of the final action reiterates the statutory criteria on specifying rebuilding periods that are ''as short as possible,'' taking into account specified factors. Management measures put in place by the rebuilding plan should be expected (at least 50% probability) to achieve rebuilding by T_{target}. NMFS does not believe these sections should be revised to focus on ''short-term disasters'' or ''unusually severe'' community impacts, as the MSA provides for several factors to be considered. NMFS believes the final guidelines provide sufficient general guidance on the MSA requirements, but acknowledges that there is case law in different jurisdictions (such as NRDC v. NMFS), that fishery managers should consider in addition to the general guidance.

Comment 87: A commenter stated that § 600.310(j)(3)(i)(E) of the proposed action should be revised to state that ''as short as possible'' is a mandate, not just a priority.

Response: NMFS deleted the ''priority'' text in § 600.310 (j)(3)(i)(E) of the final action. That text is unnecessary given that § 600.310 (j)(3)(i) of the guidelines explains ''as short as possible'' and other rebuilding time period requirements from MSA section 304(e)(4).

Comment 88: Commenters raised several questions about the relationship of NS1 and National Standard 8 (NS 8), including whether NS 1 ''trumps'' NS 8 and whether the ACL guidance provides sufficient flexibility to address NS 8 considerations.

Response: NS 1 states: ''Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.'' MSA section 301(a)(1). NS 8 states: ''Conservation and management measures shall, *consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks,* take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2) [*i.e.*, National Standard 2] , in order to (A) provide for sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.'' MSA section 301(a)(8) (*emphasis added*).

The objectives in NS8 for sustained participation of fishing communities and minimization of adverse economic impacts do not provide a basis for continuing overfishing or failing to rebuild stocks. The text of NS8 explicitly provides that conservation and management measures must prevent overfishing and rebuild overfished stocks. MSA does provide, however, for flexibility in the specific conservation and management measures used to achieve its conservation goals, and NMFS took this into consideration in developing the revised NS1 guidelines.

Comment 89: NMFS received many comments regarding § 600.310(m) of the proposed action, a provision commonly called the ''mixed stock exception.'' One comment supported the revision as proposed. Some commenters noted that the provision is very important in managing specific mixed stock fisheries, and that changes in the proposed guidelines would make it impossible to use. Specific concern was noted about text that stated that the ''resulting rate of fishing mortality will not cause any stock or stock complex to fall below its MSST more than 50 percent of the time in the long term.'' In addition, commenters stated that the proposed revisions do not allow for social and economic aspects to be taken in to account adequately and would negatively impact several fisheries and fishing communities. Many others commented that the provision should be removed entirely, because it is contrary to the intent of the MSA. The MSA, as amended by the MSRA, requires preventing and ending overfishing, and a mixed stock exception would allow for chronic overfishing on vulnerable fish stocks within a complex.

Response: MSRA amended overfishing and rebuilding provisions of the MSA, reflecting the priority to be given to the Act's conservation goals. NMFS believes that the final NS1 guidelines provide helpful guidance on the new statutory requirements and will strengthen efforts to prevent overfishing from occurring in fisheries. Preventing overfishing and achieving, on a continuing basis, the OY is particularly challenging in mixed stock fisheries. To address this issue, the proposed action retained a mixed stock exception. NMFS recognizes the concerns raised about how the exception will impact efforts to prevent and end overfishing, and thus, revised the current NS1 guidelines text in light of new MSRA provisions.

The current mixed stock exception allows overfishing to occur on stocks within a complex so long as they do not become listed under the Endangered Species Act (ESA). As explained in the proposed guidelines, NMFS believes that ESA listing is an inappropriate threshold, and that stocks should be managed so they retain their potential to achieve MSY. The revised guidelines propose a higher threshold, limiting F to a level that will not lead to the stock becoming overfished in the long term. In addition, if any stock, including those under the mixed stock exception, were to drop below its MSST, it would be subject to the rebuilding requirements of the MSA, which require that overfishing be ended immediately and that the stock be rebuilt to B_{msy} (see § 600.310(j)(2)(ii)(B) of the final action). The exception, as revised, addresses concerns regarding social, economic, and community impacts as it could allow for continued harvest of certain stocks within a mixed stock fishery.

Having considered public comments on the proposed guidelines, NMFS has decided to retain the mixed stock exception as proposed in the guidance. While NMFS has chosen in the NS1 guidelines to emphasize the importance of stock-level analyses, MSA refers to preventing overfishing in a fishery and provides for flexibility in terms of the specific mechanisms and measures used to achieve this goal. The mixed stock exception provides Councils with needed flexibility for managing fisheries, while ensuring that all stocks in the fishery continue to be subject to strong conservation and management. However, NMFS believes that the mixed stock exception should be applied with a great deal of caution, taking into consideration new MSRA requirements and NS1 guidance regarding stock complexes and indicator species. NMFS also believes that Councils should work to improve selectivity of fishing gear and practices in their mixed-stock fisheries so that the need to apply the mixed stock exception is reduced in the future.

VI. Changes From Proposed Action

Annual catch target (ACT) is described as a management option, rather than a required reference point in paragraphs (f)(1), (f)(2)(v), (f)(6), (f)(6)(i), and (g)(2) in the final action.

The following sentence was deleted from paragraph (b)(2)(v)(B): ''The SSC may specify the type of information that should be included in the Stock Assessment and Fishery Evaluation (SAFE) report (*see* § 600.315).'' Paragraph (b)(2)(v)(C) was revised to make some clarifying edits regarding the SSC and peer review process. The following sentence was included in (b)(2)(v)(D): ''The SSC recommendation that is the most relevant to ACLs is ABC, as both ACL and ABC are levels of annual catch.''

Paragraph (c)(5) is removed because ''ACT control rule'' is no longer a required part of the definition framework. Paragraph (c)(6) in the proposed action is re-designated as paragraph (c)(5) in the final action. Paragraph (c)(7) in the proposed action is re-designated as paragraph (c)(6) in the final action.

Paragraph (d)(1) was revised to clarify that Councils may, but are not required to, use the ''ecosystem component'' species classification. Paragraphs (d)(2) through (d)(7) were revised to better clarify the classification system for stocks in an FMP. Paragraph (d)(9) is revised to emphasize that indicator stocks are stocks with SDC that can be used to help manage more poorly known stocks that are in a stock complex. Paragraph (d)(10) has been added to describe in general how to evaluate ''vulnerability'' of a stock.

Paragraph (e)(1)(iv) was revised to clarify that ecological conditions should be taken into account when specifying MSY. The following sentence was added to paragraph (e)(2)(i)(C): ''The MFMT or reasonable proxy may be expressed either as a single number (a fishing mortality rate or F value), or as a function of spawning biomass or other measure of reproductive potential.'' The following sentence was added to paragraph (e)(2)(i)(D): ''The OFL is an estimate of the catch level above which overfishing is occurring.'' The following sentence was deleted from (e)(2)(ii)(A)(*1*): ''The MFMT must not exceed F_{msy}.'' Paragraph (e)(3)(iv) was revised to improve clarity. The following sentence was deleted from (e)(3)(v)(A): ''As a long-term average, OY cannot exceed MSY.''

Paragraph (f)(1) was revised to give examples of scientific and management uncertainty. Paragraphs (f)(2)(ii) and (iii) were revised to clarify that scientific uncertainty in the OFL and any other scientific uncertainty should be accounted for when specifying ABC and the ABC control rule. Paragraph (f)(3) was revised to improve clarity; to acknowledge that the SSC may recommend an ABC that differs from the result of the ABC control rule calculation; and to state that while the ABC is allowed to equal OFL, NMFS expects that in most cases ABC will be reduced from OFL to reduce the probability that overfishing might occur in a year. Paragraph (f)(4) on the ABC control rule was revised to include the following sentences: ''The determination of ABC should be based, when possible, on the probability that an actual catch equal to the stock's ABC would result in overfishing. This probability that overfishing will occur cannot exceed 50 percent and should be a lower value. The ABC control rule should consider reducing fishing mortality as stock size declines and may establish a stock abundance level below which fishing would not be allowed.'' Paragraph (f)(5)(i) was revised to include the following sentences: ''ACLs in coordination with AMs must prevent overfishing (see MSA section 303(a)(15)). If a Council recommends an ACL which equals ABC, and the ABC is equal to OFL, the Secretary may presume that the proposal would not prevent overfishing, in the absence of sufficient analysis and justification for the approach.'' Also, paragraph (f)(5)(i) was revised to clarify that ''a multiyear plan must provide that, if an ACL is exceeded for a year, then AMs are triggered for the next year consistent with paragraph (g)(3) of this section.'' Paragraph (f)(5)(ii) now clarifies that ''if the management measures for different sectors differ in degree of management uncertainty, then sector-ACLs may be necessary so appropriate AMs can be developed for each sector.'' Paragraphs (f)(5)(iii) and (g)(5) were revised to remove the phrase ''large majority'' from both provisions. The description of the relationship between OFL to MSY and ACT to OY was removed from paragraph (f)(7) and is replaced with the following sentence: ''A Council may choose to use a single control rule that combines both scientific and management uncertainty and supports the ABC recommendation and establishment of ACL and if used ACT.''

Paragraph (g)(2) on inseason AMs was revised to include the following sentences: ''FMPs should contain inseason closure authority giving NMFS the ability to close fisheries if it determines, based on data that it deems sufficiently reliable, that an ACL has been exceeded or is projected to be reached, and that closure of the fishery is necessary to prevent overfishing. For fisheries without inseason management control to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL.'' Paragraph (g)(3) was revised to improve clarity and to include the following sentence: ''A Council could choose a higher performance standard (e.g., a stock's catch should not exceed its ACL more often than once every five or six years) for a stock that is particularly vulnerable to the effects of overfishing, if the vulnerability of the stock has not already been accounted for in the ABC control rule.'' Paragraph (g)(4) on AMs based on multi-year average data was revised to clarify: That Councils should explain why basing AMs on a multi-year period is appropriate; that AMs should be implemented if the average catch exceeds the average ACL; the performance standard; and that Councils can use a stepped approach when initially implementing AMs based on multi-year average data.

Paragraph (h) was revised to include the sentence: ''These mechanisms should describe the annual or multiyear process by which specific ACLs, AMs, and other reference points such as OFL, and ABC will be established.'' Paragraph (h)(1)(v) was removed because the requirement to describe fisheries data is covered under paragraph (i). Paragraph (i) is revised to clarify that Councils must describe ''in their FMPs, or associated public documents such as SAFE reports as appropriate,'' general data collection methods.

Paragraph (j)(2)(ii)(C) was removed and paragraph (j)(2)(ii)(B) was revised to include information about stocks or stock complexes that are approaching an overfished condition. Paragraph (j)(3)(i)(E) was revised to remove the ''priority'' text. That text is unnecessary given that section (j)(3)(i) explains ''as short as possible'' and other rebuilding time period requirements from MSA section 304(e)(4). Paragraph (j)(3)(ii) was revised to clarify that ''if the stock or stock complex has not rebuilt by T_{max}, then the fishing mortality rate should be maintained at $F_{rebuild}$ or 75 percent of the MFMT, whichever is less.''

Introductory language (General) has been added to paragraph (l) to clarify the relationship of other national standards to National Standard 1. Also, paragraph (l)(4) has been revised to ensure that the description about the relationship between National Standard 8 with National Standard 1 reflects more

accurately, section 301(a)(8) of the Magnuson-Stevens Act.

The words ''should'' or ''recommended'' in the proposed rule are changed to ''must'' or ''are required'' or ''need to'' in this action's codified text if NMFS interprets the guidance to refer to ''requirements of the Magnuson-Stevens Act'' and ''the logical extension thereof'' (see section 600.305(c) of the MSA). In the following, items in paragraphs of § 600.310 are followed by an applicable MSA section that contains pertinent requirements:

Paragraph (b)(3) is revised to state that Councils ''must take an approach that considers uncertainty in scientific information and management control of the fishery'' because it needs to meet requirements in MSA section 303(a)(15).

Paragraph (c) is revised to state ''* * * Councils must include in their FMPs * * *'' because it needs to meet various requirements in MSA section 303(a).

Paragraph (c) is revised to state ''Councils must also describe fisheries data * * *'' because it needs to meet requirements of various portions of MSA sections 303(a) and 303(a)(15).

Paragraph (c) is revised to state ''* * * Councils must evaluate and describe the following items in their FMPs * * *'' because it needs to meet requirements of various portions of MSA sections 303(a) and 303(a)(15).

Paragraph (e)(1) is revised to state that ''Each FMP must include an estimate of MSY * * *'' because it needs to meet requirements of MSA section 303(a)(3).

Paragraph (e)(2)(ii) is revised to state that a Council ''must provide an analysis of how the SDC were chosen * * *'' because it needs to meet requirements of MSA section 303(a)(10).

Paragraph (e)(2)(ii)(A) is revised to state ''each FMP must describe which of the following two methods * * *'' because it needs to meet requirements of MSA section 303(a)(10).

Paragraph (e)(2)(ii)(B) is revised to state ''the MSST or reasonable proxy must be expressed in terms of spawning biomass * * *'' because it needs to meet requirements of MSA section 303(a)(10).

Paragraph (f)(4) is revised to state each Council ''must establish an ABC control rule * * *'' because it needs to meet requirements of MSA sections 303(a)(15) and 302(g)(1)(B).

Paragraph (f)(4) is revised to state ''The ABC control rule must articulate how ABC will be set compared to the OFL * * *'' because it needs to meet requirements of MSA sections 303(a)(15) and 301(a)(2).

Paragraph (f)(5)(i) is revised to state ''A multiyear plan must include a mechanism for specifying ACLs for each year * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (f)(5)(i) is also revised to state ''A multiyear plan must provide that, if an ACL is exceeded * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (f)(6)(i) is revised to state ''Such analyses must be based on best available scientific * * *'' because it needs to meet requirements of MSA section 301(a)(2).

Paragraph (g)(3) is revised to state a Council ''must determine as soon as possible after the fishing year if an ACL is exceeded * * *'' because it needs to meet requirements of MSA sections 303(a)(15), 301(a)(1) and 301(a)(2).

Paragraph (h) is revised to state FMPs or FMP amendments ''must establish ACL mechanisms and AMs * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (h)(3) is revised to state ''Councils must document their rationale for any alternative approaches * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (j)(2) is revised to state ''FMPs or FMP amendments must establish ACL and AM mechanisms in 2010 * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (j)(2)(i)(A) is revised to state that '' * * * ACLs and AMs themselves must be specified * * *'' because it needs to meet requirements of MSA section 303(a)(15).

Paragraph (k) is revised to state that ''The Secretary, in cooperation with the Secretary of State, must immediately take appropriate action at the international level * * *'' because it needs to meet requirements of MSA section 304(i)—INTERNATIONAL OVERFISHING.

Paragraph (k)(3) is revised to state that ''Information used to determine relative impact must be based upon the best available scientific * * *'' because it needs to meet requirements of MSA section 301(a)(2).

Paragraph (l)(2) is revised to state that ''Also scientific assessments must be based on the best information * * *'' because it needs to meet requirements of MSA section 301(a)(2).

VII. References Cited

A complete list of all the references cited in this final action is available online at: *http://www.nmfs.noaa.gov/msa2007/catchlimits.htm* or upon request from Mark Millikin [*see* **FOR FURTHER INFORMATION CONTACT**].

VIII. Classification

Pursuant to the Magnuson-Stevens Act, the NMFS Assistant Administrator has determined that these final NS1 guidelines are consistent with the Magnuson-Stevens Act, and other applicable law.

The final NS1 guidelines have been determined to be significant for purposes of Executive Order 12866. NOAA prepared a regulatory impact review of this rulemaking, which is available at: *http://www.nmfs.noaa.gov/msa2007/catchlimits.htm.* This analysis discusses various policy options that NOAA considered in preparation of the proposed action, given NOAA's interpretation of the statutory terms in the MSRA, such as the appropriate meaning of the word ''limit'' in ''Annual Catch Limit,'' and NOAA's belief that it has become necessary for Councils to consider separately the uncertainties in fishery management and the scientific uncertainties in stock evaluation in order to effectively set fishery management policies and ensure fulfillment of the goals to end overfishing and rebuild overfished stocks.

The Chief Counsel for Regulation of the Department of Commerce certified to the Chief Counsel for Advocacy of the Small Business Administration during the proposed rule stage that these revisions to the NS1 guidelines, if adopted, would not have any significant economic impact on a substantial number of small entities. The factual basis for the certification was published in the proposed action and is not repeated here. Two commenters stated that an initial regulatory flexibility analysis should be prepared, and NMFS has responded to those comments in the ''Response to Comments.'' After considering the comments, NMFS has determined that a certification is still appropriate for this action. Therefore, a regulatory flexibility analysis is not required for this action and none was prepared.

List of Subjects in 50 CFR Part 600

Fisheries, Fishing, Reporting and recordkeeping requirements.

Dated: January 9, 2009.

James W. Balsiger,

Acting Assistant Administrator, for Fisheries, National Marine Fisheries Service.

PART 600—MAGNUSON-STEVENS ACT PROVISIONS

■ 1. The authority citation for part 600 continues to read as follows:

Authority: 16 U.S.C. 1801 *et seq.*

■ 2. Section 600.310 is revised to read as follows:

§ 600.310 National Standard 1—Optimum Yield.

(a) *Standard 1.* Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield (OY) from each fishery for the U.S. fishing industry.

(b) *General.* (1) The guidelines set forth in this section describe fishery management approaches to meet the objectives of National Standard 1 (NS1), and include guidance on:

(i) Specifying maximum sustainable yield (MSY) and OY;

(ii) Specifying status determination criteria (SDC) so that overfishing and overfished determinations can be made for stocks and stock complexes that are part of a fishery;

(iii) Preventing overfishing and achieving OY, incorporation of scientific and management uncertainty in control rules, and adaptive management using annual catch limits (ACL) and measures to ensure accountability (AM); and

(iv) Rebuilding stocks and stock complexes.

(2) *Overview of Magnuson-Stevens Act concepts and provisions related to NS1*—(i) *MSY.* The Magnuson-Stevens Act establishes MSY as the basis for fishery management and requires that: The fishing mortality rate does not jeopardize the capacity of a stock or stock complex to produce MSY; the abundance of an overfished stock or stock complex be rebuilt to a level that is capable of producing MSY; and OY not exceed MSY.

(ii) *OY.* The determination of OY is a decisional mechanism for resolving the Magnuson-Stevens Act's conservation and management objectives, achieving a fishery management plan's (FMP) objectives, and balancing the various interests that comprise the greatest overall benefits to the Nation. OY is based on MSY as reduced under paragraphs (e)(3)(iii) and (iv) of this section. The most important limitation on the specification of OY is that the choice of OY and the conservation and management measures proposed to achieve it must prevent overfishing.

(iii) *ACLs and AMs.* Any FMP which is prepared by any Council shall establish a mechanism for specifying ACLs in the FMP (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability (Magnuson-Stevens Act section 303(a)(15)). Subject to certain exceptions and circumstances described in paragraph (h) of this section, this requirement takes effect in fishing year 2010, for fisheries determined subject to overfishing, and in fishing year 2011, for all other fisheries (Magnuson-Stevens Act section 303 note). ''Council'' includes the Regional Fishery Management Councils and the Secretary of Commerce, as appropriate (*see* § 600.305(c)(11)).

(iv) *Reference points.* SDC, MSY, acceptable biological catch (ABC), and ACL, which are described further in paragraphs (e) and (f) of this section, are collectively referred to as ''reference points.''

(v) *Scientific advice.* The Magnuson-Stevens Act has requirements regarding scientific and statistical committees (SSC) of the Regional Fishery Management Councils, including but not limited to, the following provisions:

(A) Each Regional Fishery Management Council shall establish an SSC as described in section 302(g)(1)(A) of the Magnuson-Stevens Act.

(B) Each SSC shall provide its Regional Fishery Management Council recommendations for ABC as well as other scientific advice, as described in Magnuson-Stevens Act section 302(g)(1)(B).

(C) The Secretary and each Regional Fishery Management Council may establish a peer review process for that Council for scientific information used to advise the Council about the conservation and management of a fishery (see Magnuson-Stevens Act section 302(g)(1)(E)). If a peer review process is established, it should investigate the technical merits of stock assessments and other scientific information used by the SSC or agency or international scientists, as appropriate. For Regional Fishery Management Councils, the peer review process is not a substitute for the SSC and should work in conjunction with the SSC. For the Secretary, which does not have an SSC, the peer review process should provide the scientific information necessary.

(D) Each Council shall develop ACLs for each of its managed fisheries that may not exceed the ''fishing level recommendations'' of its SSC or peer review process (Magnuson-Stevens Act section 302(h)(6)). The SSC recommendation that is the most relevant to ACLs is ABC, as both ACL and ABC are levels of annual catch.

(3) *Approach for setting limits and accountability measures, including targets, for consistency with NS1.* In general, when specifying limits and accountability measures intended to avoid overfishing and achieve sustainable fisheries, Councils must take an approach that considers uncertainty in scientific information and management control of the fishery. These guidelines describe how to address uncertainty such that there is a low risk that limits are exceeded as described in paragraphs (f)(4) and (f)(6) of this section.

(c) *Summary of items to include in FMPs related to NS1.* This section provides a summary of items that Councils must include in their FMPs and FMP amendments in order to address ACL, AM, and other aspects of the NS1 guidelines. As described in further detail in paragraph (d) of this section, Councils may review their FMPs to decide if all stocks are ''in the fishery'' or whether some fit the category of ''ecosystem component species.'' Councils must also describe fisheries data for the stocks, stock complexes, and ecosystem component species in their FMPs, or associated public documents such as Stock Assessment and Fishery Evaluation (SAFE) Reports. For all stocks and stock complexes that are ''in the fishery'' (see paragraph (d)(2) of this section), the Councils must evaluate and describe the following items in their FMPs and amend the FMPs, if necessary, to align their management objectives to end or prevent overfishing:

(1) MSY and SDC (see paragraphs (e)(1) and (2) of this section).

(2) OY at the stock, stock complex, or fishery level and provide the OY specification analysis (see paragraph (e)(3) of this section).

(3) ABC control rule (see paragraph (f)(4) of this section).

(4) Mechanisms for specifying ACLs and possible sector-specific ACLs in relationship to the ABC (see paragraphs (f)(5) and (h) of this section).

(5) AMs (see paragraphs (g) and (h)(1) of this section).

(6) Stocks and stock complexes that have statutory exceptions from ACLs (see paragraph (h)(2) of this section) or which fall under limited circumstances which require different approaches to meet the ACL requirements (see paragraph (h)(3) of this section).

(d) *Classifying stocks in an FMP*—(1) *Introduction.* Magnuson-Stevens Act section 303(a)(2) requires that an FMP contain, among other things, a description of the species of fish involved in the fishery. The relevant Council determines which specific target stocks and/or non-target stocks to include in a fishery. This section provides that a Council may, but is not required to, use an ''ecosystem component (EC)'' species classification. As a default, all stocks in an FMP are

considered to be ''in the fishery,'' unless they are identified as EC species (see § 600.310(d)(5)) through an FMP amendment process.

(2) *Stocks in a fishery.* Stocks in a fishery may be grouped into stock complexes, as appropriate. Requirements for reference points and management measures for these stocks are described throughout these guidelines.

(3) ''Target stocks'' are stocks that fishers seek to catch for sale or personal use, including ''economic discards'' as defined under Magnuson-Stevens Act section 3(9).

(4) ''Non-target species'' and ''non-target stocks'' are fish caught incidentally during the pursuit of target stocks in a fishery, including ''regulatory discards'' as defined under Magnuson-Stevens Act section 3(38). They may or may not be retained for sale or personal use. Non-target species may be included in a fishery and, if so, they should be identified at the stock level. Some non-target species may be identified in an FMP as ecosystem component (EC) species or stocks.

(5) *Ecosystem component (EC) species.* (i) To be considered for possible classification as an EC species, the species should:

(A) Be a non-target species or non-target stock;

(B) Not be determined to be subject to overfishing, approaching overfished, or overfished;

(C) Not be likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and

(D) Not generally be retained for sale or personal use.

(ii) Occasional retention of the species would not, in and of itself, preclude consideration of the species under the EC classification. In addition to the general factors noted in paragraphs (d)(5)(i)(A)–(D) of this section, it is important to consider whether use of the EC species classification in a given instance is consistent with MSA conservation and management requirements.

(iii) EC species may be identified at the species or stock level, and may be grouped into complexes. EC species may, but are not required to, be included in an FMP or FMP amendment for any of the following reasons: For data collection purposes; for ecosystem considerations related to specification of OY for the associated fishery; as considerations in the development of conservation and management measures for the associated fishery; and/or to address other ecosystem issues. While EC species are not considered to be ''in the fishery,'' a Council should consider measures for the fishery to minimize bycatch and bycatch mortality of EC species consistent with National Standard 9, and to protect their associated role in the ecosystem. EC species do not require specification of reference points but should be monitored to the extent that any new pertinent scientific information becomes available (e.g., catch trends, vulnerability, etc.) to determine changes in their status or their vulnerability to the fishery. If necessary, they should be reclassified as ''in the fishery.''

(6) *Reclassification.* A Council should monitor the catch resulting from a fishery on a regular basis to determine if the stocks and species are appropriately classified in the FMP. If the criteria previously used to classify a stock or species is no longer valid, the Council should reclassify it through an FMP amendment, which documents rationale for the decision.

(7) *Stocks or species identified in more than one FMP.* If a stock is identified in more than one fishery, Councils should choose which FMP will be the primary FMP in which management objectives, SDC, the stock's overall ACL and other reference points for the stock are established. Conservation and management measures in other FMPs in which the stock is identified as part of a fishery should be consistent with the primary FMP's management objectives for the stock.

(8) *Stock complex.* ''Stock complex'' means a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar. At the time a stock complex is established, the FMP should provide a full and explicit description of the proportional composition of each stock in the stock complex, to the extent possible. Stocks may be grouped into complexes for various reasons, including where stocks in a multispecies fishery cannot be targeted independent of one another and MSY can not be defined on a stock-by-stock basis (*see* paragraph (e)(1)(iii) of this section); where there is insufficient data to measure their status relative to SDC; or when it is not feasible for fishermen to distinguish individual stocks among their catch. The vulnerability of stocks to the fishery should be evaluated when determining if a particular stock complex should be established or reorganized, or if a particular stock should be included in a complex. Stock complexes may be comprised of: one or more indicator stocks, each of which has SDC and ACLs, and several other stocks; several stocks without an indicator stock, with SDC and an ACL for the complex as a whole; or one of more indicator stocks, each of which has SDC and management objectives, with an ACL for the complex as a whole (this situation might be applicable to some salmon species).

(9) *Indicator stocks.* An indicator stock is a stock with measurable SDC that can be used to help manage and evaluate more poorly known stocks that are in a stock complex. If an indicator stock is used to evaluate the status of a complex, it should be representative of the typical status of each stock within the complex, due to similarity in vulnerability. If the stocks within a stock complex have a wide range of vulnerability, they should be reorganized into different stock complexes that have similar vulnerabilities; otherwise the indicator stock should be chosen to represent the more vulnerable stocks within the complex. In instances where an indicator stock is less vulnerable than other members of the complex, management measures need to be more conservative so that the more vulnerable members of the complex are not at risk from the fishery. More than one indicator stock can be selected to provide more information about the status of the complex. When indicator stock(s) are used, periodic re-evaluation of available quantitative or qualitative information (e.g., catch trends, changes in vulnerability, fish health indices, etc.) is needed to determine whether a stock is subject to overfishing, or is approaching (or in) an overfished condition.

(10) *Vulnerability.* A stock's vulnerability is a combination of its productivity, which depends upon its life history characteristics, and its susceptibility to the fishery. Productivity refers to the capacity of the stock to produce MSY and to recover if the population is depleted, and susceptibility is the potential for the stock to be impacted by the fishery, which includes direct captures, as well as indirect impacts to the fishery (e.g., loss of habitat quality). Councils in consultation with their SSC, should analyze the vulnerability of stocks in stock complexes where possible.

(e) *Features of MSY, SDC, and OY.*—(1) *MSY.* Each FMP must include an estimate of MSY for the stocks and stock complexes in the fishery, as described in paragraph (d)(2) of this section).

(i) *Definitions.* (A) *MSY* is the largest long-term average catch or yield that can be taken from a stock or stock complex

under prevailing ecological, environmental conditions and fishery technological characteristics (e.g., gear selectivity), and the distribution of catch among fleets.

(B) *MSY fishing mortality rate (F_{msy})* is the fishing mortality rate that, if applied over the long term, would result in MSY.

(C) *MSY stock size (B_{msy})* means the long-term average size of the stock or stock complex, measured in terms of spawning biomass or other appropriate measure of the stock's reproductive potential that would be achieved by fishing at F_{msy}.

(ii) *MSY for stocks.* MSY should be estimated for each stock based on the best scientific information available (see § 600.315).

(iii) *MSY for stock complexes.* MSY should be estimated on a stock-by-stock basis whenever possible. However, where MSY cannot be estimated for each stock in a stock complex, then MSY may be estimated for one or more indicator stocks for the complex or for the complex as a whole. When indicator stocks are used, the stock complex's MSY could be listed as ''unknown,'' while noting that the complex is managed on the basis of one or more indicator stocks that do have known stock-specific MSYs, or suitable proxies, as described in paragraph (e)(1)(iv) of this section. When indicator stocks are not used, MSY, or a suitable proxy, should be calculated for the stock complex as a whole.

(iv) *Specifying MSY.* Because MSY is a long-term average, it need not be estimated annually, but it must be based on the best scientific information available (*see* § 600.315), and should be re-estimated as required by changes in long-term environmental or ecological conditions, fishery technological characteristics, or new scientific information. When data are insufficient to estimate MSY directly, Councils should adopt other measures of reproductive potential, based on the best scientific information available, that can serve as reasonable proxies for MSY, F_{msy}, and B_{msy}, to the extent possible. The MSY for a stock is influenced by its interactions with other stocks in its ecosystem and these interactions may shift as multiple stocks in an ecosystem are fished. These ecological conditions should be taken into account, to the extent possible, when specifying MSY. Ecological conditions not directly accounted for in the specification of MSY can be among the ecological factors considered when setting OY below MSY. As MSY values are estimates or are based on proxies, they will have some level of uncertainty associated with them. The degree of uncertainty in the estimates should be identified, when possible, through the stock assessment process and peer review (*see* § 600.335), and should be taken into account when specifying the ABC Control rule. Where this uncertainty cannot be directly calculated, such as when proxies are used, then a proxy for the uncertainty itself should be established based on the best scientific information, including comparison to other stocks.

(2) *Status determination criteria*—(i) *Definitions.* (A) *Status determination criteria (SDC)* mean the quantifiable factors, MFMT, OFL, and MSST, or their proxies, that are used to determine if overfishing has occurred, or if the stock or stock complex is overfished. Magnuson-Stevens Act (section 3(34)) defines both ''overfishing'' and ''overfished'' to mean a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the MSY on a continuing basis. To avoid confusion, this section clarifies that ''overfished'' relates to biomass of a stock or stock complex, and ''overfishing'' pertains to a rate or level of removal of fish from a stock or stock complex.

(B) *Overfishing* (to overfish) occurs whenever a stock or stock complex is subjected to a level of fishing mortality or annual total catch that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis.

(C) *Maximum fishing mortality threshold (MFMT)* means the level of fishing mortality (F), on an annual basis, above which overfishing is occurring. The MFMT or reasonable proxy may be expressed either as a single number (a fishing mortality rate or F value), or as a function of spawning biomass or other measure of reproductive potential.

(D) *Overfishing limit (OFL)* means the annual amount of catch that corresponds to the estimate of MFMT applied to a stock or stock complex's abundance and is expressed in terms of numbers or weight of fish. The OFL is an estimate of the catch level above which overfishing is occurring.

(E) *Overfished.* A stock or stock complex is considered ''overfished'' when its biomass has declined below a level that jeopardizes the capacity of the stock or stock complex to produce MSY on a continuing basis.

(F) *Minimum stock size threshold (MSST)* means the level of biomass below which the stock or stock complex is considered to be overfished.

(G) *Approaching an overfished condition.* A stock or stock complex is approaching an overfished condition when it is projected that there is more than a 50 percent chance that the biomass of the stock or stock complex will decline below the MSST within two years.

(ii) *Specification of SDC and overfishing and overfished determinations.* SDC must be expressed in a way that enables the Council to monitor each stock or stock complex in the FMP, and determine annually, if possible, whether overfishing is occurring and whether the stock or stock complex is overfished. In specifying SDC, a Council must provide an analysis of how the SDC were chosen and how they relate to reproductive potential. Each FMP must specify, to the extent possible, objective and measurable SDC as follows (*see* paragraphs (e)(2)(ii)(A) and (B) of this section):

(A) *SDC to determine overfishing status.* Each FMP must describe which of the following two methods will be used for each stock or stock complex to determine an overfishing status.

(1) *Fishing mortality rate exceeds MFMT.* Exceeding the MFMT for a period of 1 year or more constitutes overfishing. The MFMT or reasonable proxy may be expressed either as a single number (a fishing mortality rate or F value), or as a function of spawning biomass or other measure of reproductive potential.

(2) *Catch exceeds the OFL.* Should the annual catch exceed the annual OFL for 1 year or more, the stock or stock complex is considered subject to overfishing.

(B) *SDC to determine overfished status.* The MSST or reasonable proxy must be expressed in terms of spawning biomass or other measure of reproductive potential. To the extent possible, the MSST should equal whichever of the following is greater: One-half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years, if the stock or stock complex were exploited at the MFMT specified under paragraph (e)(2)(ii)(A)(1) of this section. Should the estimated size of the stock or stock complex in a given year fall below this threshold, the stock or stock complex is considered overfished.

(iii) *Relationship of SDC to environmental change.* Some short-term environmental changes can alter the size of a stock or stock complex without affecting its long-term reproductive potential. Long-term environmental changes affect both the short-term size of the stock or stock complex and the long-term reproductive potential of the stock or stock complex.

(A) If environmental changes cause a stock or stock complex to fall below its MSST without affecting its long-term reproductive potential, fishing mortality must be constrained sufficiently to allow rebuilding within an acceptable time frame (*also see* paragraph (j)(3)(ii) of this section). SDC should not be respecified.

(B) If environmental changes affect the long-term reproductive potential of the stock or stock complex, one or more components of the SDC must be respecified. Once SDC have been respecified, fishing mortality may or may not have to be reduced, depending on the status of the stock or stock complex with respect to the new criteria.

(C) If manmade environmental changes are partially responsible for a stock or stock complex being in an overfished condition, in addition to controlling fishing mortality, Councils should recommend restoration of habitat and other ameliorative programs, to the extent possible (see also the guidelines issued pursuant to section 305(b) of the Magnuson-Stevens Act for Council actions concerning essential fish habitat).

(iv) *Secretarial approval of SDC.* Secretarial approval or disapproval of proposed SDC will be based on consideration of whether the proposal:

(A) Has sufficient scientific merit;

(B) Contains the elements described in paragraph (e)(2)(ii) of this section;

(C) Provides a basis for objective measurement of the status of the stock or stock complex against the criteria; and

(D) is operationally feasible.

(3) *Optimum yield*—(i) *Definitions*—(A) *Optimum yield (OY).* Magnuson-Stevens Act section (3)(33) defines ''optimum,'' with respect to the yield from a fishery, as the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems; that is prescribed on the basis of the MSY from the fishery, as reduced by any relevant economic, social, or ecological factor; and, in the case of an overfished fishery, that provides for rebuilding to a level consistent with producing the MSY in such fishery. OY may be established at the stock or stock complex level, or at the fishery level.

(B) In NS1, use of the phrase ''achieving, on a continuing basis, the optimum yield from each fishery'' means producing, from each stock, stock complex, or fishery: a long-term series of catches such that the average catch is equal to the OY, overfishing is prevented, the long term average biomass is near or above B_{msy}, and overfished stocks and stock complexes are rebuilt consistent with timing and other requirements of section 304(e)(4) of the Magnuson-Stevens Act and paragraph (j) of this section.

(ii) *General.* OY is a long-term average amount of desired yield from a stock, stock complex, or fishery. An FMP must contain conservation and management measures, including ACLs and AMs, to achieve OY on a continuing basis, and provisions for information collection that are designed to determine the degree to which OY is achieved. These measures should allow for practical and effective implementation and enforcement of the management regime. The Secretary has an obligation to implement and enforce the FMP. If management measures prove unenforceable—or too restrictive, or not rigorous enough to prevent overfishing while achieving OY—they should be modified; an alternative is to reexamine the adequacy of the OY specification. Exceeding OY does not necessarily constitute overfishing. However, even if no overfishing resulted from exceeding OY, continual harvest at a level above OY would violate NS1, because OY was not achieved on a continuing basis. An FMP must contain an assessment and specification of OY, including a summary of information utilized in making such specification, consistent with requirements of section 303(a)(3) of the Magnuson-Stevens Act. A Council must identify those economic, social, and ecological factors relevant to management of a particular stock, stock complex, or fishery, and then evaluate them to determine the OY. The choice of a particular OY must be carefully documented to show that the OY selected will produce the greatest benefit to the Nation and prevent overfishing.

(iii) *Determining the greatest benefit to the Nation.* In determining the greatest benefit to the Nation, the values that should be weighed and receive serious attention when considering the economic, social, or ecological factors used in reducing MSY to obtain OY are:

(A) The benefits of food production are derived from providing seafood to consumers; maintaining an economically viable fishery together with its attendant contributions to the national, regional, and local economies; and utilizing the capacity of the Nation's fishery resources to meet nutritional needs.

(B) The benefits of recreational opportunities reflect the quality of both the recreational fishing experience and non-consumptive fishery uses such as ecotourism, fish watching, and recreational diving. Benefits also include the contribution of recreational fishing to the national, regional, and local economies and food supplies.

(C) The benefits of protection afforded to marine ecosystems are those resulting from maintaining viable populations (including those of unexploited species), maintaining adequate forage for all components of the ecosystem, maintaining evolutionary and ecological processes (e.g., disturbance regimes, hydrological processes, nutrient cycles), maintaining the evolutionary potential of species and ecosystems, and accommodating human use.

(iv) *Factors to consider in OY specification.* Because fisheries have limited capacities, any attempt to maximize the measures of benefits described in paragraph (e)(3)(iii) of this section will inevitably encounter practical constraints. OY cannot exceed MSY in any circumstance, and must take into account the need to prevent overfishing and rebuild overfished stocks and stock complexes. OY is prescribed on the basis of MSY as reduced by social, economic, and ecological factors. To the extent possible, the relevant social, economic, and ecological factors used to establish OY for a stock, stock complex, or fishery should be quantified and reviewed in historical, short-term, and long-term contexts. Even where quantification of social, economic, and ecological factors is not possible, the FMP still must address them in its OY specification. The following is a non-exhaustive list of potential considerations for each factor. An FMP must address each factor but not necessarily each example.

(A) *Social factors.* Examples are enjoyment gained from recreational fishing, avoidance of gear conflicts and resulting disputes, preservation of a way of life for fishermen and their families, and dependence of local communities on a fishery (e.g., involvement in fisheries and ability to adapt to change). Consideration may be given to fishery-related indicators (e.g., number of fishery permits, number of commercial fishing vessels, number of party and charter trips, landings, ex-vessel revenues etc.) and non-fishery related indicators (e.g., unemployment rates, percent of population below the poverty level, population density, etc.). Other factors that may be considered include the effects that past harvest levels have had on fishing communities, the cultural place of subsistence fishing, obligations under Indian treaties, proportions of affected minority and low-income groups, and worldwide nutritional needs.

(B) *Economic factors.* Examples are prudent consideration of the risk of overharvesting when a stock's size or reproductive potential is uncertain (*see* § 600.335(c)(2)(i)), satisfaction of consumer and recreational needs, and encouragement of domestic and export markets for U.S. harvested fish. Other factors that may be considered include: The value of fisheries, the level of capitalization, the decrease in cost per unit of catch afforded by an increase in stock size, the attendant increase in catch per unit of effort, alternate employment opportunities, and economic contribution to fishing communities, coastal areas, affected states, and the nation.

(C) *Ecological factors.* Examples include impacts on ecosystem component species, forage fish stocks, other fisheries, predator-prey or competitive interactions, marine mammals, threatened or endangered species, and birds. Species interactions that have not been explicitly taken into account when calculating MSY should be considered as relevant factors for setting OY below MSY. In addition, consideration should be given to managing forage stocks for higher biomass than B_{msy} to enhance and protect the marine ecosystem. Also important are ecological or environmental conditions that stress marine organisms, such as natural and manmade changes in wetlands or nursery grounds, and effects of pollutants on habitat and stocks.

(v) *Specification of OY.* The specification of OY must be consistent with paragraphs (e)(3)(i)–(iv) of this section. If the estimates of MFMT and current biomass are known with a high level of certainty and management controls can accurately limit catch then OY could be set very close to MSY, assuming no other reductions are necessary for social, economic, or ecological factors. To the degree that such MSY estimates and management controls are lacking or unavailable, OY should be set farther from MSY. If management measures cannot adequately control fishing mortality so that the specified OY can be achieved without overfishing, the Council should reevaluate the management measures and specification of OY so that the dual requirements of NS1 (preventing overfishing while achieving, on a continuing basis, OY) are met.

(A) The amount of fish that constitutes the OY should be expressed in terms of numbers or weight of fish.

(B) Either a range or a single value may be specified for OY.

(C) All catch must be counted against OY, including that resulting from bycatch, scientific research, and all fishing activities.

(D) The OY specification should be translatable into an annual numerical estimate for the purposes of establishing any total allowable level of foreign fishing (TALFF) and analyzing impacts of the management regime.

(E) The determination of OY is based on MSY, directly or through proxy. However, even where sufficient scientific data as to the biological characteristics of the stock do not exist, or where the period of exploitation or investigation has not been long enough for adequate understanding of stock dynamics, or where frequent large-scale fluctuations in stock size diminish the meaningfulness of the MSY concept, OY must still be established based on the best scientific information available.

(F) An OY established at a fishery level may not exceed the sum of the MSY values for each of the stocks or stock complexes within the fishery.

(G) There should be a mechanism in the FMP for periodic reassessment of the OY specification, so that it is responsive to changing circumstances in the fishery.

(H) Part of the OY may be held as a reserve to allow for factors such as uncertainties in estimates of stock size and domestic annual harvest (DAH). If an OY reserve is established, an adequate mechanism should be included in the FMP to permit timely release of the reserve to domestic or foreign fishermen, if necessary.

(vi) *OY and foreign fishing.* Section 201(d) of the Magnuson-Stevens Act provides that fishing by foreign nations is limited to that portion of the OY that will not be harvested by vessels of the United States. The FMP must include an assessment to address the following, as required by section 303(a)(4) of the Magnuson-Stevens Act:

(A) *DAH.* Councils and/or the Secretary must consider the capacity of, and the extent to which, U.S. vessels will harvest the OY on an annual basis. Estimating the amount that U.S. fishing vessels will actually harvest is required to determine the surplus.

(B) *Domestic annual processing (DAP).* Each FMP must assess the capacity of U.S. processors. It must also assess the amount of DAP, which is the sum of two estimates: The estimated amount of U.S. harvest that domestic processors will process, which may be based on historical performance or on surveys of the expressed intention of manufacturers to process, supported by evidence of contracts, plant expansion, or other relevant information; and the estimated amount of fish that will be harvested by domestic vessels, but not processed (*e.g.*, marketed as fresh whole fish, used for private consumption, or used for bait).

(C) *Joint venture processing (JVP).* When DAH exceeds DAP, the surplus is available for JVP.

(f) *Acceptable biological catch, annual catch limits, and annual catch targets.* The following features (see paragraphs (f)(1) through (f)(5) of this section) of acceptable biological catch and annual catch limits apply to stocks and stock complexes in the fishery (see paragraph (d)(2) of this section).

(1) *Introduction.* A control rule is a policy for establishing a limit or target fishing level that is based on the best available scientific information and is established by fishery managers in consultation with fisheries scientists. Control rules should be designed so that management actions become more conservative as biomass estimates, or other proxies, for a stock or stock complex decline and as science and management uncertainty increases. Examples of scientific uncertainty include uncertainty in the estimates of MFMT and biomass. Management uncertainty may include late catch reporting, misreporting, and underreporting of catches and is affected by a fishery's ability to control actual catch. For example, a fishery that has inseason catch data available and inseason closure authority has better management control and precision than a fishery that does not have these features.

(2) *Definitions.* (i) *Catch* is the total quantity of fish, measured in weight or numbers of fish, taken in commercial, recreational, subsistence, tribal, and other fisheries. Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded.

(ii) *Acceptable biological catch (ABC)* is a level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty (see paragraph (f)(3) of this section), and should be specified based on the ABC control rule.

(iii) *ABC control rule* means a specified approach to setting the ABC for a stock or stock complex as a function of the scientific uncertainty in the estimate of OFL and any other scientific uncertainty (*see* paragraph (f)(4) of this section).

(iv) *Annual catch limit (ACL)* is the level of annual catch of a stock or stock complex that serves as the basis for invoking AMs. ACL cannot exceed the ABC, but may be divided into sector-ACLs (*see* paragraph (f)(5) of this section).

(v) *Annual catch target (ACT)* is an amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. ACTs are recommended in the system of accountability measures so that ACL is not exceeded.

(vi) *ACT control rule* means a specified approach to setting the ACT for a stock or stock complex such that the risk of exceeding the ACL due to management uncertainty is at an acceptably low level.

(3) *Specification of ABC.* ABC may not exceed OFL (see paragraph (e)(2)(i)(D) of this section). Councils should develop a process for receiving scientific information and advice used to establish ABC. This process should: Identify the body that will apply the ABC control rule (*i.e.* , calculates the ABC), and identify the review process that will evaluate the resulting ABC. The SSC must recommend the ABC to the Council. An SSC may recommend an ABC that differs from the result of the ABC control rule calculation, based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors, but must explain why. For Secretarial FMPs or FMP amendments, agency scientists or a peer review process would provide the scientific advice to establish ABC. For internationally-assessed stocks, an ABC as defined in these guidelines is not required if they meet the international exception (*see* paragraph (h)(2)(ii)). While the ABC is allowed to equal OFL, NMFS expects that in most cases ABC will be reduced from OFL to reduce the probability that overfishing might occur in a year. Also, *see* paragraph (f)(5) of this section for cases where a Council recommends that ACL is equal to ABC, and ABC is equal to OFL.

(i) *Expression of ABC.* ABC should be expressed in terms of catch, but may be expressed in terms of landings as long as estimates of bycatch and any other fishing mortality not accounted for in the landings are incorporated into the determination of ABC.

(ii) *ABC for overfished stocks.* For overfished stocks and stock complexes, a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates in the rebuilding plan.

(4) *ABC control rule.* For stocks and stock complexes required to have an ABC, each Council must establish an ABC control rule based on scientific advice from its SSC. The determination of ABC should be based, when possible, on the probability that an actual catch equal to the stock's ABC would result in overfishing. This probability that overfishing will occur cannot exceed 50 percent and should be a lower value. The ABC control rule should consider reducing fishing mortality as stock size declines and may establish a stock abundance level below which fishing would not be allowed. The process of establishing an ABC control rule could also involve science advisors or the peer review process established under Magnuson-Stevens Act section 302(g)(1)(E). The ABC control rule must articulate how ABC will be set compared to the OFL based on the scientific knowledge about the stock or stock complex and the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. The ABC control rule should consider uncertainty in factors such as stock assessment results, time lags in updating assessments, the degree of retrospective revision of assessment results, and projections. The control rule may be used in a tiered approach to address different levels of scientific uncertainty.

(5) *Setting the annual catch limit*—(i) *General.* ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis. ACLs in coordination with AMs must prevent overfishing (see MSA section 303(a)(15)). If a Council recommends an ACL which equals ABC, and the ABC is equal to OFL, the Secretary may presume that the proposal would not prevent overfishing, in the absence of sufficient analysis and justification for the approach. A ''multiyear plan'' as referenced in section 303(a)(15) of the Magnuson-Stevens Act is a plan that establishes harvest specifications or harvest guidelines for each year of a time period greater than 1 year. A multiyear plan must include a mechanism for specifying ACLs for each year with appropriate AMs to prevent overfishing and maintain an appropriate rate of rebuilding if the stock or stock complex is in a rebuilding plan. A multiyear plan must provide that, if an ACL is exceeded for a year, then AMs are triggered for the next year consistent with paragraph (g)(3) of this section.

(ii) *Sector-ACLs.* A Council may, but is not required to, divide an ACL into sector-ACLs. ''Sector,'' for purposes of this section, means a distinct user group to which separate management strategies and separate catch quotas apply. Examples of sectors include the commercial sector, recreational sector, or various gear groups within a fishery. If the management measures for different sectors differ in the degree of management uncertainty, then sector ACLs may be necessary so that appropriate AMs can be developed for each sector. If a Council chooses to use sector ACLs, the sum of sector ACLs must not exceed the stock or stock complex level ACL. The system of ACLs and AMs designed must be effective in protecting the stock or stock complex as a whole. Even if sector-ACLs and AMs are established, additional AMs at the stock or stock complex level may be necessary.

(iii) *ACLs for State-Federal Fisheries.* For stocks or stock complexes that have harvest in state or territorial waters, FMPs and FMP amendments should include an ACL for the overall stock that may be further divided. For example, the overall ACL could be divided into a Federal-ACL and state-ACL. However, NMFS recognizes that Federal management is limited to the portion of the fishery under Federal authority (*see* paragraph (g)(5) of this section). When stocks are co-managed by Federal, state, tribal, and/or territorial fishery managers, the goal should be to develop collaborative conservation and management strategies, and scientific capacity to support such strategies (including AMs for state or territorial and Federal waters), to prevent overfishing of shared stocks and ensure their sustainability.

(6) *ACT control rule.* If ACT is specified as part of the AMs for a fishery, an ACT control rule is utilized for setting the ACT. The ACT control rule should clearly articulate how management uncertainty in the amount of catch in the fishery is accounted for in setting ACT. The objective for establishing the ACT and related AMs is that the ACL not be exceeded.

(i) *Determining management uncertainty.* Two sources of management uncertainty should be accounted for in establishing the AMs for a fishery, including the ACT control rule if utilized: Uncertainty in the ability of managers to constrain catch so the ACL is not exceeded, and uncertainty in quantifying the true catch amounts (*i.e.,* estimation errors). To determine the level of management uncertainty in controlling catch, analyses need to consider past management performance in the fishery and factors such as time lags in reported catch. Such analyses must be based on the best available scientific information from an SSC, agency scientists, or peer review process as appropriate.

(ii) *Establishing tiers and corresponding ACT control rules.* Tiers can be established based on levels of management uncertainty associated with the fishery, frequency and accuracy of catch monitoring data

available, and risks of exceeding the limit. An ACT control rule could be established for each tier and have, as appropriate, different formulas and standards used to establish the ACT.

(7) A Council may choose to use a single control rule that combines both scientific and management uncertainty and supports the ABC recommendation and establishment of ACL and if used ACT.

(g) *Accountability measures.* The following features (see paragraphs (g)(1) through (5) of this section) of accountability measures apply to those stocks and stock complexes in the fishery.

(1) *Introduction.* AMs are management controls to prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur. AMs should address and minimize both the frequency and magnitude of overages and correct the problems that caused the overage in as short a time as possible. NMFS identifies two categories of AMs, inseason AMs and AMs for when the ACL is exceeded.

(2) *Inseason AMs.* Whenever possible, FMPs should include inseason monitoring and management measures to prevent catch from exceeding ACLs. Inseason AMs could include, but are not limited to: ACT; closure of a fishery; closure of specific areas; changes in gear; changes in trip size or bag limits; reductions in effort; or other appropriate management controls for the fishery. If final data or data components of catch are delayed, Councils should make appropriate use of preliminary data, such as landed catch, in implementing inseason AMs. FMPs should contain inseason closure authority giving NMFS the ability to close fisheries if it determines, based on data that it deems sufficiently reliable, that an ACL has been exceeded or is projected to be reached, and that closure of the fishery is necessary to prevent overfishing. For fisheries without inseason management control to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL.

(3) *AMs for when the ACL is exceeded.* On an annual basis, the Council must determine as soon as possible after the fishing year if an ACL was exceeded. If an ACL was exceeded, AMs must be triggered and implemented as soon as possible to correct the operational issue that caused the ACL overage, as well as any biological consequences to the stock or stock complex resulting from the overage when it is known. These AMs could include, among other things, modifications of inseason AMs or overage adjustments. For stocks and stock complexes in rebuilding plans, the AMs should include overage adjustments that reduce the ACLs in the next fishing year by the full amount of the overages, unless the best scientific information available shows that a reduced overage adjustment, or no adjustment, is needed to mitigate the effects of the overages. If catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness. A Council could choose a higher performance standard (e.g., a stock's catch should not exceed its ACL more often than once every five or six years) for a stock that is particularly vulnerable to the effects of overfishing, if the vulnerability of the stock has not already been accounted for in the ABC control rule.

(4) *AMs based on multi-year average data.* Some fisheries have highly variable annual catches and lack reliable inseason or annual data on which to base AMs. If there are insufficient data upon which to compare catch to ACL, either inseason or on an annual basis, AMs could be based on comparisons of average catch to average ACL over a three-year moving average period or, if supported by analysis, some other appropriate multi-year period. Councils should explain why basing AMs on a multi-year period is appropriate. Evaluation of the moving average catch to the average ACL must be conducted annually and AMs should be implemented if the average catch exceeds the average ACL. As a performance standard, if the average catch exceeds the average ACL for a stock or stock complex more than once in the last four years, then the system of ACLs and AMs should be re-evaluated and modified if necessary to improve its performance and effectiveness. The initial ACL and management measures may incorporate information from previous years so that AMs based on average ACLs can be applied from the first year. Alternatively, a Council could use a stepped approach where in year-1, catch is compared to the ACL for year-1; in year-2 the average catch for the past 2 years is compared to the average ACL; then in year 3 and beyond, the most recent 3 years of catch are compared to the corresponding ACLs for those years.

(5) *AMs for State-Federal Fisheries.* For stocks or stock complexes that have harvest in state or territorial waters, FMPs and FMP amendments must, at a minimum, have AMs for the portion of the fishery under Federal authority. Such AMs could include closing the EEZ when the Federal portion of the ACL is reached, or the overall stock's ACL is reached, or other measures.

(h) *Establishing ACL mechanisms and AMs in FMPs.* FMPs or FMP amendments must establish ACL mechanisms and AMs for all stocks and stock complexes in the fishery, unless paragraph (h)(2) of this section is applicable. These mechanisms should describe the annual or multiyear process by which specific ACLs, AMs, and other reference points such as OFL, and ABC will be established. If a complex has multiple indicator stocks, each indicator stock must have its own ACL; an additional ACL for the stock complex as a whole is optional. In cases where fisheries (e.g., Pacific salmon) harvest multiple indicator stocks of a single species that cannot be distinguished at the time of capture, separate ACLs for the indicator stocks are not required and the ACL can be established for the complex as a whole.

(1) In establishing ACL mechanisms and AMs, FMPs should describe:

(i) Timeframes for setting ACLs (e.g., annually or multi-year periods);

(ii) Sector-ACLs, if any (including set-asides for research or bycatch);

(iii) AMs and how AMs are triggered and what sources of data will be used (e.g., inseason data, annual catch compared to the ACL, or multi-year averaging approach); and

(iv) Sector-AMs, if there are sector-ACLs.

(2) *Exceptions from ACL and AM requirements*—(i) *Life cycle.* Section 303(a)(15) of the Magnuson-Stevens Act ''shall not apply to a fishery for species that has a life cycle of approximately 1 year unless the Secretary has determined the fishery is subject to overfishing of that species'' (as described in Magnuson-Stevens Act section 303 note). This exception applies to a stock for which the average length of time it takes for an individual to produce a reproductively active offspring is approximately 1 year and that the individual has only one breeding season in its lifetime. While exempt from the ACL and AM requirements, FMPs or FMP amendments for these stocks must have SDC, MSY, OY, ABC, and an ABC control rule.

(ii) *International fishery agreements.* Section 303(a)(15) of the Magnuson-Stevens Act applies ''unless otherwise provided for under an international agreement in which the United States participates'' (Magnuson-Stevens Act section 303 note). This exception applies to stocks or stock complexes

subject to management under an international agreement, which is defined as ''any bilateral or multilateral treaty, convention, or agreement which relates to fishing and to which the United States is a party'' (see Magnuson-Stevens Act section 3(24)). These stocks would still need to have SDC and MSY.

(3) *Flexibility in application of NS1 guidelines*. There are limited circumstances that may not fit the standard approaches to specification of reference points and management measures set forth in these guidelines. These include, among other things, conservation and management of Endangered Species Act listed species, harvests from aquaculture operations, and stocks with unusual life history characteristics (e.g., Pacific salmon, where the spawning potential for a stock is spread over a multi-year period). 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. Councils must document their rationale for any alternative approaches for these limited circumstances in an FMP or FMP amendment, which will be reviewed for consistency with the Magnuson-Stevens Act.

(i) *Fisheries data*. 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 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.

(j) *Council actions to address overfishing and rebuilding for stocks and stock complexes in the fishery*—(1) *Notification*. The Secretary will immediately notify in writing a Regional Fishery Management Council whenever it is determined that:

(i) Overfishing is occurring;

(ii) A stock or stock complex is overfished;

(iii) A stock or stock complex is approaching an overfished condition; or

(iv) Existing remedial action taken for the purpose of ending previously identified overfishing or rebuilding a previously identified overfished stock or stock complex has not resulted in adequate progress.

(2) *Timing of actions*—(i) *If a stock or stock complex is undergoing overfishing*. FMPs or FMP amendments must establish ACL and AM mechanisms in 2010, for stocks and stock complexes determined to be subject to overfishing, and in 2011, for all other stocks and stock complexes (*see* paragraph (b)(2)(iii) of this section). To address practical implementation aspects of the FMP and FMP amendment process, paragraphs (j)(2)(i)(A) through (C) of this section clarifies the expected timing of actions.

(A) In addition to establishing ACL and AM mechanisms, the ACLs and AMs themselves must be specified in FMPs, FMP amendments, implementing regulations, or annual specifications beginning in 2010 or 2011, as appropriate.

(B) For stocks and stock complexes still determined to be subject to overfishing at the end of 2008, ACL and AM mechanisms and the ACLs and AMs themselves must be effective in fishing year 2010.

(C) For stocks and stock complexes determined to be subject to overfishing during 2009, ACL and AM mechanisms and ACLs and AMs themselves should be effective in fishing year 2010, if possible, or in fishing year 2011, at the latest.

(ii) *If a stock or stock complex is overfished or approaching an overfished condition*. (A) For notifications that a stock or stock complex is overfished or approaching an overfished condition made before July 12, 2009, a Council must prepare an FMP, FMP amendment, or proposed regulations within one year of notification. If the stock or stock complex is overfished, the purpose of the action is to specify a time period for ending overfishing and rebuilding the stock or stock complex that will be as short as possible as described under section 304(e)(4) of the Magnuson-Stevens Act. If the stock or stock complex is approaching an overfished condition, the purpose of the action is to prevent the biomass from declining below the MSST.

(B) For notifications that a stock or stock complex is overfished or approaching an overfished condition made after July 12, 2009, a Council must prepare and implement an FMP, FMP amendment, or proposed regulations within two years of notification, consistent with the requirements of section 304(e)(3) of the Magnuson-Stevens Act. Council actions should be submitted to NMFS within 15 months of notification to ensure sufficient time for the Secretary to implement the measures, if approved. If the stock or stock complex is overfished and overfishing is occurring, the rebuilding plan must end overfishing immediately and be consistent with ACL and AM requirements of the Magnuson-Stevens Act.

(3) *Overfished fishery*. (i) Where a stock or stock complex is overfished, a Council must specify a time period for rebuilding the stock or stock complex based on factors specified in Magnuson-Stevens Act section 304(e)(4). This target time for rebuilding (T_{target}) shall be as short as possible, taking into account: The status and biology of any overfished stock, the needs of fishing communities, recommendations by international organizations in which the U.S. participates, and interaction of the stock within the marine ecosystem. In addition, the time period shall not exceed 10 years, except where biology of the stock, other environmental conditions, or management measures under an international agreement to which the U.S. participates, dictate otherwise. SSCs (or agency scientists or peer review processes in the case of Secretarial actions) shall provide recommendations for achieving rebuilding targets (*see* Magnuson-Stevens Act section 302(g)(1)(B)). The above factors enter into the specification of T_{target} as follows:

(A) The ''minimum time for rebuilding a stock'' (T_{min}) means the amount of time the stock or stock complex is expected to take to rebuild to its MSY biomass level in the absence of any fishing mortality. In this context, the term ''expected'' means to have at least a 50 percent probability of attaining the B_{msy}.

(B) For scenarios under paragraph (j)(2)(ii)(A) of this section, the starting year for the T_{min} calculation is the first year that a rebuilding plan is implemented. For scenarios under paragraph (j)(2)(ii)(B) of this section, the starting year for the T_{min} calculation is 2 years after notification that a stock or stock complex is overfished or the first year that a rebuilding plan is implemented, whichever is sooner.

(C) If T_{min} for the stock or stock complex is 10 years or less, then the maximum time allowable for rebuilding (T_{max}) that stock to its B_{msy} is 10 years.

(D) If T_{min} for the stock or stock complex exceeds 10 years, then the maximum time allowable for rebuilding a stock or stock complex to its B_{msy} is T_{min} plus the length of time associated with one generation time for that stock or stock complex. ''Generation time'' is the average length of time between when an individual is born and the birth of its offspring.

(E) T_{target} shall not exceed T_{max}, and should be calculated based on the factors described in this paragraph (j)(3).

(ii) If a stock or stock complex reached the end of its rebuilding plan period and has not yet been determined to be rebuilt, then the rebuilding F should not be increased until the stock or stock complex has been demonstrated to be rebuilt. If the rebuilding plan was based on a T_{target} that was less than T_{max}, and the stock or stock complex is not rebuilt by T_{target}, rebuilding measures should be revised, if necessary, such that the stock or stock complex will be rebuilt by T_{max}. If the stock or stock complex has not rebuilt by T_{max}, then the fishing mortality rate should be maintained at $F_{rebuild}$ or 75 percent of the MFMT, whichever is less.

(iii) Council action addressing an overfished fishery must allocate both overfishing restrictions and recovery benefits fairly and equitably among sectors of the fishery.

(iv) For fisheries managed under an international agreement, Council action addressing an overfished fishery must reflect traditional participation in the fishery, relative to other nations, by fishermen of the United States.

(4) *Emergency actions and interim measures.* The Secretary, on his/her own initiative or in response to a Council request, may implement interim measures to reduce overfishing or promulgate regulations to address an emergency (Magnuson-Stevens Act section 304(e)(6) or 305(c)). In considering a Council request for action, the Secretary would consider, among other things, the need for and urgency of the action and public interest considerations, such as benefits to the stock or stock complex and impacts on participants in the fishery.

(i) These measures may remain in effect for not more than 180 days, but may be extended for an additional 186 days if the public has had an opportunity to comment on the measures and, in the case of Council-recommended measures, the Council is actively preparing an FMP, FMP amendment, or proposed regulations to address the emergency or overfishing on a permanent basis.

(ii) Often, these measures need to be implemented without prior notice and an opportunity for public comment, as it would be impracticable to provide for such processes given the need to act quickly and also contrary to the public interest to delay action. However, emergency regulations and interim measures that do not qualify for waivers or exceptions under the Administrative Procedure Act would need to follow proposed notice and comment rulemaking procedures.

(k) *International overfishing.* If the Secretary determines that a fishery is overfished or approaching a condition of being overfished due to excessive international fishing pressure, and for which there are no management measures (or no effective measures) to end overfishing under an international agreement to which the United States is a party, then the Secretary and/or the appropriate Council shall take certain actions as provided under Magnuson-Stevens Act section 304(i). The Secretary, in cooperation with the Secretary of State, must immediately take appropriate action at the international level to end the overfishing. In addition, within one year after the determination, the Secretary and/or appropriate Council shall:

(1) Develop recommendations for domestic regulations to address the relative impact of the U.S. fishing vessels on the stock. Council recommendations should be submitted to the Secretary.

(2) Develop and submit recommendations to the Secretary of State, and to the Congress, for international actions that will end overfishing in the fishery and rebuild the affected stocks, taking into account the relative impact of vessels of other nations and vessels of the United States on the relevant stock. Councils should, in consultation with the Secretary, develop recommendations that take into consideration relevant provisions of the Magnuson-Stevens Act and NS1 guidelines, including section 304(e) of the Magnuson-Stevens Act and paragraph (j)(3)(iv) of this section, and other applicable laws. For highly migratory species in the Pacific, recommendations from the Western Pacific, North Pacific, or Pacific Councils must be developed and submitted consistent with Magnuson-Stevens Reauthorization Act section 503(f), as appropriate.

(3) *Considerations for assessing ''relative impact.''* ''Relative impact'' under paragraphs (k)(1) and (2) of this section may include consideration of factors that include, but are not limited to: Domestic and international management measures already in place, management history of a given nation, estimates of a nation's landings or catch (including bycatch) in a given fishery, and estimates of a nation's mortality contributions in a given fishery. Information used to determine relative impact must be based upon the best available scientific information.

(l) *Relationship of National Standard 1 to other national standards—General.* National Standards 2 through 10 provide further requirements for conservation and management measures in FMPs, but do not alter the requirement of NS1 to prevent overfishing and rebuild overfished stocks.

(1) *National Standard 2 (see § 600.315).* Management measures and reference points to implement NS1 must be based on the best scientific information available. When data are insufficient to estimate reference points directly, Councils should develop reasonable proxies to the extent possible (*also see* paragraph (e)(1)(iv) of this section). In cases where scientific data are severely limited, effort should also be directed to identifying and gathering the needed data. SSCs should advise their Councils regarding the best scientific information available for fishery management decisions.

(2) *National Standard 3 (see § 600.320).* Reference points should generally be specified in terms of the level of stock aggregation for which the best scientific information is available (*also see* paragraph (e)(1)(iii) of this section). Also, scientific assessments must be based on the best information about the total range of the stock and potential biological structuring of the stock into biological sub-units, which may differ from the geographic units on which management is feasible.

(3) *National Standard 6 (see § 600.335).* Councils must build into the reference points and control rules appropriate consideration of risk, taking into account uncertainties in estimating harvest, stock conditions, life history parameters, or the effects of environmental factors.

(4) *National Standard 8 (see § 600.345).* National Standard 8 directs the Councils to apply economic and social factors towards sustained participation of fishing communities and to the extent practicable, minimize adverse economic impacts on such communities within the context of preventing overfishing and rebuilding overfished stocks as required under National Standard 1. Therefore, calculation of OY as reduced from MSY

should include economic and social factors, but the combination of management measures chosen to achieve the OY must principally be designed to prevent overfishing and rebuild overfished stocks.

(5) *National Standard 9 (see § 600.350).* Evaluation of stock status with respect to reference points must take into account mortality caused by bycatch. In addition, the estimation of catch should include the mortality of fish that are discarded.

(m) *Exceptions to requirements to prevent overfishing.* Exceptions to the requirement to prevent overfishing could apply under certain limited circumstances. Harvesting one stock at its optimum level may result in overfishing of another stock when the two stocks tend to be caught together (This can occur when the two stocks are part of the same fishery or if one is bycatch in the other's fishery). Before a Council may decide to allow this type of overfishing, an analysis must be performed and the analysis must contain a justification in terms of overall benefits, including a comparison of benefits under alternative management measures, and an analysis of the risk of any stock or stock complex falling below its MSST. The Council may decide to allow this type of overfishing if the fishery is not overfished and the analysis demonstrates that all of the following conditions are satisfied:

(1) Such action will result in long-term net benefits to the Nation;

(2) Mitigating measures have been considered and it has been demonstrated that a similar level of long-term net benefits cannot be achieved by modifying fleet behavior, gear selection/configuration, or other technical characteristic in a manner such that no overfishing would occur; and

(3) The resulting rate of fishing mortality will not cause any stock or stock complex to fall below its MSST more than 50 percent of the time in the long term, although it is recognized that persistent overfishing is expected to cause the affected stock to fall below its B_{msy} more than 50 percent of the time in the long term.

[FR Doc. E9–636 Filed 1–15–09; 8:45 am]

BILLING CODE 3510–22–P

[This page left blank intentionally]

Appendix 3

United Nations Convention on Law of the Sea
Annex I –Highly Migratory Species

1. Albacore tuna: *Thunnus alalunga*.
2. Bluefin tuna: *Thunnus thynnus*.
3. Bigeye tuna: *Thunnus obesus*.
4. Skipjack tuna: *Katsuwonus pelamis*.
5. Yellowfin tuna: *Thunnus albacares*.
6. Blackfin tuna: *Thunnus atlanticus*.
7. Little tuna: *Euthynnus alletteratus; Euthynnus affinis*.
8. Southern bluefin tuna:*Thunnus maccoyii*
9. Frigate mackerel: *Auxis thazard; Auxis rochei.*
10. Pomfrets: Family *Bramidae*.
11. Marlins: *Tetrapturus angustirostris; Tetrapturus belone; Tetrapturus pnuegeri; Tetrapturus albidus; Tetrapturus audax; Tetrapturus georgei; Makaira mazara; Makaira indica; Makaira nigricans.*
12. Sail-fishes: *Istiophorus platypterus; Istiophorus albicans.*
13. Swordfish: *Xiphias gladius*.
14. Sauries: *Scomberesox saurus; Cololabis saira; Cololabis adocetus; Scomberesox saurus scombroides.*
15. Dolphin: *Coryphaena hippurus; Coryphaena equiselis.*
16. Oceanic sharks: *Hexanchus griseus; Cetorhinus maximus;* Family *Alopiidae*; *Rhincodon typus;* Family *Carcharhinidae*; Family *Sphyrnidae*; Family *Isurida*.
17. Cetaceans: Family *Physeteridae*, Family *Balaenopteridae*; Family *Balaenidae*; Family *Eschrichtiidae*; Family *Monodontidae*; Family *Ziphiidae*; Family *Delphinidae*.