

RECOMMENDATIONS TO INTERNATIONAL FISHERY MANAGEMENT ORGANIZATIONS

Under the recently signed memorandum of understanding (MOU) on highly migratory species (HMS) matters, the Pacific Council has a clearer role with respect to involvement with U.S. delegations to regional fishery management organization (RFMO) meetings. Council staff are likely to more actively participate in delegation activities. In addition, Council member Marija Vojkovich sits as a Commissioner on the U.S. delegation to the Western and Central Pacific Fisheries Commission (WCPFC). The signed MOU was presented at the April 2010 Council meeting (Agenda Item G.1.b, Attachment 1, April 2010) along with a report on recent and upcoming international HMS activities (Agenda Item G.1.a, Attachment 1, April 2010).

The Northern Committee of the WCPFC is scheduled to meet September 7 – 10 in Fukuoka, Japan (NC6). In 2010 a 1-day workshop is proposed on biological reference points, immediately preceding NC6 (September 6), and the joint working group on Pacific bluefin tuna with the Inter-American Tropical Tuna Commission (IATTC) immediately following (on September 10 at the conclusion of the NC meeting) The International Scientific Committee for Tuna and Tuna-like Species (ISC) is the principal scientific advisor to the Northern Committee. The ISC will hold their annual meeting (ISC10) July 20-26, in Victoria, British Columbia, Canada.

The Antigua Convention, the new charter for the IATTC, enters into force on August 27, 2010. Reflecting this change, the IATTC moved the dates of their annual meeting to September 23-30 in 2010, to be held in Antigua, Guatemala. The Antigua Convention creates a Scientific Advisory Committee, which is scheduled to hold its first meeting August 31-September 2, in La Jolla, California. The Scientific Advisory Committee will replace the function of the Stock Assessment Review meeting that has been held in May of each year.

The timing of the Northern Committee meeting has been problematic because it occurs immediately before the September Council meeting. Developing recommendations at the June meeting is hampered because meeting materials are not available this far in advance. In addition, key science meetings, the ISC meeting and the WCPFC Science Committee meeting, occur later in the summer. The results of these scientific meetings inform the issues and agenda topics at the Northern Committee meeting. At the April 2010 meeting, the Council heard a recommendation to form an ad hoc committee that could meet between the ISC and NC meetings to further refine any recommendations developed by the Council at this meeting, based on additional information available at that time. Agenda Item E.1.a, Attachment 1 is a proposal for such a committee. If such a committee is formed, the Council may wish to define the ad hoc committee's scope in further refinement of Council recommendations. The Council also may wish to consider scheduling time on the September 2010 Council meeting agenda to further refine recommendations for the IATTC, since that meeting occurs at the end of September.

Council Action:

Develop recommendations for the U.S. delegations to the WCPFC NC and IATTC. Consider forming an ad hoc committee to further refine recommendations to the NC at a later time.

Reference Materials:

1. Agenda Item E.1.a, Attachment 1: Proposed New Ad Hoc Committee.

Agenda Order:

- a. Agenda Item Overview
- b. Reports and Comments of Advisory Bodies and Management Entities
- c. Public Comment
- d. **Council Action:** Approve Process and Recommendations for Input to the Northern Committee of the Western and Central Pacific Fisheries Commission and Inter-American Tropical Tuna Commission

Kit Dahl

PFMC
06/01/10

PROPOSED NEW AD HOC COMMITTEE

Under Agenda Item G.1 at the April 2010 meeting, the Council heard a recommendation and discussed forming a new ad hoc committee to further refine Council recommendations to the Northern Committee of the Western and Central Pacific Fisheries Commission (WCPFC).

The criteria proposed for the committee are as follows:

Ad Hoc International Highly Migratory Species Committee (IHMS)

Objective:	Further refine Council recommendations to the Northern Committee of the WCPFC.
Duties and Process:	Meet at dates to be determined between July 26 and September 3, 2010, to further refine Council recommendations to the Northern Committee based on any additional information that may be available at that time.
Members:	Three Council members and 1-2 members each from the HMSAS and HMSMT. A representative from NMFS SWR would also sit on the committee.
Duration:	Meet in 2010 as outlined above. The Council should decide whether to establish it for 2010 only or to keep it in existence to serve a similar function in future years.

Note: Council Operating Procedure 8 establishes procedures for creating, operating, and terminating ad hoc committees. Ad hoc committees are created to address specific (or short-term) issues and are intended to be in place for a limited duration. Ad hoc committees are created and terminated by vote of the Council and their objectives, duties, and expected duration are specified at the time the committee is created. Committee members are appointed by the Council Chair based on the advice of Council members and advisory committees.

PFMC
06/01/10

HIGHLY MIGRATORY SPECIES ADVISORY SUBPANEL REPORT ON
RECOMMENDATIONS TO INTERNATIONAL FISHERY MANAGEMENT
ORGANIZATIONS

The Highly Migratory Species Advisory Subpanel (HMSAS) discussed and recommends the following to the Council:

The HMSAS discussed the viability of the 10-year band of effort as opposed to the 2002-2004 timeframe for defining “current levels of effort” on albacore tuna in any Western and Central Pacific Fisheries Commission (WCPFC) or Inter-American Tropical Tuna Commission (IATTC) resolutions on the matter. The HMSAS suggest the Council direct the Highly Migratory Species Management Team (HMSMT) analyze the data and advise the best 10-year band for the U.S. albacore fishery. The HMSAS recommends the Council request National Marine Fisheries Service (NMFS) support the 10-year band of effort as a fair and equitable method of determining current effort that considers fluctuations in effort and landings due to market, ocean conditions, and other factors.

The HMSAS also recommended that the Council re-evaluate the dates of the band of effort as well as any proposed bands as to whether they should be moved forward in time to reflect the next Interim Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC) North Pacific albacore stock assessment in 2011.

The HMSAS requests that the Council recommend appropriate pressure be effectively applied to ensure the IATTC workshop on current effort issues occurs in late September 2010.

The HMSAS requests the Council ask NMFS that the U.S. take a more aggressive approach to include U.S. issues onto the Northern Committee agenda.

The HMSAS asks the Council to request the U.S. delegation to the Northern Committee that the venue for the 2011 Northern Committee meeting be hosted by the U.S.

The HMSAS asks the Council to recommend and write to NMFS that the WCPFC compliance regulations for fishing west of 150° W longitude be re-evaluated. U.S. coastal vessels who register to fish west of 150° W longitude are required to leave vessel monitoring systems (VMS) transmitters on all year at a monthly cost, even if the vessel is fishing in a coastal fishery such as Dungeness crab. Also, the 15 minute intervals for reporting position from the units should be of a longer duration. The short interval is an added financial burden. Albacore trollers are not hindered by such issues of closed areas in the region west of 150° W longitude and only move at speeds of five to six knots, thus reporting automatically twice each day should be sufficient. Since there are no closed areas or seasons for troll albacore fishery, the HMSAS requests that the Council request an exemption for the troll albacore fishery.

The HMSAS reiterates its April position on biological reference points (BRPs). Because of insufficient data, the Council and NMFS should take no action until at least the 2011 stock assessment is completed. The international process through the ISC and Albacore Working

Group is deeply involved in this issue and moving forward. Much of this issue will be further discussed at the Albacore Working Group meeting July 2010 in Victoria, BC.

The HMSAS discussed the increase in reported net marked albacore in the 2009 season and recommends that Council ask NMFS to take a more aggressive approach to enforcement of this activity. Recommendations should be made through all Regional Fishery Management Organizations (RFMOs) and especially the Technical Compliance Committee (TCC) and Northern Committee of the WCPFC.

The HMSAS recommends that the proposed Ad Hoc committee on international issues have two persons each from the HMSAS and HMSMT, and that the committee exists for a minimum of 2 years. Of particular interest for the HMSAS is the updated information from the Albacore Working Group this July and the information from the HMSMT on the best 10-year band or other means of measuring effort for the U.S. fishery. At the recent U.S./Canada treaty bilateral meeting, Mr. Moore reported on a potential Canadian method to define effort. All of these measures need to be analyzed for the effect on the U.S fleet.

The HMSAS recommends that Wayne Heikkila and Bob Osborn be appointed to the Ad Hoc committee as representatives of the HMSAS.

Concerning Northern Bluefin tuna, the west coast harvest impacts are minimal, but can be important to some small coastal purse seiners and recreational fisheries. We understand the main problem is juvenile harvest by Asian fleets. The HMSAS suggests that the council advocate additional conservation measures for the Asian fleets that will not eliminate the U.S. economic opportunity for our west coast fleet.

The HMSAS discussed striped marlin issues and reiterates the HMSAS April 2010 statement, rewritten by Bob Osborn and reproduced below.

Striped Marlin

The WCPFC has moved with great speed to a draft Conservation Management Measure (CMM) at its 6th meeting in Tahiti. We are especially concerned that the CMM contains a very limited range of effort control dates for catches of striped marlin.

The HMSAS has not been provided an analysis of the potential impacts of this CMM on the HMS fisheries of the west coast. We would like to stress the importance of North Pacific striped marlin to the recreational HMS fisheries in southern California, which appear to remain under-appreciated by regulatory agencies and delegations to international organizations apparently due to the lack of adequate socioeconomic and catch and mortality data.

The HMSAS would like to urge the Council to continue to support the management of North Pacific striped marlin. However, we would like to stress that the west coast fishery is potentially vulnerable to enormous impacts from management measures not carefully considered. The draft CMM recommends effort be restricted to catch rates of 2001, 2002, and 2003. The current Stock Assessment and Fishery Evaluation (SAFE) report for these years contains different catch numbers for the private recreational fleet that vary between 0 (zero) and 300 fish per year (obtained from an average of a longer range of years). The southern California recreational

marlin community knows the catch has never been zero but recognizes the catch does vary greatly.

Several factors combine to pose risks to west coast recreational North Pacific striped marlin fisheries. First, the southern California bight is the northernmost area for the migration of North Pacific striped marlin. Therefore, catch rates can vary greatly over multiple year periods due to oceanographic conditions that can severely limit availability but rarely completely eliminates it. Second, catch/effort data is widely believed to be under-sampled in private marinas that house the larger vessels typically used in this fishery. Third, socioeconomic data is lacking in this fishery providing the potential for under-appreciation of the impacts that a poorly designed CMM could exact. Fourth, regulatory agencies continue to use worst case scenario assumptions related to the live release of fish. As a result of these risks, impacts could be severe to the boating, tackle, and charter fishing industries solely from the lack of up-to-date information and current research.

Therefore, the HMSAS requests that the Council ask for the cooperation of NMFS in supplying timely and relevant support, information, and policies related to how they would implement effort reductions called for the draft Striped Marlin Conservation Management Measure and direct the HMSMT to work with the HMSAS and/or any Ad-Hoc Committees formed by the Council in order to ensure sufficient information is at hand so that US delegations can take learned positions on the Pacific Striped Marlin fishery.

This information should include chronological information related to catches and bycatch of Pacific Striped Marlin by US fishermen, information on survivability of released fish, and other information deemed appropriate as determined in the above process.

The HMSAS recommends that US delegations **NOT SUPPORT** the adoption of conservation management measures for Pacific striped marlin that entail additional effort reductions to US fishermen until adequate information is in hand to ensure that management measures are designed and optimized to minimize impacts to the myriad southern California businesses, the City of Avalon, and others who make a living supporting the recreational marlin fishery and other US fisheries that likely may be affected.

The HMSAS reiterates its support for research on North Pacific striped marlin to support stock assessments, provide accurate up-to-date socio-economic information on the southern California recreational marlin fishery, improve estimates on survivability of striped marlin caught and released in both recreational and commercial fisheries, and to develop gear modifications to increase survivability of released fish.

PFMC
06/12/10

HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM REPORT ON
RECOMMENDATIONS TO INTERNATIONAL FISHERY MANAGEMENT ORGANIZATIONS

The Highly Migratory Species Management Team (HMSMT) discussed recommendations that the Pacific Fishery Management Council (Council) might consider making to the U.S. delegations to the Western and Central Pacific Fishery Commission (WCPFC) Northern Committee and to the Inter-American Tropical Tuna Commission (IATTC). The HMSMT recommends the Council postpone making any recommendations on bigeye and yellowfin tuna management measures until September after the updated stock assessments for these species are available.

The HMSMT discussed the possibility that the U.S. delegation propose adoption of a Total Allowable Catch (TAC) management framework for the eastern Pacific Ocean (EPO) tuna purse seine fishery at the upcoming IATTC meeting. The HMSMT believes that this may be a more effective method to manage capacity and catch in the purse seine fleet compared to the current vessel capacity limits and time/area closures. The IATTC has dedicated port sampling programs in all of the major EPO offloading ports that would make tracking a TAC-based management framework feasible. The HMSMT recommends that the U.S. delegation to the IATTC move forward with developing a proposal for a TAC.

The HMSMT supports the adoption of biological reference points and effective conservation measures for bluefin tuna in the IATTC and WCPFC. Currently, no biological reference points are agreed upon for bluefin tuna; however, with respect to all potential reference points examined by the International Scientific Committee for Tuna and Tuna-like Species in the Northern Pacific's (ISC), the fishing mortality rate appears to exceed that which would support maximum sustainable yield. There was a one-year conservation measure adopted by the WCPFC in December 2009 (CMM 2009-07); however, the HMSMT believes that its effectiveness is compromised by the substantial exemptions that were included and the limited timeframe of the measure. The HMSMT recommends that the U.S. delegation to the Northern Committee propose a more effective and comprehensive conservation measure for bluefin tuna. The Council might also consider recommending the U.S. pursue participation in the bluefin tuna meeting scheduled for August 30, 2010 in La Jolla, CA, between Japan, Mexico, and the IATTC Secretariat to discuss potential management measures for bluefin tuna in the EPO.

The HMSMT notes that the ISC Albacore Working Group will meet in July to discuss potential biological reference points for use in albacore management. The HMSMT supports the concept of creating an ad-hoc committee as described in Attachment 1 of Agenda Item E.1.a. to review the results of the Albacore Working Group and other HMS issues that may arise prior to the September Council meeting.

Finally, with respect to U.S. proposals for conservation measures that are likely to be discussed at the upcoming IATTC meeting, the HMSMT recommends that the Council support proposals that would increase compliance with IATTC management measures; for example, the proposal to clarify and improve Illegal, Unreported, and Unregulated (IUU) vessel listing procedures. The HMSMT also recommends that the U.S. delegation advocate for more comprehensive data reporting and collection by members of the IATTC and WCPFC consistent with the U.S. requirements under National Standard 1 Guidelines.

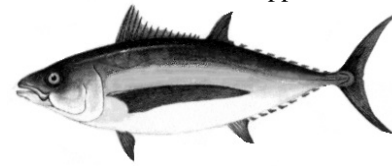
In summary, the HMSMT recommends:

- Postponing bigeye and yellowfin tuna recommendations until after the updated stock assessments are released;
- The U.S. delegation to the IATTC develop a proposal for a TAC in the purse seine fishery;
- The U.S. delegation to the Northern Committee propose a more effective and comprehensive bluefin tuna conservation measure in the WCPFC;
- The United States pursue participation in the IATTC bluefin tuna meeting and move forward with a proposal for a bluefin tuna conservation measure in the IATTC;
- Creating an ad-hoc committee to review the results of the Albacore Working Group and other HMS issues that arise as a result of the ISC meeting;
- The Council support proposals that would increase compliance with IATTC management measures;
- The U.S. delegations to the IATTC and WCPFC advocate for more comprehensive data reporting and collection by members of the IATTC and WCPFC.

Table 1. Upcoming International HMS Meetings for 2010.

Date	Meeting	Location
July 6-9	ISC Pacific Bluefin Working Group	Nanaimo, Canada
July 12-13	ISC Albacore and Billfish Working Group	Victoria, Canada
July 15	ISC Shark Assessment Taskforce	Victoria, Canada
July 20-26	ISC Plenary annual meeting	Victoria, Canada
Aug. 10-19	WCPFC Scientific Committee	Nukualofa, Tonga
Aug. 30	Bluefin tuna meeting	La Jolla, CA
Aug. 30	IATTC Technical Meeting on Sharks	La Jolla, CA
Aug. 31-Sept. 3	IATTC Scientific Advisory Committee	La Jolla, CA
Sept. 7-10	WCPFC Northern Committee	Fukuoka, Japan
Sept. 17	U.S. General Advisory Committee to IATTC	La Jolla, CA
Sept. 23-Oct. 1	IATTC and AIDCP annual meetings	Antigua, Guatemala
Sept. 30-Oct. 5	WCPFC Technical and Compliance Committee	Pohnpei, Micronesia
December 6-11	WCPFC annual meeting	Honolulu, HI

PFMC
06/12/10



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June 1, 2010

Chairman David Ortmann
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

Re: Biological Reference Points - PFMC Input

Dear Chairman Ortmann:

I'm writing on behalf of the Western Fishboat Owners Association (WFOA) to request that the Pacific Fisheries Management Council (PFMC) provide input to the efforts by the International Science Committee - Albacore Working Group member nations to provide input on relating to biological reference point analysis being conducted by the International Albacore Working Group. This will form the basis of management advice to the RFMOs charged with management of Pacific albacore.

As you may be aware, WFOA recently received Marine Stewardship Council (MSC) certification for albacore landed by all U.S. troll and baitboat fishermen. Under the conditions of the certification WFOA is required to encourage all levels of management to develop biological reference points (BPR's) for monitoring the state of the harvest relative to stock status. However, regardless of any conditions set forth by the MSC certification, WFOA regards the fair, consistent, and scientifically based establishment of BPR's by all relative RFMO's.

As vice chair of the HMS advisory panel, I will be discussing the need for BRP's with the panel and ask that the PFMC support the on-going international effort to reach a mutually agreed upon set of biological reference points to gauge the current status of albacore.

The Albacore Working Group has been actively engaged in developing a framework of recommendations to the International Science Committee that advises WCPFC and IATTC. At the recent meeting of the working group in Shimizu, Japan in April of this year the subject of biological reference points was discussed extensively. The working group has developed a consensus that focus be on lower limit reference points to prevent recruitment overfishing. At the current time the WG is examining various proposed minimum biomass estimates (SSB10%, SSB25% or ATHL). The working group will be presenting options to the NC to consider.

The WG is looking for input from managers to the process of establishing biological reference points. Specifically, it would be helpful to obtain input on:

1. management objectives for the stock, noting that an interim objective is in place for north Pacific albacore,
2. specification of the management strategy, e.g., control rules,
3. specification of the risk management strategy, i.e., risk tolerant, risk adverse,
4. decisions on reference points and control rules for albacore.

WFOA believes the Albacore WG is moving forward toward a consensus BRP. It is commonly agreed that the minimum biomass is an unacceptable reference point and will examine all suggested methods. We would hope the PFMC would communicate their concerns to the appropriate RFMOs and associated scientific bodies with information or direction on the form of BPRs. The albacore working group will be meeting in Victoria BC in mid-July to consider this subject further and welcomes all input to the effort of establishing BRPs for north Pacific albacore.

Sincerely,



Wayne Heikkila
Executive Director

cc: WFOA Board of Directors

FISHERY MANAGEMENT PLAN AMENDMENT 2--ANNUAL CATCH LIMITS AND ACCOUNTABILITY MEASURES

The Pacific Fishery Management Council (Council) has been developing an amendment to the Highly Migratory Species (HMS) Fishery Management Plan (FMP) to address revised National Standard 1 guidelines as described in the Final Rule published on January 16, 2009 (74 FR 3178). At the April 2010 meeting the Council adopted a range of alternatives for public review, which are described in Attachment 1. At this meeting, the Council is scheduled to take final action by identifying a preferred alternative.

Attachment 2 contains proposed amendments to the text of the HMS FMP to incorporate the changes adopted by this action. Marginal notes highlight differences in how the FMP would be amended according to which alternative is chosen.

The FMP amendment language is fairly general, authorizing the Council to establish reference points, including allowable biological catch (ABC) and annual catch limits (ACLs), consistent with the National Standard 1 Guidelines. Under the alternatives managed stocks could be subject to the “international exception” described at 50 CFR 600.310(h)(2)(ii). ABCs and ACLs need not be set for these stocks although other reference points—MSY, status determination criteria (SDC), and optimum yield—still must be set. Under Alternative 2 (see Attachment 1) all HMS stocks would be exempted but under Alternatives 3 and 4 shortfin mako and/or common thresher shark would not be exempted from this requirement. If the Council chooses Alternative 3 or 4, the Council should consider initiating the process of establishing the ACLs for these stocks under the periodic management cycle described in Chapter 5 of the FMP. Agenda Item E.3 presents the opportunity to start that process.

Council Action:

Adopt a preferred alternative and review the draft amendment language to ensure consistency with the preferred alternative.

Reference Materials:

1. Agenda Item E.2.a, Attachment 1: Draft Environmental Assessment (Partial), Amendment 2 to the HMS FMP.
2. Agenda Item E.2.a, Attachment 2: Draft Amendment Language, HMS FMP Amendment 2.

Agenda Order:

- a. Agenda Item Overview
- b. Reports and Comments of Advisory Bodies and Management Entities
- c. Public Comment
- d. **Council Action:** Adopt Final Amendment

Kit Dahl

PFMC
05/26/10

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Agenda Item E.2.a
Attachment 1
June 2010

**AMENDMENT 2 TO THE FISHERY MANAGEMENT
PLAN FOR U.S. WEST COAST FISHERIES FOR
HIGHLY MIGRATORY SPECIES TO ADDRESS
REVISED NATIONAL STANDARD 1 GUIDELINES**

ENVIRONMENTAL ASSESSMENT

(PARTIAL DRAFT)

PREPARED BY:

**PACIFIC FISHERY MANAGEMENT COUNCIL
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**NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST REGION**

JUNE 2010

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Glossary of National Standard 1 Guideline Concepts

Reference Point	Description
Maximum Sustainable Yield (MSY) <i>600.310(e)(1)</i>	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 technology characteristics (e.g., gear selectivity)
Optimum Yield (OY) <i>600.310(e)(3) and (e)(3)(iv)</i>	A decisional mechanism to address MSA and FMP objectives. OY definition(s) must account for the need to prevent overfishing. A long-term average amount of desired yield that accounts for economic, social, and ecological factors... an FMP must contain ACLs and AMs to achieve OY. See (e)(3)(iii) and (iv) for factors to be considered in determining OY.
Status Determination Criteria (SDC): <i>600.310(e)(2)</i>	The FMP must describe which one of two methods will be used to determine overfishing status: (1) $F > MFMT$ or reasonable proxy or (2) $Catch > OFL$; in both cases exceeds the threshold for 1 year or more
Maximum Fishing Mortality Threshold (MFMT)	The level of fishing mortality (F), on an annual basis, above which overfishing is occurring
Overfishing Limit (OFL)	Annual amount of catch that corresponds to the estimate of MFMT applied to a stock or stock complex's abundance expressed in terms of numbers or weight of fish
Minimum Stock Size Threshold (MSST)	The level of biomass below which the stock or stock complex is considered overfished
Acceptable Biological Catch (ABC) / ABC Control Rule <i>600.310(f)</i>	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 and should be based on the ABC control rule. ABC control rule means a specified approach to setting ABC for a stock or stock complex as a function of the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. Councils should develop a process for receiving scientific information and advice used to establish ABC including the body that will apply the ABC control rule (calculate the ABC) and the review process. The SSC must recommend the ABC to the Council.
Annual Catch Limit (ACL); mechanisms for specifying ACLs <i>600.310(f)</i>	The level of annual catch of a stock or stock complex that serves as the basis for invoking AMs. ACL cannot exceed ABC but may be divided into sector-specific ACLs
Accountability Measures (AMs) <i>600.310(g)</i>	Management controls to prevent ACLs from being exceeded and to correct or mitigate overages of the ACL if they occur. There are two categories: inseason AMs and AMs for when the ACL is exceeded.
Annual Catch Target (ACT) (optional) <i>600.310(f)(6) & (g)(2)</i>	An optional AM. An amount of annual catch that is the management target of the fishery, and accounts for management uncertainty in controlling catch at or below the ACL.

CHAPTER 1 INTRODUCTION, INCLUDING PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Organization of the Document

This document provides background information about, and analysis of, a proposed amendment (Amendment 2) to the *Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species* (HMS FMP) to revise part of the FMP to ensure that it is consistent with guidelines to meet the objectives of National Standard 1 in the Magnuson-Stevens Fishery Conservation and Management Act (MSA). National Standard 1 states that “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.” The MSA is the principal legal basis for fishery management of U.S. fisheries in the EEZ or on the high seas beyond the EEZ for vessels making landings at U.S. ports. The EEZ extends from the outer boundary of state waters at 3 nautical miles (nmi) to a distance of 200 nmi from shore.

In addition to addressing MSA mandates, this document is a supplemental environmental impact statement (SEIS), pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended. According to NEPA (Section 102(2)(C)), any “major Federal action significantly affecting the quality of the human environment” must be evaluated in an environmental impact statement (EIS). However, an agency may prepare an environmental assessment (EA), which provides “sufficient evidence and analysis for determining whether to prepare an environmental impact statement.” The EA serves to disclose what impacts are anticipated, and if the proposed action is found to result in significant impacts an EIS need not be prepared. The agency then makes a Finding of No Significant Impact. Based on a preliminary determination by National Marine Fisheries Service (NMFS) staff in consultation with Pacific Fishery Management Council (hereafter, Council) staff, implementing the proposed action is unlikely to result in significant impacts. Therefore, rather than preparing an EIS, NMFS and the Council have decided to prepare an EA. This document is organized so that it contains the analyses required under NEPA and other applicable law (see Chapter 6).

Environmental impact analyses have four essential components: 1) a description of the purpose and need for the proposed action; 2) a set of alternatives that represent different ways of accomplishing the proposed action; 3) a description of the human environment affected by the proposed action; and 4) an evaluation of the expected direct, indirect, and cumulative impacts of the alternatives. (The human

environment includes the natural and physical environment, and the relationship of people with that environment, 40 CFR 1508.14.) These elements allow the decision maker to look at different approaches to accomplishing a stated goal and understand the likely consequences of each choice or alternative. Based on this structure, the document is organized in six chapters:

- The remainder of Chapter 1 describes the purpose and need for the proposed action and considerations that went into the development of this EA.
- Chapter 2 outlines different alternatives that have been considered to address the purpose and need. The Council will choose a preferred alternative from among these alternatives.
- Chapter 3 describes the components of the human environment potentially affected by the proposed action (the “affected environment”). The affected environment may be considered the baseline condition, which would be potentially changed by the proposed action.
- Chapter 4 evaluates the effects of the alternatives on components of the human environment in order to provide the information necessary to determine whether such effects are significant, or potentially significant.
- Chapter 5 details how this action meets 10 National Standards set forth in the MSA (§301(a)).
- Chapter 6 provides information on those laws and Executive Orders, in addition to the MSA and NEPA, that an action must be consistent with, and how this action has satisfied those mandates.

1.2 The Proposed Action and Why the Council and NMFS are Considering It

The proposed action is to revise relevant sections of the HMS FMP to ensure they are consistent with advisory guidelines published in Federal regulations at Section 600.310. The guidelines describe fishery management approaches to meet the objectives of National Standard 1 found in the MSA, Section 301. National Standard 1) states “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.” 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. NMFS revised National Standard 1 (NS1) Guidelines in response to these changes in the MSA. The NS1 Guidelines were published in the Federal Register on January 16, 2009. These revisions to the NS1 guidelines address, among other things, new requirements for fisheries undergoing overfishing, to have ACLs and AMs to end overfishing by 2010, and all fisheries to have ACLs and AMs in place to prevent or end overfishing by 2011, and beyond. A stock or stock complex may not require an ACL and AMs if it qualifies for a statutory exception under the Magnuson-Stevens Act. The NS1 Guidelines also discuss how stocks should be classified in the FMP. As part of this action the HMSMT evaluated all the species and stocks identified in the FMP in light of available information on catch to consider possible reclassification.

The Guidelines are intended to meet the objectives of NS1 by providing guidance on:

1. Specifying maximum sustainable yield (MSY) and OY;
2. 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;

3. 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
4. Rebuilding stocks and stock complexes.

The Council is revising the HMS FMP to be consistent with revised NS1 Guidelines in order to more effectively prevent overfishing and rebuild overfished stocks, or stocks that may become overfished.

1.3 Background on Revised National Standard 1 Guidelines

1.4 Scoping and the Council Process

Public involvement is an important part of the scoping process. According to NEPA regulations (40 CFR 1501.7) scoping is “an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action.” Public scoping is designed to provide interested citizens, government officials, and tribes an opportunity to help define the range of issues and alternatives that should be evaluated in the EIS. The Council process, which is based on stakeholder involvement and allows for public participation and public comment, has been the principal mechanism for public scoping in developing the proposed action for Amendment 2 and the related range of alternatives. The public has had and will continue to have the opportunity to comment on the proposal during Council, subcommittee, and advisory body meetings.

1.5 Internal Scoping and Determination of the Range of Impacts Evaluated in this EA

On May 5, 2010, NMFS held an internal scoping meeting to determine the appropriate type of NEPA document to prepare based on an initial assessment of the range of impacts that may result from the proposed action. Based on the results of this meeting the SWR Regional Administrator concurred with the recommendation of the NMFS NEPA Coordinator that an EA was the appropriate level of analysis for this action.

Based on this and subsequent internal scoping NMFS and Council staffs determined that the following environmental components may be affected by the proposed action:

- Fish stocks
- Other components of the fishery ecosystem
- The socioeconomic environment.

CHAPTER 2 DESCRIPTION OF THE ALTERNATIVES

2.1 Introduction

The alternatives are organized around the following topics:

- 1) Classification of stocks in the FMP as either management unit species (MUS) or ecosystem component (EC) species, or otherwise dropped from the FMP
- 2) Application of the MSA international exception to annual catch limits (ACLs) and accountability measures (AMs) for MUS
- 3) Determining the Primary fishery management plan (FMP) for MUS also addressed by the Western Pacific Fishery Management Council's (WPFMC) Pelagics FMP
- 4) Establishing Reference Points and Accountability Measures

The following sections detail issues considered under these topics, which in some cases are presented as different options for Council decision-making. Section 2.7 describes four alternatives, including the alternative of no action, that combine responses to the issues outlined below into proposals for amending the HMS FMP to comply with the revised National Standard 1 Guidelines. Appendix A contains proposed changes to the HMS FMP.

2.2 Classification of Stocks in the FMP

2.2.1 Classification Criteria in the Original HMS FMP

The HMS FMP identifies both **managed species** and **monitored species**. Section 3.1 of the original HMS FMP discusses classification criteria. The list of criteria for classification as an MUS included:

1. *the species occurs in the Pacific Council management area*
2. *the species occurs in west coast HMS fisheries*
3. *the species is defined as highly migratory in the MSA or the Law of the Sea Convention*
4. *the species is important (moderate to high value) in the landings or to the fishery*
5. *the species is managed by the Western Pacific Fishery Management Council (WPFMC)*
6. *sufficient data exists to calculate a bio-analytically based MSY, including a reasonable MSY proxy that is based, e.g., on catches and yields that are stable over time*
7. *the species possesses special biological characteristics (e.g. low productivity)*

The originally proposed HMS FMP stipulated that any species meeting the first three criteria on the list of MUS classification criteria would be strongly considered for inclusion. The Council chose to adopt the proposed action alternative, which was to include species “that are at least moderately important or of special conservation concern in West Coast HMS fisheries, and also managed by the WPFMC,” leading to the current list of 13 HMS FMP MUS. Tunas, swordfish, striped marlin and HMS sharks were deemed variously important to commercial and sports interests, dorado (dolphinfish) was noted to be of growing importance in the Southern California recreational fishing industry, and all were mentioned to be of concern to conservationists, particularly the HMS sharks.

The criteria for inclusion in the original FMP for monitoring purposes included the following:

1. species having a record of being caught in an HMS fishery and not covered by another FMP or state management regime
2. otherwise of special concern (e.g. elasmobranchs, which have relatively low productivity)

The original FMP noted that these species “often comprise a fishery’s bycatch,” and stated that they should be “monitored on a consistent and routine basis to the extent practicable. Sampling and coverage fraction will depend on the take rates of the species that are of the most concern. This monitoring is needed to evaluate the impact of HMS fisheries on incidental and bycatch species (as well as MUS) and to track the effectiveness of bycatch reduction methods.”

2.2.2 Revised National Standard 1 Classification Criteria

The Guidelines introduce the concept of species “in the fishery,” for which catch limits must be considered, and **ecosystem component (EC) species**, an optional stock classification category in an FMP; EC species do not require active management. The current FMP monitored species category seems to be very similar in concept to the EC category. The HMSMT decided that this FMP amendment provides an opportunity to take a comprehensive look at the current list of MUS and monitored species to determine which should be considered “in the fishery” and subject to management and which are more appropriately classified as EC species, and whether some of the species currently listed as monitored species in the FMP should be dropped altogether, because they are rarely if ever caught in current west coast HMS fisheries.

According to revised National Standard 1 Guidelines (600.310(d)(1)) all stocks in an FMP are considered to be “in the fishery” by default unless they are identified as ecosystem component (EC) species. There are several criteria that should be met for a species to be included in the EC category (§660.310(d)(5)). These are:

- Be a non-target stock/species;
- Not be subject to overfishing, approaching overfished, or overfished and not likely to become subject to overfishing or overfished in the absence of conservation and management measures; and,
- Not generally retained for sale or personal use, although “occasional” retention is not by itself a reason for excluding a species from the EC category.

One of the reasons given for including EC species in an FMP is for data collection purposes, which is consistent with the intent presented in the HMS FMP. EC species are not considered “in the fishery” but Councils should consider measures to minimize bycatch of these species consistent with National Standard 9. OY and reference points (MSY, OFL, SDC, ABC, ACL, ACT) do not need to be specified for EC species. One of the essential purposes behind monitored species in the FMP and the EC species

in the Guidelines is similar: to track species over time, periodically evaluate their status, and assess whether any management is needed under the FMP, in which case a monitored/EC species could be reclassified as MUS that is “in the fishery.” Other purposes for identifying EC species are to allow Councils to consider measures “to minimize bycatch and bycatch mortality of EC species consistent with National Standard 9, and to protect their associated role in the ecosystem.”

Many of the monitored species are also currently WPFMC Pelagics Plan FMP MUS. Inclusion in another FMP could also be used as a criterion for determining whether a stock should be classified as an EC or in the fishery, if both Pelagics FMP fisheries and HMS FMP fisheries are catching the same stock. If a species is actively managed in that FMP, this would lend additional support to classifying it as an EC species if there is low susceptibility to HMS FMP fisheries. However, the WPFMC is considering reclassifying some of their MUS as EC species.

If a monitored/EC species is reclassified as an MUS in the fishery, then it should be determined:

- If the international exception should be applied, and
- If it is also an MUS in the Pelagics FMP, which FMP should be designated the primary FMP.

2.2.3 Reclassification Options

The options described below are not mutually exclusive; one or more may be combined in the alternatives described in Section 2.7.

1. Leave all management unit species (MUS) as MUS, and reclassify all monitored species as EC species.

Rationale: The inclusion of monitored species in the HMS FMP appears to have captured, for most monitored species, the intent of the new EC species in that they are not major components of the fishery but have been captured, at least once, incidentally in the U.S. west coast HMS fisheries.

2. Reclassify opah as an MUS.

Rationale: Landings by gear types used to target HMS are significant (exceeding 50 mt annually in recent years) and the market for opah has apparently grown since the development of the HMS FMP. On the other hand, Opah is not defined as highly migratory under the MSA or the UN Law of the Sea Treaty (Annex 1), one of the three criteria that the HMS FMP uses to consider inclusion as a managed species.

3. Reclassify bigeye thresher and pelagic thresher as EC species.

Rationale: These two species were included in the HMS FMP because they may be particularly vulnerable to the effects of fishing due to their life history characteristics. Like the other three pelagic shark species covered in the HMS FMP, they are long lived, have low fecundity and are slow to mature. However, unlike the other three pelagic shark species in the HMS FMP, they are not taken in high numbers in the U.S. west coast HMS fisheries. Recent landings of each species average less than 5 mt annually, and pelagic threshers are mainly encountered during warm water El Niño years. Observer records for the swordfish drift gillnet fishery demonstrate that estimated blue shark catch is at least ten-fold higher than either pelagic or bigeye thresher shark catch, on average. Neither pelagic thresher nor bigeye thresher is of recreational or commercial importance for U.S. west coast fisheries; in contrast, shortfin mako and common thresher sharks are recreationally and commercially important species. In

addition, both the pelagic and bigeye thresher sharks are taken in greater numbers by fisheries operating outside the U.S. west coast EEZ, and both are managed under the WPFMC Pelagics FMP.

4. Drop 22 monitored species from the HMS FMP and reclassify all other monitored species as EC species.

Rationale: Table 1 shows the proposed reclassification of monitored species under this option. (Data on recent landings is shown in Table 2.) All species proposed to be dropped from the FMP with the exception of bat ray and leopard shark have average annual landings of less than 1 mt over the past 9 years. Upon closer examination, the relatively higher level of reported bat ray landings was taken during CPS targeted trips.

Leopard sharks are benthic dwelling, coastal sharks; although the reported annual recreational catch is relatively high, it is unlikely that leopard sharks are actually taken while targeting HMS. Furthermore, leopard sharks are included in the Council's Groundfish FMP.

Twelve monitored species would be reclassified as EC species under this option (note that opah, which in the option above would be reclassified as an MUS, is included here among these 12 species). Most of these have landings less than 1 mt annually. Pacific bonito, louver, escolar, and bat ray have had landings over 1 mt in recent years (see Table 2) Chapter 3 provides additional information on the catch of these species, and explanation of why they would qualify as EC species.

Table 1. Reclassification options for current HMS FMP managed/monitored species.

Species	Commercial Landings Reported
Drop from FMP	
1. Bat ray, <i>Myliobatis californica</i>	Yes
2. Black marlin, <i>Makaira indica</i>	
3. Blacktip shark, <i>Carcharhinus limbatus</i>	
4. Blue marlin, <i>Makaira nigricans</i>	
5. Dusky shark, <i>C. obscurus</i>	
6. Lancetfishes, Alepisauridae	
7. Leopard shark, <i>Triakis semifasciata</i>	Yes
8. Manta/Mobula rays, Mobulidae	
9. Oarfish, <i>Regalecus glesne</i>	
10. Oceanic whitetip shark, <i>C. longimanus</i>	
11. Pacific moonfish, <i>Selene peruviana</i>	
12. Pacific sailfish, <i>Istiophorus platypterus</i>	
13. Pacific saury, <i>Cololabis saira</i>	
14. Prickly shark, <i>Echinorhinus cookei</i>	
15. Rainbow runner, <i>Elageteris bipinnulata</i>	
16. Salmon shark, <i>Lamna ditropis</i>	Yes
17. Shortbill spearfish, <i>Tetrapturus angustirostris</i>	
18. Silky shark, <i>C. falciformis</i>	Yes
19. Six gill shark, <i>Hexanchus riseus</i>	
20. Soupfin shark, <i>Galeorhinus galeus</i>	
21. Spiny dogfish, <i>Squalus acanthias</i>	
22. Whale shark, <i>Rincodon typus</i>	
Reclassify as EC Species	
1. Black skipack, <i>Euthynnus lineatus</i>	Yes
2. Bullet mackerel (tuna), <i>Auxis rochei</i>	
3. Common mola, <i>Mola mola</i>	
4. Escolar, <i>Lepidocybium flavobrunneum</i>	Yes
5. Hammerhead sharks, Sphyrnidae	Yes
6. Louvar, <i>Luvarus imperialis</i>	Yes
7. Oilfish, <i>Ruvettus pretiosus</i>	Yes
8. Pacific bonito, <i>Sarda chiliensis</i>	Yes
9. Pacific pomfret, <i>Brama japonica</i>	Yes
10. Pelagic stingray, <i>Pteroplatytrygon violacea</i>	Yes
11. Wahoo, <i>Acanthocybium solandri</i>	Yes
Reclassify from Monitored to MUS	
Opah, <i>Lampris guttatus</i>	Yes
Reclassify from MUS to EC	
Pelagic thresher shark, <i>Alopias pelagicus</i>	Yes
Bigeye thresher shark, <i>Alopias superciliosus</i>	Yes

Table 2. Monitored Species, commercial or recreational catch reported.

Species	Other FMP Coverage	Average Annual Commercial Landings (mt) 2000-2008	Average Annual Recreational Dead Catch (mt) 2004-2008	Estimated Average Annual DGN Catch 2000-2008, no. fish
Pacific bonito, <i>Sarda chiliensis</i>		420.28	4.2	412
Opah, <i>Lampris guttatus</i>	WP Pelagics	37.56	0.1	997
Louvar, <i>Luvarus imperialis</i>		1.98	0.0	137
Escolar, <i>Lepidocybium flavobrunneum</i>	WP Pelagics	1.58	0.0	1
Bat ray, <i>Myliobatis californica</i>		1.43 [¥]	1.0	6
Leopard shark, <i>Triakis semifasciata</i>	P Groundfish	0.63	4.4	0
Pelagic stingray, <i>Pteroplatytrygon violacea</i>		0.33	0.0	80
Oilfish, <i>Ruvettus pretiosus</i>	WP Pelagics	0.26	0.0	5
Wahoo, <i>Acanthocybium solandri</i>	WP Pelagics	0.26	0.0	0
Hammerhead sharks, Sphyrnidae	WP Pelagics	0.10	0.0	7
Pacific pomfret, <i>Brama japonica</i>	WP Pelagics	0.02	0.0	73
Black skipjack, * <i>Euthynnus lineatus</i>	WP Pelagics	0.02	0.5	0
Common mola, <i>Mola mola</i>		–	0.0	12,738
Salmon shark, <i>Lamna ditropis</i>	AK Groundfish	‡	0.0	15
Silky shark, <i>C. falciformis</i>	WP Pelagics	‡	0.0	0
Spiny dogfish, <i>Squalus acanthias</i>	AK & P Groundfish	–	0.1	0
Bullet mackerel (tuna), <i>Auxis rochei</i>	WP Pelagics	–	0.0	116

Sources:

PacFIN ft and ftl tables; only landings by HMS gear types.

Average annual RecFIN HMS A+B1 catch (dead catch) weight estimates in metric tons for private and rental.

Notes:

*RecFIN does not separately report "black skipjack"; average for all skipjack catch is shown.

¥Although bat ray was landed with purse seine, a HMS gear, examination of species composition shows that the sets were made on CPS.

**RecFIN does not appear to separately report the different thresher shark species; total thresher

‡ Excluded because less than 3 vessels made landings during the time period.

–No landing record for this time period.

Table 3. Monitored species for which commercial (2000-2008) or recreational (2004-2008) catch was not reported for HMS gears.

Species	Other FMP Coverage	Note on PacFIN data
Black marlin, <i>Makaira indica</i>	WP Pelagics	Species not separately identified in PacFIN
Blacktip shark, <i>Carcharhinus limbatus</i>		No landing record for this time period
Blue marlin, <i>Makaira nigricans</i>	WP Pelagics	No landing record for this time period
Dusky shark, <i>C. obscurus</i>		No landing record for this time period
Lancetfishes, Alepisauridae		No landing record for this time period
Manta/Mobula rays, Mobulidae		Species not separately identified in PacFIN
Oarfish, <i>Regalecus glesne</i>		Species not separately identified in PacFIN
Oceanic whitetip shark, <i>C. longimanus</i>	WP Pelagics	Species not separately identified in PacFIN
Pacific moonfish, <i>Selene peruviana</i>		Species not separately identified in PacFIN
Pacific sailfish, <i>Istiophorus platypterus</i>	WP Pelagics	No landing record for this time period
Pacific saury, <i>Cololabis saira</i>		No landing record for this time period
Prickly shark, <i>Echinorhinus cookei</i>		Species not separately identified in PacFIN
Rainbow runner, <i>Elageticus bipinnulata</i>		Species not separately identified in PacFIN
Shortbill spearfish, <i>Tetrapturus angustirostris</i>	WP Pelagics	Species not separately identified in PacFIN
Six gill shark, <i>Hexanchus riseus</i>	AK Groundfish	No landing record for this time period
Southern shark, <i>Galeorhinus galeus</i>	AK & P Groundfish	No landing record for this time period
Whale shark, <i>Rincodon typus</i>		Species not separately identified in PacFIN

Sources:

PacFIN fit and fit tables; only landings by HMS gear types.

Average annual RecFIN HMS A+B1 catch (dead catch) weight estimates in metric tons for private and rental.

2.3 Applying the NS1 Guideline’s “International Exception”

Section 660.310(h)(2)(ii) of the revised National Standard 1 Guidelines, relating to international fishing agreements, 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.” For stocks that meet this exception, only MSY, OY, and SDCs have to be defined. ABC, ACLs, and AMs are not required. Once any changes to the list of HMS FMP MUS are determined, the Council would need to decide which of these would be subject to the MSA “international exception.”

Opah, if reclassified as an MUS, would be subject to the international exception under all of the following options.

1. Apply the international exception to all of the HMS MUS

The rationale for this alternative is that both the IATTC and WCPFC (the two RFMOs that manage HMS stocks in the Pacific at the international level) include general statements in their charter documents asserting broad management authority over all HMS species. Article 1 of the IATTC Antigua Convention, which enters into force 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.” 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 occurring in the Convention Area, and such other species of fish as the Commission may determine.” All of the HMS MUS are found on the referenced Annex 1 list.

Furthermore, the WPFMC has indicated that it is considering applying the international exception to all MUS in their Pelagics FMP after reclassifying selected MUS as EC species (personal communication from Paul Dalzell, Senior Staff Scientist, WPFMC). Since all HMS FMP MUS are also Pelagics FMP MUS applying the international exception to all HMS FMP MUS would be consistent with the WPFMC’s approach. The two Councils should ensure consistency in their treatment of these stocks with respect to the international exception and, as necessary, agree upon which will become the primary FMP (see Section 2.4 below).

The RFMOs regularly conduct stock assessments for tuna and billfish species in the HMS FMP. Conservation measures have been adopted, or are under consideration for many of the species in the HMS FMP. Table 4 summarizes information on stock assessments and RFMO activities.

Table 4. Summary of stock assessments and RFMO conservation measures for HMS FMP MUS.

Species (stocks)	Assessment and conservation measures
Tunas	
Albacore tuna, <i>Thunnus alalunga</i> (NPO)	Regularly assessed by the ISC. IATTC and WCPFC conservation measures in place
Bigeye tuna, <i>T. obesus</i> (EPO, WCPO)	Regularly assessed by WCPFC and IATTC and both RFMOs have conservation measures in place
Skipjack tuna, <i>Katsuwonus pelamis</i> (EPO, WCPO)	Regularly assessed by the WCPFC and IATTC; no specific conservation measure in place but both RFMOs are addressing purse seine fleet capacity and the issue of unsustainable FAD sets.
Bluefin tuna, <i>T. orientalis</i> (NPO)	Occasionally assessed by the ISC; the WCPFC adopted a conservation measure in 2009
Yellowfin tuna, <i>T. albacares</i> (EPO, WCPO)	Regularly assessed by WCPFC and IATTC and both RFMOs have conservation measures in place
Billfish	
Striped marlin, <i>Tetrapturus audax</i> (NPO, EPO)	Occasionally assessed by the ISC and IATTC; WCPFC considered conservation measure in 2009 to be developed further in 2010
Swordfish, <i>Xiphias gladius</i> (NPO, SEPO)	Occasionally assessed by the ISC and IATTC; WCPFC has conservation measure for SP stock
Sharks	
Bigeye thresher shark, <i>Alopias superciliosus</i>	NMFS has occasionally assessed selected species; IATTC and WCPFC adopted conservation measures for sharks (C-05-03, CMM-2008-06). The WCPFC identifies “key shark species” as blue shark, oceanic whitetip shark, mako sharks, silky sharks, and thresher sharks
Blue shark, <i>Prionace glauca</i>	
Common thresher shark, <i>A. vulpinus</i>	
Pelagic thresher shark, <i>A. pelagicus</i>	
Shortfin mako shark, <i>Isurus oxyrinchus</i>	
Other	

Species (stocks)	Assessment and conservation measures
Dorado (dolphin), <i>Coryphaena hippurus</i>	IATTC has consolidated bycatch resolution referencing dorado (C-04-05); WCPFC has nonbinding resolution on bycatch species
Possible Additional MUS	
Opah, <i>Lampris guttatus</i>	IATTC has consolidated bycatch resolution (C-04-05); WCPFC has nonbinding resolution on bycatch species

2. Apply the international exception to all MUS except for common thresher shark and shortfin mako shark

Common thresher shark and shortfin mako shark are important species in west coast EEZ fisheries and the HMS FMP established harvest guidelines for common thresher and shortfin mako sharks. This reflects the fact that west coast fisheries catch these species in more than negligible quantities. Thus, even though there is evidence that RFMOs are managing shark species included in the HMS FMP, it may be appropriate to consider adopting ACLs (and perhaps reevaluating the current harvest guidelines) for these two species.

3. Apply the international exception for all MUS except for common thresher shark

Although a large portion of the common thresher shark stock appears to inhabit Mexico waters and they are taken in large numbers in near shore fisheries there, the best available science indicates that the range of the common thresher shark taken in the U.S. west coast fisheries is likely limited to the U.S. EEZ and the Mexico EEZ off the northern portion of Baja California, with very limited movement beyond to the north and west. Collaborative research among SWFSC scientists, Scripps Institute of Oceanography and CICESE, Ensenada, Mexico, demonstrates a significant artisanal fishery for common thresher sharks off northern Baja, yet the fractional catch by Mexico fisheries of the common thresher shark stock is estimated to have been either stable or in decline since the development of the HMS FMP due to recent regulatory changes affecting shark fisheries. Accurate landings estimates for the Mexico fleet are not available, yet the stock is relatively confined and U.S. West Coast landings likely comprise a greater proportion of the total stockwide catch than for any of the other pelagic shark MUS.

2.4 Determining the Primary FMP

Section 600.310(d)(7) of the Guidelines states that Councils should choose which FMP will be the primary FMP in which management objectives and other requirements of the Guidelines will be established in cases where a stock or species is identified in more than one FMP. All of the HMS FMP MUS are also currently MUS in the WPFMC’s Pelagics FMP; therefore, it is necessary to determine which FMP will identify MSY, OY, SDC, and other management objectives. For stocks subject to the international exception (most or all under both FMPs) only MSY, SDCs, and OY need to be specified. Both Councils could rely on RFMO sponsored stock assessments to identify these reference points, if available.

An approach based on determining the primary FMP at a stock level, rather than a species level, is proposed. Where stock structure is understood, as with the tropical tunas, separate stocks have been identified in the EPO and WCPO. As general principal, the WPFMC’s Pelagics FMP would be the primary FMP for stock in the WCPO and the HMS FMP would be the primary FMP for stocks in the EPO. A second important principal for determining the primary FMP is the importance of the species or stock for the fisheries managed under the respective FMPs. For species where current understanding

identifies a single stock across the North Pacific, or where stock structure is not well understood, this principal would be another consideration in determining the primary FMP. The division of responsibility between NMFS Southwest and Pacific Islands Regions and Science Centers is a third consideration. The Regions have divided responsibilities for coordinating participation in RFMO forums, for example, and the Science Centers divide responsibility for developing stock assessments (which may be developed through the RFMO forums with participation by scientists for national government agencies). Finally, where stock structure is poorly understood, and MSY may be specified for a local (west coast EEZ) portion of the stock (see discussion below), the HMS FMP would report reference points for that local stock. Table 5 shows possible assignments of managed species between the HMS FMP and the Pelagics FMP, based on these considerations and discussions among the staffs of the two Councils and their respective management teams.

HMS stock structure is an active area of research and scientific understanding of stock structure may change over time. Therefore, a stock-based approach to addressing the primary FMP issue will have to take into account potential changes in such scientific understanding. Greater stock partitioning or lumping may require the WPFMC and PFMC to reconsider designation of the primary FMP. For this reason the proposed designations outlined in Table 5 would not be specified in the HMS FMP. Instead, the FMP will be amended to discuss the process by which the determination of the primary FMP will be made in consultation with the WPFMC, allowing changes to primary FMP designations without the need to again amend the FMP.

Although MUS would be identified at the stock level for the purpose of identifying reference points in the respective FMPs, the PFMC would continue to maintain a Pacific-wide management interest in the species and therefore report reference points for WCPO stocks based on what is reported by the WPFMC.

Table 5. Potential primary FMP for HMS MUS.

Species	Potential Primary FMP Designations
Tunas	
Albacore tuna, <i>Thunnus alalunga</i> (NPO)	HMS FMP
Bigeye tuna, <i>T. obesus</i> (EPO, WCPO)	EPO: HMS FMP / WCPO: Pelagics FMP
Skipjack tuna, <i>Katsuwonus pelamis</i> (EPO, WCPO)	EPO: HMS FMP / WCPO: Pelagics FMP
Bluefin tuna, <i>T. orientalis</i> (NPO)	HMS FMP
Yellowfin tuna, <i>T. albacares</i> (EPO, WCPO)	EPO: HMS FMP / WCPO: Pelagics FMP
Billfish	
Striped marlin, <i>Tetrapturus audax</i> (NPO, EPO)	Pelagics FMP (NPO) / HMS FMP (EPO)
Swordfish, <i>Xiphias gladius</i> (NPO) ¹	Pelagics FMP (NPO) / HMS FMP (EPO) ⁴
Sharks	
Bigeye thresher shark, <i>Alopias superciliosus</i>	May be classified as EC species under HMS FMP
Blue shark, <i>Prionace glauca</i>	HMS FMP
Common thresher shark, <i>A. vulpinus</i>	HMS FMP (local stock)
Pelagic thresher shark, <i>A. pelagicus</i>	May be classified as EC species under HMS FMP
Shortfin mako shark, <i>Isurus oxyrinchus</i>	HMS FMP (local stock)
Other	
Dorado (dolphin), <i>Coryphaena hippurus</i>	HMS FMP (local stock)
Possible Additional MUS	
Opah, <i>Lampris guttatus</i>	HMS FMP reports MSY proxy for portion of the stock in the west coast EEZ

2.5 Establishing Reference Points, ACLs, and Accountability Measures

2.5.1 Reference Points Required For All Managed Stocks

The reference points discussed in the section apply to all managed stocks in the FMP, including those subject to the international exception.

2.5.1.1 MSY or an MSY Proxy

A framework is proposed based on a tiered system depending upon whether or not a stock assessment with MSY based estimates is available and whether or not a time series of stockwide catch is available.

Stocks with Quantitative Assessments, Category 1: These are stocks for which a recent stock assessment has been conducted, containing MSY-based estimates. For these stocks the HMSMT would summarize the results of the stock assessment and estimated reference points and present the summary to the SSC. If the SSC considered the assessment results to be robust, the MSY and OFL would be

¹ The HMS FMP identified EPO swordfish as the managed stock. IATTC conducts stock assessments on EPO swordfish. Recent genetics studies, fishery and demographics data conclude that the NEPO and SEPO stocks may be distinct. The latest IATTC swordfish assessment was conducted for the SEPO only. Due to uncertainty about stock structure, the primary FMP for the NPO stock would be the Pelagics FMP while responsibility for reporting on EPO assessments would be covered under the HMS FMP.

recommended to the Council for management. These quantities would be reported in the annual SAFE document

Stocks with Estimates of Stock-wide Catch, Category 2: If the stock has not been recently or ever assessed, the HMSMT would compile the best available data on stockwide catch and use some part of the time series to estimate a sustainable catch limit. Catch-based models that incorporate some stock productivity parameters and methods to account for uncertainty, such as DCAC or DB-SRA, may prove useful for estimating MSY. Alternatively, if justified, catch levels from select years when the stock was believed to be fished sustainably could be used to come up with a proxy MSY.

Stocks with Estimates of Local Catch Only, Category 3: If a time series of stockwide catch is not available, then it may be necessary to use a time series of only regional (U.S. west coast) catch and apply a catch-based estimation model (as above) or select levels of sustainable catch to serve as a proxy local MSY.

While the HMSMT may identify a reasonable MSY or MSY proxy, the SSC would endorse the reference point and recommend it to the Council for use in management. When an MSY proxy is established on a local level, the target yield can be considered equivalent to a regional overfishing limit (OFL), a new reference point established under the revised NS1 Guidelines. Catch-based models that incorporate some stock productivity parameters and methods to account for uncertainty, such as depletion corrected average catch (DCAC) or depletion based stock reduction analysis (DB-SRA) may prove useful for estimating a MSY for Category 2 and 3 stocks. Alternatively, if justified, catch levels from select years when the stock was believed to be fished sustainably could be used to come up with a proxy MSY.

The MSY or MSY proxy estimate for each managed stock would be reported in the SAFE, published annually.

2.5.1.2 Status Determination Criteria

The Guidelines state that status determination criteria “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 a stock or stock complex is overfished” 660.310(e)(2)(ii).

Overfishing Threshold

To determine if overfishing is occurring a Council may use the maximum fishing mortality threshold (MFMT), which “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” 660.310(e)(2)(ii)(A)(1) or the overfishing limit (OFL), “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” 660.310(e)(2)(i)(D). According to the Guidelines, exceeding either the MFMT or the OFL for a period of 1 year or more constitutes overfishing.

The HMS FMP identifies a default calculation, $MFMT = F_{MSY}$. For vulnerable species, an alternative calculation is proposed for identifying OY determined in terms of $F = 0.75 F_{MSY}$. The Guidelines define vulnerability as follows:

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). 660.310(d)(10)

Under this amendment no change is proposed to the calculation of the overfishing threshold ($MSST = F_{MSY}$), except that it would be expressed as an OFL or fishing mortality rate, as appropriate. The OFL estimate for each managed stock would be reported in the SAFE, published annually. If either Pacific RFMO adopts a fishing mortality based reference point for an HMS stock, that reference point would be reported, after SSC review.

For vulnerable species a precautionary reduction from the default calculation would be considered on a case-by-case basis, based on information about the vulnerability of the stock. The FMP currently describes a precautionary threshold of $0.75 F_{MSY}$. The FMP would be amended to emphasize the case-by-case approach with $0.75 F_{MSY}$ as a starting point.

The FMP identifies the managed shark species, bluefin tuna, and striped marlin as vulnerable. Under this amendment the FMP would be revised so that vulnerable species would not be specified in the FMP itself. Instead, the HMSMT would periodically evaluate the vulnerability of selected stocks when respecifying MSY and/or SDCs.

Overfished Threshold

The minimum stock size threshold (MSST) is used to determine if a stock is overfished. “The MSST or reasonable proxy must be expressed in terms of spawning biomass or other measure of reproductive potential” 660.310(e)(2)(ii)(B).

The HMS FMP defines a default MSST as no less than half of B_{MSY} (when natural mortality exceeds 0.5). If natural mortality is equal to or greater than 0.5 then the MSST would vary between $0.5B_{MSY}$ and $0.75B_{MSY}$ based on the calculation $(1-M)B_{MSY}$. For vulnerable species the HMS FMP currently suggests a precautionary adjustment from the default value used to calculate the MSST; it would be set generally closer to B_{MSY} than under the default calculation. No change is proposed in the method for determining the MSST, except that the FMP will more clearly specify how the calculation would be made for vulnerable species.

The Guidelines at 600.310(k) describe the required Council response to a Secretarial determination of international overfishing. The FMP will be amended to reference and summarize these requirements.

2.5.1.3 Optimum Yield

Optimum yield is defined in the MSA. The Guidelines state “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” 600.310(b)(2)(ii). OY is based on MSY as reduced by factors outlined in Section (e)(3) of the Guidelines. OY is expressed as an “amount of fish”; in other words it is a quantity rather than a rate.

The HMS FMP describes an OY control rule. For species not considered vulnerable the OY or OY proxy is set equal to MSY. For vulnerable species the OY or OY proxy is set at $0.75MSY$.

Under the amendment the FMP would be revised to describe a more flexible framework for setting OYs that addresses life history concerns, management goals, and socioeconomic considerations on a species-by-species basis. The description of the framework would be based on the criteria enumerated in the

following sections in the Guidelines: (e)(3)(iv), factors to consider in OY specification, and (e)(3)(iii), determining the greatest benefit to the Nation. As in the FMP currently, the framework would relate OY to SDCs, such that OY control rules are consistent with the objectives of preventing overfishing and rebuilding overfished stocks. For stocks where a local MSY is identified (Category 3 above), the OY (and SDCs) would be for the portion of the stock for which local MSY is determined.

2.5.2 Reference Points for Managed Species not Subject to the International Exception

In addition to the reference points outlined above, for those species not subject to international exception (potentially, shortfin mako and common thresher shark) the allowable biological catch and annual catch limit must be established. The Guidelines also identify the annual catch target (ACT) as an optional accountability measure. ACTs are intended to account for management uncertainty.

2.5.2.1 Allowable Biological Catch

ABC is a new concept in the revised Guidelines. According to the Guidelines, “ABC is a level of a stock or stock complex’s catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty ..., and should be specified based on the ABC control rule” 310(f)(2)(ii). The ABC control rule is a “specified approach” for setting the ABC. Catch is measured in weight or numbers of fish and is assessed from all sources (commercial, recreational, subsistence, tribal, and other fisheries). The SSC must recommend the ABC to the Council and the ABC may not exceed the OFL.

Because this is a new concept the HMS FMP currently contains no definition or discussion of ABC. Under this amendment the FMP would be revised to describe the processes for specifying ABC control rules and ABCs. The HMSMT would define the ABC control rule, which would then be reviewed by the SSC and adopted by the Council.²

Generally, the ABC control rule should be consistent with the OY control rule, because the OY should not be greater than the ABC. For stocks where a local MSY is identified (Category 3 above), the ABC would be for the portion of the stock for which local MSY is determined.

The Guidelines suggest a stochastic approach to setting ABC: “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” 660.310(f)(4). The Groundfish and CPS Subcommittees of the SSC have developed a methodology that relates the probability of overfishing to a corresponding reduction from the OFL to set the ABC {SSC, 2009 1723 /id}, often referred to a “P star” (P*) after the symbol used to denote the probability that overfishing will occur. This methodology could be combined with DCAC or DB-SRA methods to determine the ABCs for the two shark stocks (since they are likely to fall into Category 3 in terms of data availability).

2.5.2.2 Annual Catch Limit

According to the Guidelines, an ACL is “the level of annual catch of a stock or stock complex that serves as the basis for invoking AMs [accountability measures]” 660.310(f)(2)(iv). The ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis, 660.310(f)(5)(i). The Guidelines

² The Guidelines state “each Council must establish an ABC control rule based on scientific advice from the SSC” 600.310(f)(4).

are silent on what considerations would prompt setting the ACL to a level below the ABC. Presumably, considerations equivalent to those used for setting the OY could factor into setting an ACL below the ABC. The ACL would normally not be set greater than the OY.³ Therefore, if the OY is set below the ABC, it is likely that the ACL should also be set at that lower level.

2.6 Accountability Measures

Accountability measures are management controls to prevent ACLs from being exceeded and to respond to a situation where an ACL has been exceeded. Section g in the Guidelines describes the features of accountability measures. Inseason AMs include monitoring and management measures to prevent catch from exceeding ACLs, and may include annual catch targets (ACTs). If an ACL is exceeded more than once every four years then the system of ACLs and AMs should be re-evaluated and modified as necessary.

Chapter 5 in the HMS FMP describes a framework for the periodic specification of quotas, harvest guidelines, and an array of management measures. In section 6.1.7, describing quotas and harvest guidelines, the FMP authorizes the following procedure:

The HMS Management Team, at its annual meeting in May or June, will review the catches from the previous statistical year (April 1-March 31) and compare those catches with the established harvest guidelines; evaluate the status of the stocks; and develop recommendations for management measures, as appropriate. These management measures will be presented to the Council as part of the SAFE document at its June and/or September meetings to be reviewed and approved for public review. Final action on management measures would be scheduled for the Council's November meeting.⁴

The specification process operates on a 2-year, or biennial, schedule. The fishing year is defined as April 1-March 31 and the current biennial period ends on March 31, 2011. The Council has considered implementation or adjustment of management measures for two biennial periods since implementation of the HMS FMP (2007-2009 and 2009-2011). For the first cycle the Council adopted new recreational bag limits for albacore tuna and modified vessel marking requirements for CPFV vessels. For the second cycle the Council considered measures to constrain the recreational catch of common thresher shark (time/area closures, bag limits) but ultimately did not recommend new regulatory measures.

This framework provides flexibility to respond to changing conditions in fisheries. It is very similar to the specifications framework authorized by the Groundfish FMP. As part of the biennial process, routine management measures can be identified. These can be implemented or modified inseason through a single Council meeting and one Federal Register notice ("notice actions") or two Council meetings and one Federal Register notice ("abbreviated rulemaking"). To date the Council has not done any inseason management under the HMS FMP, because no pressing resource conservation issues have arisen that can be dealt with unilaterally (without international action).

³ An exception might be for a stock where MSY (rather than a proxy) can be specified and current stock biomass is well in excess of BMSY. Since OY is a long-term average amount of desired yield, it could be set consistent with long-term MSY while in the short term the ACL could be set higher so that stock biomass declines to BMSY. However, given current rates of exploitation of almost all fish stocks, it is unlikely that such a situation would arise.

⁴ Although this paragraph uses the term "management measures," given the context it may be assumed that the specific reference would be to quotas or harvest guidelines.

This framework is readily adaptable to the requirements of the Guidelines. Therefore, no new accountability measures are proposed under this amendment. However, the FMP would be revised to explain how the existing AMs are related to any ACLs that may be established. Added language in the FMP will explain their function in preventing an ACL from being exceeded or addressing situations where post-season accounting shows an ACL has been exceeded.

If ACLs were established for any MUS, perhaps the more pressing issue would be whether current catch monitoring systems are sufficient to ensure that an ACL would not be exceeded. Specifically, if the ACL is developed as a limit on total removals (catch and dead discards) then appropriate monitoring of bycatch would need to be ensured. Some components of the recreational fishery may be poorly monitored. For some species many fishermen practice catch-and-release, and post-release mortality rates are not well estimated.⁵ Finally, data availability and analysis of total removals would need to be timely if inseason measures are needed to prevent an ACL from being exceeded.

2.7 Proposed Alternatives

In this section the range of issues outlined above, some presented with different options, are organized into a set of alternatives. Each alternative represents a complete package of measures to amend the HMS FMP to comply with the Guidelines. Table 6 provides a comparative summary of the alternatives described below.

2.7.1 *Alternative 1: No Action*

Under the No Action the HMS FMP would not be amended.

Classification of Stocks in the FMP: Currently there are 13 MUS and 34 monitored species listed in Chapter 3 of the HMS FMP. Section 2.2.1 describes the criteria that were used to select which species would be included in these categories

Applying the International Exception: When the FMP was implemented the Guidelines did not contain provisions for ACLs or the exception at 660.310((h)(2)(ii) for setting ABCs and ACLs.

Determining the Primary FMP: When the FMP was implemented the Guidelines did not contain language at 660.310(d)(7) stating that for stocks or species appearing in more than one FMP Councils should choose which FMP will be the primary FMP.

Establishing Reference Points, ACLs, and Accountability Measures: Chapter 4 in the HMS FMP identifies MSY for managed species and describes methods for determining SDCs and OYs. The FMP does not discuss or specify ABCs or ACLs for any managed species, because at the time of implementation the Guidelines did not contain these provisions. Chapters 5 and 6 describe the framework for the periodic specification of management measures and management measures in place at the time of FMP implementation. Regulations pursuant to the HMS FMP are found at 50 CFR 660 Subpart K.

⁵ NMFS SWFSC has been conducting ongoing research to improve estimates of post-release mortality for recreational caught sharks.

2.7.2 Alternative 2

Classification of Stocks in the FMP: The current 13 MUS would remain as listed. All 34 listed monitored species would be reclassified as EC species.

Applying the International Exception: The international exception to setting ABCs and ACLs described at 660.310((h)(2)(ii)) would be applied to all managed species.

Determining the Primary FMP: The HMS FMP will be amended to discuss the process by which the determination of the primary FMP will be made in consultation with the WPFMC. The determination will be based on the stock, or portion of the stock (if stock structure is poorly understood and catch data is limited), for which reference points will be identified.

Establishing Reference Points, ACLs, and Accountability Measures: MUS will be assigned to one of three categories based on how much information is available for estimating an MSY or MSY proxy. Methods appropriate to data availability will be applied to estimate MSYs and SDCs. The FMP will be amended to more clearly describe the methods for determining SDCs. If an RFMO has adopted reference points for an HMS FMP managed stock, that reference point will be reported, after SSC review. MSY or MSY proxy and OFL estimates will be reported in the SAFE, which is published annually. The FMP would be revised to describe a more flexible framework for setting OYs that addresses life history concerns, management goals, and socioeconomic considerations on a species-by-species basis consistent with the criteria enumerated in the Guidelines. Although all species would be excepted from the ABC/ACL requirement under this alternative, language would be added describing these reference points and the process for determining them in the event that at a later date the Council chooses to set an ACL for one or more managed species. Language will be added to the FMP referencing Section 600.310(k) in the Guidelines on Council response to a Secretarial determination of international overfishing. Since the international exception is applied to all stocks, ABCs and ACLs would not be identified. The current processes and measures described in Chapters 5 and 6 of the FMP would be used to address the Guidelines' discussion of accountability measures. Chapter 5 would be amended to reference and summarize relevant sections of the Guidelines.

2.7.3 Alternative 3

Classification of Stocks in the FMP: Opah would be added to the current list of 13 MUS for a total of 14 MUS. Monitored species that the HMSMT has determined have very low susceptibility to west coast fisheries would be dropped so that 11 EC species are identified in the HMS FMP.

Applying the International Exception: The international exception to setting ABCs and ACLs described at 660.310((h)(2)(ii)) would be applied to all managed species except for common thresher and shortfin mako shark.

Determining the Primary FMP: Same as Alternative 2.

Establishing Reference Points, ACLs, and Accountability Measures: For MSY, SDCs, and OY the FMP would be amended in the same manner as under Alternative 2. Additional language would be added to the FMP stating that ABCs and ACLs would be set for common thresher and shortfin mako shark. The current processes and measures described in Chapters 5 and 6 of the FMP would be used to address the Guidelines' discussion of accountability measures. Chapter 5 would be amended to reference and summarize relevant sections of the Guidelines.

2.7.4 Alternative 4

Classification of Stocks in the FMP: Opah would be added to the current list of 13 MUS while pelagic and bigeye thresher shark would be reclassified as EC species, leaving a total of 12 MUS in the FMP. Monitored species that the HMSMT has determined have very low susceptibility to west coast fisheries would be dropped so that 13 EC species are identified in the HMS FMP.

Applying the International Exception: The international exception to setting ABCs and ACLs described at 660.310((h)(2)(ii) would be applied to all managed species except for common thresher shark.

Determining the Primary FMP: Same as Alternative 2.

Establishing Reference Points, ACLs, and Accountability Measures: For MSY, SDCs, and OY the FMP would be amended in the same manner as under Alternative 2. Additional language would be added to the FMP describing the process and methods for setting ABCs and ACLs for common thresher shark. The current processes and measures described in Chapters 5 and 6 of the FMP would be used to address the Guidelines' discussion of accountability measures. Chapter 5 would be amended to reference and summarize relevant sections of the Guidelines.

2.7.5 Alternative 5 (Council-preferred)

To be completed after June Council meeting.

Classification of Stocks in the FMP

Applying the International Exception

Determining the Primary FMP

Establishing Reference Points, ACLs, and Accountability Measures

Table 6. Summary of alternatives.

Issue	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Classification of stocks	13 MUS 34 monitored species	13 MUS 34 EC species	14 MUS (add Opah) 11 EC species (drop selected)	12 MUS (bigeye and pelagic thresher to EC, add opah) 13 EC species (drop selected, move as above)
Application of the international exception	Not applied	Applied to all stocks	Applied to all stocks except common thresher and shortfin mako	Applied to all stocks except common thresher
Primary FMP designation	No designations	Designation at stock level in consultation with WPFMC; flexibility to change based on new information	Designation at stock level in consultation with WPFMC; flexibility to change based on new information	Designation at stock level in consultation with WPFMC; flexibility to change based on new information
Specification of MSY and SDC	<ul style="list-style-type: none"> MSY or MSY proxies listed in FMP Methods for determining MFMT and MSST identified 	<ul style="list-style-type: none"> MSY or MSY proxies estimated using methods consistent with data availability category MSY and SDCs reported in SAFE 	<ul style="list-style-type: none"> MSY or MSY proxies estimated using methods consistent with data availability category MSY and SDCs reported in SAFE 	<ul style="list-style-type: none"> MSY or MSY proxies estimated using methods consistent with data availability category MSY and SDCs reported in SAFE
Specification of OYs	Default and alternative OY control rules described	Flexible framework to determine OY on stock basis based on criteria in Guidelines	Flexible framework to determine OY on stock basis based on criteria in Guidelines	Flexible framework to determine OY on stock basis based on criteria in Guidelines
Specification of ABCs	Not specified	Not Specified	Specified for common thresher and shortfin mako	Specified for common thresher
Specification of ACLs	Not specified	Not Specified	Specified for common thresher and shortfin mako	Specified for common thresher
Accountability measures	Chapters 5 & 6 outline managed measures and process for periodic adjustment	Measures and processes as described in Chapters 5 & 6 of the FMP	Measures and processes as described in Chapters 5 & 6 of the FMP	Measures and processes as described in Chapters 5 & 6 of the FMP

Table 7. Managed and EC species under the action alternatives.

Alternative 2	Alternative 3	Alternative 4
Managed Species		
1 Albacore tuna, <i>Thunnus alalunga</i>	1 Albacore tuna, <i>Thunnus alalunga</i>	1 Albacore tuna, <i>Thunnus alalunga</i>
2 Bigeye tuna, <i>T. obesus</i>	2 Bigeye tuna, <i>T. obesus</i>	2 Bigeye tuna, <i>T. obesus</i>
3 Skipjack tuna, <i>Katsuwonus pelamis</i>	3 Skipjack tuna, <i>Katsuwonus pelamis</i>	3 Skipjack tuna, <i>Katsuwonus pelamis</i>
4 Bluefin tuna, <i>T. orientalis</i>	4 Bluefin tuna, <i>T. orientalis</i>	4 Bluefin tuna, <i>T. orientalis</i>
5 Yellowfin tuna, <i>T. albacares</i>	5 Yellowfin tuna, <i>T. albacares</i>	5 Yellowfin tuna, <i>T. albacares</i>
6 Striped marlin, <i>Tetrapturus audax</i>	6 Striped marlin, <i>Tetrapturus audax</i>	6 Striped marlin, <i>Tetrapturus audax</i>
7 Swordfish, <i>Xiphias gladius</i>	7 Swordfish, <i>Xiphias gladius</i>	7 Swordfish, <i>Xiphias gladius</i>
8 Bigeye thresher shark, <i>Alopias superciliosus</i>	8 Bigeye thresher shark, <i>Alopias superciliosus</i>	8 Blue shark, <i>Prionace glauca</i>
9 Blue shark, <i>Prionace glauca</i>	9 Blue shark, <i>Prionace glauca</i>	9 Common thresher shark, <i>A. vulpinus</i>
10 Common thresher shark, <i>A. vulpinus</i>	10 Common thresher shark, <i>A. vulpinus</i>	10 Shortfin mako shark, <i>Isurus oxyrinchus</i>
11 Pelagic thresher shark, <i>A. pelagicus</i>	11 Pelagic thresher shark, <i>A. pelagicus</i>	11 Dorado (dolphin), <i>Coryphaena hippurus</i>
12 Shortfin mako shark, <i>Isurus oxyrinchus</i>	12 Shortfin mako shark, <i>Isurus oxyrinchus</i>	12 Opah, <i>Lampris guttatus</i>
13 Dorado (dolphin), <i>Coryphaena hippurus</i>	13 Dorado (dolphin), <i>Coryphaena hippurus</i>	
	14 Opah, <i>Lampris guttatus</i>	
EC Species		
1 Bat ray, <i>Myliobatis californica</i>	1 Black skipack, <i>Euthynnus lineatus</i>	1 Pelagic thresher shark, <i>Alopias pelagicus</i>
2 Black marlin, <i>Makaira indica</i>	2 Bullet mackerel (tuna), <i>Auxis rochei</i>	2 Bigeye thresher shark, <i>Alopias superciliosus</i>
3 Blacktip shark, <i>Carcharhinus limbatus</i>	3 Common mola, <i>Mola mola</i>	3 lack skipack, <i>Euthynnus lineatus</i>
4 Blue marlin, <i>Makaira nigricans</i>	4 Escolar, <i>Lepidocybium flavobrunneum</i>	4 Bullet mackerel (tuna), <i>Auxis rochei</i>
5 Dusky shark, <i>C. obscurus</i>	5 Hammerhead sharks, Sphyrnidae	5 Common mola, <i>Mola mola</i>
6 Lancetfishes, Alepisauridae	6 Louvar, <i>Luvarus imperialis</i>	6 Escolar, <i>Lepidocybium flavobrunneum</i>
7 Leopard shark, <i>Triakis semifasciata</i>	7 Oilfish, <i>Ruvettus pretiosus</i>	7 Hammerhead sharks, Sphyrnidae
8 Manta/Mobula rays, Mobulidae	8 Pacific bonito, <i>Sarda chiliensis</i>	8 Louvar, <i>Luvarus imperialis</i>
9 Oarfish, <i>Regalecus glesne</i>	9 Pacific pomfret, <i>Brama japonica</i>	9 Oilfish, <i>Ruvettus pretiosus</i>
10 Oceanic whitetip shark, <i>C. longimanus</i>	10 Pelagic stingray, <i>Pteroplatytrygon violacea</i>	10 Pacific bonito, <i>Sarda chiliensis</i>
11 Pacific moonfish, <i>Selene peruviana</i>	11 Wahoo, <i>Acanthocybium solandri</i>	11 Pacific pomfret, <i>Brama japonica</i>
12 Pacific sailfish, <i>Istiophorus platypterus</i>		12 Pelagic stingray, <i>Pteroplatytrygon violacea</i>
13 Pacific saury, <i>Cololabis saira</i>		13 Wahoo, <i>Acanthocybium solandri</i>
14 Prickly shark, <i>Echinorhinus cookei</i>		
15 Rainbow runner, <i>Elageteris bipinnulata</i>		
16 Salmon shark, <i>Lamna ditropis</i>		
17 Shortbill spearfish, <i>Tetrapturus angustirostris</i>		

	Alternative 2	Alternative 3	Alternative 4
18	Silky shark, <i>C. falciformis</i>		
19	Six gill shark, <i>Hexanchus riseus</i>		
20	Soufjin shark, <i>Galeorhinus galeus</i>		
21	Spiny dogfish, <i>Squalus acanthias</i>		
22	Whale shark, <i>Rincodon typus</i>		
23	lack skipack, <i>Euthynnus lineatus</i>		
24	Bullet mackerel (tuna), <i>Auxis rochei</i>		
25	Common mola, <i>Mola mola</i>		
26	Escolar, <i>Lepidocybium flavobrunneum</i>		
27	Hammerhead sharks, Sphyrnidae		
28	Louvar, <i>Luvarus imperialis</i>		
29	Oilfish, <i>Ruvettus pretiosus</i>		
30	Opah, <i>Lampris guttatus</i>		
31	Pacific bonito, <i>Sarda chiliensis</i>		
32	Pacific pomfret, <i>Brama japonica</i>		
33	Pelagic stingray, <i>Pteroplatytrygon violacea</i>		
34	Wahoo, <i>Aathocybium solandri</i>		

2.8 Alternatives Considered but Rejected from Further Analysis

In November 2009 the Council considered an alternative under which the international exception would only be applied to the managed tunas and billfish in the HMS FMP and not to the four shark species and dorado.

2.9 Summary of the Impacts of the Alternatives

2.9.1 *Alternative 1 (No Action)*

The Council continues to provide advice to U.S. RFMO delegations as the primary means to prevent/end overfishing on HMS stocks. If the Secretary determines that overfishing is occurring on an internationally managed stock, MSA Section 304(i) applies. Under this section the Council provides a report to Congress and the Departments of Commerce and State describing measures needed at the international level to end overfishing and proposes domestic regulations to address the relative impact of U.S. fishing vessels.

Catch estimates for common thresher and shortfin mako sharks are periodically compared to established harvest guidelines. If information suggests a harvest guideline has been or is likely to be exceeded within 2 years the Council may implement additional management measures through the biennial process.

If significant trends or changes in the status of monitored species are detected, they are documented in the SAFE. The SAFE may include recommendations concerning bycatch and incidental catch.

Since the HMS FMP has been implemented, no catch controls have been established under the management framework that have had an adverse socioeconomic impact. (New recreational bag limits for albacore were implemented in 2007 but likely had negligible socioeconomic impacts.)

2.9.2 *Alternative 2*

No change from No Action except:

- Identification and regular reporting of OFLs/MFMT could provide additional criteria relative to Secretarial determination of overfishing and action under MSA Section 304(i).
- Coordination with the WPFMC on identification of reference points for stocks would be needed.

2.9.3 *Alternative 3*

In addition to the effects described for Alternative 2, the following would apply under this alternative:

- The Council would have the opportunity to implement management measures for opah should a need be identified under the framework described in Chapter 5 of the FMP.
- A fewer number of monitored EC species could allow more effective tracking of the status of these stocks.
- ACLs for shortfin mako and common thresher sharks would establish a stricter standard for limiting catch than the current harvest guidelines. If an ACL is exceeded more than once in 4 years the Council would have to implement appropriate accountability measures.

2.9.4 Alternative 4

The effects of Alternative 4 would be the same as those described under Alternative 3 except:

- ACLs are only set for common thresher shark. Given information on the distribution and migration patterns of shortfin mako shark, this stock is more likely to be encountered in internationally managed pelagic fisheries. Therefore, the application of the international exception is appropriate.
- The reclassification of pelagic and bigeye thresher as EC species recognizes that they are less frequently encountered and landed in west coast HMS fisheries. The catch of these species would continue to be monitored. This change is unlikely to have a substantial effect on the conservation of these stocks from a west coast perspective.

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**AMENDMENT 2 TO THE FISHERY MANAGEMENT
PLAN FOR U.S. WEST COAST FISHERIES FOR
HIGHLY MIGRATORY SPECIES TO ADDRESS
REVISED NATIONAL STANDARD 1 GUIDELINES**

**PROPOSED CHANGES TO THE FMP
TEXT**

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INTRODUCTION

In order to comply with revised National Standard 1 Guidelines revisions to Chapters 3-5 of the HMS FMP are proposed as outlined below.

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3.0 SPECIES IN THE MANAGEMENT UNIT

Numerous species are caught in HMS fisheries. Those to be actively managed are the Management Unit Species (MUS) listed in Section 3.1. Other species, caught incidentally to targeted species, will be were originally classified in the FMP as monitored; under revised National Standard 1 Guidelines, some of those species have been reclassified as ecosystem component (EC) species.

HMS fishing gears catch an assortment of tunas, billfish, sharks and other fishes, and some protected species as well. Important species, which meet certain criteria described below, are designated as management unit species, that is, they are subject to active management by the FMP. The management unit species are addressed in Section 3.1.

In addition to management unit species, over the incidental catch of at least fifty other fish species are caught has been recorded. It is recommended that data be collected for these and any others caught by HMS gears to assess the amount and type of bycatch as required by the Magnuson-Stevens Act.

EC Species included for monitoring purposes are discussed in Section 3.23. One or more Any of these species could be added to the management unit through a plan amendment, if warranted by changes in west coast HMS fisheries by action of the Council. This requires a plan amendment.

A few sSpecies are designated by this FMP as prohibited because of their special status are addressed in Section 3.4. These species, if intercepted, must be released immediately, unless there are other provisions for their disposition, or unless permits are held for their capture. Prohibited species are addressed in Section 3.3.

Protected species caught incidentally to HMS fisheries include various species of seabirds, sea turtles and marine mammals. Protected species are addressed in Appendix D by HMS fishery type, and in Section 6.1.5.

3.1 Management Unit Species (Actively Managed)

The Plan Development Team and the Council examined a number of different criteria and alternatives for species to be included in the management unit. Public testimony covered a wide range of alternatives, from a relatively short list of target species in West Coast HMS fisheries, to a long list of species harvested by HMS fisheries. The Council assumed that species placed in the management unit would be candidates for active management, i.e., the fisheries for these species may need to be managed through the Council process resulting in Federal regulations to implement adopted management measures regulated by the federal government. The Council also understood that maximum sustainable or optimum yield (bio-analytically-based or proxy) is the basis of management and would have to be specified for each species in the management unit, and that a definition of overfishing is required. The Council considered various combinations of the following criteria for including species in the management unit, with the stipulation that any species that met the first three criteria would be strongly considered for inclusion:

1. the species occurs in the Pacific Council management area
2. the species occurs in west coast HMS fisheries

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3. the species is defined as highly migratory in the Magnuson-Stevens Act or the Law of the Sea Convention
4. the species is important (moderate to high value) in the landings or to the fishery
5. the species is managed by the Western Pacific ~~Region Fishery Management~~ Council
6. sufficient data exists to calculate a bio-analytically based MSY, including a reasonable MSY proxy that is based, e.g., on catches and yields that are stable over time
7. the species occurs in fisheries which the Pacific Council wants to actively manage
8. the species possesses special biological characteristics (e.g., low productivity)

The Magnuson-Stevens Act defines highly migratory species as tuna species, marlin (*Tetrapturus* spp. and *Makaira* spp.), oceanic sharks, sailfishes (*Istiophorus* spp.) and swordfish (*Xiphias gladius*). The term “tuna species” includes albacore tuna (*Thunnus alalunga*), bigeye tuna (*T. obesus*), bluefin tuna (*T. thynnus* and *T. orientalis*), skipjack tuna (*Katsuwonus pelamis*), and yellowfin tuna (*T. albacares*). The inclusion of these definitions establishes the authority of the Secretary of Commerce to manage directly the above species in the Atlantic Ocean and Gulf of Mexico, without the need for a regional fishery management council FMP.

The United Nations Convention on the Law of the Sea, Annex I, defines “highly migratory species” to include: albacore tuna, bluefin tuna, bigeye tuna, skipjack tuna, yellowfin tuna, blackfin tuna (*Thunnus atlanticus*), little tuna (*Euthynnus alletteratus*; *E. affinis*), southern bluefin tuna (*T. maccoyii*), frigate mackerel (*Auxis thazard*; *A. rochei*), pomfrets (family Bramidae), marlins (*Tetrapturus angustirostris*; *T. belone*; *T. pfluegeri*; *T. albidus*; *T. audax*; *T. georgei*; *Makaira mazara*; *M. indica*; *M. nigricans*), sailfishes (*Istiophorus platypterus*; *I. albicans*), swordfish, sauries (*Scomberesox saurus*; *S. saurus scombroides*; *Cololabis saira*; *C. adocetus*), dorado (*Coryphaena hippurus*; *C. equiselis*), oceanic sharks (*Hexanchus griseus*; *Cetorhinus maximus*; *Rhincodon typus*; family Alopiidae; family Carcharhinidae; family Sphyrnidae; family Lamnidae), cetaceans (family Physeteridae; family Balaenopteridae; family Balaenidae; family Eschrichtiidae; family Monodontidae; family Ziphiidae; family Delphinidae).

Species in the management unit of the Pelagic Fisheries FMP adopted by the Western Pacific Region Fishery Management Council are listed in Section 1.7.6.

The management unit includes:

Tunas:

- North Pacific albacore (*Thunnus alalunga*)
- yellowfin tuna (*Thunnus albacares*)
- bigeye tuna (*Thunnus obesus*)
- skipjack tuna (*Katsuwonus pelamis*)
- northern bluefin tuna (*Thunnus orientalis*)

Sharks:

- common thresher shark (*Alopias vulpinus*)
- ~~pelagic thresher shark (*Alopias pelagicus*)~~
- ~~bigeye thresher shark (*Alopias superciliosus*)~~
- shortfin mako or bonito shark (*Isurus oxyrinchus*)

Comment [KRD1]: Moved under Alternative 4

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blue shark (*Prionace glauca*)

Billfish/Swordfish:

striped marlin (*Tetrapturus audax*)

swordfish (*Xiphias gladius*)

Other:

dorado or dolphinfish (*Coryphaena hippurus*)

Opah, *Lampris guttatus*

Comment [KRD2]: Moved under Alternatives 3 and 4

The management unit includes all five species of tuna which are important to commercial and recreational fisheries in the north Pacific (albacore, bluefin) and eastern tropical Pacific (yellowfin, bigeye, skipjack). Striped marlin is included because of its importance to the recreational fishery in California. Swordfish is a major target in commercial drift gillnet, harpoon and longline fisheries, and is pursued by anglers. Blue shark is an abundant bycatch species in drift gillnet and longline fisheries. It has been the target of some directed shark fisheries in the past, and currently is caught by anglers. Common thresher shark and shortfin mako shark are important species in the drift gillnet fishery and also are targeted by recreational fishers. ~~Bigeye and pelagic thresher sharks are landed by the drift gillnet fishery but in small amounts compared to common thresher and mako sharks. They are included in the management unit largely because of concern that they have poor resilience to fishing.~~ Dorado is an important component of the suite of species targeted by recreational fishers, especially in southern California.

Comment [KRD3]: Text moved under Alternative 4 (see revisions below).

The species are to be managed aiming for consistency in both regional and international management. Since the MUS tunas and billfishes are fished ocean-wide and are already assessed or reviewed regularly at international forums, the Council's main task would be to ensure that their local management is neither inconsistent with, nor is abrogated by, international management. The more regionally distributed sharks not currently under international management require more direct, regional or local assessments of stock status and possibly regional management (common thresher and shortfin mako sharks). Where production potentials cannot be estimated accurately (e.g., because only small fractions of the stocks are taken), the species, as MUS, will still be regularly reviewed under Council guidance (e.g., pelagic and bigeye thresher sharks; dorado).

3.2 Determining the Primary FMP for Managed Stocks

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National Standard 1 Guidelines state if a stock is identified in more than one fishery, Councils should choose which FMP will be the primary FMP in which management objectives and reference points (see Chapter 4) will be established. Conservation measures in the FMP that is not the primary FMP should be consistent, to the extent practicable, with those established in the primary FMP. Since, as discussed above, a criterion for choosing the managed species in this FMP is their management by the WPFMC, the PFMC and WPFMC will coordinate to identify the primary FMP for Pacific stocks of the managed species. Generally, the WPFMC's FMPs will be primary for stocks occurring in the Western and Central Pacific Ocean and this FMP will be the primary FMP for stocks occurring in the Eastern Pacific Ocean (with the jurisdictional boundaries of the WCPFC and IATTC serving to define these regions). Another important criterion in considering the primary FMP is the relative importance of the stock to fisheries managed under the respective FMPs. This consideration is especially important for stocks where stock structure is poorly understood or the stock is considered a single stock across the North Pacific. Identification of the primary FMP does not preclude either Council from developing recommendations and participating in international forums related to the management in the Pacific Ocean of the species herein.

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3.23 ~~Species Included in the FMP for Monitoring Purposes~~ Ecosystem Component Species

~~According to revised National Standard 1 Guidelines (600.310(d)(1)) all stocks in an FMP are considered to be “in the fishery” by default unless they are identified as ecosystem component (EC) species. There are several criteria that should be met for a species to be included in the EC category (§660.310(d)(5)). These are:~~

- ~~• Be a non-target stock/species;~~
- ~~• Not be subject to overfishing, approaching overfished, or overfished and not likely to become subject to overfishing or overfished in the absence of conservation and management measures; and,~~
- ~~• Not generally retained for sale or personal use, although “occasional” retention is not by itself a reason for excluding a species from the EC category.~~

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~~One of the reasons given for including EC species in an FMP is for data collection purposes. EC species are not considered “in the fishery” but Councils should consider measures to mitigate and minimize bycatch of these species, to the extent practicable, consistent with National Standard 9. MSY, OY and other reference points (see Chapter 4) do not need to be specified for EC species. Identification of EC species will help the Council to track these species over time, periodically evaluate their status, and assess whether any management is needed under the FMP, in which case an EC species could be reclassified as a managed species. Identification of EC species also allows the Council to consider measures to minimize bycatch and bycatch mortality of EC species and to protect their associated role in the ecosystem.~~

~~The criteria for species included in the FMP for monitoring purposes are:~~

- ~~• species having a record of being caught in an HMS fishery~~
- ~~• not covered by another FMP or state management regime, or~~
- ~~• of special concern (e.g., elasmobranchs, which have relatively low productivity).~~

~~These species, which often comprise a fishery’s bycatch, should be monitored on a consistent and routine basis to the extent practicable. Sampling periodicity and coverage fraction will depend upon the take rates of the species that are of most concern. This monitoring is needed to evaluate the impact of HMS fisheries on incidental and bycatch species (as well as MUS), and to track the effectiveness of bycatch reduction methods (see Section 6.1.3). Monitored species EC species other than the MUS and prohibited species (see below and Section 6.1.6) are:[†]~~

~~Billfishes and Swordfish~~

~~Black marlin, *Makaira indica*~~

~~Blue marlin, *Makaira nigricans*~~

~~Pacific sailfish, *Istiphorus platypterus*~~

~~Shortbill spearfish, *T. angustirostris*~~

Comment [KRD4]: Deletions indicated species dropped from the FMP under Alternatives 3 and 4

~~Sharks and Rays~~

~~Bat ray, *Myliobatis californica*~~

~~Blacktip shark, *C. limbatus*~~

[†] ~~Note: This list of monitored species was incorrect in the FMP as originally published in revised form pursuant to Amendment 1. The FMP with the corrected list was produced in August 2009.~~

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Dusky shark, *C. obscurus*
Hammerhead sharks, Sphyrnidae
Leopard shark, *Triakis semifasciata*
Manta/Mobula rays, Mobulidae
Oceania whitetip shark, *C. longimanus*
Pelagic sting ray, *Dasyatis violacea*
Prickly shark, *Echinorhinus cookei*
Salmon shark, *Lamna ditropis*
Silky shark, *Carcharhinus falciiformis*
Six gill shark, *Hexanchus risus*
Soupfin shark, *Galeorhinus galeus*
Spiny dogfish, *Squalus acanthias*
Whale shark, *Rincodon typus*
Pelagic thresher shark (*Alopias pelagicus*)
Bigeye thresher shark (*Alopias superciliosus*)

Tunas and Mackerels

Black skipjack, *Euthynnus lineatus*
Bullet mackerel (tuna), *Auxis rochei*
Pacific bonito, *Sarda chiliensis*
Wahoo, *Acanthocybium solandri*

Jacks and Pomfrets

Pacific moonfish, *Selene peruviana*
Pacific pomfret, *Brama japonica*
Rainbow runner, *Elagatis bipinnulata*

Other Fishes

Common mola, *Mola mola*
Escolar, *Lepidocybium flavobrunneum*
Lancetfishes, *Alepisauridae*
Louvar, *Luvarus imperialis*
Oarfish, *Regalecus glesne*
Oilfish, *Ruvettus pretiosus*
Opah, *Lampris guttatus*
Pacific saury, *Cololabis saira*

Bigeye and pelagic thresher sharks are landed by the drift gillnet fishery but in small amounts compared to common thresher and mako sharks. They originally included in the FMP as managed species are included in the management unit—largely because of concern that they have poor resilience to fishing. Under Amendment 2 they were reclassified as EC species.

As outlined in Section 4.3 of this FMP, each year the HMS Management Team will deliver one combined SAFE report for all species in this FMP to the Council. The SAFE report will follow the guidelines specified in National Standard 2 ~~(of 10)~~ and will be used by the Council and NMFS to develop and evaluate regulatory adjustments, if necessary, under the framework procedure or the FMP amendment process. ~~It~~ The SAFE will document-track and report on significant trends or changes in monitored-EC species over time, and assess the relative success of existing state and federal fishery management programs. The SAFE report will also make recommendations to the Council concerning conservation and management of bycatch and incidental catch.

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Comment [KRD5]: Moved from MUS under Alternative 4

Comment [KRD6]: Moved to managed species under Alternatives 3 and 4

Comment [KRD7]: Revision applicable under Alternative 4

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3.34 Prohibited Species

A few species are considered for inclusion under the category Prohibited Species in this Plan. In general, prohibited species must be released immediately if caught, unless other provisions for their disposition are established, including for scientific study. Striped marlin, now allowed for sport-only and not commercial fishing by California, is prohibited by specific allocation and is discussed separately in Section 6.2.4. Pacific halibut and salmon are managed separately from this Plan, but are important in some HMS fisheries and so are provided for here with respect to how they can be caught. Prohibited species in HMS fisheries are:

Great white shark (*Carcharodon carcharias*)
Basking shark (*Cetorhinus maximus*)
~~mega~~Mega mouth shark (*Megachasma pelagio*)
Pacific halibut (*Hippoglossus stenolepis*)
Pink salmon (*Onchorhynchus gorbuscha*)
Chinook salmon (*O. tshawytscha*)
Chum salmon (*O. keta*)
Sockeye salmon (*O. nerka*)
Coho salmon (*O. kisutch*)

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4.0 PREVENTING OVERFISHING AND ACHIEVING OPTIMUM YIELD

The concepts of control rules and status determination criteria for management and the default and alternative management control rules for this FMP, are discussed below. Control rules for managing MUS are required under the Magnuson-Stevens Act.

4.1 ~~Control Rules and Preventing Overfishing~~ Reference Points Including MSY, OY, and Status Determination Criteria

These ~~criteria-reference points~~ are guideposts for managing exploited stocks and require being able to determine and monitor the effects of fishing. But such effects are not always clear, e.g., catch per unit of effort trends may not only reflect the abundance of HMS, but also how fishing success is affected by schooling or wide-ranging behaviors, fishing efficiency, and environmental effects on the availability of species. Estimated population status of management unit species is discussed in Section 4.8 and summarized in Tables 4-4 and 4-5. The SAFE Report (see Section 4.3), produced annually, provides periodic updates to the information found in this FMP.

Many of the more productive HMS species support large and widespread international fisheries that are best managed cooperatively with other nations. In particular, rebuilding programs, required unilaterally by the Magnuson-Stevens Act for overfished stocks, would be ineffective without international cooperation, especially if domestic catches are only small fractions of the stock-wide harvest (see Table 4-5 for West Coast catch fractions). For such species, regional remedial actions must be to the extent practicable, concurrent with recommendations/resolutions adopted at international forums for cooperative action (see Section 4.5 on stock rebuilding).

Still other HMS species possess life histories characterized by low productivity, thus supporting smaller fisheries that tend to be more regional than international. They have more localized distributions and life stage needs, often within the EEZ. Not only are they more easily overfished, but recovery takes longer, i.e., the species are less resilient to overfishing. Their management should be more conservative, and may require stronger proactive and targeted regional leadership.

Managing conservatively means being precautionary, especially when there are large uncertainties in how a stock is being affected by fishing. Besides lowering the threshold for taking remedial action, it could mean preventing rapid growth of fisheries to prevent overshooting of management goals, or taking steps to protect the reproductive potential of stocks.

The goal of the Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act of 1996 and Magnuson-Stevens Reauthorization Act of 2006, is to ensure the long term sustainability of fisheries and fish stocks by halting or preventing overfishing and by rebuilding overfished stocks. The Act requires developing fishery management plans for exploited species of U.S. seas including shelf, anadromous, and highly migratory species whose ranges extend beyond the EEZ. By its National Standard 1, optimum yield is the ultimate goal for each fishery.

National Standard 1 Guidelines, ~~as required by the Magnuson-Stevens Act and published in the Federal Register (Code of Federal Regulations, 50 CFR 600.3-305 et. seq.10)~~ were developed to assist in implementing the Act. The Guidelines state that the following items should be included in the FMP:

Maximum sustainable yield (MSY): 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.

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MSY fishing mortality rate (Fmsy): The fishing mortality rate that, if applied over the long term, would result in MSY.

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MSY stock size (Bmsy): 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 Fmsy.

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Status determination criteria (SDC): Quantifiable factors or their proxies, that are used to determine if overfishing has occurred, or if the stock or stock complex is overfished. "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. SDC are:

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Maximum fishing mortality threshold (MFMT): 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.

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Overfishing limit (OFL): 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.

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Minimum stock size threshold (MSST): The level of biomass below which the stock or stock complex is considered to be overfished.

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Optimum yield (OY): 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.

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Acceptable biological catch (ABC): A level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty, and should be specified based on the ABC control rule.

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ABC control rule: 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).

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Annual catch limit (ACL): 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.

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Annual catch target (ACT): 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.

ACT control rule: 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.

~~and introduced the terms "Control Rule" and "Status Determination Criteria" (SDC) relative to the requirements of National Standard 1 (NS 1). The control rule specifies how a fishery is to be managed depending upon stock status relative to the SDCs, which are biological benchmarks or thresholds. There are two SDCs: the Maximum Fishing Mortality Threshold (MFMT) and the Minimum Stock Size~~

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~~Threshold (MSST). By control rule definition, overfishing occurs when fishing mortality F is greater than the MFMT mortality. Similarly, a stock is overfished when its size falls below the MSST stock biomass. The Magnuson Stevens Act (1304,e) requires NMFS to notify Congress when the stock is approaching the overfished condition (i.e., if there is overfishing and the stock is expected to be overfished within two years) and when it is overfished. Fishery managers must then take appropriate remedial action: in the case of approach to being overfished, harvest rates must be reduced below MFMT; in the case of being overfished, a rebuilding plan must be prepared within one year to rebuild the stock. The rebuilding plan must bring the stock back to the level producing maximum (or optimal) sustainable yield within a specified time period. The Guidelines call for precautionary management, i.e., use of conservative control rules with remedial action to begin even if the overfishing/overfished status cannot be established with certainty.~~

4.1.1 ~~Default MSY, SDC, and Determining Overfishing and Overfished Control Rules~~

4.1.1.1 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, and should be re-estimated as required by changes in long-term environmental or ecological conditions, fishery technological characteristics, or new scientific information.

MSY is estimated based on the amount of information available about the stock. The following categories show the relationship between available information and the estimation of MSY:

Stocks with Quantitative Assessments, Category 1: These are stocks for which a recent stock assessment has been conducted, containing MSY-based estimates. For these stocks the HMSMT would summarize the results of the stock assessment and estimated reference points and present the summary to the SSC. If the SSC considered the assessment results to be robust, the MSY and OFL would be recommended to the Council for management. These quantities would be reported in the annual SAFE document

Stocks with Estimates of Stock-wide Catch, Category 2: If the stock has not been recently or ever assessed, the HMSMT would compile the best available data on stockwide catch and use some part of the time series to estimate a sustainable catch limit. Catch-based models that incorporate some stock productivity parameters and methods to account for uncertainty, such as DCAC or DB-SRA, may prove useful for estimating MSY. Alternatively, if justified, catch levels from select years when the stock was believed to be fished sustainably could be used to come up with a proxy MSY.

Stocks with Estimates of Local Catch Only, Category 3: If a time series of stockwide catch is not available, then it may be necessary to use a time series of only regional (U.S. west coast) catch and apply a catch-based estimation model (as above) or select levels of sustainable catch to serve as a proxy local MSY.

4.1.1.2 MFMT and OFL

~~The general model for a control rule is the default **Maximum Sustainable Yield Control Rule** suggested in the Technical Guidance by Restrepo et al. (1998), and it is the model for this FMP. This control rule is a procedure for maintaining MSY, and is like that being considered by the Western Pacific Region Fishery Management Council. It is illustrated schematically in Figure 4-1, where the x and y axes are in relative measure, the biomass and fishing mortality ratios B/B_{MSY} and F/F_{MSY} , respectively. Here, F_{MFMT} the MFMT mortality threshold is the ratio $F_{MFMT}/F_{MSY} = 1.0$; it is the mortality threshold for all stock levels~~

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above the MSST threshold (described below). It is illustrated schematically in Figure 4-1, where the x and y axes are in relative measure, the biomass and fishing mortality ratios B/B_{MSY} and F/F_{MSY} , respectively. With this MFMT ceiling emplaced, a stock would not be reduced to levels any lower than B_{MSY} that produces MSY (on average). It is to be noted, however, that the Technical Guidance for precautionary compliance with NS 1 (Restrepo, *et al.* 1998) allows that MFMT can be occasionally and temporarily exceeded at some level of probability that depends upon the variability of fishing mortality. The OFL is 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.

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4.1.1.3 MSST

The **MSST biomass threshold**, the minimum biomass at which recovery measures are to begin, is the ratio B_{MSST}/B_{MSY} . It specifies a lower biomass level that allows remedial action not to be triggered each time B drops below B_{MSY} , simply from natural variation. In terms of B_{MSY} , the recommended level of B_{MSST} is:

$$B_{MSST} = (1-M)B_{MSY} \text{ when } M \text{ (natural mortality)} \leq 0.5, \text{ and}$$

$$B_{MSST} = 0.5B_{MSY} \text{ when } M > 0.5$$

(i.e., whichever is greater). B_{MSST} must not be less than $B_{MIN} = 0.5B_{MSY}$ and should allow recovery back to B_{MSY} within 10 years when F is reduced to zero (to the extent possible).

4.1.1.4 OY Control Rule

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and introduced the terms “Control Rule” and “Status Determination Criteria” (SDC) relative to the requirements of National Standard 1 (NS 1). The MSY control rule specifies how a fishery is to be managed depending upon stock status relative to the SDCs, which are biological benchmarks or thresholds. There are two SDCs: the Maximum Fishing Mortality Threshold (MFMT) and the Minimum Stock Size Threshold (MSST). By control rule definition, overfishing occurs when fishing mortality F is greater than the MFMT mortality. Similarly, a stock is overfished when its size falls below the MSST stock biomass. The Magnuson-Stevens Act (MSA Section 304(c) and 304(i) describe required responses requires NMFS to notify Congress when the a stock is subject to overfishing, approaching the overfished condition (i.e., if there is overfishing and the stock is expected to be overfished within two years), and when it is overfished. Fishery managers must then take appropriate remedial action: in the case of approach to being overfished, harvest rates must be reduced below MFMT; in the case of being overfished, a rebuilding plan must be prepared within one year to rebuild the stock. The rebuilding plan must bring the stock back to the level producing maximum (or optimal) sustainable yield within a specified time period. The Guidelines call for precautionary management, i.e., use of conservative control rules with remedial action to begin even if the overfishing/overfished status cannot be established with certainty.

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4.1.1.4 Determining if Overfishing is Occurring or a Stock is Overfished

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The Council will monitor each managed HMS stock and determine annually, if possible, if overfishing is occurring and whether the stock is overfished. Overfishing is occurring if the fishing mortality rate exceeds MFMT or catch exceeds the OFL for 1 year or more.

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The MSST or a reasonable proxy must be expressed in terms of spawning biomass or other reproductive potential. Should the estimated size of an HMS stock in a given year fall below this threshold, the stock is considered overfished.

4.1.2 Optimum Yield

OY is defined as MSY reduced by relevant socioeconomic factors, ecological considerations, and fishery-biological constraints so as to provide the greatest long-term benefits to the Nation. Therefore, OY cannot be set greater than MSY, and must take into account the need to prevent overfishing and rebuild overfished HMS stocks. To the extent possible, the relevant social, economic, and ecological factors used to establish OY for an HMS stock or fishery should be quantified and reviewed in historical, short-term, and long-term contexts. National Standard 1 Guidelines includes examples of factors that may be considered when determining OY. OY should not be greater than the ABC or ACL, if identified (see below).

The Council may establish an Optimum Yield (OY) Control Rule is also shown in Figure 4-1, it being (after the Restrepo et al. (1998) recommended. This control rule uses a precautionary default of 0.75MFMT of the MSY control rule (the lower dashed horizontal and slope line in the figure). This rule is for maintaining catch at or below OY, which is defined as MSY reduced by relevant socioeconomic factors, ecological considerations, and fishery biological constraints so as to provide the greatest long term benefits to the Nation.

Simulation studies have indicated that management according to the OY default rule will often allow biomasses (B_{OY}) to be maintained at about 1.25B_{MSY} (as shown), with yields of about 95% of MSY. Like for MSST of the MSY Control Rule, there is a The Minimum Biomass Flag (B_{FLAG}) is similar to the MSST and may be set for the OY Control Rule equal to (1-M)B_{OY} or 0.5B_{OY} (whichever is greater) (Boggs et al. 2000). B_{FLAG}, which would then be equivalent to 1.25(B_{MSST} /B_{MSY}), serves as a warning call to halt biomass reduction that would jeopardize obtaining OY on average.

The OY control rule has a more conservative range of restraints that may be appropriate for more vulnerable species. The more vulnerable a species is to being overfished, the more conservative should management be. And since the maximum value of OY is MSY, then the more should the catch ratio OY/MSY be reduced from unity (while B_{OY}/B_{MSY} is increased from unity).

These control rules involve the concept of target and limit reference points. It can be seen that B_{MSY} and B_{OY} are target reference points for the long term management goals of MSY or OY. But B_{MSST} and B_{FLAG} are limit thresholds for the respective control rules that should not be exceeded, or exceeded only at some level of probability. A stock that is reduced below those biomass limits would normally require remedial action, because the target goals would then be jeopardized. Similarly, F_{OY} is a target reference point. However, F_{MSY} could be a target reference point or a limit threshold; it could be the target point for the MSY control rule or it could be the limit threshold for the OY control rule. If B < B_{FLAG} is expected with the latter rule, remedial action may be recommended even though the stock could still be far above B_{MSST}.

4.1.2.3 Alternative Management Control Rule Specification of OY for Vulnerable Species

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). In consultation with the SSC, the HMSMT may analyze the vulnerability of HMS stocks from time to time.

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Since the management unit species vary from vulnerable to very productive, an alternative OY specification may be considered for vulnerable species. ~~the default MSY control rule applies to MUS, but additionally, an alternative OY target control rule is used for “vulnerable” species.~~

~~Vulnerability of species can stem from many reasons, and any species that has been depleted to 50% below B_{MSY} (for the logistic production model, to 25% of unfished level B_0) that is incapable of recovering back to that B_{MSY} level within 10 years (with fishing removed) is to be considered vulnerable in this FMP. The productivities (potential per capita rates of population increase r) of such species would have to be 5% or less per year, assuming recovery time is determined by a linear compensatory increase in r with population decline (logistic model). Only the sharks among the MUS, including common thresher, are likely to have such low rates and long recovery times (see Table 4-1), and they are therefore considered vulnerable by this criterion. Vulnerable OYs are also appropriate for other fish species for other reasons of stock health concern (see bluefin tuna, Section 4.8.1, and striped marlin, Section 4.8.3).~~

In this FMP, where OY is not determined analytically, an OY or OY proxy ~~is~~ may be defined according to vulnerability, starting with consideration of a value of $0.75*(MSY \text{ or } MSY(\text{proxy}))$. ~~as follows:~~

~~OY(proxy) = MSY or MSY(proxy) — for species not considered vulnerable~~

~~OY(proxy) = $0.75*(MSY \text{ or } MSY(\text{proxy}))$ — for species considered vulnerable~~

The rationale for using this approach to set the OY for the vulnerable species ~~OY~~ follows from the recommended $F_{OY} = 0.75F_{MSY}$ (see Figure 4-1). Then since $MSY = F_{MSY}B_{MSY}$, $OY = 0.75F_{MSY}B_{MSY} = 0.75MSY$ when estimated from the same B_{MSY} biomass. Starting from this consideration of an alternative OY specification, the Council may take into account other factors relating to the stock’s vulnerability (biological productivity and susceptibility to fisheries) in determining an appropriate OY for the stock.

Since the default alternative rule is defined with MFMT and MSST as ratios relative to MSY (as in Figure 4-1), its resulting generality allows management according to specific criteria even without estimates of the absolute biomass or exploitation status of a stock. This allows all the MUS, diverse with respect to productivity, scientific understanding, and stock status, to be managed by the same rule and in accordance with the requirements of the Magnuson-Stevens Act. ~~This control rule is the most straight forward of the possible rules discussed by Restrepo et al. (1998) and is the one they recommend. The reduction in fishing mortality it calls for to rebuild depleted populations is intermediate with respect to the degree of depletion that can be remedied at acceptable rates of recovery. It is the same rule being considered for the Western Pacific Region Fishery Management Council’s FMP for pelagic fisheries (but with the additional stipulation for vulnerable species).~~

4.1.4 ABC, ACLs, ACTs, and Accountability Measures

According to the National Standard 1 Guidelines an ABC and a related ACL must be set for stocks managed under an FMP. However, the Guidelines include an exception to this requirement for stocks 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” (50 CFR 600.310(h)(2)(ii)). The Council has determined that all the managed stocks in this FMP meet this criterion, except for common thresher shark and shortfin mako shark.

The ABC is a level of a stock’s annual catch that accounts for scientific uncertainty in the estimate of OFL and any other scientific uncertainty. The ABC may not exceed the OFL. The HMSMT will develop ABC control rules for those managed stocks for which they are required. The ABC control rule will be reviewed by the Council’s SSC. Based on that review the Council will adopt the ABC control rule judged

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suitable by the SSC. Through this process the ABC control rule may be revised from time to time based on the best scientific information available. The ABC will be expressed in terms of catch, or landings if the ABC control rule incorporates an estimate of bycatch or other sources of fishing mortality.

The Council will establish ACLs for those managed stocks for which they are required. ACTs and ACT control rules may be established if they would help ensure the ACL is not exceeded. The ACL may not exceed the ABC. ACLs will be established for each year in the biennial management cycle (see Chapter 5). ACLs are established, reviewed, and may be adjusted as part of the periodic management cycle described in Section 5.2. No “sector ACLs” are identified (see 50 CFR 660.310(f)(5)(ii)) in this FMP, but may be established as part of the biennial management process.

The biennial management process will be used to implement accountability measures (AMs) should they be required. AMs are management controls to prevent ACLs from being exceeded and to correct or mitigate overages of the ACL if they occur.

Annually, the HMSMT will gather the requisite information needed to determine whether an ACL has been exceeded as soon as possible after the end of the fishing year (March 31). If catch exceeds the ACL more than once in the last four years, the system of ACLs and AMs will be reevaluated and modified if necessary. For the purposes of this evaluation a 3-year moving average or other multi-year approach may be used, if there are insufficient data to conduct the evaluation based on a single year’s catch.

4.1.3 Adopted Control Rules

This FMP adopts the default MSY (or MSY proxy) control rule (Section 4.4.1), but additionally uses an OY (instead of MSY) target for vulnerable species (Section 4.1.2). The default MSY control rule was chosen because it is the standard recommended in technical guidance for implementing National Standard 1 of the Magnuson-Stevens Act, and it is consistent with the WPRFMC’s rule for pelagic fisheries. The vulnerable species OY control rule is applied to sharks because of their low productivity, and to bluefin tuna and striped marlin because of uncertainties concerning total catches and stock structures.

To be precautionary, the OY for vulnerable species is set for now at 0.75MSY (from the relationship shown in Figure 4-1). Any harvest guideline for vulnerable species is set equal to that OY.

The status of the MUS in this FMP is discussed in terms of this default control rule in Section 3.3.

4.1.45 Stock Rebuilding Council Response to Overfishing

If a stock is subject to overfishing, approaching being overfished, or overfished fishery managers must then take appropriate remedial action.

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4.1.5.1 International Overfishing

If the Secretary determines that a stock is overfished or approaching the condition of being overfished due to excess international fishing pressure, and for which there are no measures (or no effective measures) to end overfishing under an international agreement to which the United States is a party, then the Council will respond according to the procedures described in Section 304(i) of the MSA (and 50 CFR 600.310(j)(4)(iv)).

4.1.5.2 Rebuilding Stocks when International Fishing Pressure is not the Cause

When stock size B falls below its MSST level, F must be reduced below its fishing mortality threshold to

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allow stock rebuilding at least back to B_{MSY} . The amount of mortality reduction would depend upon the severity of stock depletion below MSST, the stock's capacity to rebound, and the desired recovery time of the stock. In rebuilding according to the default MSY control rule (Figure 4-1), F is reduced linearly by the amount that B is determined to be below MSST. After the stock has been rebuilt back to MSST, maintaining F at the MFMT level will allow the stock to continue its increase until at equilibrium at B_{MSY} . With the OY Control Rule, the decrease from F_{OY} is shown beginning at B_{MSY} , rather than at B_{FLAG} , to enable faster rebuilding back to B_{OY} .

Under NMFS's National Standard Guidelines, a number of factors enter into the specification of the time period for rebuilding. The lower limit of the specified time period for rebuilding is determined by the status and biology of the stock or stock complex and its interactions with other components of the marine ecosystem, and is defined as the amount of time that would be required for rebuilding if fishing mortality were eliminated entirely. If the lower limit is less than 10 years, then the specified time period for rebuilding may be adjusted upward to the extent warranted by the needs of fishing communities and recommendations by international organizations in which the United States participates, except that no such upward adjustment can result in the specified time period exceeding 10 years, unless management measures under an international agreement in which the United States participates dictate otherwise. If the lower limit is 10 years or greater, then the specified time period for rebuilding may be adjusted upward to the extent warranted by the needs of fishing communities and recommendations by international organizations in which the United States participates, except that no such upward adjustment can exceed the rebuilding period calculated in the absence of fishing mortality plus one mean generation time or equivalent period based on the species' life-history characteristics. Overfishing restrictions and recovery benefits must also be fair and equitable among fishery sectors. Rebuilding of internationally managed fisheries must reflect traditional U.S. participation in those fisheries relative to that of other nations.

Fishery management councils actually have considerable latitude in how they rebuild depleted stocks. The rebuilding rules illustrated in Figure 4-1 and also Figures 4-2 and 4-3 (the F ramps) are examples of just some of the possible approaches to F -reduction. Actual rebuilding could proceed through a combination of ways, e.g. a series of stepped increases in F or series of increasing catch quotas as the biomass rebuilds back toward B_{MSY} (such quotas can be shown only indirectly in terms of the F and B dimensions of Figure 4-1).

Rebuilding of overfished stocks is a unilateral requirement by the Magnuson-Stevens Act, but, as already noted, internationally fished stocks require cooperative catch reductions among the fishing nations for this rebuilding to be effective. U.S. responsibility in the rebuilding, however, will be greater the more localized the stock and the greater the domestic take of the stock's production (see unilateral/international management, Section 2.2).

In general, rebuilding is to remedy stock depletion, but there can also be rebuilding to remedy **local depletion**. The latter rebuilding could be domestic and unilateral. Local depletion occurs when localized catches are in excess of replacement from local and external (via net immigration) sources of production. As such, it can occur independently of the status of the overall stock. The local depletion of abundance can be stronger than the concurrent stock-wide decrease (Squire and Au 1990). In all cases, the degree and extent of this depletion must be assessed relative to the health of the overall stock and the resiliency of the species.

4.2 Assessment of Stock Status

National Standard 2 requires using the best scientific information in managing management unit species. This requires periodic updating of stock status for comparing against their control rules. Status updating

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will be through Stock Assessment and Fishery Evaluation (SAFE) reports (Section 4.3). In the case of species under international management, the control rule approach must be promoted so that status in terms of SDCs (e.g., F/F_{MSY} , B/B_{MSY}) can be described (see also Section 2.1).

The control rule approach implies an ability to determine the level of biomass B relative to its initial level B_0 and (at least conceptually) relative to B_{MSY} , and to determine the level of mortality F relative to some target level like F_{MSY} . Relative biomass level could be estimated by the decline in catch rate (CPUE) or, with sufficient information on stock and recruitment, by percent spawning potential ratio (SPR), or proxies based on SPR, e.g., $B_{50\%}$ or $F_{50\%}$. Non-empirical MSY levels of B or F can be estimated as fractions of B_0 or multiples of M , respectively, e.g., $B_{MSY}=0.5B_0$ or $F_{MSY}=1.0M$.

In many cases estimates of MSY or OY themselves are the only information available for management, and the F/F_{MSY} and B/B_{MSY} ratios must be derived from those estimates. This does not abrogate the control rule, because MSY and OY *are* the management goals. Where MSYs have not been determined, average stock-wide catch levels over appropriate time periods can be proxies.

Both MSY and OY refer to a species' sustainable catch, stock-wide. For some species there is no stock-wide catch information, and some (e.g., pelagic thresher shark, mako shark, dorado) occur within the management area as the edges of wider distributions, so even their maximum, regional catch levels are unlikely to reflect stock production. While MSYs remain unknown for those species, the local catches can be used to estimate a local or regional level of MSY.

4.3 Stock Assessment and Fishery Evaluation Report

National Standard 2 of the Magnuson-Stevens Act requires that the best scientific information available be used in developing FMPs and implementing regulations. For HMS, except dorado and sharks, NMFS and the Pacific Council rely on analyses and assessments adopted by various international bodies (of which U.S. is an active participant), such as the Inter-American Tropical Tuna Commission (IATTC), Interim Scientific Committee for Tuna and Tuna-like Species in the North Pacific (ISC), Standing Committee on Tuna and Billfish (SCTB) and others. For other species such as dorado and sharks, the HMS Management Team and NMFS develops stock and fishery assessments, provides peer reviews and presents the results to the Council. The guidelines for implementation of NS 2 require preparation of an annual Stock Assessment and Fishery Evaluation (SAFE) report. The SAFE report will largely rely on international body assessments, NMFS directed assessments, and any new fishery information. The NS 2 guidelines for a SAFE report, adapted for this FMP, are below.

The SAFE report is a document or set of documents that provides the Council with a summary of information concerning the most recent biological condition of stocks and the marine ecosystems in the management unit and the social and economic condition of the recreational and commercial fishing interests, fishing communities, and the fish processing industries. It summarizes, on a periodic basis, the best available scientific information concerning the past, present, and possible future condition of the stocks, marine ecosystems, and fisheries being managed under federal regulation.

The Secretary of Commerce has the responsibility to assure that a SAFE report or similar document is prepared, reviewed annually, and changed as necessary. The Secretary or Council may utilize any combination of talent from Council, state, Federal, university, or other sources to acquire and analyze data and produce the SAFE report.

The SAFE report provides information to the Council and Southwest Region of NMFS for determining annual harvest levels from each stock, documenting significant trends or changes in the resource, marine ecosystems, and fishery over time, and assessing the relative success of existing state and Federal fishery

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management programs. Information on bycatch and safety for each fishery should also be summarized. In addition, the SAFE report may be used to update or expand previous environmental and regulatory impact documents, and ecosystem and habitat descriptions.

Each SAFE report must be scientifically based, and cite data sources and interpretations.

Each SAFE report should contain information on which to base harvest specifications, including ABCs, ACLs, and ACTs, if appropriate.

Each SAFE report should contain a ~~description of the maximum fishing mortality threshold and the minimum stock size threshold~~ threshold estimate of the MFMT or OFL, and MSST for each stock or stock complex, along with information by which the Council may determine:

- Whether overfishing is occurring with respect to any stock or stock complex; if any stock or stock complex is overfished; if the rate or level of fishing mortality applied to any stock or stock complex is approaching the maximum fishing mortality threshold, and if the size of any stock or stock complex is approaching the minimum stock size threshold.
- Any management measures necessary to provide for rebuilding an overfished stock or stock complex (if any) to a level consistent with producing the maximum sustainable yield in such fishery.

Each SAFE report may contain additional economic, social, community, essential fish habitat, and ecological information pertinent to the success of management or the achievement of objectives of each FMP.

Each year, in June and September, the HMS Management Team will deliver one combined SAFE report for all species in this FMP to the Council. The SAFE report will follow the guidelines specified in NS 2 and will be used by the Council and NMFS to develop and evaluate regulatory adjustments under the framework procedure or the FMP amendment process. This information will provide the basis for determining annual harvest levels from each stock, documenting significant trends or changes in the resource, the bycatch, and the fishery over time, and assessing the relative success of existing state and federal fishery management programs. In addition, the SAFE report will be used to update or expand previous environmental and regulatory impact documents, and ecosystem and habitat descriptions, including EFH. The SAFE report will also make recommendations to the Council on matters concerning bycatch and incidental catch.

4.4 Status of Management Unit Stocks at the Time of FMP Adoption

... (no changes proposed to this section)

4.5 Measures Adopted by the Council to End of Overfishing and Rebuild Overfished Stocks

... (no changes proposed to this section)

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Table 4–1. Demographic and productivity comparisons of highly migratory MUS and selected prohibited species.

Species (yrs)	Age at Maturity (yr ⁻¹)	Fecundity (yr ⁻¹)	M ^{1/} (yrs)	Max. Age (yr ⁻¹)	Productivity (r) at B _{MSY} ^{2/} (yr ⁻¹)	PGR _{MAX} ^{3/} (yrs)	T _D ^{4/}
TUNAS							
Skipjack	1	Millions (eggs)	1.50	5	0.16-0.34	0.68	2.1
Yellowfin	2.5	"	0.90	8	0.11-0.18	0.34	3.4
Bigeye	3	"	0.40	10	0.10-0.16	0.30	3.7
Albacore	4.5	"	0.30	12	0.07-0.11	0.20	5.2
Bluefin	5	"	0.25	20	0.07-0.10	0.19	5.6
BILLFISHES							
Str. Marlin	4	"	0.47	9	0.08-0.13	0.23	4.6
Swordfish	5	"	0.21	20	0.07-0.10	0.18	5.8
SHARKS							
Com.Thresh.	5	4 (pups)	0.234	19	0.04-0.07	0.12	9.2
S.F. Mako	7	6	0.160	14	0.04-0.06	0.10	10.2
Blue	6	23	0.223	20	0.04-0.06	0.10	10.4
Pel.Thresh.	9	2	0.155	29	0.02-0.04	0.07	15.0
White	9	7	0.126	36	0.02-0.04	0.07	15.8
B.E.Thresh.	13	2	0.223	20	0.02-0.03	0.05	22.7
Basking	18	3	0.136	50	0.01-0.02	0.04	27.4
OTHER							
Dorado	0.6	240K+ (eggs)	1.060	4	>0.34	0.97	1.4

Footnotes:

1. M is instantaneous natural mortality. All life history parameters are from Smith et al. (1998), Smith et al. (*In press* 2003), Au et al. (*In press*).
2. Productivity *r* is the potential per-capita rate of population growth per year, here at B_{MSY}. Estimated for Tunas and Billfishes assuming that at B_{MSY}, F_{MSY} = 1.0M and initial fecundity increases by factor 1.00-1.25 [after Au et al. (*In press*)]; for Sharks assuming that at B_{MSY}, F_{MSY} = 0.5M-1.0M with fecundity not increased [after Smith et al. (*In press*)]. All figures are rounded.
3. PGR is the fractional Population Growth Rate per year. PGR_{MAX} is the maximum rate calculated as (e^{2r} - 1). Exploitation of the population (fraction of total population caught) greater than PGR_{MAX} should bring population collapse, hence PGR_{MAX} estimates maximum sustainable exploitation. The logistic model is assumed. Based on range of *r*.
4. T_D is the doubling time for populations depleted to 50% of B_{MSY} (hence the recovery time), calculated as (ln 2)/1.5r (the *r* is assumed to have increased linearly with the depletion, as per the logistic model). Based on range of *r*.

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Table 4-2. Summary of population status of management unit species at the time of FMP adoption (see text under species descriptions for details).

Species (Stock)	F/F _{MSY}	Over-fishing? (>1.0?)	B _{MSST} / B _{MSY} (1-M)	B/B _{MSY}	Over-fished? (<1-M?)	MinBiomass Flag Ratio (1.25(B _{MSST} /B _{MSY}))	NeedAction? (B/B _{MSY} <FlagRatio?)
TUNAS							
Albacore (NP)	0.50	N	0.70	1.10	N	0.88	N ^{1/}
Bluefin (NP)	Unkn	n	0.75	Unkn	n	0.94	n ^{2/}
Bigeye (EPO)	1.11	y	0.60	1.11	N	0.75	N ^{3/}
Skipjack (EPO)	Unkn	n	0.50	2.50 ^{4/}	N	0.63	N
Yellowfin (EPO)	~1.30 ^{5/}	Y	0.50	~0.86 ^{5,6/}	N	0.63	N
BILLFISHES							
Str. Marlin (EPO)	0.70	N	0.50	1.07	N	0.63	N ^{7/}
Swordfish (EPO)	<1.00	N	0.70	>1.00	N	0.88	N ^{8/}
SHARKS							
C.Thresher(EPO)	<1.00 ^{9/}	N	0.77	~1.10 ^{9/}	N	0.96	N ^{10/}
P.Thresher(EPO)	Unkn	?	0.85	Unkn	?	1.05	? ^{11/}
BE Thresh.(EPO)	Unkn	?	0.78	Unkn	?	0.97	? ^{12/}
Mako (EPO)	<1.00	N	0.71	>1.00	N	0.88	N ^{13/}
Blue (EPO)	<0.50	N	0.78	>1.00	N	0.97	N ^{14/}
OTHER							
Dorado (EPO)	Unkn	Unlikely	0.50	Unkn	Unlikely	0.63	N ^{15/}

Note: Overfishing, Overfished, and Need Action columns ask if previous column value meets criterion; e.g., under Overfishing, is the previous fraction >1.0? Less certain Y/N is y/n.

Footnotes:

- Note that stock is now in high productivity period (NPALW 2000).
- No evidence of stock ill health, but abundance indexes are inconclusive (Bayliff 2001).
- Assuming a stock-recruitment relationship (Maunder and Harley 2002). See text for caveats.
- Boggs et al. 2000.
- From production model (Tomlinson 2001, IATTC 2000).
- Assuming a stock-recruitment relationship, B/B_{MSY} for 2001 could be 1.09 (Maunder 2002).
- EPO stock has recovered (Hinton and Bayliff 2002a).
- Per cpue patterns in EPO (Hinton and Bayliff 2002b).
- Work in progress, D.W. Au and C. Show, SWFSC/NMFS, La Jolla, CA
- Stock in recovery with positive population growth since 1992-94.
- Status unknown, but catches incidental and on edge of species' broad range.
- Status unknown, but catches incidental and possibly on edge of species' habitat.
- Fishery takes mostly juveniles on edge of range; adults largely unavailable.
- See text re Kleiber et al. stock assessment.
- Highly productive and widely distributed throughout tropical/subtropical Pacific.

Comment [KRD9]: This table may be deleted from the FMP with this information periodically updated in the SAFE.

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Table 4-3. Stockwide and regional (CA, OR, WA) catches in thousand (K) mt for management unit species at the time of FMP adoption, with respect to MSY, sustainability, and regional harvest guidelines.

Species (Stock)	MSY (or proxy)	OY (or proxy)	Catches (K mt round wgt, 1995-99 period)			Status		
			Stock-wide	Regional		Regional Catch		Harvest Guideline
	Comm'l	Rec'l		Fract'n	Sust'l?			
1. TUNAS								
Albacore (NP)	120 ^{1/}	(120)	67-128 ^{2/}	10-18	<0.05-1.31	0.16	Y	
Bluefin (NP)	(20) ^{3/}	(15)	13-24 ^{4/}	<1-5	<0.05	0.10	Y	
Bigeye (EPO)	79 ^{5/}	(79)	64-94 ^{4/}	#0.1		<0.01	Y	
Yellowfin (EPO)	270 ^{6/}	(270)	244-306 ^{4/}	1-6	0.12-0.84	0.01	Y	
Skipjack (EPO)	(190) ^{3/}	(190)	137-295 ^{4/}	4-7	<0.1	0.03	Y	
2. BILLFISHES								
Str. Marlin (EPO)	4.5 ^{7/}	(3.4)	2-4 ^{2/}	<0.02	0.03	0.01	Y	
Swordfish (EPO)	(12.5) ^{8/}	(12.5)	8-15 ^{4/}	1-2	<0.01	0.12	Y	
3. SHARKS								
Cm Thresher(Reg'l)	(0.45) ^{9/}	(0.34)	Unkn	0.27-0.33	0.01-0.06	?	Y	0.34 ^{10/}
PI Thresher(Reg'l)	(0.020) ^{11/}	(0.015)	Unkn	0.004 ^{12/}		?	y	
BE Thresher(Reg'l)	(0.04) ^{13/}	(0.03)	Unkn	0.01-0.03		?	y	
Mako/Bonito(Reg'l)	(0.20) ^{14/}	(0.15)	Unkn	0.06-0.13	0.01-0.08	?	Y	0.15 ^{15/}
Blue (NP)	~120 ^{15/}	(90)	>50 ^{16/}	0.08-0.17 ^{17/}	<0.03	<0.01	Y	
4. OTHER								
Dorado (EPO)	(0.45) ^{3/}	(0.45)	0.22-0.56 ^{18/}	<0.01-0.04	<0.01-0.08	0.04	Y	

MSY: from catch-effort relationships, unless a proxy. **Proxy MSY:** average stock-wide catches over appropriate years or (minimal) local (West Coast) MSYs (LMSY) including local average levels of catch. **OY:** equal to MSY or to 0.75MSY (bluefin tuna, str. marlin, sharks). **Stock-wide Catch:** 1995-99 catches. **Regional Commercial Catches:** 1995-99 West Coast catches from PacFIN data base (Table 2-1); also drift gillnet catches (str. marlin, blue shark) extrapolated from SWFSC Observer Records, 1995-99. Except for albacore, these catches are mainly from within the EEZ. **Regional Recreational Catch:** CPFV (Table 2-57) and RECFIN (Table 2-58) data, and assuming 12.9kg/bluefin, 7.1kg/yellowfin, 2.4kg/skipjack, 7.3kg/albacore, 6.5kg/dorado, 113kg/swordfish, 16.7kg/mako, and 28.1kg/thresher; also, assuming 59kg/str. marlin, 300 sport-caught fish/yr. **Status:** Less certain Y/N is y/n re sustainability. **Harvest Guideline:** for shark species of regional/local concern; equal to the OY proxy.

Footnotes

1. Average MSY over low and high productivity periods (Bartoo and Shiohama 1985, NPALW 2000). See text.
2. NPALW 2000
3. Mean of 1995-99 stock-wide catches.
4. IATTC 2001
5. MSY between 66 and 92 K mt from production models (IATTC 2000).
6. From production model (Tomlinson 2001, IATTC 2000).
7. MSY and catches from Hinton and Bayliff (2002a).
8. Average of 1995-99 catches; an analytically derived MSY is pending.
9. LMSY proxy by Population Growth Rate (PGR) method; is a minimal estimate of MSY (see text).
10. The OY proxy = 0.75MSY.
11. LMSY proxy as average catch during strong El Niño years (here 1983, 1984, and 1997) when species presence became significant.
12. Average catch 1995-99 excluding 1997 (strong El Niño year).
13. Average catch 1982-99.
14. LMSY proxy as average 1981-1999 regional catch; is a minimal estimate of MSY (see text).
15. After Kleiber et al. (see text).
16. Estimated N. Pacific catches after Nakano and Seki (MS) (see text).

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- 17. Catches from SWFSC DGN observer data base, plus other fisheries landings (Tables 2-1,2-40, 2-42). No data on LL bycatches.
- 18. FAO Area 77 catches.

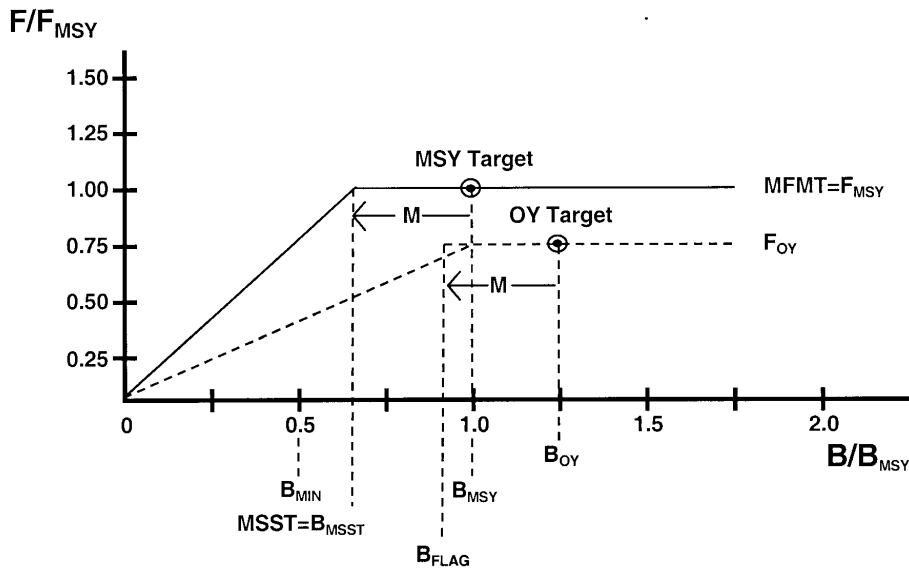
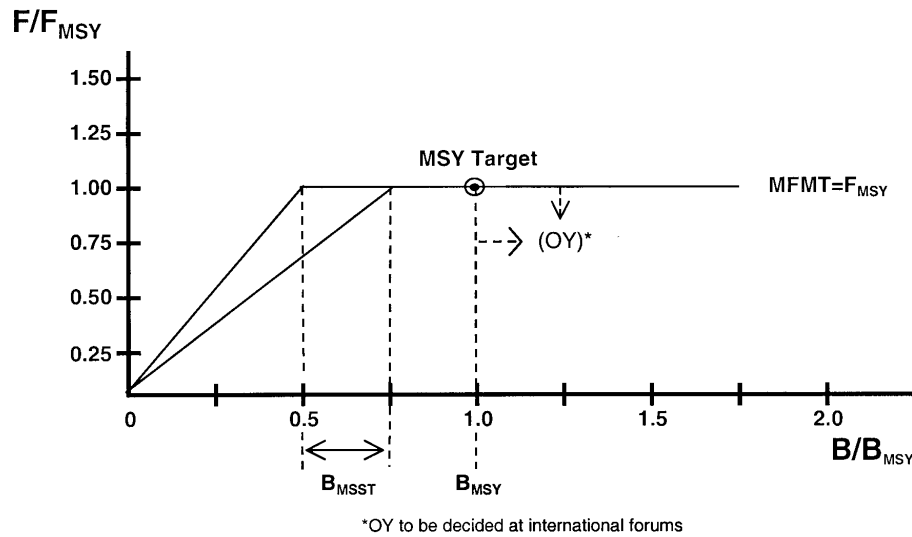


Figure 4-1. General model of maximum sustainable yield and optimum yield control rules, according to Restrepo et al. (1998).



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Figure 4-2. MSY control rules for tunas and billfishes.

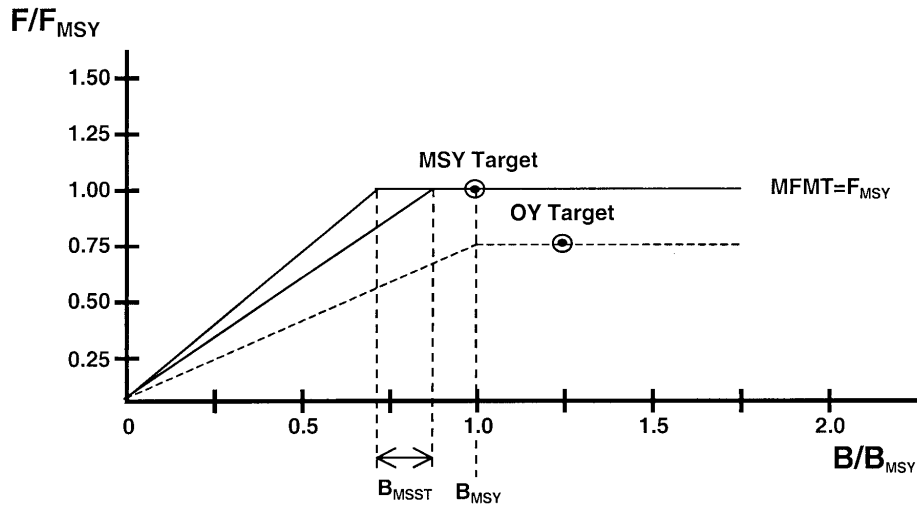


Figure 4-3. General MSY control rule for sharks, with an OY example.

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5.0 PERIODIC SPECIFICATION OF MANAGEMENT MEASURES

5.1 Framework Procedures

Many fishery management plans under the Magnuson-Stevens Act use framework procedures by which flexible management, within the scope and criteria established by the FMP and implementing regulations, can be implemented without amending the FMP. Framework actions can usually be implemented more quickly than FMP amendments, allowing for more timely management response.

Such flexible management measures may be imposed, adjusted, or removed at any time during the year, or according to an established management cycle. Management measures may be imposed for resource conservation, or social or economic reasons consistent with FMP procedures, goals and objectives.

Analyses of biological, ecological, social, and economic impacts will be considered when a particular change is proposed. As a result, the time required to take action will vary depending on the type of action, its impacts on the fisheries, resources, and environment, and the review of these impacts by interested parties. Satisfaction of legal requirements under other applicable laws (e.g., Administrative Procedure Act, National Environmental Policy Act, Regulatory Flexibility Act, Executive Order 12866, etc.) for actions taken under framework procedures generally requires analysis and public comment before the measures may be implemented by the Secretary of Commerce.

Types of Framework Actions

Under most framework procedures, management measures may be established, adjusted or removed using the following categories of actions:

- § “Automatic” actions such as quota closures, which are nondiscretionary and must have already been analyzed in advance. Automatic actions may be made effective immediately in a single *Federal Register* notice, if there are adequate grounds for appropriate waivers of prior opportunity for public notice and comment, and the cooling-off period, as provided in the Administrative Procedure Act.
- § “Notice” actions requiring at least one Council meeting and one *Federal Register* notice. These are management actions other than “automatic” actions that are either nondiscretionary or within the scope of a previous analysis. An example of a “notice” action might be a change in the incidental catch allowance per trip for non-HMS gears. Notice actions may be made effective immediately in a single *Federal Register* notice, if there are adequate grounds for appropriate waivers of prior opportunity for public notice and comment, and the cooling-off period, as provided in the Administrative Procedure Act.
- § “Abbreviated Rulemaking” actions normally requiring at least two Council meetings and one *Federal Register* notice. Abbreviated rulemaking would be used only when time is insufficient to use the full rulemaking process. Abbreviated rulemaking actions may be made effective immediately in a single *Federal Register* notice, if there are adequate grounds for appropriate waivers of prior opportunity for public notice and comment, and the cooling-off period, as provided in the Administrative Procedure Act.
- § “Full Rulemaking” (regulatory amendments or adjustments to change management rules) requiring at least two Council meetings and two *Federal Register* notices consisting of proposed and final rules. These include any proposed management measures not falling within the other categories, including measures that are highly controversial or that directly allocate a resource.

These procedures would not affect the authority of the Secretary of Commerce to take emergency regulatory action under Section 305(c) or (d) of the Magnuson-Stevens Act.

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Framework Process for Rulemaking Actions

New measures or changes to measures may be implemented for one or more fisheries for HMS in the Pacific Council area through the framework procedures. The objective is efficiency and timeliness in management.

Reasons for adopting these framework measures may include, but are not limited to, the following:

- to implement U.S. obligations under an international agreement;
- to achieve optimum yield and prevent overfishing;
- to respond to a determination that overfishing is occurring;
- to minimize adverse impacts of fishing on EFH;
- to minimize bycatch and bycatch mortality;
- to reduce adverse effects of fisheries on protected resources and promote the recovery of any species listed under ESA.
- to promote vessel safety;
- to reduce conflict and provide for orderly fisheries;
- to allocate among domestic HMS fisheries;
- to address social or economic issues;
- to facilitate management of the fisheries;
- to meet goals and objectives of the FMP;
- to respond to changes in management of HMS in other areas of the Pacific.

The following types of measures are authorized to be established, adjusted, or removed using this framework process, without amending the FMP:

- time/area restrictions;
- reporting requirements;
- permits or licenses (for commercial harvesters or vessels, for recreational harvesters or vessels, and for processors) and endorsements for individual fisheries;
- ABCs, ACLs, ACTS, quotas, or harvest guidelines;
- fish length limits;
- recreational daily catch (bag) limits;
- trip limits;
- gear restrictions;
- changes to definition of legal gear;
- allocations among U.S. West Coast fisheries;
- at-sea observers;
- vessel monitoring systems (VMS);

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- adjustments to descriptions of EFH and designation of habitat areas of particular concern;
- measures to minimize bycatch or minimize mortality of bycatch;
- measures to minimize interactions with protected species, including, but not limited to, implementation of federal biological opinions and court rulings.

General Procedure. Following an established management cycle which includes production of an annual Stock Assessment and Fishery Evaluation (SAFE) report, the HMS Management Team, HMS Advisory Subpanel, or other Council advisory body, or a member of the public, may identify a problem and request regulatory action. If the Council agrees that regulations may be necessary, it will direct the HMS Management Team and/or staff to prepare a draft document which includes a description of the problem, alternative management actions and analysis of the impacts of the alternatives. The document will be in the form of an environmental impact statement or environmental assessment/regulatory impact review/regulatory flexibility analysis which meets the analytical requirements of NEPA, Executive Order 12866, the Regulatory Flexibility Act, the Magnuson-Stevens Act and other applicable law.

Upon completion, the draft document will be made available to the interested public and will be addressed by the Council at a subsequent meeting. The issue will be placed on the subsequent meeting agenda, which will be distributed to the media and interested public and published in the *Federal Register*. The Council will seek to identify all interested persons and organizations and solicit their involvement in discussion and resolution of this problem through the Council process. If the action involves a fishery that extends beyond the EEZ, the Council shall invite comments from the Western Pacific and North Pacific Fishery Management Councils on the action that may affect those councils' fisheries. After receipt of comment from its advisory entities and the public, the Council will decide whether or not to adopt the draft document for public comment.

If the Council decides to proceed with the issue, it will revise the draft document as necessary and make it available for public comment. The issue will be placed on the agenda for a subsequent meeting, which will be distributed to the media and interested public and published in the *Federal Register*. At this meeting, after receipt of comment from its advisory entities and the public, the Council will adopt a measure or package of measures for submission to NMFS for approval. A final document including the Council action and rationale will be prepared and submitted to NMFS. The document will specifically indicate whether there will be any impacts on HMS fishery interests in areas of concern of other fishery management councils. If another council has commented on the proposed action, a copy of those comments will be included in the submission.

Point-of-Concern Framework Procedure. The point-of-concern procedure is an additional tool for the Council's use in exercising resource stewardship. The process is intended to foster continuous and vigilant review of Pacific HMS stocks and fisheries. Point-of-concern criteria are intended to assist the Council in determining when a focused review of a particular species is warranted and if management measures are required. The Council has the authority to act solely on a point-of-concern. The point-of-concern framework is intended to be complementary to the work by the HMS Management Team to monitor the fisheries throughout the year. A point-of-concern must be raised to the Chair of the Council in writing, including rationale, background and supporting data.

A point-of-concern occurs when one or more of the following is found or expected:

- Catch has exceeded an ACL based on annual or multi-year average data
- Catch is projected to exceed, within two years, the current ACLs, harvest guidelines, or quotas based on current exploitation rates;

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- Developments in a foreign fishery or actions required under an international management framework affect the likelihood of overfishing HMS domestically;
- Estimated bycatch of a species or species group increases significantly above previous estimates, or there is information that abundance of a bycatch species has declined significantly;
- New information is discovered on the biological characteristics of one or more species, or on the characteristics of a stock, indicating that current management measures are inadequate;
- An error in data or stock assessment is detected that significantly changes the estimates of impacts of current management;
- MSY control rule parameters or approach require modification;
- Projected catches for a non-management unit HMS species increase substantially such that applying the default control rule to that species would show catches exceeding the Allowable Biological Catch. This could require moving a species into the management unit;
- Changes in ecological relationships, such as significant shifts in predator-prey interactions or declines in forage species, indicate that an HMS population may be in decline.

If a point-of-concern is raised to Chair of the Council, the Council shall decide if the HMS Management Team (HMSMT) should proceed to address the concern, and/or if any additional actions are warranted by the Council at that time. Notwithstanding, if an ACL is exceeded the Council must implement accountability measures as soon as possible to correct the operational issue that caused the ACL overage.

If so directed by the Council, the HMSMT will prepare a report including recommendations, rationale, and analysis for appropriate management measures to resolve the point-of-concern. After receiving the HMSMT report, the Council will hear public testimony and, if appropriate, recommend management measures to the NMFS Regional Administrator accompanied by supporting rationale and analysis of impacts. The Council analysis will include a description of (a) resource conservation or ecological issues consistent with FMP objectives; (b) likely impacts on other management measures, other fisheries, and bycatch; and (c) socioeconomic impacts to commercial and recreational segments of the HMS fishery. The recommendation will also explain the urgency of the measure(s), if any.

The NMFS Regional Administrator will review the Council's recommendation and supporting information and will follow the appropriate implementation process. If the NMFS Regional Administrator does not concur with the Council's recommendation, the Council will be notified in writing of the reasons for the rejection.

The same framework procedures would be used during the management cycle for changing conservation and management measures, except there would be no point-of-concern criteria for raising conservation concerns to the Council.

5.2 Management Cycle

The management cycle is a pre-determined regular schedule for council management actions with respect to HMS fisheries. Cycle differences affect the time available for fishery assessments, the timeliness of available data and of management response, and the degree to which fishers can participate in the management process.

Future developments in the fisheries do not ordinarily bring need for change in the management cycle schedule, and the management cycle is thus a fixed element of the FMP. However, should there be need

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to change the management schedule, e.g., because of marked changes in fishery practices, the Council can do so by vote and without a plan amendment, provided the Council gives six-month notice.

The FMP establishes a *biennial* management cycle with regulatory/statistical year *April 1 to March 31*. The schedule would be as follows:

Year 1

- June Provide update to the Council on status of the HMS fisheries; preliminary SAFE report. If necessary, Council directs HMSMT to prepare draft regulatory analysis to implement harvest levels and/or management measures.
- September Annual SAFE document presented to Council. If necessary, Council directs HMSMT to prepare a draft regulatory analysis to implement new harvest levels and/or management measures. Council adopts for public review proposed actions addressing concerns from current and previous SAFE reports.
- November Council adopts final action and submits to NMFS for approval.

Year 2

- April Measures become effective, and stay in effect for at least two years.

This schedule allows at least minimally sufficient time for data analysis, provides for timely response to fishery problems, and allows most fishers adequate access to the management process, as scheduled.

The cycle is repeated biennially, with new actions considered in September and becoming effective in April every other year. The Council would schedule HMS for the June, September, and November Council meetings.

Under this biennial cycle (or any cycle), the HMS management team would still conduct ongoing reviews of the fisheries and status of stocks and prepare an annual SAFE document for the Council. The Council would still have to prepare a stock rebuilding plan within one year of notification by the Secretary of Commerce that a stock has been declared overfished, as called for under the Magnuson-Stevens Act (Section 2.3).

5.3 Procedure for Making Recommendations to Regional Fishery Management Organizations

The Council may develop an Operating Procedure to facilitate effective coordination and communication of management advice, in concert with the WPFMC and through the appropriate U.S. delegation, between the Councils and RFMOs involved in HMS management in the Pacific Ocean. The Operating Procedure may include specific decision-making schedules and criteria in order to harmonize PFMC, WPFMC, and RFMO processes.

HIGHLY MIGRATORY SPECIES ADVISORY SUBPANEL REPORT ON
FISHERY MANAGEMENT PLAN AMENDMENT 2, ANNUAL CATCH
LIMITS AND ACCOUNTABILITY MEASURES

The Highly Migratory Species Advisory Subpanel (HMSAS) recommends a modified Alternative 3 as the most favored alternative. Working with Alternative 3, as set forth on page 23 of the Draft Environmental Assessment (Agenda Item E.2.a, Attachment 1), there should be 14 Management Unit Species (MUS) (adding opah) and 11 ecosystem component species (drop selected species). With regard to Pacific bonito, there was no consensus as to whether it should be added as a fifteenth MUS, or whether it would be better to have Pacific bonito as a MUS in the Coastal Pelagic Species Fishery Management Plan (FMP), or if management should be left to the State.

The HMSAS believes all the 14 MUS species should be covered by the international exception including common thresher and shortfin mako sharks, which is a difference from Alternative 3. The basis for this decision appears on page 12, Table 4, where it is set forth that both species have been the subject of conservation measures adopted by either the Western and Central Pacific Fishery Commission (WCPFC) or the Inter-American Tropical Tuna Commission. The HMSAS believes that the thresher shark fishery could benefit from international cooperation with Mexico.

As to the designation of the primary FMP, the HMSAS disagrees with some of the identifications set forth in table 5 on page 15, but can agree with the statement that designation should be at the stock level in consultation with the WPFMC with flexibility to change based on new information. This is included in Alternative 3.

The HMSAS also supports that maximum sustainable yield (MSY) or MSY proxies should be estimated using methods consistent with data availability with MSY and status determination criteria reported in the Stock Assessment Fishery Evaluation report. The same goes for the specification of OYs using a flexible framework to determine optimum yield (OY) on a stock basis utilizing the criteria in the Guidelines. Finally, since the HMSAS recommends that the international exception be applied to all MUS, the specification of acceptable biological catches, annual catch limits, and Accountability Measures are not relevant.

PFMC
06/12/10

HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM REPORT ON
FISHERY MANAGEMENT PLAN AMENDMENT 2, ANNUAL CATCH LIMITS AND
ACCOUNTABILITY MEASURES

This Highly Migratory Species Management Team (HMSMT) Report provides information which may be helpful to the Council regarding adoption of alternatives under Highly Migratory Species Fishery Management Plan (HMS FMP) Amendment 2 (Item E.2) to address requirements under the revised National Standard 1 Guidelines. This report includes the following sections:

- 1) Criteria for classifying stocks as management unit species (MUS), ecosystem component (EC) species or not in the FMP
- 2) Applying the international exception
- 3) Guidance on determining maximum sustainable yield (MSY), optimum yield (OY) and status determination criteria (SDC) for the MUS
- 4) Possible approaches to setting ACLs for stocks not subject to the international exception
- 5) Overview of proposed alternatives
- 6) HMSMT Recommendation for New Alternative 5
- 7) Additional changes to the proposed FMP Amendment 2 text

1. Criteria for classification of stocks in the FMP as management unit species, ecosystem component species or not in the FMP

The HMSMT proposed a reclassification scheme for species in the HMS FMP in the April 2010 HMSMT Report and Supplemental HMSMT Report, and in the draft HMS FMP Amendment 2 in the June 2010 Council briefing book. Since then, the HMSMT strengthened the rationale for reclassifying species in the original HMS FMP. The following criteria were identified to support the reclassification of non-MUS as either EC species or not in the HMS FMP:

1. Reclassify as EC species any species with less than 1 mt average annual landings between 2000-2008 but with appreciable catch in observer data.
2. Absent other overriding factors, reclassify species with more than 1 mt and less than 5 mt of landings as EC species and species with less than 1 mt average landings from 2000-2008 as not in the HMS FMP.

Under criterion 1 pelagic stingray and lancetfishes are reclassified as EC species, because both showed appreciable catch observer data.

Based on criterion 2 (fewer than 1 mt of landings), the HMSMT proposes dropping the following additional five currently monitored species from the HMS FMP:

1. Black skipjack
2. Bullet mackerel (tuna)

3. Hammerhead sharks
4. Oilfish
5. Pacific pomfret

The HMSMT discussed reclassification of Pacific bonito to meet National Standard 1 (NS1) guidelines. Bonito was a monitored species under the original HMS FMP. The HMSMT does not believe bonito qualifies as an EC species since it is targeted and landed commercially in significant quantities by west coast small purse seine vessels. Furthermore, bonito does not appear on the United Nations Convention on the Law of the Sea Annex 1 or on the Magnuson-Stevens Act (MSA) list of HMS, and it is not believed to be caught on trips targeting HMS MUS. The HMSMT believes the species does not meet the criteria for classification as either an HMS MUS or an EC species, and given that California Department of Fish and Game (CDFG) manages bonito with port sampling and size limits, recommends it be dropped from the HMS FMP.

There were no additional changes with respect to alternatives for MUS based on these revised classification criteria.

2. Applying the international exception

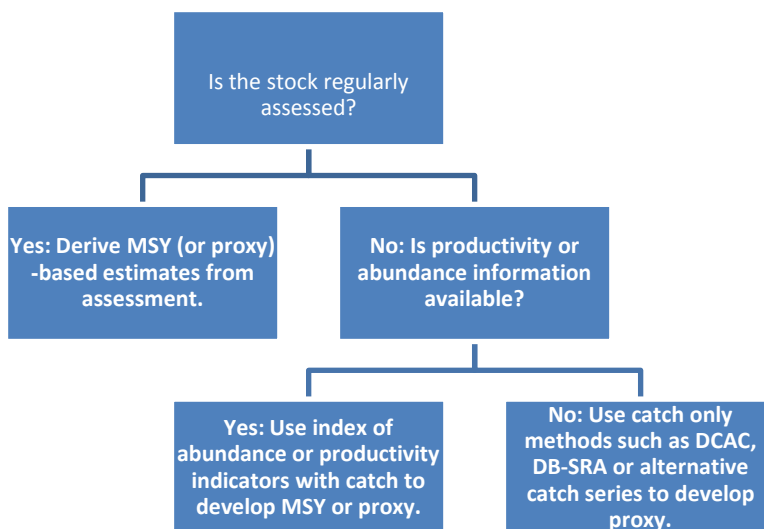
The HMSMT proposes the following basis for applying the international exception to managed species. For most of the HMS FMP MUS, the relative proportion of the stockwide catch made by U.S. west coast fisheries is small; the majority of catch occurs outside the U.S. Exclusive Economic Zone (EEZ) by foreign nations. For this reason, and because their management is within the authority of international Regional Fishery Management Organizations (RFMOs), the HMSMT believes there is sufficient reason for wide application of the international exception. The HMSMT notes that the Council has established harvest guidelines for some species and may choose to set ACLs regardless of whether the international exception is adopted.

The HMSMT believes that management and conservation goals, strategies, and measures consistent with the Magnuson Stevens Act and NS1 guidelines are best achieved when they apply throughout the range and to all the fisheries for a HMS MUS and therefore, recommends continuing to work through international RFMOs to do so and apply the international exception to all HMS MUS.

3. Guidance on determining MSY, OY and SDCs for MUS for which the PFMC is the lead

The HMSMT recommends that the Council consider specifying of MSY (or proxies), OY, SDCs, overfishing limit (OFL), and ACLs if required for each MUS during the HMS biennial process for routine management measures, similar to the process outlined for groundfish in Chapter 5, Section 5 in the proposed Groundfish FMP Amendment 23. Chapter 5 of the HMS FMP, Periodic Specification of Management Measures, should be amended to incorporate comparable language making it clear that the biennial process will also be used to establish or adjust estimates of the aforementioned parameters.

The April 2010 Supplemental HMSMT Report proposed a decision-making framework to determine the method to estimate these reference points for each MUS species. Decisions are based upon whether or not a stock assessment with MSY-based estimates is available and whether or not a time series of stockwide catch is available. All additional information on stock productivity should also be taken into consideration when determining MSY and the other reference points. The framework is generally described in section 2.5.1.1 of the HMS FMP Amendment 2 EA included in the June 2010 Council briefing book. We provide the following decision making flow chart to help clarify the proposed framework.



Note that under the revised NS1 Guidelines, the overfishing threshold can be expressed as a mortality rate (the maximum fishing mortality rate; MFMT) or as an OFL which is the catch produced at F_{MSY} . No change in how the minimum stock size threshold (MSST) is defined in the FMP is proposed.

OY is discussed in Section 2.5.1.3 of the draft EA. A key element in the definition of OY is that any difference between MSY and OY must be expressed as a reduction from MSY in the direction of a lower yield. The HMSMT notes that the NS1 guidelines include a provision for setting OY at a lower level than MSY. In the original FMP, such an approach was taken for species that were considered vulnerable by setting $OY = 0.75 F_{MSY}$. In the FMP Amendment, OY will be determined on a case-by-case basis, re-evaluated as part of the biennial process and updated in the Stock Assessment Fishery Evaluation (SAFE) report.

For regularly assessed stocks: e.g. yellowfin tuna of the EPO assessed by the IATTC¹

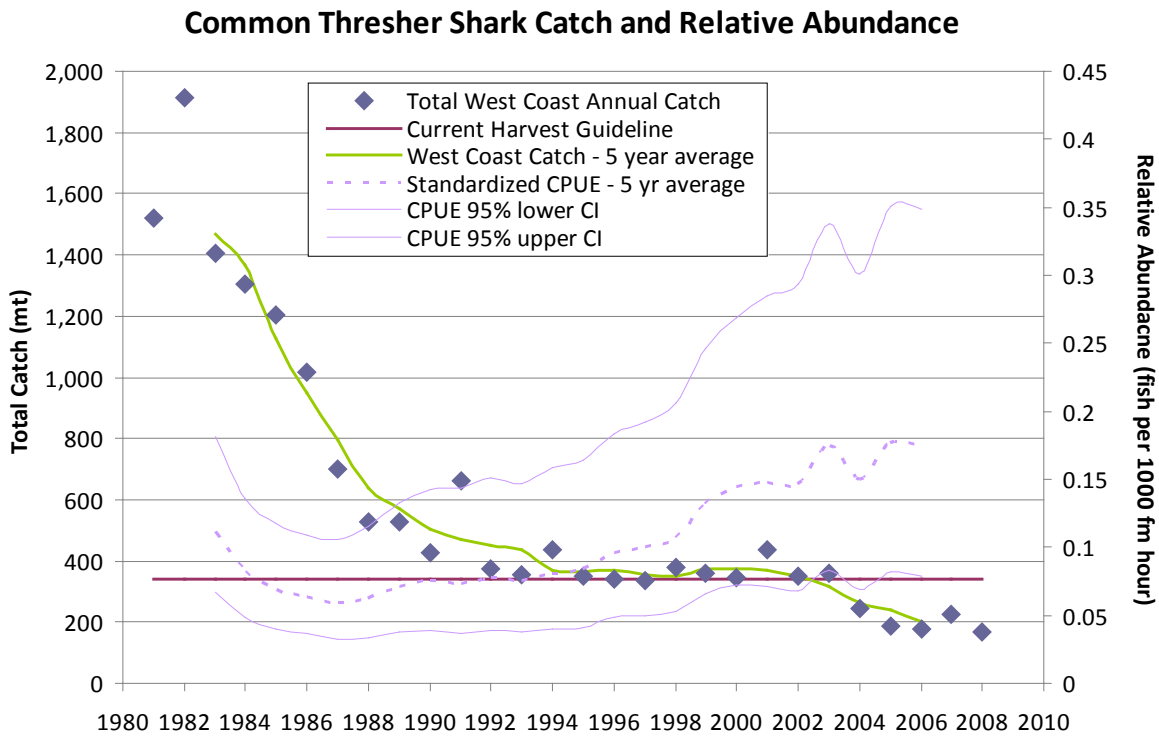
As part of the biennial process, as discussed above, the HMSMT will review recent stock assessments each year when preparing the annual SAFE document. The team will summarize the results and present the estimated MSY-based reference points to the SSC. If the SSC finds the assessment results robust, the values will be recommended to the Council as appropriate MSY-based reference points for the stock. In the event that the SSC finds the reference points

¹ Maunder, M.N. and Aires-Da-Silva, A. 2010. Status of yellowfin tuna in the Eastern Pacific Ocean in 2008 and outlook for the future. IATTC Document SARM-10-06a.

undesirable for management purposes, the SSC may recommend that the Council ask the RFMOs to include further sensitivities or analyses in future assessments. Because the HMS assessments are generally conducted by working groups outside of the PFMC, under the revised MSA NSI Guidelines, the Council provides recommendations regarding international management through the U.S. delegations to the RFMOs.

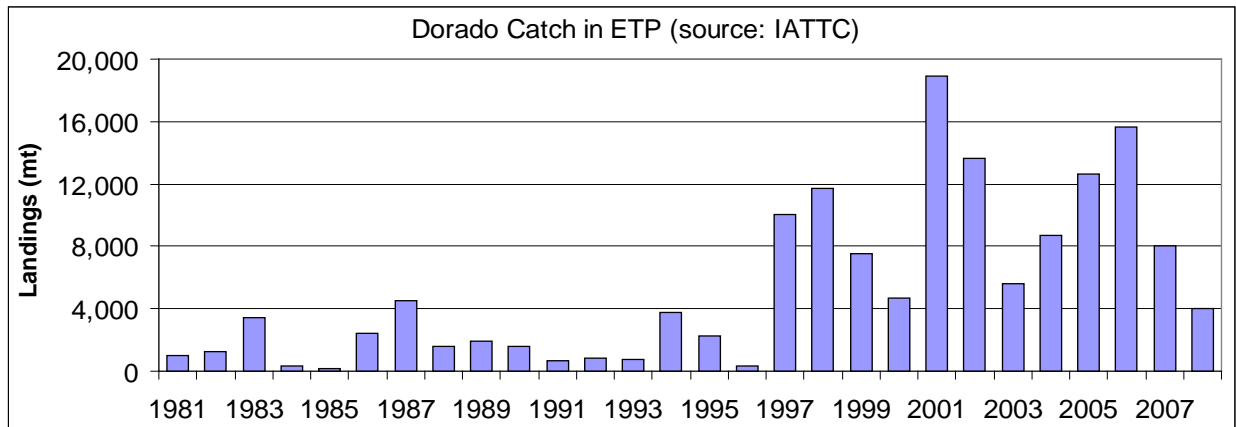
For unassessed stocks with catch history and additional information on relative abundance or stock productivity: e.g. common thresher shark

The HMSMT will compile the best available stockwide catch data, or if not available, regional catch data and all additional information on a stock’s productivity including relative abundance or catch/effort data if available. MSY or proxy estimates will be developed based on the catch time series and additional information. The relative impact of U.S. West Coast fisheries may help to inform decisions on selecting appropriate reference points. As part of the biennial process, the HMSMT will propose a MSY or proxy and justification to the SSC for recommendation to the Council. As an example, the figure below shows the U.S. West Coast total landings of common thresher shark between 1981-2008 and a delta-general linear model (GLM) derived abundance index for the drift gillnet fishery (NMFS Southwest Fisheries Science Center, preliminary results). The catch history reflects declines in effort as a consequence of time and area restrictions imposed to protect pupping thresher sharks and protected species. Based on the declining catches, and increasing trend in catch per unit of effort (CPUE), a potential MSY could be calculated as the average catch landed during the period when the CPUE was beginning to increase after the population decline in the mid 1980s, such as 1988-1994 in this example.



For unassessed stocks with catch history but lacking further information on relative stock abundance or productivity: e.g. dorado of the EPO

For each species, the HMSMT will compile the best available stockwide, or if not available, regional catch data. A catch-based method such as the Depletion Corrected Average Catch (DCAC), Depletion Based Stock Reduction Analysis (DB-SRA), or in the case of a relatively stable catch history without indications of stock depletion, an average of selected catch levels may be chosen to represent a proxy MSY. As an example, at the time of the HMS FMP development, an average of the annual catch for FAO area 77 between 1995-1999 (450 mt) was considered a reasonable MSY proxy for dorado. A potential updated MSY proxy for dorado, that also reflects catch for a larger part of the stock’s range, could be an average of the annual Eastern Pacific Ocean (EPO) catch for the past 5 years (9829 mt; see figure below).



4. Approaches to setting ACLs for stocks not subject to the international exception

The same framework proposed for setting MSY and SDCs for MUS can be applied to establish reference points for managed stocks not subject to the international exception. Under the revised NS1 Guidelines, for MUS for which the Council FMP is the lead and which are not subject to international exception, the Council must establish an OFL, ABC, ACL and Accountability Measures. Under the tiered decision-making framework described above, OFL would be determined from an assessment, or developed from stockwide or regional catch history with or without additional information regarding a stock’s productivity. For common thresher shark, as an example, the regional MSY proxy may be set at some catch level based on historical or recent fishing informed by any productivity or abundance trends. ABC could be equal to or reduced from OFL based on scientific uncertainty (σ) as established by the SSC, and the Council’s value for risk associated with the potential for overfishing (often referred to as P*). Management uncertainty should be further considered in order to establish an ACL less than or equal to ABC. The establishment of SDCs would follow the framework above.

OFL	STOCK SPECIFIC MSY OR MSY PROXY
ABC	OFL * Scientific Uncertainty BUFFER
ACL	Equal to ABC or reduced for management uncertainty

The HMSMT believes that the methodology described in the NS1 guidelines to define an OFL as a reference point to ensure that MFMT ($= F_{MSY}$) is not exceeded, then as necessary scaling OFL down to the ABC to account for scientific uncertainty and further reducing the ABC down to the ACL to account for management uncertainty suggests that the ACL serves the same purpose in the NS1 guidelines as $OY = 0.75 MSY$ served in the original HMS FMP. For consistency with the definition of OY in the original HMS FMP, the HMSMT recommends the Council consider defining OY as MSY for species which do not require an ACL, and as the ACL level of catch for cases where one is applicable.

If necessary the biennial process would be used to invoke additional accountability measures (AMs). The process the Council went through in 2008 for the 2009-2011 period presents an example. Concern was raised that increased recreational catch of common thresher shark, combined with commercial catch, could mean that total catch was approaching or exceeding the harvest guideline. The HMSMT both proposed potential recreational management measures and gathered information to estimate total catch. Based on this information the Council decided that additional measures were not necessary at that time. However, the process demonstrates how the biennial process can be used to establish or adjust AMs to avoid exceeding an ACL.

5. Overview of proposed alternatives

Section 2.7 of the draft EA outlines the proposed alternatives, which are summarized in Table 6:

1. Alternative 1 is the No Action alternative required under NEPA; it does not address the requirements of the NS1 guidelines.
2. Alternative 2 retains the list of species in the current HMS FMP, but reclassifies monitored species as ECS; the international exception is applied to all MUS in the HMS FMP.
3. Alternative 3 adds opah as an additional MUS; the international exception would apply to all MUS except common thresher shark and shortfin mako shark.
4. In addition to including opah as a new MUS, Alternative 4 reclassifies bigeye thresher shark and pelagic thresher shark from MUS to ECS; the international exception would apply to all MUS except common thresher shark.

6. HMSMT Recommendation for New Alternative 5

Alternative 5 reflects the HMSMT's preferred choices from the full range of alternatives based on the background presented in this and previous HMSMT reports.

a) Classification of Stocks in the FMP

Select a list of species for reclassification as MUS and ECS as described under Alternative 4 in the draft EA, but replace the list of 13 ECS shown under Alternative 4 with the following revised list of eight ECS which reflects the criteria in Section 1) above:

1. Bigeye thresher shark
2. Common mola
3. Escolar
4. Lancetfishes
5. Louvar
6. Pelagic stingray
7. Pelagic thresher shark
8. Wahoo

b) Applying the International Exception

Apply the international exception to setting ABCs and ACLs described at 660.310(h)(2)(ii) to all managed species (Same as Alternative 2).

c) Determining the Primary FMP: Same as Alternative 2.

d) Establishing Reference Points, ACLs, and Accountability Measures: Same as Alternative 2.

HMSMT's recommended Alternative 5 is summarized in the following table (comparable to Table 6 (page 23) in Attachment 1, Agenda Item E.2.a)

Issue	Alternative 5
a) Classification of stocks	12 MUS (bigeye and pelagic thresher to EC, add opah) 8 EC species (drop selected per criteria in Section 1 of this HMSMT Report)
b) Application of the international exception	Applied to all stocks
c) Primary FMP designation	Designation at stock level in consultation with WPFMC; flexibility to change based on new information
d) Specification of MSY and SDC	<ul style="list-style-type: none"> • MSY or MSY proxies estimated using methods consistent with data availability category • MSY and SDCs reported in SAFE
d) Specification of OYs	Flexible framework to determine OY on stock basis, based on criteria in Guidelines
d) Specification of ABCs	Not Specified
d) Specification of ACLs	Not Specified
d) Accountability measures	Measures and processes as described in Chapters 5 & 6 of the FMP

7. Additional changes to the proposed FMP Amendment 2 text

Based on advice from the SSC and NMFS, the HMSMT proposes additional revisions to the FMP text.

- The HMS FMP should explicitly state that changes to quantitative estimates of reference points should be frameworked, i.e., not require an FMP amendment to change. Section 2.4 on the HMS FMP currently suggests that any change to reference points are considered fixed elements of the FMP. A revision to Section 2.4 is proposed to make clear that the FMP contains the procedures for determining reference points, which would require an amendment to change, but estimates of the actual values could be periodically revised based on the new information and reported in the SAFE document.
- The entirety of Section 4.1.1.4, OY Control Rule should be deleted.
- Section 4.1.2, Optimum Yield, and Section 4.1.3, Optimum Yield for Vulnerable Species, should be further revised as outlined below
- Figures 4-1 through 4-3 should be revised to be consistent with revised NS1 Guidelines

Section 2.4 Fixed Elements of the Fishery Management Plan

Fixed elements are the long-standing elements of a fishery management program that direct how it is applied and for what purpose. FMP amendments are required when fixed elements of the FMP are changed, as well as for major or controversial actions outside the scope of the original FMP.

Examples of fixed element actions that would require an FMP amendment include:

- § changes to management objectives;
- § changes to the species in the management unit (actively managed species);
- § changes to the control rules (~~definition of overfishing~~) methods for determining MSY, OY and SDC,¹
- § amendments to any procedures required by the FMP;
- § implementation of limited entry programs. This FMP does not propose a federal limited entry program for any HMS fishery at this time. The Council adopted a control date of March 9, 2000 for commercial and party/charter fisheries for HMS, in anticipation that a limited access program may be needed in the near future. Meanwhile, existing state limited entry programs for HMS fisheries will remain in effect when the FMP is implemented; and
- § allowing a longline fishery in the EEZ (other than through approved activities under an EFP).

...

4.1.2 Optimum Yield

OY is defined as MSY reduced by relevant socioeconomic factors, ecological considerations, and fishery-biological constraints so as to provide the greatest long-term benefits to the Nation. Therefore, OY may ~~cannot~~ be set greater than MSY, and must take into account the need to prevent overfishing and rebuild overfished HMS stocks. To the extent possible, the relevant social, economic, and ecological factors used to establish OY for an HMS stock or fishery should be quantified and reviewed in historical, short-term, and long-term contexts. National Standard 1 Guidelines includes examples of factors that may be considered when determining OY. OY should not be greater than the ABC or ACL, if identified (see below).

¹ Numerical estimates-determination of these reference points may should be periodically revised, based on the best scientific information, without requiring an FMP amendment. Any such revised estimates-determinations, after approval by NMFS, will be published in the annual SAFE report (see Section 4.3).

The OY specifications in Table 4-3 of the FMP [Stockwide and regional (CA,OR, WA) catches in thousand (k) mt for management unit species at the time of adoption] shall remain in effect until changed by recommendation of the Council, after considering recommendations of the SSC, and approval by NMFS. The OY for any management unit species not listed in Table 4-3, shall be determined preferably concurrently with addition to the management unit, or as soon as possible thereafter by recommendation of the Council, after considering input by the SSC, and approval by NMFS.

~~An example of an **Optimum Yield (OY) Control Rule** is also shown in Figure 4-1, it being the Restrepo et al. (1998) recommended, precautionary default of $0.75MFMT$ of the MSY control rule (the lower dashed horizontal and slope line). This rule is for maintaining OY, which is defined as MSY reduced by relevant socioeconomic factors, ecological considerations, and fishery biological constraints so as to provide the greatest long-term benefits to the Nation. Simulation studies have indicated that management according to the OY default rule will often allow biomasses (B_{OY}) to be maintained at about $1.25B_{MSY}$ (as shown), with yields of about 95% of MSY. Like for MSST of the MSY Control Rule, there is a **Minimum Biomass Flag (B_{FLAG})** for the OY Control Rule equal to $(1-M)B_{OY}$ or $0.5B_{OY}$ (whichever is greater) (Boggs et al. 2000). B_{FLAG} , which would then be equivalent to $1.25(B_{MSST}/B_{MSY})$, serves as a warning call to halt biomass reduction that would jeopardize obtaining OY on average.~~

~~The OY control rule has a more conservative range of restraints that may be appropriate for more vulnerable species. The more vulnerable a species is to being overfished, the more conservative should management be. And since the maximum value of OY is MSY, then the more should the catch ratio OY/MSY be reduced from unity (while B_{OY}/B_{MSY} is increased from unity).~~

~~These control rules involve the concept of target and limit reference points. It can be seen that B_{MSY} and B_{OY} are target reference points for the long term management goals of MSY or OY. But B_{MSST} and B_{FLAG} are limit thresholds for the respective control rules that should not be exceeded, or exceeded only at some level of probability. A stock that is reduced below those biomass limits would normally require remedial action, because the target goals would then be jeopardized. Similarly, F_{OY} is a target reference point. However, F_{MSY} could be a target reference point or a limit threshold; it could be the target point for the MSY control rule or it could be the limit threshold for the OY control rule. If $B < B_{FLAG}$ is expected with the latter rule, remedial action may be recommended even though the stock could still be far above B_{MSST} .~~

4.1.23 Alternative Management Control Rule Specification of OY for Vulnerable Species

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). In consultation with the SSC, the HMSMT may analyze the vulnerability of HMS stocks from time to time.

Since the management unit species vary from vulnerable to very productive, an alternative OY specification may be considered for vulnerable species. the default MSY control rule applies to MUS, but additionally, an alternative OY target control rule is used for "vulnerable" species.

Vulnerability of species can stem from many reasons, and any species that has been depleted to 50% below B_{MSY} (for the logistic production model, to 25% of unfished level B_0) that is incapable of recovering back to that B_{MSY} level within 10 years (with fishing removed) is to be considered vulnerable in this FMP. The productivities (potential per capita rates of population increase r) of such species would have to be 5% or less per year, assuming recovery time is determined by a linear compensatory increase in r with population decline (logistic model). Only the sharks among the MUS, including common thresher, are likely to have such low rates and long recovery times (see Table 4-1), and they are therefore considered vulnerable by this criterion. Vulnerable OYs are also appropriate for other fish species for other reasons of stock health concern (see bluefin tuna, Section 4.8.1, and striped marlin, Section 4.8.3).

In this FMP, where OY is not determined analytically, an OY proxy is defined according to vulnerability, as follows:

OY(proxy) = MSY or MSY(proxy) ——— for species not considered vulnerable

OY(proxy) = 0.75*(MSY or MSY(proxy)) — for species considered vulnerable

The rationale for the vulnerable species OY follows from the recommended $F_{OY} = 0.75F_{MSY}$ (see Figure 4-1). Then since $MSY = F_{MSY}B_{MSY}$, $OY = 0.75F_{MSY}B_{MSY} = 0.75MSY$ when estimated from the same B_{MSY} biomass.

Since the default alternative rule is defined with MFMT and MSST as ratios relative to MSY (as in Figure 4-1), its resulting generality allows management according to specific criteria even without estimates of the absolute biomass or exploitation status of a stock. This allows all the MUS, diverse with respect to productivity, scientific understanding, and stock status, to be managed by the same rule and in accordance with the requirements of the Magnuson-Stevens Act. This control rule is the most straight forward of the possible rules discussed by Restrepo et al. (1998) and is the one they recommend. The reduction in fishing mortality it calls for to rebuild depleted populations is intermediate with respect to the degree of depletion that can be remedied at acceptable rates of recovery. It is the same rule being considered for the Western Pacific Region Fishery Management Council's FMP for pelagic fisheries (but with the additional stipulation for vulnerable species).

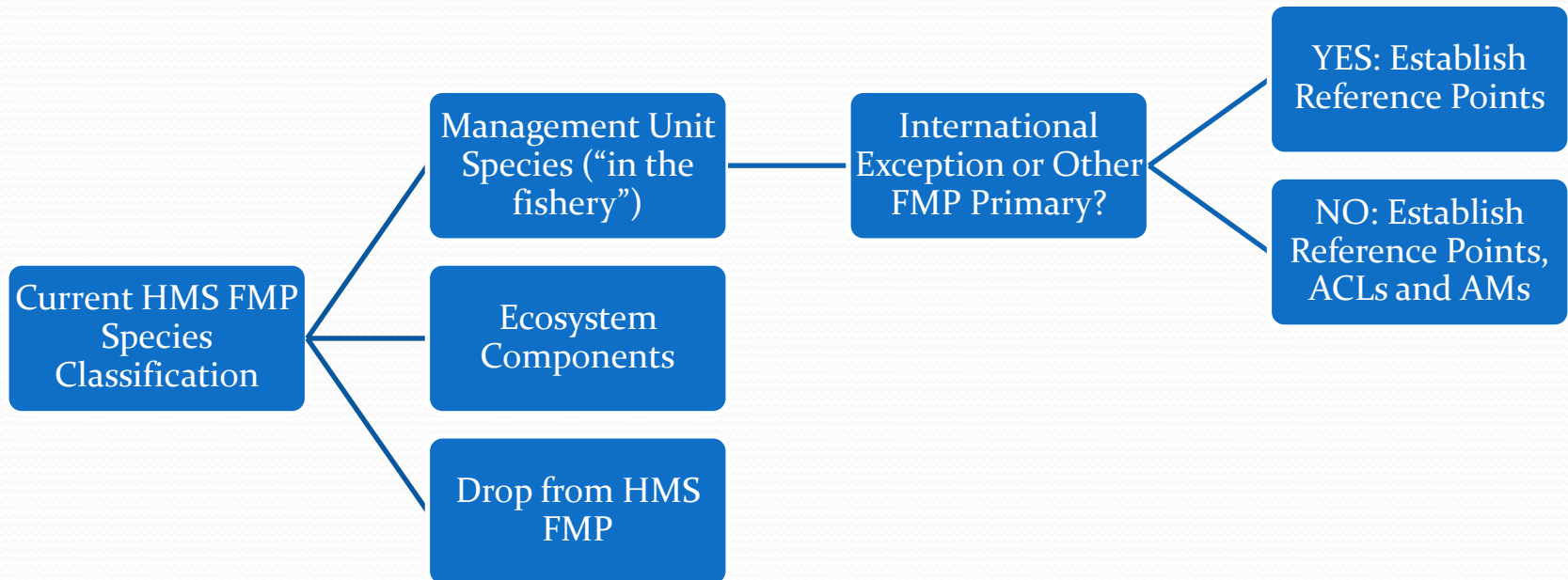
**Amendment 2 to the FMP for U.S. West Coast
Fisheries for Highly Migratory Species to Address
Revised National Standard 1 Guidelines:
Overview of Alternatives**

Pacific Fishery Management Council Meeting
Portland, Oregon
13 June 2010

Summary of Actions for Council

- Reclassify species in the original HMS FMP as a management unit species (MUS), ecosystem component species (ECS) or not in the HMS FMP
- Apply the international exception to selected MUS
- Select from among Alternatives 1-4 or develop a Council-preferred Alternative 5 to be completed after the June Council meeting

Amendment 2 Flow Chart



HMSMT Report Outline

- 1) Criteria for classifying stocks as management unit species (MUS), ecosystem component (EC) species or not in the FMP
- 2) Guidance on applying the international exception
- 3) Determining MSY, OY and SDCs for the MUS
- 4) Approaches to setting ACLs for stocks not subject to the international exception
- 5) Overview of proposed alternatives, including HMSMT recommendation

Proposed Reclassification Rules

1. Reclassify as ECS any species with fewer than 1 mt average annual landings between 2000-2008 but with appreciable catch in observer data.
2. Absent other overriding factors, reclassify species with more than 1 metric ton (mt) and fewer than 5 mts of landings averaged from 2000-2008 as ECS and species with fewer than 1 mt average landings as not in the HMS FMP.

Resulting Table 1 Changes

- Reclassify pelagic stingray and lancetfishes as ECS, due to appreciable observer catch.
- Drop the following currently monitored species in addition to those already proposed, due to fewer than 1 mt average landings:
 1. Black skipjack
 2. Bullet mackerel (tuna)
 3. Hammerhead sharks
 4. Oilfish
 5. Pacific pomfret

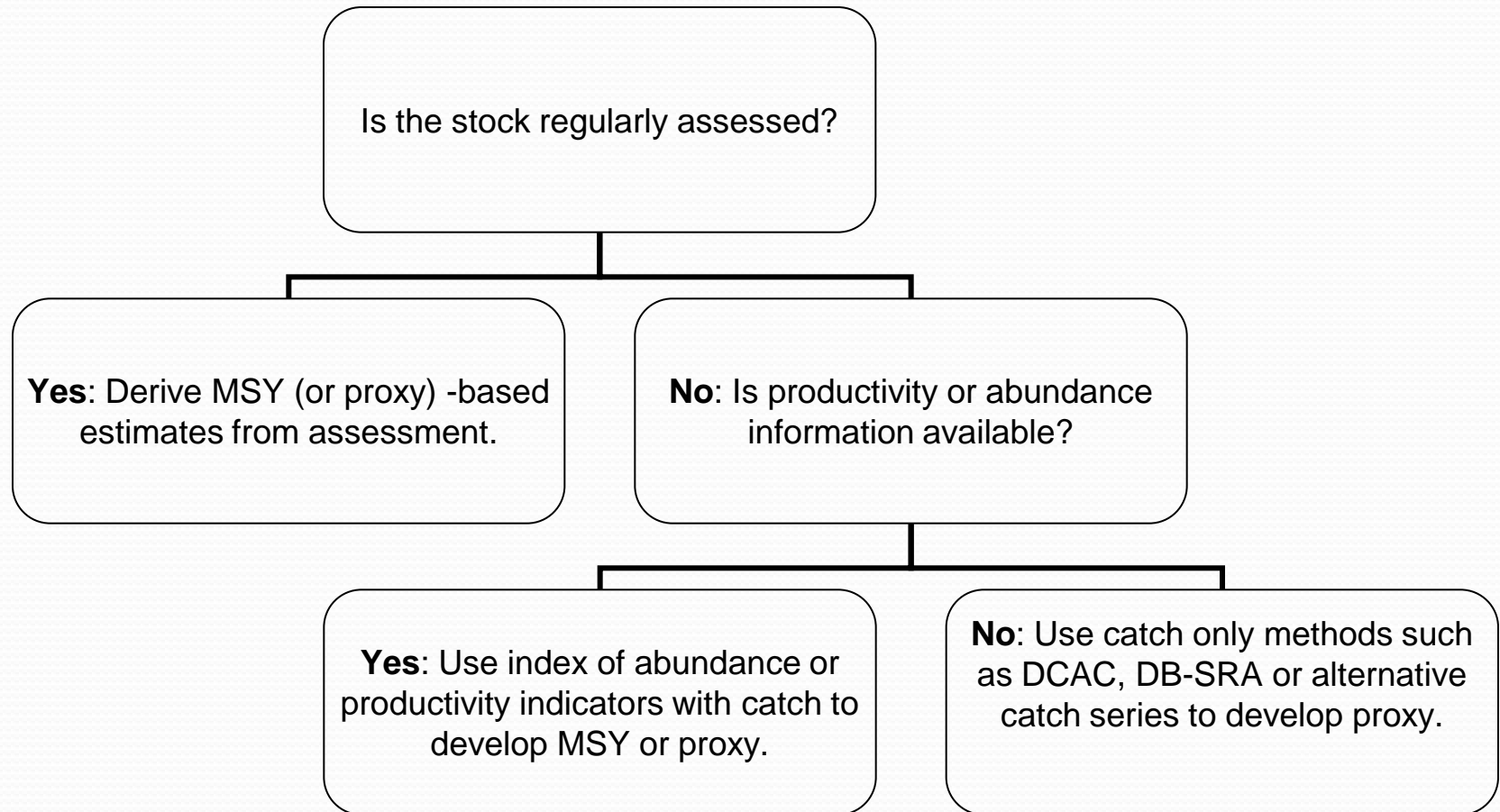
Bonito

- Monitored species under the original HMS FMP
- Targeted and landed commercially in significant quantities by west coast small purse seine vessels (must be non-target species to qualify as ECS)
- Not on the United Nations Convention on the Law of the Sea Annex 1 or on the MSA list of HMS
- Not believed to be caught on trips targeting HMS MUS
- CDFG manages bonito with port sampling and size limits
- HMSMT recommends dropping bonito from the HMS FMP

International Exception

1. For most HMS FMP MUS, the relative proportion of the stockwide catch made by U.S. west coast fisheries is small with the majority of catch occurring outside the U.S. EEZ by foreign nations
2. HMS MUS are managed by the international RFMOs
3. Adopting the international exception does not preclude the Council from managing to existing harvest guidelines or setting ACLs for any HMS FMP MUS

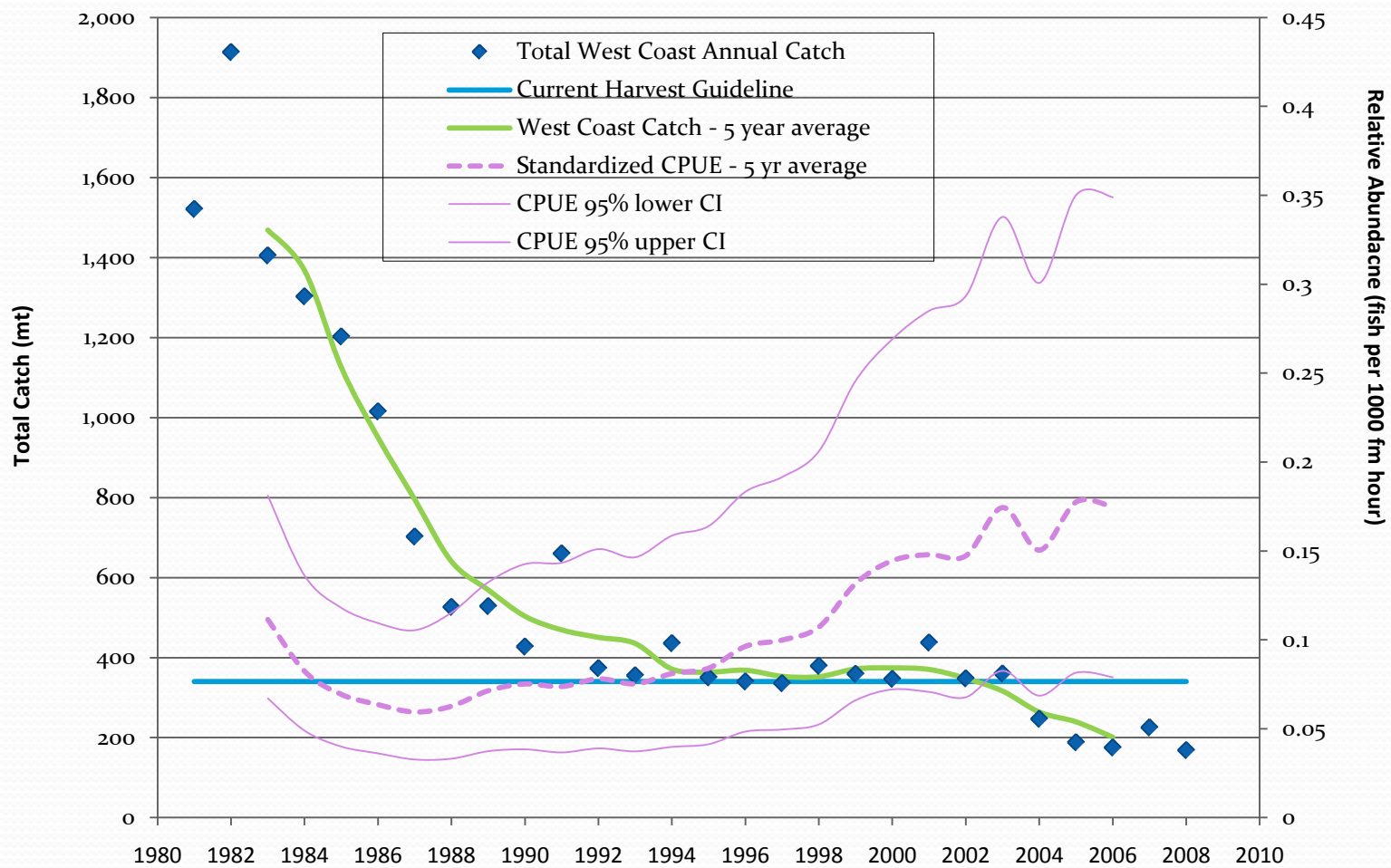
Framework for determining MSY, OY and SDCs for the MUS

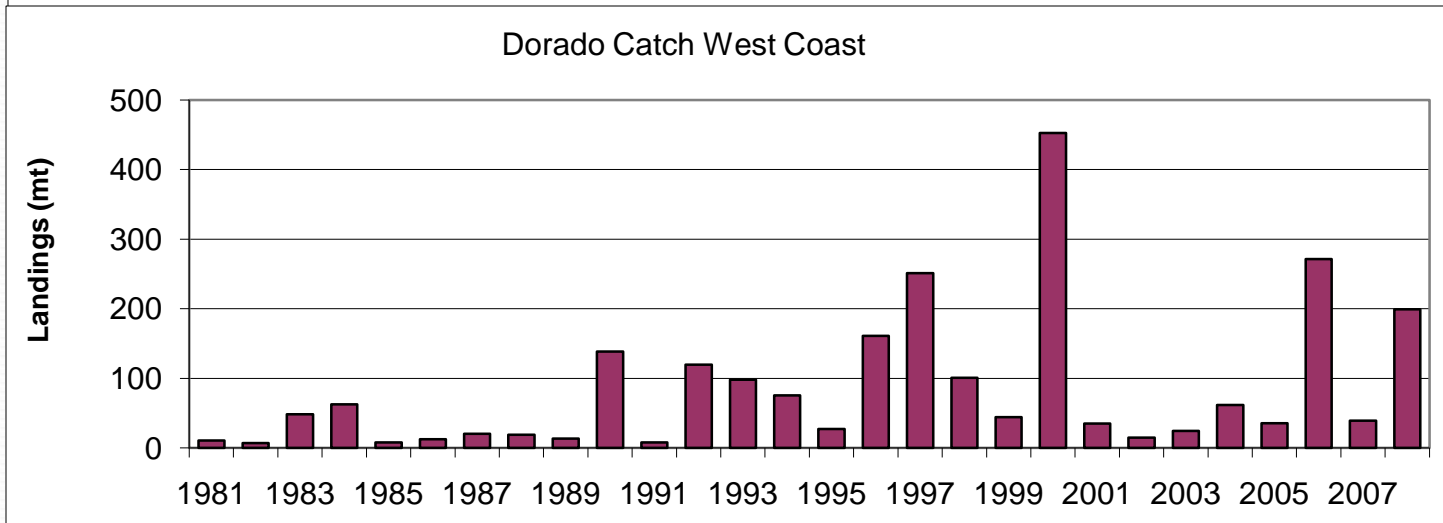
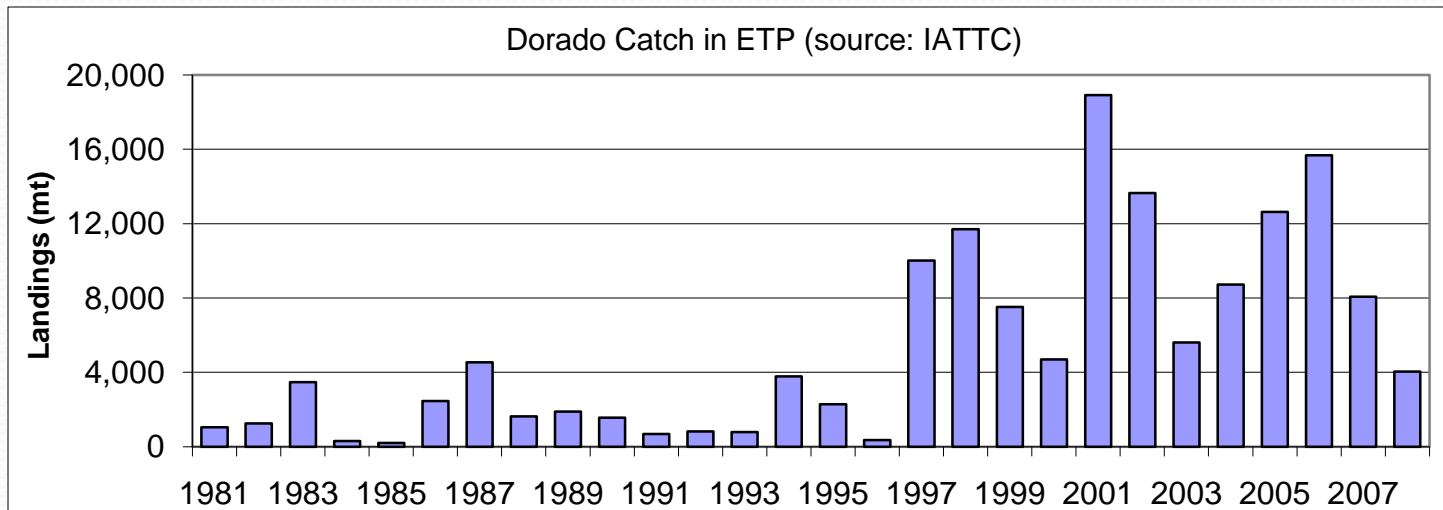


ACLs for stocks not subject to the international exception

- MUS for which the PFMC FMP is the lead and not subject to international exception require the Council to establish OFLs, ABCs, ACLs and AMs
- Use similar framework to that proposed for setting MSY and SDCs for MUS to establish an OFL
- OFL to be determined based on an assessment, on stockwide catch or regional catch
- If available, use additional information regarding a stock's productivity

Common Thresher Shark Catch and Relative Abundance





Summary of Alternatives

- **Alternative 1:** No Action alternative
- **Alternative 2:** Reclassify all monitored species as ECS; apply international exception to all MUS.
- **Alternative 3:** Add opah as a MUS; apply international exception to all MUS except common thresher shark and shortfin mako shark.
- **Alternative 4:** Add opah as a MUS and reclassify bigeye thresher shark and pelagic thresher shark as ECS; international exception would apply to all MUS except common thresher shark.
- **Alternative 5:** Defined by the Council (“Council-preferred”)

HMSMT Recommended Alternative

Classification of stocks

- 12 MUS (move bigeye and pelagic thresher to EC, add opah)
- 8 EC species (drop selected per rules in Section 1 of HMSMT Report)

Application of the international exception

Applied to all stocks

Primary FMP designation

Designation at stock level in consultation with WPFMC; flexibility to change based on new information

Specification of MSY and SDC

- MSY or MSY proxies estimated using methods consistent with data availability category
- MSY and SDCs reported in SAFE

Specification of OYs

Flexible framework to determine OY on stock basis based on criteria in Guidelines

Specification of ABCs

Not Specified

Specification of ACLs

Not Specified

Accountability measures

Measures and processes as described in Chapters 5 & 6 of the FMP

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON
FISHERY MANAGEMENT PLAN 2,
ANNUAL CATCH LIMITS AND ACCOUNTABILITY MEASURES

The Scientific and Statistical Committee (SSC) reviewed the final revisions to the Highly Migratory Species (HMS) Fishery Management Plan (FMP) Amendment 2 and options proposed to bring the plan into conformity with National Standard 1 (NS1) guidelines. Drs. Stephen Stohs and Suzanne Kohin of the Highly Migratory Species Management Team (HMSMT) presented a review of the steps taken to bring the plan into compliance and how they incorporated prior SSC advice into Amendment 2.

The HMSMT presented four alternatives for the management unit species (MUS) to be included in the FMP. The SSC finds that all three of the proposed alternatives for MUS are preferable to the status quo alternative. All of the potential species in the FMP qualify for international exemption for annual catch limits (ACLs) because they are managed by Regional Fishery Management Organizations (RFMOs), such as the Inter-American Tropical Tuna Commission and Western and Central Pacific Fisheries Commission. Many of these species (but not all) are also regularly assessed by RFMOs, and have acceptable estimates of the required status determination criteria (SDC).

The SSC notes that alternatives 3 and 4 include proposals for active Council management of shark species that will require computation of acceptable biological catch (ABCs) and ACLs. The two shark species under consideration are shortfin mako and common thresher sharks. The HMSMT presented catch and catch-per-unit-effort (CPUE) data and discussed approaches to calculate overfishing limits (OFLs) and ACLs catch limits for these species. The SSC concurs with the HMSMT that common thresher and shortfin mako may need additional attention because of local importance and low assessment priority by RFMOs.

Common thresher has a coastal distribution (U.S. and Mexico) and a time series of catch and effort data that may make it possible to estimate ABCs and OFLs. Shortfin mako does not have as extensive data and is more widely distributed, especially offshore, which may make it difficult to derive catch limit estimates for this species. The SSC was informed that catch and CPUE trends for common thresher shark may not reflect abundance due to bias induced by management changes over time. The SSC agreed with the HMSMT that if this species is considered for active management, CPUE data would need to be standardized to correct for potential biases. Further, model-based approaches for estimating OFLs and ABCs may be feasible for these species, and would be preferred over average catch methods.

The HMSMT is currently revising portions of the FMP and the SSC notes that there are instances of inconsistent language, particularly the heavy reliance on the annual optimum yield (OY) concept remaining from prior versions of the FMP. Revisions are needed to conform to terms used in NS1 guidelines, and annual catch limits should be recast in terms of OFLs, ABCs and ACLs.

CHANGES TO ROUTINE MANAGEMENT MEASURES FOR 2011-2012

Section 5.2 in the Fishery Management Plan (FMP) for U.S. West Coast Fisheries for Highly Migratory Species (HMS) describes the biennial management cycle. Under this process Council decision-making occurs at the June, September, and November Council meetings to establish or adjust harvest specifications and management measures for a two-year period beginning on April 1 of the following year—the start of the next fishing year. This agenda item commences the third biennial management cycle since FMP implementation, with any regulations proposed by the Council becoming effective on or after April 1, 2011. Such regulations continue in effect for at least two years unless subsequently modified through the Council process.

At this meeting, the Council will review any regulatory changes proposed by advisory bodies and management entities. According to the FMP, if the Council decides to proceed with any such changes the Council then directs the Highly Migratory Species Management Team to prepare a draft regulatory analysis for the measures identified by the Council. This analysis will support Council decision-making at the September meeting—when the Council adopts proposed actions for public review—and the November meeting—when the Council takes final action.

The Washington Department of Fish and Wildlife (WDFW) submitted a report proposing the placing of a per-trip limit on the Washington recreational albacore tuna fishery. In addition, as discussed in the situation summary for Agenda Item E.2, if the Council decides to adopt annual catch limits (ACLs) for any of the stocks managed under the HMS FMP, then the current agenda item would present an opportunity to initiate the process for determining what those ACLs should be.

Council Action:

Identify potential changes to harvest specifications and management measures for future consideration.

Reference Materials:

1. Agenda Item E.3.b, WDFW Report.

Agenda Order:

- a. Agenda Item Overview
- b. Reports and Comments of Advisory Bodies and Management Entities
- c. Public Comment
- d. **Council Action:** Initial Identification of Preliminary Management Changes for Further Consideration

Kit Dahl

PFMC
05/25/10

HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM REPORT ON
CHANGES TO ROUTINE MANAGEMENT MEASURES FOR 2011-2012

Washington Recreational Albacore Bag Limit

The Highly Migratory Species Management Team (HMSMT) discussed the Washington Department of Fish and Wildlife (WDFW) proposal to consider implementing a Federal per trip bag limit for albacore in the Washington recreational fishery.

The WDFW has proposed the concept of a bag limit for the recreational albacore fishery due to increases in recreational effort and catch, particularly by private vessels targeting albacore. The bag limit would apply to individual recreational anglers on a per trip basis, regardless of trip duration. This is proposed in lieu of a daily bag limit because albacore fishing trips from Washington ports typically average 1.5 days. WDFW will be conducting a series of public meetings to develop a range of alternatives for the Council to consider at its September meeting.

The HMSMT supports the concept and will review the alternatives when developed. In developing the alternatives, the HMSMT suggests using an approach similar to the analysis completed when developing alternatives for California albacore bag limits. The HMSMT also recommends that cross-boundary rule conflicts be avoided when developing the alternatives.

PFMC
06/12/10

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE REPORT ON
CHANGES TO ROUTINE MANAGEMENT MEASURES FOR
HIGHLY MIGRATORY SPECIES

The Washington Department of Fish and Wildlife (WDFW) would like to introduce the concept of placing a per trip limit on the Washington recreational albacore tuna fishery. The Pacific Fishery Management Council considered this in 2006 and decided to maintain status quo (i.e., no recreational bag limit). WDFW had committed to work with the Westport and Ilwaco charter associations to pursue legislation to limit the number charter licenses for albacore. We were successful in 2007; since then, a WDFW salmon charter license (which is limited in number) is required to take passengers for hire to fish for albacore tuna.

However, since 2006, there was a new albacore stock assessment, which indicated that overfishing may be occurring and, in response, commitments were made by the U.S. in international forums regarding limiting effort to current levels. While discussions are ongoing relative to limiting the commercial albacore fishery, we believe it would be prudent for the Council to again consider placing a per angler trip limit on the Washington recreational albacore fishery.

WDFW had an initial meeting with recreational representatives in Westport, and will have subsequent public meetings to develop a range of alternatives for Council consideration at its September 2010 meeting.

WESTPORT CHARTERBOAT ASSOCIATION
P. O. BOX 654 • WESTPORT, WASHINGTON 98595

June 3, 2010

Pacific Fishery Management Council
7700 NE Ambassador Place
Suite 101
Portland, OR 97220-1384
David Ortmann, Chairman

Re: Agenda Item E.3 "HMS FMP management measures"

Dear Chairman Ortmann and Council members,

The Westport Charterboat Association represents approximately 30 charter vessels operating out of Westport, Washington. About 20 of these vessels engage in multiple-day trips for Albacore Tuna annually, July through mid-October. Albacore fishing comprises a substantial portion of the annual incomes of most of those vessels.

The purpose of this letter is to inform the Council that although we are not at this time ready to take a position on the specifics of an Albacore trip limit proposal being made by WDFW, however, we are in support of the process itself and will work with the Department for the duration of the management cycle.

Respectfully yours,

Westport Charterboat Association Board of Directors
Steve Westrick, President

Cc Linda Buell, HMSAS
Doug Fricke, HMSAS