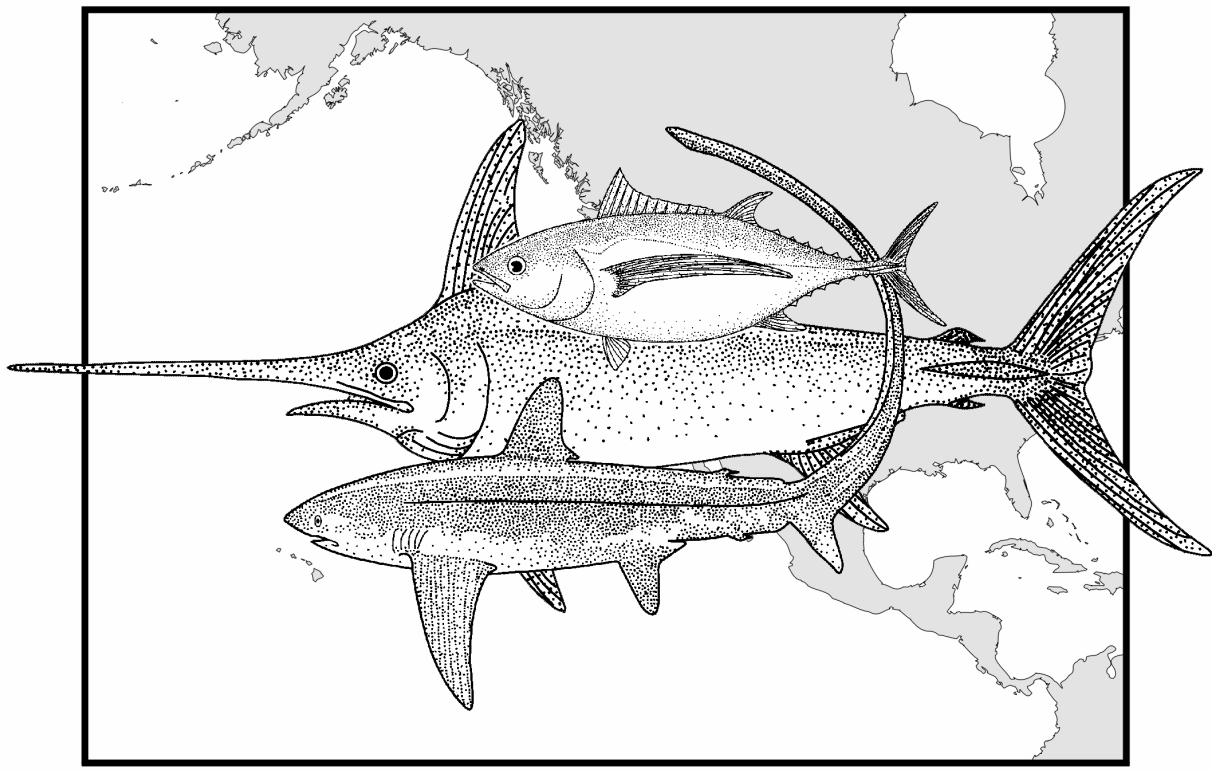
FISHERY MANAGEMENT PLAN FOR U.S. WEST COAST FISHERIES FOR HIGHLY MIGRATORY SPECIES



AMENDED THROUGH AMENDMENT 8

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Preface
Reorganization of the FMP under Amendment 1

The Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (HMS FMP) was originally published as a combined document with the Final Environmental Impact Statement (FEIS), required by the National Environmental Policy Act in August 2003. That document contains detailed descriptions of the biological and socioeconomic environment affected by implementation of the Plan and an analysis of alternatives for implementing different components of the Plan, along with discussion of critical issues, such as stock status, protected species interactions, bycatch, and the management regime in place prior to FMP implementation.

Amendment 1 made substantive changes to the FMP to address bigeye tuna overfishing and also reorganized the FMP to excerpt elements specific to the FMP, as adopted and approved, from the combined FMP/FEIS. Descriptive material in the original FMP/FEIS has been moved to a series of appendices. As part of Amendment 4 the bigeye rebuilding plan was moved to Appendix J of the FMP.

The original FMP/FEIS remains a publicly available document. The information and analysis contained therein are a valuable resource to support future management actions and amendments to this FMP.

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Frequently-Used Terms in Highly Migratory Species Management

Biomass

The estimated amount, by weight, of an HMS population. The term biomass means total biomass (age one and above) unless stated otherwise.

Bycatch

Fish that are harvested in a fishery, but are not sold or kept for personal use and includes economic discards and regulatory discards. Such term does not include fish released alive under a recreational catch-and-release fishery management program.

Commercial fishing

Fishing in which the fish harvested, either in whole or in part, are intended to enter commerce through sale, barter, or trade.

Council

The Pacific Fishery Management Council, including its HMSMT, HMSAS, SSC, and any other committee established by the Council.

Epipelagic

The vertical habitat within the upper water column from the surface to depths generally not exceeding approximately 200 m (0-109 fm), i.e. above the mesopelagic zone.

Essential fish habitat

Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

Exclusive economic zone

The zone established by Presidential Proclamation 5030, 3 CFR part 22, dated March 10, 1983, and is that area adjacent to the United States which, except where modified to accommodate international boundaries, encompasses all waters from the seaward boundary of each of the coastal states to a line on which each point is 200 nautical miles (370.40 km) from the baseline from which the territorial sea of the United States is measured. Off the West Coast states, the EEZ is the area between 3 and 200 miles offshore.

Far offshore

All waters beyond the EEZ of the United States and beyond any foreign nation's EEZ, to the extent that such EEZ is recognized by the United States.

Fishery Management Area

The EEZ off the coasts of Washington, Oregon, and California between 3 and 200 nautical miles offshore, bounded in the north by the Provisional International Boundary between the United States and Canada, and bounded in the south by the International Boundary between the United States and Mexico.

Fishing:

(1) the catching, taking, or harvesting of fish;

(2) the attempted catching, taking, or harvesting of fish;

(3) any other activity which can reasonably be expected to result in the catching, taking, or harvesting of fish; or

(4) any operations at sea in support of, or in preparation for, any activity described above.

This term does not include any activity by a vessel conducting authorized scientific research.

Gear conflict

Any incident at sea involving one or more fishing vessels: (1) in which one fishing vessel or its gear comes into contact with another vessel or the gear of another vessel; and (2) That results in the loss of, or damage to, a fishing vessel, fishing gear, or catch.

Harvest guideline

A numerical harvest level or range of levels that is a general objective and is not a quota. Attainment of a harvest guideline does not require a management response, but it does prompt review of the fishery.

Harvesting vessel

A vessel involved in the attempt or actual catching, taking, or harvesting of fish, or any activity that can reasonably be expected to result in the catching, taking, or harvesting of fish.

Highly Migratory Species

Species managed under the HMS FMP, specifically:

Tunas:
North Pacific Albacore (*Thunnus alalunga*)
Yellowfin tuna (*Thunnus albacares*)
Bigeye tuna (*Thunnus obesus*)
Skipjack tuna (*Katsuwonus pelamis*)
Pacific bluefin tuna (*Thunnus thynnus*)

Sharks:
Common thresher shark (*Alopias vulpinus*)
Shortfin mako shark (*Isurus oxyrinchus*)

Blue shark (*Prionace glauca*)

Billfish/Swordfish:
Striped marlin (*Tetrapturus audax*)
Swordfish (*Xiphias gladius*)

Other:
Dorado or Dolphinfish (*Coryphaena hippurus*)

Highly Migratory Species Advisory Subpanel (HMSAS)

The HMSAS is comprised of members of the fishing industry and public appointed by the Council to review proposed actions for managing the highly migratory species fisheries.

Highly Migratory Species Fishery Management Plan (HMS FMP)

The Fishery Management Plan for the Washington, Oregon, and California Highly Migratory Fisheries developed by the Pacific Fishery Management Council and approved by the Secretary of Commerce, and as it may be subsequently amended.

Highly Migratory Species Management Team (HMSMT)

The individuals appointed by the Council to review, analyze, and develop management measures for the HMS fishery.

High seas

All waters beyond the EEZ of the United States and beyond any foreign nation's EEZ, to the extent that such EEZ is recognized by the United States (Note, this differs from the definition in the Magnuson-Stevens Act (MSA) which defines high seas as waters beyond the territorial sea).

Incidental catch or incidental species

Species caught and retained while fishing for the primary purpose of catching a different species (Note, this differs from bycatch which are discarded at sea).

Incidental take

The take of marine mammals, sea turtles, or sea birds during fishing operations.

Local depletion

Occurs when localized catches are in excess of replacement from local and external sources of production (via net immigration). Local depletion can occur independently of the status of the overall stock. The local depletion of abundance can be greater than stock-wide decreases.

Maximum sustainable yield

The largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions.

Mesopelagic

The vertical habitat within the mid-depth ocean water column, from depths between 200 and 1000 m (109-547 fm) i.e., below the epipelagic zone.

Neritic

Inhabiting coastal waters primarily over the continental shelf generally over bottom depths equal to or less than 183 m (100 fm) deep.

Oceanic

Inhabiting the open sea, ranging beyond continental and insular shelves, beyond the neritic zone.

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 ecosystem; that is prescribed on the basis of the MSY from the fishery, as reduced by any relevant economic, social, or ecological factor and, in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the MSY in such fishery.

Overfished

Stock or stock complex whose size is sufficiently small that a change in management practices is required in order to achieve an appropriate level and rate of rebuilding.

Overfishing

To fish at a rate or level that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis.

Owner of a vessel or vessel owner

A person identified as the current owner in the Certificate of Documentation (CG-1270) issued by the U.S. Coast Guard for a documented vessel, or in a registration certificate issued by a state or the U.S. Coast Guard for an undocumented vessel.

Pan-Pacific

Throughout the entire Pacific region.

Pelagic

Inhabiting the water column as opposed to being associated with the sea floor; generally occurring anywhere from the surface to 1000 meters (547 fm). (See also epipelagic and mesopelagic)

Person

Any individual, corporation, partnership, association or other entity (whether or not organized or existing under the laws of any state), and any Federal, state, or local government, or any entity of any such government that is eligible to own a documented vessel under the terms of 46 U.S.C. 12102(a).

Processing or to process

The preparation or packaging of HMS to render the fish suitable for human consumption, pet food, industrial uses or long-term storage, but does not mean heading and gutting unless there is additional preparation.

Prohibited species

Those species and species groups whose retention is prohibited unless authorized by other applicable law (for example, to allow for examination by an authorized observer or to return tagged fish as specified by the tagging agency).

Quota

A specified numerical harvest objective for a single species of HMS, the attainment (or expected attainment) of which causes the complete closure of the fishery for that species.

Recreational fishing

Fishing with authorized recreational fishing gear for personal use only, and not for sale.

Regional Administrator

The Administrator, Southwest Region, NMFS, or designee.

Southern California Bight

The region of concave coastline off southern California between the headland at Point Conception and the U.S. Mexican border, and encompassing various islands, shallow banks, basins and troughs extending from the coast roughly 200 km offshore.

Sustainable Fisheries Division (SFD)

The Assistant Regional Administrator for Sustainable Fisheries, Southwest Region, NMFS, or a designee.

Take

The term is used with respect to protected species (marine mammals, sea turtles, and seabirds), is defined by the applicable statute (Marine Mammal Protection Act, Endangered Species Act, or the Migratory Bird Treaty Act), and its implementing regulations.

Acronyms

ABC	acceptable biological catch
ACL	annual catch limit
ACT	annual catch target
AIDCP	Agreement on the International Dolphin Conservation Program
AM	accountability measure
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
Council	Pacific Fishery Management Council
CPFV	commercial passenger fishing vessel
CPUE	catch per unit of effort
DAH	domestic annual harvest
DAP	domestic annual processing
DGN	drift gillnet
DGNLE	drift gillnet limited entry
DBSRA	Depletion Based Stock Reduction Analysis
DCAC	Depletion Corrected Average Catch
DSBG	Deep-set buoy gear
EA	environmental assessment
EC	ecosystem component
EEZ	exclusive economic zone
EFH	essential fish habitat
EFL	eye-to-fork length
EFP	exempted fishing permit
ESA	Endangered Species Act
F	fishing mortality
FAO	Food and Agriculture Organization of the United Nations
FEIS	final environmental impact statement
FL	fork length
FMP	fishery management plan
GIS	geographic information system
HAPC	habitat area of particular concern
HMS	highly migratory species
HMSAS	Highly Migratory Species Advisory Subpanel
HMS FMP	Highly Migratory Species Fishery Management Plan
HMSMT	Highly Migratory Species Management Team
HSFCA	High Seas Fishing Compliance Act
IATTC	Inter-American Tropical Tuna Commission
IDCPA	International Dolphin Conservation Program Act
IPOA	International Plan of Action
ISC	Interim Scientific Committee for Tuna and Tuna-like Species in the North Pacific
IUCN	World Conservation Union
JFL	jaw-to-fork length
LMSY	local maximum sustainable yield
LOS	Law of the Sea
M	natural mortality
MARPOL	International Convention for the Prevention of Pollution from Ships
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MBTA	Migratory Bird Treaty Act
MFMT	maximum fishing mortality threshold

MHLC	Multi-Lateral High Level Conference for Conservation and Management of Highly Migratory Species of the Central and Western Pacific
MMPA	Marine Mammal Protection Act
MSST	maximum stock size threshold
MSY	maximum sustainable yield
MUS	management unit species
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	national pollutant discharge elimination system
NPFMC	North Pacific Fishery Management Council
NPOA	National Plan of Action
NS	National Standards (of the Magnuson-Stevens Act)
OFL	overfishing limit
OY	optimum yield
PICES	North Pacific Marine Science Organization
PFMC	Pacific Fishery Management Council or Pacific Council
POCTRT	Pacific Offshore Cetacean Take Reduction Team
PSMFC	Pacific States Marine Fisheries Commission
RFMO	regional fishery management organization
SAFE	stock assessment and fishery evaluation
SCB	Southern California Bight
SDC	status determination criteria
SPC	Secretariat of the Pacific Community
SPR	spawning potential ratio
SSC	Scientific and Statistical Committee
SST	sea surface temperature
SWFSC	Southwest Fisheries Science Center (NMFS)
TALFF	total allowable level of foreign fishing
UNIA	United Nations Implementing Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks
USCG	U.S. Coast Guard
VMS	vessel monitoring system
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean
WPFMC	Western Pacific Fishery Management Council

1.0 Introduction

1.1 Purpose of This Document

This Fishery Management Plan (FMP) includes important species of tunas, billfish, and sharks which are harvested by West Coast highly migratory species (HMS) fisheries. A complete list of species in the management unit is provided in Chapter 3. The FMP is intended to ensure conservation and promote the achievement of optimum yield of HMS throughout their ranges, both within and beyond the U.S. Exclusive Economic Zone (EEZ), to the extent practicable. Effective conservation and management in most cases will require concerted U.S. and international action. The FMP may serve as a vehicle for fulfilling the West Coast portion of U.S. obligations under international conservation agreements, if domestic U.S. implementing legislation authorizes its use.

Currently, stocks covered under the HMS FMP fall under the National Standard 1 Guidelines (50CFR600.310(h)(1)(ii)) as internationally managed and therefore are exempt from MSA 303(a)(15), which requires specification of acceptable biological catch (ABC), annual catch limits (ACLs), annual catch targets (ACTs), and accountability measures (AMs) (see Chapter 4 for more information). The Council has a long-standing practice of advising the U.S. delegations to regional fishery management organizations (RFMOs) and implementing the recommendations and resolutions of the RFMOs. The Council will not normally set ABCs and ACLs for HMS Management Unit Species (MUS) stocks the Council has determined meet this criterion. However, application of this exception does not preclude the Council from setting an ACL (and identifying an associated ABC to facilitate setting the ACL) if circumstances warrant.

The FMP has been amended eight times. Amendment 1, approved in 2007, addresses overfishing of bigeye tuna, an MUS. Amendment 1 also reorganized the FMP, which in its prior form was combined with the Final Environmental Impact Statement evaluating the effects of its implementation. The reorganized FMP is a more concise document containing those elements required by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) describing the management program. Amendment 2, approved in 2011, made FMP provisions (principally in Chapters 3-5) consistent with the revised National Standard 1 Guidelines (50 CFR 600.310) adopted pursuant to the Magnuson- Stevens Fishery Conservation and Management Reauthorization Act of 2006. Amendment 3, adopted in 2015, added a suite of lower trophic level species to the FMP's list of ecosystem component (EC) species. Consistent with the objectives of the Council's FMPs and its Fishery Ecosystem Plan, Amendment 3 prohibits future development of directed commercial fisheries for the suite of EC species shared among all four FMPs ("Shared EC Species") until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem. Amendment 4, adopted in 2017, updated and streamlined portions of the FMP. Amendment 5, adopted in 2017, added a description of the Federal limited entry for the large mesh drift gillnet fishery operating off the coast of California. Amendment 6, adopted in 2023, authorized DSBG and created a limited entry program for the Southern California Bight (SCB). Amendment 7, also adopted in 2023, updated the description of the standardized Bycatch Reporting Methodology in the HMS FMP. Amendment 8, approved by the Council in 2023, updated EFH descriptions, fishing and non-fishing impacts, research and information needs, and other material related to the periodic EFH review completed in 2023.

This FMP is a "framework" plan, which includes some fixed elements and a process for implementing or changing regulations without amending the plan (flexible measures). Ongoing management of HMS, and the need to address new issues that arise, make it impossible to foresee and address all regulatory issues in the initial plan. Some framework adjustments can be implemented more quickly than plan amendments, allowing for more timely management response. Changes to any of the fixed elements in the plan require a plan amendment. The framework procedures are described in Chapter 5.

This document also specifies the initial management measures, which are implemented through Federal regulations affecting one or more fisheries for highly migratory species. They may be modified in the future, or new regulations may be implemented, using the framework adjustment procedures in the plan.

This FMP provides the vehicle to address issues of regional, national and international concern. The conservation community has raised concerns about the status of HMS, essential fish habitat, and bycatch of fish and capture of protected species in HMS fisheries. International and U.S. policies reflect these concerns. The 1995 Agreement on Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks provides that nations will cooperate in regional management bodies to establish and ensure compliance with conservation measures for HMS. The 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, adopted by the Food and Agriculture Organization of the United Nations (FAO), requires nations to maintain a registry of authorized vessels fishing on the high seas and ensure that such vessels are marked for identification and that they report sufficient information on their fishing activities. The High Seas Fishing Compliance Act is the domestic legislation enacted in 1995 to implement the FAO Agreement. The FAO also was the forum for the negotiation of a non-binding "Code of Responsible Conduct of Fisheries" which establishes principles for national and international fishery management. The final text of this code was negotiated in September 1995 and National Marine Fisheries Service (NMFS) has completed an implementation plan for the U.S. In 1999, the FAO adopted an International Plan of Action for the Conservation and Management of Sharks, which encourages nations to assess the status of shark stocks within their EEZs and those fished on the high seas. The U.S. has developed a National Plan of Action for conservation and management, and an FMP can help by focusing research and data collection efforts to support the National Plan. Within the U.S., the MSA requires councils to describe and identify essential fish habitat, minimize to the extent practicable adverse effects on habitat caused by fishing, and identify other actions to encourage conservation and enhancement of habitat. The Act requires that conservation and management measures, to the extent practicable, minimize bycatch and to the extent that bycatch cannot be avoided, minimize the mortality of such bycatch. Finally, the Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), and Migratory Bird Treaty Act (MBTA) provide protections for special resources. An FMP serves as a mechanism to address these critical issues in an open process and with the advice of all concerned.

This FMP provides a basis to increase investment in research, data collection, and stock assessments for Pacific HMS. Knowledge of stock status is quite limited for many species. Increased funding is necessary to make sure that overfishing is prevented and that sustainable yields are provided for the long term. An FMP also can help to make sure that fishery data gaps and inconsistencies for HMS are addressed.

This FMP provides a mechanism for collaboration with the other Pacific area councils to achieve more consistent management of fisheries which harvest stocks in common. In particular, this FMP could facilitate coordinating management of Hawaii-permitted pelagic longline vessels that make landings on the West Coast and West Coast-based pelagic longliners. Also, the councils and the NMFS science centers in both regions could work together in the preparation of stock assessment and fishery evaluation (SAFE) reports on a regular basis. The councils should receive consistent scientific advice concerning the status of stocks which vessels from the different council areas harvest in common.

1.2 How This Document is Organized

This FMP is organized in seven chapters and several appendices:

- Chapter 1 (this chapter) describes the rationale for HMS management and provides background information on the management context.
- Chapter 2 describes the management philosophy, recognizing the international nature of HMS

management, and lists the goals and objectives of the FMP.

- Chapter 3 describes the species in the management unit, including EC and prohibited species.
- Chapter 4 describes the framework for determining management thresholds, control rules for management, measures to prevent overfishing and rebuild overfished stocks, and the contents of the SAFE document.
- Chapter 5 describes the process for periodically modifying applicable harvest specifications and management measures. This FMP is a framework plan, meaning that most management measures may be changed through regulatory action without a need to amend the FMP.
- Chapter 6 describes general management measures they may be used to manage West Coast HMS fisheries. Many of these measures can be changed through the management framework described in Chapter 5, which allows management measures to be adopted and adjusted to address ongoing conservation concerns. This chapter also describes required specifications for any foreign fishing in the West Coast EEZ targeting HMS. Currently, HMS within the West Coast EEZ are considered fully utilized, and no foreign fishing is permitted.
- Chapter 7 describes essential fish habitat (EFH) for HMS, fishing and non-fishing effects on this EFH and mitigation measures that may be applied.

Material from the original combined FMP and final environmental impact statement (FEIS), published in August 2003 as part of the FMP implementation process, is available on the Council's website. This material does not describe the management framework or Council HMS management policies and procedures and only supplements the required and discretionary provisions of the FMP described in §303 of the MSA.

1.3 Application of Federal Authority

The management unit in this FMP consists of highly migratory species and their associated fisheries that occur within the West Coast EEZ and on the high seas with the catch being landed on the West Coast. This is consistent with National Standard 3 of the MSA, which requires that "To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination." It also is consistent with Section 102 of the Act which states that, "The United States shall cooperate directly or through appropriate international organizations with those nations involved in fisheries for highly migratory species with a view to ensuring conservation and shall promote the achievement of optimum yield of such species throughout their range, both within and beyond the exclusive economic zone."

This FMP applies to all U.S. vessels that fish for management unit species within the EEZ off California, Oregon, or Washington. This FMP also applies to U.S. vessels that fish for management unit species on the high seas (seaward of the EEZ) and land their fish in California, Oregon, or Washington. However, pelagic longline vessels that are registered for use under a Western Pacific longline limited entry permit and fish on the high seas and land their fish in California, Oregon, and Washington are also subject to regulations promulgated pursuant to the Western Pacific Fishery Management Council's (WPFMC) Pelagic Fishery Ecosystem Plan (50 CFR 665 Subpart F) whether they make landings on the West Coast or areas under the WPFMC's jurisdiction (Hawaii, American Samoa, Guam, Northern Mariana Islands).

The FMP does not apply to U.S. vessels that fish for management unit species on the high seas and land into a non-U.S. port. However, those vessels are subject to the requirements of the High Seas Fishing Compliance Act (HSFCA, 16 U.S.C. 5501 et seq.), including permit and reporting requirements.

U.S. vessels that fish for tuna and associated species in the eastern tropical Pacific Ocean also may be subject to management measures under the Tuna Conventions Act (16 U.S.C. 951 et seq.), which implemented the agreement that established the Inter-American Tropical Tuna Commission (IATTC).

There also is the potential for regulations to be promulgated in the future pursuant to other international arrangements such as the U.S.-Canada Albacore Treaty. Section 1.6 provides more information about the

relationship of fishery management under this FMP with fishery management under international arrangements.

The application of Federal authority as described above promotes the achievement of many of the objectives of the FMP (Section 2.2), including:

- Ensure or contribute to international cooperation in the long-term conservation and sustainable use of highly migratory fish stocks that are caught by West Coast-based fishers.
- Promote inter-regional collaboration in management of fisheries for species which occur in the Pacific Council's managed area and other Councils' areas.
- Promote effective monitoring and enforcement.
- Establish procedures to facilitate rapid implementation of future management actions, as necessary.
- Ensure that fisheries are in compliance with laws and regulations to conserve and restore species listed pursuant to the ESA, MMPA, and MBTA.

This application of authority is appropriate for the following reasons:

- To ensure consistent application of conservation and management measures applying to U.S. fishers on the high seas under other FMPs (e.g., Hawaii longline restrictions);
- To implement measures adopted by international management organizations in which the U.S. participates; if authorized by domestic U.S. implementing legislation;
- To promote consistent and coordinated data collection and management throughout the range of HMS; and
- To promote cooperative and reinforcing management of U.S. HMS fisheries throughout the Pacific such that vessels cannot avoid conservation requirements simply by relocating their operations.

1.4 Complexity of HMS Management

HMS management presents formidable challenges, particularly in the Pacific area. There are numerous species of tuna, billfish, oceanic sharks, and other species that occur throughout vast areas of the Pacific Ocean. Knowledge of stock distribution and status is limited. There is a moderate amount of information for the commercially important tunas, lesser amounts for swordfish and other billfishes, and scant information for sharks and other highly migratory fishes. Regular and comprehensive stock assessments are needed for certain species. These species are harvested by numerous coastal and distant-water fishing nations throughout the Pacific. The FEIS for this FMP (PFMC 2003, Chapter 2 Section 2.6) documents 36 nations harvesting HMS in the Pacific. United States fisheries harvest HMS in the EEZ of the U.S., in the EEZs of other nations, and on the high seas.

The two principal regional fishery management organizations (RFMOs) responsible for conservation in the Pacific are the IATTC and the WCPFC. The treaties establishing these RFMOs give them wide scope to manage and conserve HMS and other organisms caught in HMS fisheries, but principally they manage fisheries for tropical tunas (yellowfin, skipjack, and bigeye), temperate tunas (Pacific bluefin and North Pacific albacore), and certain billfish (swordfish) in their convention areas. Increasingly, RFMOs are adopting measures dealing with non-target species including sharks, billfish, and various non-fish species (sea turtles, marine mammals, seabirds). Member nations, including the U.S., are obligated to implement these measures for their national fisheries.

In 1981, the U.S. and Canada signed the Treaty on Pacific Coast Albacore Tuna Vessels and Port Privileges, which permits fishing vessels of each nation to fish for albacore tuna in waters of the other nation beyond 12 miles. U.S. albacore fishermen became concerned about the increased effort by Canadian vessels in U.S. waters and the lack of information on the amount of albacore taken by Canadian vessels, and in 2002 the U.S. and Canada have agreed to Treaty changes to resolve these issues. See section 1.6 for more information on this issue.

Within the U.S., HMS fishery management in the Pacific area is the responsibility of three regional fishery management councils, the WPFMC, North Pacific Fishery Management Council (NPFMC), and the Pacific Fishery Management Council (PFMC), and the adjacent states. Coordination among councils is desirable, because fishers from the different council areas are harvesting the same stocks of HMS, and in some cases are fishing in the same areas, but landing in different locations. Prior to implementation of the FMP, West Coast-based fisheries for HMS were mainly managed by the states of Washington, Oregon, and California, in concert with relevant Federal laws. These Federal statutes include the High Seas Fishing Compliance Act, Tuna Conventions Act, MMPA, MBTA, and ESA. The lack of a single FMP covering all U.S. vessels in the Pacific created a situation where U.S. vessels fishing on the high seas could be subject to different regulations, depending on where they started their trip or where they landed. This created inequities and frustrated achievement of management goals. In addition, foreign vessels and U.S. vessels were often subject to different regulations.

At the time of FMP implementation, HMS were harvested by five major West Coast-based commercial fisheries and various recreational fisheries. Commercial fisheries include surface hook–and–line, pelagic drift gillnet, pelagic longline, purse seine, and harpoon. These fisheries operate in the West Coast EEZ, in state waters, and on the high seas. Anglers pursue HMS from commercial passenger fishing vessels as well as private boats. There are sport fisheries targeting albacore, mixed tunas and dorado, billfish, and sharks. At the time of FMP adoption, there were no quotas or allocations among gear groups. User conflicts occurred, particularly in California, where state regulations prohibited longlining within 200 miles and controlled time and area for the drift gillnet fishery.

The recreational community, particularly in Southern California, has been concerned about the status and availability of tunas, billfish, and sharks and the impacts of the commercial fisheries on the recreational fisheries for these species. Anglers have opposed a longline fishery in the EEZ off California targeting tunas and swordfish. They are concerned about increased fishing mortality and commercial effort in general and increased bycatch of striped marlin, sharks, and other species.

In addition, a growing conservation community is concerned about the management of HMS, including sharks, which are particularly vulnerable to exploitation. This community also is concerned about increasing bycatch and bycatch mortality of HMS, other fish, and protected species. Longline and drift gillnet gears targeting HMS also capture protected species such as marine mammals, seabirds, and turtles.

1.5 History of the Fishery Management Plan

The PFMC was created in 1976 pursuant to the MSA, and began to develop FMPs for all of the major fisheries in its area of authority, including a draft FMP for billfish (including swordfish) and oceanic sharks (PFMC 1981). At that time, tunas were not included in the MSA and thus could not be managed by councils. The draft billfish FMP and several others were not adopted by the Council, because it became clear that Federal management of all West Coast fisheries was not necessary nor cost-effective. With limited resources, the Council decided to concentrate its efforts on those which required Federal management, such as salmon and groundfish. In the case of billfish and oceanic sharks, the Council concluded that effective stock conservation required international management efforts and that there was little the Council could accomplish. The fishery management problems were primarily in California, and

the State was addressing these problems.

In 1990, the Pacific States Marine Fisheries Commission (PSMFC) adopted an interjurisdictional FMP for thresher shark (PSMFC 1990) pursuant to the Interjurisdictional Fisheries Act, 16 U.S.C. 4101 et seq. The fishery for thresher shark began off California in 1977. Thresher sharks are targeted by drift gillnets in California along with swordfish and mako sharks. Incidental catches of thresher shark also occur in set gillnet fisheries. Drift gillnet fisheries for thresher shark began off the coasts of Oregon and Washington in 1983 under experimental fishing permits. This permit fishery in Oregon and Washington continued through 1988, when it was terminated due to bycatch of marine mammals and leatherback turtles, declining interest in the fishery, and concerns about the abundance of thresher shark. The PSMFC plan established a management panel composed of one member each from the states of Washington, Oregon, and California, which made management recommendations to the state agencies. The plan proposed an annual coastwide thresher shark harvest guideline of 750,000 pounds (340 mt dressed weight) and discouraged catches of juvenile sharks. No quotas were established, but the States did agree to this harvest guideline, which since 1991 has never been approached. No additional management actions were adopted subsequent to the PSMFC plan.

The WPFMC consulted the Pacific Council and NPFMC on a proposal they made to be the single council designated for HMS management. The Pacific Council opposed this approach. In July 1996, after receiving input from the affected councils and industry groups, NMFS concluded that single council designation was not necessary at that time to achieve effective management under the MSA or to support the Department of State in carrying out U.S. obligations. At the September 1997 Pacific Council meeting, the Southwest Region of NMFS (now part of the West Coast Region) presented a paper outlining options for Pacific Council involvement in HMS management. Options included no action, the WPFMC proposal, Secretarial management, a joint FMP, and a separate West Coast FMP. The paper summarized numerous activities at the national and international levels affecting HMS fisheries based on the West Coast. NMFS argued that the regional councils should play an active role in planning U.S. participation in future internationally managed HMS fisheries, and that the Pacific Council has unique capabilities for reaching the diverse fishing industry of the West Coast and involving them in the development of management policy. At that meeting, the Pacific Council established an HMS Policy Committee to address HMS issues and coordinate with the other councils. At the November 1997 meeting, the Pacific Council appointed a representative to attend meetings of the IATTC and negotiations underway to establish the WCPFC (the Multi-Lateral High Level Conference for Conservation and Management of Highly Migratory Species of the Central and Western Pacific (MHLC) process) and recommended establishment of an inter-council coordinating committee. In June 1998, the Pacific Council appointed members to a West Coast HMS Advisory Subpanel (HMSAS) composed of representatives of constituent groups.

In September 1998, representatives of the three Pacific area councils and NMFS met to discuss collaboration in HMS management. The NMFS Southwest Region (now the West Coast Region) presented a "straw man" approach for coordinated management, under which the existing WPFMC FMP would serve as the foundation for the comprehensive plan. The WPFMC did not support this collaborative approach. In June 1999, the Pacific Council voted to begin development of an FMP for HMS fisheries. The Pacific Council preferred that some form of comprehensive FMP be developed with all three councils involved and wrote the other two councils inviting their participation. While the Pacific Council recognized the difficulties associated with joint FMPs, it was optimistic that framework procedures and operational mechanisms could be developed to allow either independent or joint council actions as necessary and appropriate to achieve FMP objectives. While the NPFMC expressed support for a joint FMP, the WPFMC stated that it was not inclined to participate at that time. The Pacific Council decided to begin development of a separate FMP for West Coast-based HMS fisheries, holding open the alternative of a comprehensive FMP in the future should the WPFMC decide to participate.

In March 2001, NMFS wrote the Pacific Council to provide updated information on recent domestic HMS fishery management issues that had a bearing on the development of the FMP. As a result, the Pacific Council realized it needed to address immediate HMS fishery management regulation issues rather than to prepare only a framework plan.

1.6 Management Context

This FMP is intended to facilitate Council engagement with RFMOs, other international obligations that the U.S. is a party to, and domestic parties including the WPFMC and Indian Tribes.

1.6.1 International Entities and Agreements

The U.S. is a member of the IATTC, which was established in 1950. Pursuant to the Tuna Conventions Act of 1950, as amended, NMFS promulgates regulations to carry out IATTC recommendations that have been approved by the Department of State. In 2003, parties to the IATTC signed the Convention for the Strengthening of the Inter-American Tropical Tuna Commission Established by the 1949 Convention between the United States of America and the Republic of Costa Rica, commonly referred to "Antigua Convention." The Antigua Convention defines the Convention Area to consist of the waters bounded by the coast of the Americas, the 50° N. and 50° S. parallels, and the 150° W. meridian. Historically, the species under IATTC purview included all HMS in the Convention Area and the IATTC focused almost exclusively on tropical tuna species (and especially yellowfin tuna) taken in purse seine, baitboat, and longline fisheries. However, the Antigua Convention promotes an ecosystem approach, which opens the possibility of considering other organisms that interact with HMS fisheries. Stock assessments by IATTC scientific staff are conducted regularly on tropical tunas.

The multi-lateral Agreement on the International Dolphin Conservation Program (AIDCP) was signed in 1998. The AIDCP succeeded the 1992 Agreement on the Conservation of Dolphins (La Jolla Agreement) which was later enhanced in 1995 by the Declaration of Panama. The IATTC provides the secretariat for the AIDCP. The objectives of the AIDCP are: 1) to progressively reduce incidental dolphin mortalities in the tuna purse-seine fisheries in the Agreement Area to levels approaching zero, through the setting of annual limits; 2) with the goal of eliminating dolphin mortality in this fishery, to seek ecologically sound means of capturing large yellowfin tunas not in association with dolphins; and 3) to ensure the long-term sustainability of the tuna stocks in the Agreement Area, as well as that of the marine resources related to this fishery, taking into consideration the interrelationship among species in the ecosystem, with special emphasis on *inter alia*, avoiding, reducing, and minimizing bycatch and discards of juvenile tunas and non-target species. The International Dolphin Conservation Program Act (IDCPA), among other things, amended the MMPA to implement the Declaration of Panama, including the objectives of the International Dolphin Conservation Program, into U.S. law.

The Western and Central Pacific Fisheries Commission (WCPFC) was established by the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WPCO), which entered into force on April 19, 2004. While West Coast interests are only peripherally involved in management of major tuna fisheries in the WCPO, the WCPFC's Northern Committee makes recommendations for management of North Pacific swordfish, albacore, and bluefin, all of which are of interest to West Coast fisheries.

The International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean (ISC) The ISC evolved through a series of consultations between the U.S. and Japan with a twofold purpose: 1) to enhance scientific research and cooperation for conservation and rational utilization of the species of tuna and tuna-like fishes that inhabit the North Pacific Ocean during a part or all of their life cycle; and 2) to establish the scientific groundwork if, at some point in the future, it is decided to create a multilateral

regime for the conservation and rational utilization of these species in this region.

Current ISC membership can include coastal states/economies of the region and states/economies with vessels fishing for these species in the region. Observer participants include relevant intergovernmental fishery organizations, relevant intergovernmental marine science organizations, and other entities with vessels fishing for these species in the region. This membership includes Canada, Chinese-Taipei, Japan, Republic of Korea, Mexico, People's Republic of China, and the U.S. Non-voting members include the FAO, North Pacific Marine Science Organization (PICES), Pacific Community (SPC), and WCPFC; cooperating non-membership includes the IATTC. Nongovernment organizations participate at ISC meetings as observers. The ISC is the science provider for the WCPFC Northern Committee through a Memorandum of Understanding.

The ISC regularly assesses and analyzes fishery and other relevant information concerning northern stocks. It meets annually in a plenary session and develops conservation recommendations for northern stocks. It also formulates research proposals and coordinates research on northern stocks. Through a memorandum of understanding, the ISC is the science provider for the WCPFC Northern Committee.

The ISC operates through working groups composed of scientific experts from organizations affiliated with both member and non-member nations. This includes Albacore, Billfish, Pacific bluefin tuna, Shark, and Statistics working groups who meet periodically.

In 1981, the United States and Canada entered into the U.S.-Canada Albacore Treaty regarding fishing for albacore tuna in the eastern Pacific. Under the treaty, U.S. albacore vessels are authorized to fish for albacore in waters under the jurisdiction of Canada and more than 12 miles from the baseline from which the territorial sea is measured and to use certain port facilities in Canada. Albacore may be landed in that port for sale, export, or transshipment back to the U.S. Similarly, Canadian vessels are authorized to fish in waters under U.S. jurisdiction more than 12 miles from the baseline from which the territorial sea is measured and to use certain U.S. ports to obtain supplies and other services. Albacore may be landed in those ports for sale, export, or transshipment back to Canada. The parties annually exchange lists of vessels that may fish in the other nation's zone, though these lists are not binding (that is, a vessel on a list is not obliged to fish in the other nation's waters). Logbooks of catch and effort are to be maintained, and the nations are to exchange data on the fisheries. The agreement was amended in 2002 and codified by law in April 2004.

United Nations Agreements: The United Nations Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (known as the UNIA or Fish Stocks Agreement) under the Law of the Sea Treaty interprets the duty of nations to cooperate in conservation and management of fishery resources. Measures adopted in the EEZ of a coastal state and by any international arrangement for HMS in the region should be compatible. The Agreement was adopted in 1995 by the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks and the requirements for the entry into force of the Agreement were met on 11 November 2001. A coastal state should not adopt measures that would undermine the effectiveness of regional measures to achieve conservation of the stocks. In the case of the Pacific Council, for example, while the UNIA does not dictate how management of HMS fisheries in the U.S. EEZ should be carried out, the UNIA requires that EEZ management be compatible with management under any international arrangement (such as the IATTC, for species that are under IATTC conservation measures).

The U.S. also has participated in deliberations and decisions of the FAO that have implications for HMS management under the FMP. The Committee on Fisheries of FAO has agreed to international plans of action dealing on a variety of conservation issues. The international plans of action (IPOAs) are voluntary instruments elaborated within the framework of the Code of Conduct for Responsible Fisheries. They apply

to all States and entities and to all fishers. Four IPOAs have been developed to date: International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds), for the Conservation and Management of Sharks (IPOA-Sharks) to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU), and for the Management of Fishing Capacity (IPOA-Capacity). In turn, the U. S. has developed national plans of action (NPOAs) to carry out the objectives of the international plans of action. The FMP can provide a mechanism for considering and implementing specific actions that support these national plans of action. In fact, the seabird avoidance measures implemented through this FMP are consistent with the seabird NPOA.

1.6.2 High Seas Fishing Compliance Act

The International Conservation and Management Measures by Fishing Vessels on the High Seas was adopted by the FAO in November 1993. It establishes the responsibility of each nation for the actions of vessels fishing under that nation's flag on the high seas. The agreement requires that vessels have specific authorization from their flag nation to participate in high seas fishing. Further, nations must maintain a registry of authorized vessels, ensure that those vessels are marked for identification according to international standards, and ensure that they report sufficient information on their fishing activities. The High Seas Fishing Compliance Act (HSFCA) is the domestic legislation enacted in 1995 to provide authority to the Secretary of Commerce to implement this FAO Agreement.

1.6.3 Western Pacific Pelagics FMP / Fishery Ecosystem Plan

The initial Western Pacific FMP was adopted in 1987 and included initial estimates of MSY for the stocks and set OY for these fisheries in the EEZ. The regulations applied to domestic and foreign fishing for billfishes, wahoo, mahi-mahi, and oceanic sharks. Among the original regulations were a prohibition on drift gillnet fishing within the region's EEZ and provisions for experimental fishing permits. The FMP prohibited foreign longline vessels from fishing within certain areas of the EEZ. Additional areas up to 150 nm from Guam and the main Hawaiian Islands and up to 100 nm from the Northwestern Hawaiian Islands may be closed to foreign longline vessels if their fishing activity is causing adverse impacts on domestic fishery performance, excessive waste of catch, excessive enforcement costs, or adverse effects on stocks. No legal foreign longline fishing has occurred under the FMP. The WPFMC substantially reorganized its existing FMPs to create regional fishery ecosystem plans. One of these, which replaced the Pelagics FMP, is the Pelagic Fishery Ecosystem Plan, implemented in 2009.

1.6.4 Relationship to Existing Fishery Management

An aspiration of the Pacific Council in adopting this FMP is to provide a basis for harmonizing management of fisheries by U.S. vessels that fish in both the Western and Eastern Pacific through engagement with the international entities and agreements described in Section 1.6.1. The FMP also can be a mechanism for coordinating HMS management responsibilities stemming from state laws and regulations, the MMPA, and the ESA. Such coordination could also provide an open and continuing process for considering the possible need for changes in those regulations as conditions change or new information becomes available.

1.6.5 Treaty Indian Fishing Rights

Legal Considerations

Treaties between the United States and numerous Pacific Northwest Indian tribes reserve to these tribes the right of taking fish at usual and accustomed grounds and stations ("u&a grounds") in common with all citizens of the United States. See U.S. v. Washington, 384 F. Supp. 312, 349-350 (W.D. Wash. 1974).

The NMFS recognizes four tribes as having u&a grounds in the marine areas managed by this FMP: the Makah, Hoh, and Quileute tribes, and the Quinault Indian Nation. The Makah Tribe is a party to the Treaty of Neah Bay, Jan. 31, 1855, 12 Stat. 939. See 384 F. Supp. at 349, 363. The Hoh and Quileute tribes and the Quinault Indian Nation are successors in interest to tribes that signed the Treaty with the Quinault, et al. (Treaty of Olympia), July 1, 1855, 12 Stat. 971. See 384 F. Supp. at 349, 359 (Hoh), 371 (Quileute), 374 (Quinault). The tribes' u&a grounds do not vary by species of fish. U.S. v. Washington, 157 F. 3d 630, 645 (9th Cir. 1998).

The treaty fishing right is generally described as the opportunity to take a fair share of the fish, which is interpreted as up to 50 percent of the harvestable surplus of all species of fish and shellfish that pass through the tribes' u&a grounds. Washington v. Washington State Commercial Passenger Fishing Vessel Association, 443 U.S. 658, 685-687 (1979) (salmon); U.S. v. Washington, 459 F. Supp. 1020, 1065 (1978) (herring); Makah v. Brown, No. C85-160R, and U.S. v. Washington, Civil No. 9213 - Phase I, Subproceeding No. 92-1 (W.D. Wash., Order on Five Motions Relating to Treaty Halibut Fishing, at 6, Dec. 29, 1993) (halibut); U.S. v. Washington, 873 F. Supp. 1422, 1445 and n. 30 (W.D. Wash. 1994), aff'd in part and rev'd in part, 157 F. 3d 630, 651-652 (9th Cir. 1998), cert. denied, 119 S.Ct. 1376 (1999) (shellfish); U.S. v. Washington, Subproceeding 96-2 (Order Granting Makah's Motion for Summary Judgment, etc. at 4, November 5, 1996) (Pacific whiting). The court applied the conservation necessity principle to Federal determinations of harvestable surplus in Makah v. Brown, No. C85-160R/ United States v. Washington, Civil No. 9213 - Phase I, Subproceeding No. 92-1, Order on Five Motions Relating to Treaty Halibut Fishing, at 6-7, (W.D. Wash. Dec. 29, 1993); Midwater Trawlers Co-op. v. Department of Commerce, 282 F.3d 710, 718-719 (9th Cir. 2002). U.S. v. Washington, 873 F.Supp. 1422, 1430, aff'd 157 F. 3d 630, 644-645 (9th Cir. 1998), cert. denied, 119 S.Ct. 1376; Midwater Trawlers Co-op. v. Department of Commerce, 282 F.3d 710, 717 (9th Cir. 2002)

U.S. v. Washington, 384 F.Supp. 312, 364-365 (W.D. Wash. 1974).

NMFS recognizes the areas set forth in the regulations cited below as marine u&a grounds of the four Washington coastal tribes. The Makah u&a grounds were adjudicated in U.S. v. Washington, 626 F.Supp. 1405, 1466 (W.D. Wash. 1985), aff'd 730 F.2d 1314 (9th Cir. 1984); see also Makah Indian Tribe v. Verity, 910 F.2d 555, 556 (9th Cir. 1990); Midwater Trawlers Co-op. v. Department of Commerce, 282 F.3d 710, 718 (9th Cir. 2002). The u&a grounds of the Quileute and Quinault tribes were adjudicated in United States v. Washington, 2:09-sp-00001-RSM, (W.D. Wash. Sept. 3, 2015). The u&a grounds of the Hoh tribe have been recognized administratively by NMFS. See, e.g., 67 Fed. Reg. 30616, 30624 (May 7, 2002) (u&a grounds for salmon); 50 C.F.R. 660.324(c) (u&a grounds for groundfish); 50 C.F.R. 300.64(i) (u&a grounds for halibut). The u&a grounds recognized by NMFS may be revised as ordered by a Federal court.

The legal principles described above support the conclusion that treaty Indian fishing rights apply to HMS that pass through the coastal tribes' ocean u&a grounds. The quantity of this right has not yet been determined or adjudicated, although it is possible that specific treaty Indian allocations may be necessary in the future. To anticipate this eventuality, and to establish an orderly process for implementing treaty fisheries, this FMP authorizes adoption of procedures to accommodate treaty fishing rights in the implementing regulations.

2.0 Management Philosophy

2.1 Management Philosophy and Approach

Highly migratory species are wide-ranging, likely to be fished by multi-national fleets beyond U.S. waters, have productivity potentials ranging from very low to very high, and can seldom be directly surveyed for abundance. Their management usually requires international cooperation, for which there must be active U.S. participation at international forums. The management should be precautionary and multidimensional in approach.

Precautionary management should be the guiding theme in managing HMS species. It is called for by National Standard 1 of the MSA, FAO's Code of Conduct for Responsible Fisheries, the United Nations' "UNIA" or "Highly Migratory Species and Straddling Stocks" Agreement, and regional agreements, such as MHLC. Precautionary management is proactive, i.e., it seeks to minimize the likelihood of attaining the overfished condition by accounting for uncertainties and by establishing preventive procedures. Other aspects of this concept are discussed in Sections 4.1–4.5. Precautionary management of HMS species should include:

1. Consideration of the biological limitations of species. Due to different and unique life histories, HMS species have differing vulnerabilities to exploitation that require differing management. For example, most tunas are wide-ranging and productive while many sharks, with delayed sexual maturity and low fecundity, are not. Precautionary quotas may be more appropriate for vulnerable species, as maintenance of healthy levels of their reproductive potential is more the concern than is maximization of yields.
2. Control of the growth rate of fisheries. Rapidly expanding fisheries are likely to overshoot management goals, both biological and economic. Uncontrolled growth can produce excess fishing capacity that is difficult to withdraw. The lower the productivity of a species, the greater the need for this control.

Multidimensional management, within the context of the above two precautionary concepts, refers to methods that are complementary and which are often applied in combination in actual management. There are at least four methods:

1. Management by Catch and Effort Limits. The limits for this traditional approach should be determined with express consideration of species' life histories and productivity potentials and applied within the context of control rules (Section 4.1.2). These limitations should also extend to controlling the rate of fishery expansions (#2 above).
2. Management by protecting reproductive potential. Season and/or area closures should be considered for times and places occupied by significant portions of populations that are reproducing females, especially for low-productivity species.
3. Management by Limiting Access. To prevent rapid increase in fishing effort, excess fishing capacity, and boom-bust exploitation, and to promote stable and long-term fishing investment and thereby incentives for resource conservation, limited entry systems should be considered.
4. Management by Limiting Bycatch. Under the MSA, bycatch must be minimized and avoided to the extent practicable. Increased utilization to reduce bycatch discards can be promoted, but with the productivity potentials of the species involved considered. Incentives should be provided to promote gears with low bycatch.

Whatever the method or approach, specific management actions in this plan are to be in accordance with a control rule (Sections 4.1.2), which focuses on biomass relative to that for MSY (the B/B_{MSY} ratio) and on biomass relative to MSST (the B/B_{MSST} ratio - for the overfished condition). Thus, in managing to maintain MSY, specific corrective action is not mandatory unless biomass giving B_{MSST}, or the overfished ratio, is reached. If MSY is exceeded, managers must bear in mind that MSY and other reference points refer to

the equilibrium or long- term average stock condition, and that any year's catch can be above or below the target level depending on variations in stock availability or stock size as affected by recruitment. It is for this reason that the overfished state is specified as biomass reduced to B_{MSST} (not B_{MSY}), and not simply catch being greater than MSY. Moreover, when MSY is a proxy estimate, managers need to recognize its interim nature. There will be uncertainty in all cases, so quotas or harvest guidelines must be developed with care.

2.2 Management Goals and Objectives

The preceding approaches for managing the management unit species of this plan are to be implemented by specific management actions that are described in Chapter 6. The general goals and objectives of this FMP are listed below to provide context for these actions. They are not listed in order of priority:

1. Promote and actively contribute to international efforts for the long-term conservation and sustainable use of highly migratory species fisheries that are utilized by West Coast-based fishers, while recognizing these fishery resources contribute to the food supply, economy, and health of the nation.
2. Provide a long-term, stable supply of high-quality, locally caught fish to the public.
3. Minimize economic waste and adverse impacts on fishing communities to the extent practicable when adopting conservation and management measures.
4. Provide viable and diverse commercial fisheries and recreational fishing opportunity for highly migratory species based in ports in the area of the Pacific Council's jurisdiction, and give due consideration for traditional participants in the fisheries.
5. Implement harvest strategies which achieve optimum yield for long-term sustainable harvest levels.
6. Provide foundation to support the State Department in cooperative international management of highly migratory species fisheries.
7. Promote inter-regional collaboration in management of fisheries for species which occur in the Pacific Council's managed area and other Councils' areas.
8. Minimize inconsistencies among Federal and state regulations for highly migratory species fisheries.
9. Minimize bycatch and avoid discard and implement measures to adequately account for total bycatch and discard mortalities.
10. Prevent overfishing and rebuild overfished stocks, working with international organizations as necessary.
11. Acquire biological information and develop a long-term research program.
12. Promote effective monitoring and enforcement.
13. Minimize gear conflicts.
14. Maintain, restore, or enhance the current quantity and productive capacity of habitats to increase fishery productivity for the benefit of the resource and commercial and recreational fisheries for highly migratory species.
15. Establish procedures to facilitate rapid implementation of future management actions, as necessary.
16. Promote outreach and education efforts to inform the general public about how West Coast HMS fisheries are managed and the importance of these fisheries to fishers, local fishing communities, and consumers.
17. Manage the fisheries to prevent adverse effects on any protected species covered by MMPA and MBTA and promote the recovery of any species listed under the ESA to the extent practicable.

18. Allocate harvest fairly and equitably among commercial, recreational, and charter fisheries for HMS, if allocation becomes necessary.

2.3 Unilateral Management, Harvest Guidelines and Quotas, and Overfishing

2.3.1 Unilateral Management

For most MUS in this FMP, U.S. harvest by West Coast-based vessels represents only a small fraction of total fishing mortality out of the overall range of the species, and any unilateral action, such as a reduction in the U.S. West Coast harvest or effort, would not likely have a significant biological effect on the stock. However, as discussed in the section on overfishing (see Section 4.4), the MSA requires unilateral action when the Secretary of Commerce (Secretary) determines a stock is subject to overfishing or overfished, and the Secretary has not determined that these conditions are due to excessive international fishing pressure. Furthermore, unilateral management of U.S. vessels may also be appropriate under some circumstances apart from overfishing. This is particularly true for vulnerable stocks, defined, in part, as stocks that will require more than ten years to recover from depletion (see Section 4.3). Circumstances where unilateral management may be appropriate, not necessarily because a stock is overfished, include, but are not limited to, the following situations:

1. Where a stock is regionally distributed, and a significant portion of the regional distribution is subject to harvest by U.S. West Coast fisheries;
2. Where the ESA, the MMPA, or the MBTA mandate that a species be protected in both United States' and international waters; or
3. Where unilateral action is needed to address domestic issues such as local depletion, protection for essential fish habitat in United States' waters, bycatch reduction, catch allocations, or conflicts among user groups.

2.3.2 Precautionary harvest guidelines and quotas

A quota is a specified numerical harvest objective, the attainment (or expected attainment) of which causes closure of the fishery for that species or species group. A harvest guideline is a specified numerical harvest objective that is not a quota. Attainment of a harvest guideline does not require closure of a fishery.

No U.S. harvest quotas were recommended at the time of FMP adoption. A U.S. harvest guideline (to replace the current PSMFC guideline) is initially recommended for the common thresher shark, since thresher shark is regionally distributed, its population occupies a significant portion of the EEZ every year, and it is harvested by West Coast-based U.S. fishing vessels. A harvest guideline is also recommended for the shortfin mako shark because of the stock's vulnerability, and the possible importance of the U.S. West Coast EEZ as nursery habitat. The recommended harvest guidelines for these sharks are: 340 mt (round weight) for common thresher shark and 150 mt (round weight) for shortfin mako shark.

2.2.3 Overfishing

Sections 304(e) and 304(i) of the MSA, 16 U.S.C. §1854(e) and (i), govern the response to overfishing and rebuilding of overfished stocks. At any time, if the Secretary determines that a fishery is overfished or approaching a condition of being overfished, the Secretary must immediately notify the Council and request that actions be taken to end overfishing and rebuild the affected stock(s). For those fisheries managed under an FMP or an international agreement, the status is determined using the criteria for overfishing specified in the FMP or the agreement. If the Secretary determines that overfishing is due to excessive international fishing pressure, the requirements of MSA Section 304(i) apply; otherwise, the requirements of Section 304(e) apply. Once an HMS stock is determined to be overfished and subject to the requirements of Section

304(e), the Council must prepare, within two years, an FMP amendment or proposed regulations to end overfishing and rebuild the affected stock (see Section 4.4). The Council's rebuilding plan will reflect traditional participation in the fishery, relative to other nations, by fishers of the United States, consistent with Section 304(e)(4)(C) of the Magnuson-Stevens Act, 16 U.S.C. §1854(e)(4)(C).

Because of the widespread distribution of HMS stocks outside the U.S. EEZ, it is recognized that unilateral action by the U.S. will likely provide little or no biological benefit to most of the stock(s) managed under this FMP, and that concerted international efforts will be required in order to achieve rebuilding. Therefore, the Secretary may invoke the provisions of MSA Section 304(i) (also 50 CFR 600.310(k)) in cases where a fishery is overfished or approaching a condition of being overfished due to excessive international fishing pressure. Under Section 304(i) within one year after the Secretary's determination, the Council shall develop recommendations for domestic regulations to address the relative impact of U.S. fishing vessels and provide to Congress and the Secretary of State recommendations for international actions that will end overfishing and rebuild affected stocks. It is expected that the Department of State and U.S. delegation, in coordination with NMFS, will consider the Council's recommendation in developing U.S. positions for presentation to the international body, and will keep the Council informed of actions by the international body to end or prevent overfishing. These actions may be taken into account by the Council when developing its recommendation to NMFS for any additional U.S. regulations necessary to address the relative impact of U.S. fishing vessels on HMS stocks subject to the provisions of Section 304(i).

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 methods for determining MSY, OY and SDC;[1]
- amendments to any procedures required by the FMP;
- implementation of limited entry programs. 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).

[1] Numerical estimates of these reference points may be periodically revised, based on the best scientific information, without requiring an FMP amendment. Any such revised determinations, after approval by NMFS, will be published in the annual SAFE report (see Section 4.6).

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, 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, the incidental catch of at least fifty other fish species 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 MSA.

EC species are discussed in Section 3.3. Any of these species could be added to the management unit through a plan amendment, if warranted by changes in west coast HMS fisheries.

Species designated by this FMP as prohibited because of their 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.

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 6.3.3.

3.1 Management Unit Species (Actively Managed)

3.1.1 Background

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. 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
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
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 MSA defines HMS 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), and cetaceans (family Physeteridae; family Balaenopteridae; family Balaenidae; family Eschrichtiidae; family Monodontidae; family Ziphiidae; family Delphinidae).

Species in the management unit of the Pelagic Fisheries FEP adopted by the WPFMC are mahi-mahi/dolphinfish (*Coryphaena spp*.); marlin and spearfish (*Makaira spp.*, Tetrapturus spp.); oceanic sharks (family Alopiidae, family Carcharhinidae, family Lamnidae, family Sphyrnidae); sailfish (*Istiophorus spp.*); swordfish (*Xiphias sp.*); tuna and related spp. (*Allothunnus sp.*, *Auxis spp*., *Euthynnus spp., Gymnosarda sp., Katsuwonus sp., Scomber spp., Thunnus spp.*); wahoo (*Acanthocybium sp.*); moonfish/opah (*Lampris sp.*); pomfret (family Bramidae); oilfish/walu (family Gempylidae).

3.1.2 Management Unit Species

The HMS FMP management unit includes:

Tunas:

North Pacific albacore (*Thunnus alalunga*)

yellowfin tuna (*Thunnus albacares*)

bigeye tuna (*Thunnus obesus*)

skipjack tuna (*Katsuwonus pelamis*)

Pacific bluefin tuna (*Thunnus orientalis*)

Sharks:

common thresher shark (*Alopias vulpinus*)

shortfin mako or bonito shark (*Isurus oxyrinchus*)

blue shark (*Prionace glauca*)

Billfish/Swordfish:

striped marlin (*Tetrapturus audax*)

swordfish (*Xiphias gladius*)

Other:

dorado or dolphinfish (*Coryphaena hippurus*)

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. Dorado is an important component of the suite of species targeted by recreational fishers, especially in southern California.

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., dorado).

3.2 Determining the Primary FMP for Managed Stocks

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 Pacific Council 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.

3.3 Species Included in the FMP as Ecosystem Component Species

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.

EC species and prohibited species (see below and Section 6.3.4) are:

Bigeye thresher shark *(Alopias superciliosus*)
Common mola, *Mola mola*

Escolar, *Lepidocybium flavobrunneum*
Lancetfishes, Alepisauridae
Louvar, *Luvarus imperialis*
Pelagic sting ray, *Dasyetis violacea*
Pelagic thresher shark (*Alopias pelagicus*)
Wahoo, *Acathocybium solandri*

Bigeye and pelagic thresher sharks are landed by the drift gillnet fishery but in small amounts compared to common thresher and mako sharks. Originally included in the FMP as managed species, largely because of concern that they have poor resilience to fishing, they were re-designated EC species under FMP Amendment 2, because of the low number caught in West Coast commercial and recreational fisheries.

EC species shared between all four Council FMPs, including the HMS FMP are:

Round herring, *Etrumeus teres*
Thread herring, *Opisthonema libertate, O. medirastre*
Mesopelagic fishes of the families *Myctophidae*, *Bathylagidae*, *Paralepididae*, and *Gonostomatidae*
Pacific sand lance, *Ammodytes hexapterus*
Pacific saury, *Cololabis saira* Silversides, *Atherinopsidae* Smelts of the family *Osmeridae*
Pelagic squids (families: *Cranchiidae, Gonatidae, Histioteuthidae, Octopoteuthidae, Ommastrephidae* except Humboldt squid (*Dosidicus gigas*), *Onychoteuthidae*, and *Thysanoteuthidae*)

No directed commercial fisheries may begin for any shared EC species until and unless the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

As outlined in Section 4.6 of this FMP, each year the HMS Management Team (HMSMT) 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 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. The SAFE will track and report on significant trends or changes in 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.

3.4 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 FMP, 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 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*)

4.0 Preventing Overfishing and Achieving Optimum Yield

This chapter describes the framework for controlling catch from HMS fisheries to achieve the overall objective of optimum yield. As discussed throughout, domestic catches are often only a small fraction of the stock-wide harvest. (The HMS SAFE document periodically reports the fraction of stock-wide catch represented by West Coast fisheries). Most HMS MUS support large and widespread international fisheries that are best managed cooperatively with other nations through the two Pacific tuna RFMOs.

Some HMS MUS, such as sharks, possess life histories characterized by low productivity. Not only are they more easily overfished, but recovery takes longer, i.e., the species are less resilient to overfishing. Some of these species have a localized distribution and life stage needs, concentrated within the U.S. West Coast EEZ, thus supporting smaller fisheries that tend to be more regional than international. Their management should be more conservative, and may require more proactive and targeted regional leadership for species with localized distributions.

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 MSA, as amended by the Sustainable Fisheries Act of 1996 and Magnuson-Stevens Conservation and Management 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 MSA 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 MSA and published in the Code of Federal Regulations (50 CFR 600.310) were developed to assist in implementing the MSA.

4.1 Reference Points Including Maximum Sustainable Yield, Optimum Yield, and Status Determination Criteria

Reference points are guideposts for managing exploited stocks based on stock biomass and the amount of catch (and thus fishing mortality) that is occurring. They are used to determine if overfishing is occurring or a stock is overfished. In either case, control rules or other predetermined procedures are triggered to reduce fishing mortality. However, for most HMS MUS stock rebuilding will be ineffective without international cooperation. For such species, domestic regulations must be predicated on the relative impact of West Coast fisheries.

4.1.1 Reference Points Required for All Stocks

Section 303(a)(15) of the MSA applies "unless otherwise provided for under an international agreement in which the United States participates" (P.L. 109-479 104(b)(1)). This exception applies to stocks or stock complexes subject to management under an international agreement, which is defined as "any bilateral or multilateral treaty, convention, or agreement which relates to fishing and to which the United States is a party" (see MSA section 3(24)). Maximum sustainable yield, optimum yield, and status determination criteria would still need to be specified for stocks subject to this exception.

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. For management purposes MSY is usually expressed in terms of the following reference points:

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

MSY stock size (B_{MSY}): The long-term average size of the stock or stock complex, measured in terms of spawning biomass or other appropriate measure of the stock's reproductive potential that would be achieved by fishing at F_{MSY}.

Status determination criteria (SDC) are quantifiable thresholds (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:

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.

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.

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

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.

4.1.2 Reference Points Required for Stocks Subject to MSA Section 303(a)(15)

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.

Annual catch limit (ACL): The level of annual catch of a stock or stock complex that serves as the basis for invoking accountability measures (AMs). The ACL cannot exceed the ABC, but may be divided into sector-specific ACLs.

For domestically managed stocks an ABC control rule must be established. This control rule is 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.

National Standard 1 Guidelines provide an exception to the requirement to establish ABCs, ACLs, and AMs for stocks or stock complexes subject to management under an international agreement. By inference, the above reference points would need to be established for stocks not subject to this international exception and are wholly managed domestically.

4.2 Maximum Sustainable Yield

Because MSY is a long-term average, it need not be estimated annually. 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.

As part of the biennial process (see Chapter 5), the HMSMT will review recent stock assessments or other information as described below, and submit a draft SAFE document for review at the September Council meeting containing MSY estimates, noting if they are a change from the current value. At the request of the Council, the Scientific and Statistical Committee (SSC) will review these estimates and make recommendations to the Council on their application in management decisions. Based on this advice, the Council may recommend revisions to MSY estimates to NMFS.

MSY is estimated based on the amount of information available about the stock. MSY is specified as an absolute quantity, either in weight or number of fish. For management purposes, the estimate of MSY by itself is less relevant than the reference points, F_{MSY} and B_{MSY}, that may be derived from it. However, for many HMS, a deterministic estimate of MSY may not be possible. In these cases proxy values for MSY-based reference points may be used. These MSY-related reference points may be specified in various ways, for example relative to a stock depletion level (biomass relative to unfished biomass) or spawning potential ratio (the spawning potential per recruit referenced to the unfished level).

The following describes the relationship between available information and the estimation of MSY:

For regularly assessed stocks: A plausible estimate of MSY (and other MSY-based reference points) or their proxies may be determined from the assessment. Because HMS assessments are generally conducted by working groups outside of the Council process, selections for status determinations may be based on what the science providers (e.g. ISC working groups, IATTC staff, SPC staff) provide in their reports. Based on advice from the SSC, the Council may recommend changes in the way that MSY is estimated in the assessment, and such recommendations would be forwarded to the RFMO conducting or sponsoring the stock assessment through the U.S. delegation for consideration when conducting future assessments. In that event, the Council could recommend to retain any current MSY estimate in the FMP or regulations, or propose an alternate estimate.

For unassessed stocks with catch history and additional information on relative abundance or stock productivity: The HMSMT reviews 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 and effort data, if available. The Council may recommend MSY or proxy estimates for NMFS to use in making those determinations, based on the catch time series and additional information.

For unassessed stocks with catch history but lacking further information on relative stock abundance or productivity: The HMSMT reviews the best available stockwide catch data, or if not available, regional catch data. The Council may recommend MSY or proxy estimates based on 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.

No matter the method used to estimate MSY or select a proxy, the relative impact of U.S. West Coast fisheries may help to inform the Council's recommendations.

MSY is specified as an absolute quantity, either in weight or number of fish. For management purposes, the estimate of MSY by itself is less relevant than the reference points, F_{MSY} and B_{MSY}, that may be derived

from it. However, for many HMS, a deterministic estimate of MSY may not be possible. In these cases proxy values for MSY-based reference points may be used. These MSY-related reference points may be specified in various ways such as referenced to a stock depletion level (biomass relative to unfished biomass) or spawning potential ratio (the spawning potential per recruit referenced to the unfished level).

4.3 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. Normally, OY should not be greater than the ABC or ACL, if identified (see below). However, since OY is a long-term average and ABCs and ACLs are set annually there may be instances where the ABC or ACL could exceed the OY on a short-term basis. The OYs specified when this FMP was approved shall remain in effect until changed by recommendation of the Council, after considering recommendations of the SSC, and approval by NMFS. If the Council incorporates a new management unit species into the FMP, the OY shall be determined preferably concurrently or as soon as possible thereafter by recommendation of the Council, after considering input by the SSC, HMSMT, and approval by NMFS. OY specifications will be reported in the HMS SAFE.

Although required, specifying OY for internationally managed stocks is problematic, because achieving OY is intended to produce the greatest benefit to the Nation and prevent overfishing. For most of the HMS FMP MUS stocks, fisheries managed under this FMP catch a very small proportion (in some cases less than one percent) of stock-wide catch. Therefore, for internationally-managed stocks, the Council may consider fishing levels that are agreed upon by the U.S. at the international level when specifying OY.

A stock's vulnerability should be a key consideration in specifying OY. Vulnerability is a combination of a stock's 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.

When specifying OY, the Council may consider a reduction from the estimate of MSY based on stock vulnerability along with the other factors discussed above. A 25% reduction could be considered as a starting point for specifying OY based on vulnerability. For stocks subject to MSA Section 303(a)(15), because they are not subject to an international agreement in which the United States participates, the procedures for specifying the ABC and ACL should be taken into account so that on average the ABC does not exceed OY.

4.4 Assessment of Stock Status

National Standard 2 requires using the best scientific information available in management. This requires periodic updating of stock status for comparing against status determination criteria. Stock status will be reported in SAFE reports (Section 4.6). In the case of species under international management, the Council should recommend adopted SDCs as limit reference points to be considered by the appropriate RFMO (see also Section 2.1).

The methods for determining SDCs (described below) imply an ability to determine the level of biomass relative to its unfished 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}. This may be possible only for certain assessed stocks,

depending on the amount of information available for stock assessments (see Section 4.2 regarding information available for assessments and determining MSY). When a stock assessment has not been completed, the 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 $F_{50\%}$. In these cases, it may be necessary to use proxy values to compute SDCs. For data-poor stocks, MSY or OY estimates based on catch history alone may be the only information available for management, and the F/F_{MSY} and B/B_{MSY} ratios must be derived from those estimates. In these cases, proxy values could be based on average stock-wide catch over an appropriate time period. F_{MSY} and B_{MSY} proxies can be scaled as fractions of B_0 or multiples of M, respectively, e.g., $B_{MSY}=0.5B_0$ or $F_{MSY}=1.0M$.

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., 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 stock-wide MSY is unknown for those species, the local catches can be used to estimate a local or regional MSY.

4.4.1 Status Determination Criteria

The Council will monitor each managed HMS stock with regard to whether overfishing is occurring and whether the stock is overfished in relation to status determination criteria (MFMT and MSST). The Secretary will use the following status determination criteria to identify stocks subject to overfishing or that have become overfished as specified at MSA section 304(e).

MFMT equals F_{MSY}. 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.

MSST is calculated as the greater of:

$B_{MSST} = (1\text{-}M)B_{MSY}$ when M (natural mortality) ≤ 0.5, or
$B_{MSST} = 0.5B_{MSY}$ when $M > 0.5$

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.

Over*fishing* occurs when fishing mortality F is greater than the MFMT mortality or catch exceeds OFL for one year or more. Similarly, a stock is **over*fished*** when its size falls below the MSST stock biomass. MSA Section 304(e) and 304(i) describe required responses when 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. If Section 304(e) applies and overfishing is occurring, harvest rates in fisheries managed under this FMP must be reduced below the MFMT. This would be especially urgent when a stock is approaching an overfished condition. If the stock is 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 MSY within a specified time period.

4.4.2 Council Response to Overfishing

The Secretary will immediately notify the Council when a stock or stock complex is subject to overfishing or overfished. The Council must then take appropriate remedial action in relation to the applicability of Sections 304(e) and 304(i).

4.4.2.1 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. This section requires the Council make recommendations for domestic regulations to address the relative impact of U.S. vessels and recommendations for international actions to end overfishing and rebuild affected stocks.

Section 304(i)(2) states that the "appropriate council" shall develop recommendations for domestic measures and international actions to end overfishing. The Pacific Council may notify NMFS for which HMS stocks it considers itself the appropriate council. NMFS may use this information when deciding whether the Pacific Council is obligated to develop recommendations pursuant to Section 304(i)(2). The Council also may use this assessment of appropriateness to prioritize the stocks for which it will identify management reference points. Any determination that this FMP is the primary FMP for any particular HMS MUS stock should also be taken into account (see Section 3.2). While catches by fisheries managed under this FMP would be the main factor in deciding whether it is the "appropriate council," the Council may wish to reserve the right to develop recommendations for international actions for stocks that such fisheries are only modestly engaged in (e.g., South Pacific albacore).

On December 15, 2004, NMFS notified the Council that overfishing was occurring Pacific-wide on bigeye tuna and requested the Council to take appropriate action. Because this notification occurred before the 2007 MSA reauthorization when Section 304(i) was added, the Council incorporated rebuilding measures into this chapter of the FMP, pursuant to MSA Section 304I, by FMP Amendment 1. Given the subsequent implementation of the requirements in Section 304(i), this material was moved to Appendix J under Amendment 4.

4.4.2.2 When International Fishing Pressure is not the Cause

Rebuilding of overfished stocks is a unilateral requirement by the MSA, but, as already noted, internationally fished stocks require cooperative catch reductions among the fishing nations for this rebuilding to be effective. U.S. responsibility for rebuilding is greater for stocks not subject to MSA Section 304(i) and the requirements at Section 304(e) apply.

When stock size (B or SSB) falls below its MSST level, fishing mortality must be reduced sufficiently to allow stock rebuilding at least back to B_{MSY} by a target rebuilding year, which is identified in a rebuilding plan adopted by the Council. ACLs are then set accordingly until the stock is rebuilt to B_{MSY}.

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.

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.

4.5 Management of Stocks Subject to MSA Section 303(a)(15) Because They Are not Subject to an International Agreement in which the United States Participates

Currently, stocks covered under the HMS FMP fall under the National Standard 1 Guidelines (50CFR600.310(h)(1)(ii)) as internationally managed and therefore are exempt from MSA 303(a)(15) which requires specification of ABC, ACLs, ACTs, and AMs. The Council has a long-standing practice of following the recommendations and resolutions of the RFMOs.

4.5.1 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." The Council will not normally set ABCs and ACLs for HMS MUS stocks that the Council has determined meet this criterion. However, application of this exception does not preclude the Council from setting an ACL (and identifying an associated ABC to facilitate setting the ACL) if circumstances warrant.

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 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. 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 this management cycle described. ACLs may be subdivided as part of the biennial management process. This includes establishing separate sector-ACLs, and for stocks or stock complexes that have harvest in state waters, dividing the overall ACL between a Federal-ACL and a state-ACL.

The biennial management process will be used to implement 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. AMs include ACTs and ACT control rules, which the Council also may establish if they would help ensure the ACL is not exceeded. An ACT is an amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The ACT control rule is 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.

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.

4.5.2 Precautionary Management for Stocks above the MSST but below B_{MSY} or its Proxy

Fishery management councils have considerable latitude in how they rebuild stocks depleted below B_{MSY} but not overfished. To rebuild stock biomass to $B_{MSY,}$ a precautionary reduction from the ABC to the ACL should be considered. The reduction would be scaled to stock depletion in reference to the B_{MSY} target. This can take a linear form, so that the reduction from the ABC increases in proportion to the decline in biomass.[2] Other forms can be considered such as a series of stepped constant ACLs for different ranges of B_{MSY} values.

4.6 Stock Assessment and Fishery Evaluation Report

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 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 NMFS West Coast Region 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 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.

National Standard 2 of the MSA 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 IATTC, ISC, and WCPFC. For other species such as dorado and sharks, the HMSMT and NMFS develop stock and fishery assessments, provide peer reviews, and presents the results to the Pacific Council. The guidelines for implementation of National Standard 2 require preparation of an annual SAFE report. The SAFE report will largely rely on international body assessments, NMFS directed assessments, and any new fishery information. Consistent with National Standard 2 guidelines for a SAFE

[2] As an example, the Council's Pacific Coast Groundfish FMP identifies a "40-10" precautionary reduction predicated on an MSY proxy for roundfish of B40%. The linear reduction is scaled so that F or catch would be zero when stock size reaches 10% of its unfished size. Practically, however, catches would be managed under a rebuilding plan when the stock biomass falls below the MSST, which for roundfish is B25%.

report adapted for this FMP, the contents of the HMS SAFE report are listed below.

Each SAFE report

- Must be scientifically based, and cite data sources and interpretations.
- Report any changes to numerical estimates of MSY and OY adopted by the Council as a recommendation to NMFS as part of the biennial process described in Chapter 5.
- Report estimates of the MFMT, OFL, and MSST for each stock or stock complex, along with information by which the Secretary 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 MFMT; and if the size of any stock or stock complex is approaching the MSST.
- Should contain information on which to base harvest specifications, including ABCs, ACLs, and ACTs, if appropriate.
- May contain recommendations to the Council on matters concerning bycatch and incidental catch.
- May describe those management measures necessary to rebuild an overfished stock or stock complex to a level consistent with producing the MSY in such fishery.
- Include a table with the stock-specific OYs specified at the time the FMP was approved.
- May contain additional economic, social, community, essential fish habitat, and ecological information pertinent to the success of management or the achievement of objectives of this FMP.

Periodically, to align with the preparation of the Council's inventory of research and data needs prepared by the SSC, the SAFE will contain research and data need recommendations.

Each year, in September and November, the HMSMT 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 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 can be used to update or expand previous environmental and regulatory impact documents, and ecosystem and habitat descriptions, including essential fish habitat (EFH).

5.0 Biennial Process for Specifying Management Reference Points and Management Measures

5.1 Framework Procedures

Many fishery management plans under the MSA 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.

This process also may be used to identify, adopt, and review revised estimates of MSY, OY, and any related SDC based on the best scientific information. Estimates of MSY, OY, and SDC, after NMFS review and approval, will be published in the next SAFE document and used for management, as appropriate.

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 require 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 MSA.

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 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, recreational harvesters or vessels, and 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);
- 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.

In addition, the Council may adopt changes to numerical estimates of reference points, including MSY, OY, and SDC including OFLs. Any adopted changes to estimates of MSY or OY will be forwarded to the

Secretary as a recommendation, consistent with the appropriate framework action among those described above. If an organization, established pursuant to an international agreement to which the United States participates, identifies reference points for any stock managed under this FMP, the Council would normally identify those reference points as appropriate for management. Any determination of the appropriateness of the use of such reference points for management would be based on the best scientific information available.

General Procedure. Following an established management cycle which includes production of an annual SAFE report, the HMSMT, HMSAS, 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 HMSMT and/or staff to prepare a draft document which includes a description of the problem, proposed management actions, and analysis. Any documentation must comply with the analytical requirements of NEPA, Executive Order 12866, the Regulatory Flexibility Act, the MSA and other applicable law. Through internal scoping, NMFS and the Council will determine the form and content of this analytical document.

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 HMSMT 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 muli-year average data;
- Catch is projected to exceed, within two years, the current harvest guidelines or quotas based on current exploitation rates;
- 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 ABC. 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 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 and review of status determination criteria. This cycle is intended to accommodate the schedule for fishery assessments prepared by regional fishery management organizations, the timeliness of available data and of management responses, 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 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 does so at its March meeting in even-numbered years.

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

Even-Numbered Years

September — Provide update to the Council on status of the HMS fisheries and, as appropriate, proposed adjustments to the numerical estimates of MSY, OY, and SDC in a preliminary SAFE report. If necessary, Council directs HMSMT to prepare draft regulatory analysis to implement revised estimates of reference point values, ACLs, or other harvest objectives and/or management measures.

November — Annual SAFE document presented to Council. If necessary, Council directs HMSMT to prepare a draft regulatory analysis to implement revised estimates of reference point values, ACLs, or other harvest objectives and/or management measures. Council adopts for public review proposed actions addressing concerns from current and previous SAFE reports.

Odd-Numbered Years

March — Council adopts final recommendations to NMFS, Department of State, and Congress for international measures to end overfishing and/or rebuild stocks and proposed regulations necessary for domestic fishery management.

NMFS implements domestic fishery management regulations as soon as practicable after Council final action, while fulfilling applicable statutory requirements related to rulemaking.

The SAFE document in even-numbered years, after NMFS review and approval, publishes any revised estimates of reference point values, including ACLs or other harvest objectives (e.g., a harvest guideline) previously adopted by the Council.

Under this biennial cycle (or any cycle), the HMSMT 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 two years of notification by the Secretary of Commerce that a stock not subject to management under an international agreement to which the United States is party has been declared overfished, as called for under the MSA (Section 2.3).

6.0 Management Measures

Sections 6.1 through 6.5 describe the general elements of the FMP that affect HMS fisheries directly. Many of these elements address fundamental requirements of the MSA and other applicable law. They can be modified through framework procedures if the Council so chooses. Section 6.6 describes fishery-specific management measures.

6.1 Legal Gear and Gear Restrictions

Various state restrictions on gear exist in Washington, Oregon, and California. A listing of current state regulations in Washington, Oregon, and California at the time of plan adoption is in Appendix B to the HMS FMP FEIS (PFMC 2003).

Authorized fisheries under the authority of each regional fishery management council and all fishing gear used in each fishery in the EEZ are listed in Federal regulations (50 CFR 600.725). The use of any gear or participation in a fishery not on the list of authorized fisheries and gear is prohibited. Additional definitions and relevant regulations may appear elsewhere in Federal regulations, controlling the use of gear whether or not on the list at 50 CFR 600.725(v). An individual fisherman may notify the Council of the intent to use a gear or participate in a fishery not already on the list and the Council then has 90 days to regulate or prohibit the use of the gear.

Legal commercial HMS gear includes:

- Harpoon: Fishing gear consisting of a pointed dart or iron attached to the end of a line several hundred feet in length, the other end of which is attached to a flotation device. Harpoon gear is attached to a pole or stick that is propelled only by hand, and not by mechanical means.
- Surface Hook and Line: One or more hooks attached to one or more lines (includes troll, rod and reel, handline, albacore jig, live bait, and bait boat; excludes pelagic longline and mousetrap gear. Mousetrap gear means a free floating set of gear thrown from a vessel, composed of a length of line with a float on one end and one or more hooks or lures on the opposite end, which is not actively tended and does not comply with the definition of DSBG).
- Large Mesh Drift Gillnet: A panel of netting, suspended vertically in the water by floats along the top and weights along the bottom, which is not stationary nor anchored to the bottom. Large-mesh drift gillnets (used to target HMS) must have a minimum stretched mesh size of 14 inches. This definition minimizes potential problems from additional bycatch, protected species interactions, and competition with other fishery sectors. Small-mesh gillnet may not be used to target HMS. This description is consistent with the historic use of large-mesh drift gillnet to target swordfish and sharks.
- Purse Seine: A floated and weighted encircling net that is closed by means of a purse line threaded through rings attached to the bottom of the net (includes encircling net, purse seine, ring net, drum purse seine, lampara net).
- Pelagic Longline: A main line that is suspended horizontally in the water column, which is not stationary nor anchored, and from which dropper lines with hooks (gangions) are attached.
- Deep-set buoy gear (DSBG): Line fishing gear in two configurations: standard buoy gear and linked buoy gear. The gear consists of either a vertical line affixed to a buoy array with one or more hooks, or a horizontal line with hooks attached, connected to the terminal ends of two vertical lines affixed to buoy arrays, respectively. Both configurations limit the number of hooks used and require the hooks to be set deeper than a specified minimum depth and that buoys are configured to avoid entanglement. The gear is fished during specified hours and requires active tending.

Legal recreational gear includes:

- Rod-and-Reel (pole-and-line): A hand-held (including rod holder) fishing rod with a manually or electrically operated reel attached.
- Spear: A sharp, pointed, or barbed instrument on a shaft. Spears can be operated manually or shot from a gun or sling.
- Hook and Line: One or more hooks attached to one or more lines (excludes mousetrap gear).

These definitions of gear ensure consistent and unambiguous coastwide management. However, the framework adjustment procedures (Chapter 5) may be used to modify the definitions of legal commercial or recreational fishing gears, authorize new gears, or prohibit the use of existing legal gears. Therefore, the above list is not definitive.

Gear restrictions may specify the amount, dimensions, configuration or deployment of commercial, and recreational fishing gear, for example minimum mesh size or the number of hooks. Changes in gear regulations should minimize costs to the fisheries, insofar as this is consistent with achieving the goals of the change.

6.2 Fishery Monitoring

6.2.1 Permits

Permits are a standard tool used in virtually all fishery management plans to support management by:

- Enhancing or facilitating collection of biological, economic or social data.
- Facilitating enforcement of laws and regulations.
- Identifying those who would be affected by actions to prevent or reduce excess capacity in the fishery.
- Providing information to meet international obligations.

A special kind of permit may be required for limited entry into a fishery. Implementation of a limited entry program would require an FMP amendment.

6.2.1.1 Commercial Permits

This FMP requires a Federal permit for all commercial HMS vessels that fish for HMS off of, or land HMS in, the States of California, Oregon, and Washington. This general HMS permit is endorsed with a specific endorsement for each gear type to be used. Initially, there are no qualification criteria, such as minimum amount of landings, to obtain specific gear endorsements. Any commercial fisher may obtain the required gear endorsements. The permit is issued to a vessel owner for each specific fishing vessel used in commercial HMS fishing. This action is a practical procedure for tracking commercial HMS fishing activities, and the effects of regulations on those activities.

Regulations implementing the FMP establish the permitting system and set the terms and conditions for issuing a permit. The permits and endorsements are subject to sanctions, including revocation, as provided by Section 308(g) of the MSA. Permit requirements could be changed in the future under the framework procedures (Chapter 5). This permit program would not eliminate existing state permit or licensing requirements, or Federal permits under the HSFCA.

Drift Gillnet Limited Entry Permit

For individuals fishing with drift gillnet gear, a Federal drift gillnet limited entry (DGN LE) permit is required. These Federal DGN LE permits are subject to the following conditions:

- DGN LE permits are issued to an individual, and a vessel must be specified on the permit.
- DGN LE permits are issued annually for the fishing year starting April 1 and ending March 31 of the following year.
- Upon publication of NMFS' final rule to establish the Federal DGN permit, all California DGN permit holders would be eligible for a Federal DGN permit. If a 2017-2018 state permit renewal application is not received by CDFW or postmarked by March 31, 2018, the permit holder will not be eligible to receive a 2018-2019 Federal DGN permit.
- Thereafter, the deadline for receipt or postmark of a Federal DGN permit renewal application would be April 30 of the fishing year (e.g., April 30, 2019 for the April 1, 2019 - March 31, 2020 fishing year).
- A DGN permit that has expired will not be renewed unless the permit owner requests reissuance by July 31 (three months after the renewal application deadline) and NMFS determines that failure to renew was proximately caused by illness, injury, or death of the permit owner. If the permit expires, it will be forfeited and NMFS will not reissue the permit to anyone.[3]
- DGN LE permits can be transferred at most once every three fishing years. For the purpose of determining transfer eligibility, the fishing year starts April 1 and ends March 31 of the following year.
- DGN permits may be transferred to another individual only if the current permit holder has held the Federal DGN LE permit for a minimum of three consecutive years (counted April 1 to March 31 of the following year). At the time of the establishment of the Federal DGN LE permit system, the length of time an individual has held a California drift gillnet limited entry permit carries over (e.g., if an individual has held a California DGLE permit for 2 years, they are eligible to transfer the Federal DGN LE permit after 1 year). Exceptions to this limitation on permit transfer may be made under the following circumstances:
    - The permittee suffers from a serious illness or permanent disability that prevents the permittee from earning a livelihood from commercial fishing.
    - If the permittee's heirs or estate submit a transfer request within six months of the permittee's death.
    - Upon dissolution of marriage if the permit is held as community property.
- A permit holder may designate another individual to fish under their permit for up to 15 days per year; the substitute must hold a valid general HMS permit and comply with all other Federal permitting requirements.

Deep-Set Buoy Gear Limited Entry Permit

A Deep-Set Buoy Gear Limited Entry (DSBG LE) permit is required to fish with DSBG in Federal waters east of 120° 28' 18" W. longitude.

Permit Possession

The DSBG LE permit is held by a person, as defined at 50 CFR 660.702, who must designate a vessel on the permit. The designated vessel need not be owned by the permit holder. The permit holder may change the vessel designation on the permit by written request to NMFS not more than once per calendar year unless a *force majeure* event renders the assigned vessel incapable of operation. The vessel owner must also hold a General HMS permit for the vessel from which a DSBG permit is being fished. A person may

[3] These renewal deadlines (April 30 and July 31) for the Federal DGN permit differ from the state permit renewal deadlines but are consistent with procedures for other Federal permits. Compared to the state DGN permit, the July 31 deadline imposes a shorter renewal window period and does not provide a mechanism to appeal for reinstatement in the event of a failure to renew.

only hold one DSBG LE permit. Multiple DSBG LE permits may designate the same vessel, but only one DSBG LE permit may be fished from any one vessel at a time. The permit holder is not required to be onboard the vessel when DSBG is in use.

Number of DSBG LE Permits Issued Annually and Maximum Number

Up to 50 permits will be issued for the first year for which the fishery is authorized and up to 25 additional permits may be issued annually in subsequent years until either a) a maximum of 300 permits are issued, b) NMFS determines, based on applicable law (principally the ESA and MMPA), that the maximum number of permits should be less than 300, or c) the Council determines that the maximum number of permits should be less than 300 based on its consideration of any relevant factors such as those enumerated in Section 303(b)(6) of the MSA. Permits which are not renewed do not count towards the annual permit allocation for the following year and may be issued to new applicants in addition to the annual 25 permits.

Permits are issued by ranking applicants according to the permit qualification criteria listed below. When an application is received, the eligible applicant will be added to the applicant pool and ranked based on the qualification criteria. Applications will only be accepted during a predetermined time. Qualification for issuance of a permit will be determined prior to the permit year and/or fishing season. Tier 9 applications may be considered on a first come, first served basis annually until the maximum number of permits have been issued.

Limited Entry Permit Qualification Criteria

DSBG LE permits are issued to eligible applicants in rank order according to the tiered eligibility criteria listed below. Should more eligible applicants qualify based on a tier category than the number of permits to be issued in a single year, eligible applicants are additionally ranked according to the total landed weight of swordfish attributable to the applicant within the window period for the relevant tier and by the relevant gear type (Tiers 1-5) or first come, first served (Tiers 6-9). Even if an applicant qualifies under more than one tier criterion, that person will only be issued one permit, based on their highest tier qualification. The following tier categories are used for ranking eligible applicants:

1. EFP holders, with at least 10 documented calendar days of DSBG fishing effort by December 31, 2018. Documentation shall consist of a West Coast Observer Program record indicating either:
    a. the EFP holder as vessel captain for that fishing day; or
    b. fishing effort for that day conducted on a vessel owned by or under the EFP managed by that individual.
2. California Drift Gillnet Shark and Swordfish permit holders who made at least one large-mesh DGN swordfish landing between the 2013-2014 and 2017-2018 fishing seasons and surrender their state or federal DGN permit as part of a DGN permit trade-in or buy-back program.
3. EFP holders approved by the Council prior to April 1, 2021 who conducted at least 10 calendar days of DSBG fishing effort or with 10 days of DSBG effort on their vessel or by vessels they manage under the EFP by the effective date of the Final Rule authorizing DSBG. Documentation shall consist of a NMFS West Coast Observer Program record or a properly submitted NMFS DSBG logbook indicating either:
    a. the EFP holder as vessel captain for that fishing day; or
    b. fishing effort for that day was conducted on a vessel owned by or under the EFP managed by that individual.
4. California General Swordfish permit holders who possessed a permit during the 2018-2019 fishing season and made at least one swordfish landing using harpoon gear between the 2013-2014 and 2017-2018 fishing seasons.

5. California Drift Gillnet Shark and Swordfish permit holders who have made at least one large-mesh DGN swordfish landing between the 2013-2014 and 2017-2018 fishing seasons and who did not surrender their state or federal DGN permit as part of a trade-in or buy-back program.
6. California Drift Gillnet Shark and Swordfish permit holders who have not made a swordfish landing with large-mesh DGN gear since March 31, 2013, and who surrender their state or federal DGN permit as part of a permit trade-in or buy-back program.
7. State or Federal DGN LE permit holders who have not made a swordfish landing with DGN gear since March 31, 2013, and did not surrender their DGN LE permit as part of a state or Federal DGN permit trade-in or buy-back program.
8. Any individual with documented commercial swordfish fishing experience between January 1, 1986 and the effective date of the final rule on a first come first served basis. The basis for documenting commercial swordfish fishing experience attributable to the applicant will be possession of a valid commercial fishing license on that date and either:
    a. A valid California Department of Fish and Wildlife fish landing receipt identifying the individual as the fisherman of record; or
    b. A valid state or federal logbook where swordfish were taken and identifying the individual as captain or crew on that day; or
    c. A signed affidavit from a vessel owner or captain identifying the individual as vessel captain or crew on the day that swordfish were taken.
9. Any individual on a first come first served basis.

Permit Renewal

The HMS LE DSBG permit is valid for one year and expires if not renewed. A permit will be renewed based on application by the permit holder and as long as the permit holder has adhered to any requirements specified in Federal regulations. Federal regulations will specify any requirements and deadlines for permit renewal applications such that the permit may be reissued for the next year. The number of expired permits will be added to the number of permits to be issued in subsequent years such that only valid, issued permits are counted toward the cumulative maximum number to be issued in a year.

Permit Transfer

HMS LE DSBG permits are not transferable except for a one-time transfer upon death of a permit holder to a member of that permit holder's immediate family as defined in regulations.

6.2.1.2 Recreational Permits

This FMP requires a Federal permit for all commercial passenger recreational fishing vessels (CPFV) that fish for HMS, but an existing State permit or license for recreational vessels can meet this requirement. The Council requests states to incorporate in their existing CPFV permit systems an allowance for an HMS endorsement on the permits so that statistics can be gathered on that segment of the HMS fishery. This action is a practical procedure for tracking and controlling, by permits, recreational HMS fishing activities and the effects of regulations on those activities.

6.2.2 Reporting Requirements

The MSA requires that FMPs specify the pertinent data that shall be submitted to the Secretary with respect to commercial, recreational, and charter fishing in the fishery, including, but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, number of hauls, and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors (Section 303(a)(5)).

Catch, effort, and catch disposition data are critical for monitoring the fisheries, assessing the status of the stocks and fisheries, and evaluating the effectiveness of management. Historically, data necessary for management of HMS were not regularly or fully collected by State, Federal, or international organizations. HMS reporting requirements for basic catch-effort and bycatch are inconsistent among the states and may be insufficient for stock and fishery monitoring. Various overlapping reporting requirements may apply to vessels fishing for HMS from the West Coast. Permitting under the HSFCA, states, the IATTC, and the WCPFC all trigger reporting requirements that may vary across different fisheries. A uniform Federal requirement for vessels catching HMS in the West Coast EEZ facilitates consistent reporting.

All commercial and recreational party or charter/CPFV fishing vessels fishing for HMS must maintain and submit logbooks to NMFS. The original logbook form for each day of the fishing trip must be submitted to either NMFS or the appropriate state management agency. State or existing Federal logbooks can meet this requirement as long as essential data elements are present, and data are available to NMFS subject to a data exchange agreement.[4] In any case, existing state reporting requirements, including those for landing receipts, would remain in effect. These reporting requirements may be adjusted under the framework process (Chapter 5). These requirements facilitate obtaining commercial (including CPFV) catch and effort data and allow for NMFS to develop a standardized database on West Coast fisheries.

6.2.3 Fishery Observer Authority

Observer programs are important for obtaining accurate information on total catch, catch disposition and protected species interactions, and also for detailed biological data and samples that managers cannot expect fishers to collect. Catch disposition information importantly includes data on bycatch, for which observers are indispensable in most cases (Section 6.3). Observation also can be very useful to better understand how different gears are actually deployed and how practical and effective regulations actually are. Observer placement authority for NMFS facilitates obtaining more accurate and complete information about fisheries. However, observers may not be suitable for all vessels; smaller vessels may not have accommodations for observers and vessels that take extended trips are much more costly to observe. Therefore, it is incumbent on NMFS to develop an observer sampling plan that, in addition to the scientific objectives, also recognizes the different types of vessels and vessel capabilities in the various fisheries.

An observer program must include a sample design and cost analysis (including impacts on the vessels being sampled) for Council review and comment prior to implementing the program. The sampling design will include the sampling rate, which is a function of the required sample size for determining take rates or amounts with a given precision. When a take amount is the result of infrequent events, as in certain protected species interactions, very large sampling of a fleet is needed for its precise estimation, and cost will be the determining factor for sample size.

NMFS may require that vessels carry observers when directed to do so by the NMFS Regional Administrator. NMFS is to complete initial observer sampling plans within six months of FMP implementation. NMFS will also develop initial observer sampling programs for the private recreational fisheries at a later date. This FMP focuses initially on the fisheries inadequately or not monitored under Federal authority (MMPA, ESA) in meeting the FMP goal of documenting and reviewing bycatch mortality and protected species interactions in HMS fisheries. Observer programs are initially mandated for the longline, surface hook-and-line, small purse seine, and CPFV fisheries.

Prior to implementation of this FMP, the large- and small-mesh drift gillnet fisheries already had MMPA-mandated observer programs, and the pelagic longline fishery came under an ESA mandate for observers.

[4] Samples of logbook forms at the time the FMP was implemented can be found in the HMS FMP FEIS (PFMC 2003), Appendix D.

These programs will be periodically reviewed by the HMSMT for adequacy in meeting the goals of this FMP (important if the sampling rates in the protected species programs are reduced).

6.3 Bycatch Monitoring and Minimization

The MSA requires that bycatch in fisheries be assessed, and that the bycatch and bycatch mortality be reduced to the extent practicable. Specifically, National Standard 9 states that an FMP shall establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures to the extent practicable and in the following priority: 1) minimize bycatch; and 2) minimize the mortality of bycatch which cannot be avoided.

6.3.1 Standardized Bycatch Reporting Methodology

MSA Section 303(a)(11) requires that FMPs establish a standardized bycatch reporting methodology (SBRM) to assess the amount and type of bycatch occurring in any fishery managed under the FMP. An SBRM is an established, consistent procedure or procedures used to collect, record, and report bycatch data in these managed fisheries, and the methods may vary from one fishery to another. The SBRM is used to estimate bycatch as its defined by the MSA and includes fish which are harvested in a fishery, but which are not sold or kept for personal use and includes economic discards and regulatory discards. SBRMs, as described in the FMP, focus on reporting methods and inform procedures to assess bycatch and the development of measures to minimize bycatch or bycatch mortality (section 6.3.2).

The Council examined existing bycatch reporting methodologies, and found that current logbook requirements for the various fisheries (states, NMFS and IATTC), together with periodic recreational fishing surveys and port sampling, have provided an important source of information on catch and bycatch for all HMS fisheries (Appendix C, section 5). Nonetheless, certain additional measures were considered to provide improved standardization of logbook reporting and better ground-truthing of the logbook data through pilot observer programs for some of the presently unobserved fisheries. Observer programs are authorized consistent with observer sampling plans prepared by NMFS (Section 6.2.3). All commercial and recreational party or charter/CPFV fishing vessels must maintain and submit to NMFS logbook records containing catch and effort statistics, including bycatch (Section 6.2.2).

When designing and developing monitoring data collection programs under the SBRM, the Council and NMFS, in consultation with the states, considered the feasibility and need for various monitoring methods in light of the level of bycatch in each fishery and the risk that such bycatch poses to affected fish stocks. Catch and bycatch characteristics for the fisheries managed under this FMP are addressed in this Section, and in further detail in Appendix C of the FMP and the Stock Assessment and Fishery Evaluation (SAFE) reports, which are updated annually. In addition to reporting catch and bycatch in Appendix C and the yearly SAFE reports, logbook data is used to report aggregated catch (including bycatch) and effort to the respective RFMOs and RFMO science providers, which use the information to produce stock assessments for HMS. SBRM for some HMS fisheries incorporates state-run programs sufficient for meeting federal requirements. If conditions in a fishery change such that the amount or nature of bycatch changes, or a state-run program is no longer sufficient for meeting federal requirements, the Council could use the framework procedures described in Section 5.1 to implement additional bycatch monitoring and reporting methodologies.

The authorized gear types enumerated in Section 6.1 define the following fisheries to which SBRMs apply:

- Surface hook-and-line fishery targeting albacore tuna
- Harpoon fishery
- Coastal purse seine fishery when targeting HMS MUS

- California large mesh drift gillnet fishery
- Pelagic longline fishery
- Recreational party/charter boat fishery
- Private recreational boat fishery
- Deep-set buoy gear

Appendix C also describes bycatch monitoring measures for the tropical tuna purse seine fishery. However, this fishery is not actively managed under the HMS FMP, because no vessels in the fishery make landings on the West Coast. Conservation measures for the fishery are adopted by the IATTC and applied to U.S. vessels by regulations pursuant to the Tuna Conventions Act and the High Seas Fishing Compliance Act, rather than the MSA.

Surface hook-and-line fishery targeting albacore tuna

NMFS began collecting data from the fishery in 1974. Each year the SWFSC publishes a summary of the fishery and its associated statistics in an administrative report. Discard rates of non-marketable albacore are not known definitively, but limited observer sample data from the North Pacific albacore troll fishery during the 1990s indicated that these rates are likely low and if accounted for, would not substantially inflate the estimates of the landed catch. Typically, the troll fishery discards fish that are smaller than roughly 4.1 kg (58 cm or 2-year-old fish). According to information in Appendix C (Section C.3.2) small amounts of skipjack tuna, bluefin tuna, dorado, and billfish were observed as incidental catch and are generally sold according to data from the limited observer program run by NMFS (27 trips in 8 years) in the 1990s and in 2006, and from commercial landings data.

According to information compiled in Appendix C (Section C.3.2), the live bait boat component of this fishery is very selective in catching larger fish, so discards are low.

Data collection for this fishery under the SBRM includes a mandatory Federal logbook program. Logbooks provide information about bycatch through self-reporting. Given that available information does not indicate a concern for the amount or type of bycatch in the fishery, which can be characterized by type with reasonable certainty, logbooks represent the most feasible data collection method for this fishery. as they are relatively low in cost compared to other methods such as onboard observers. Bycatch information is periodically presented in the aforementioned administrative reports prepared by the SWFSC, and any uncertainty arising from use of data collected by logbooks can be qualitatively described and considered in relevant analyses.

Harpoon fishery

This gear is highly selective and it is likely that a bycatch in this fishery would be economic discards of swordfish or shark species, or fish not successfully harpooned and landed. Data collection consists of a logbook and commercial landing receipts to characterize effort and catch, including bycatch. There is no observer requirement for the harpoon fishery and in the absence of comprehensive direct observation, it cannot be confirmed that absolutely no bycatch occurs. There are anecdotal accounts of individuals targeting unmarketable species such as blue shark with harpoon as “practice” for catching swordfish. However, these reports are not common or verified. Given the selective nature of this fishing gear to target one fish at a time and the status of the blue shark stock available off the U.S. West Coast, impacts of “harpoon practice” would have minimal impact to the blue shark population. Due to the year-to-year variability in availability of swordfish in surface waters and the open access structure of the permits, the number of harpoon participants varies; but has remained relatively low and generally stable over time. Given that bycatch in this fishery is of very little concern for the overall health of any stocks, logbooks are the most feasible data collection method due to low cost, compared to other methods, such as observers.

Coastal purse seine fishery when targeting HMS MUS

As documented in the HMS SAFE Report, the fishery only targets tunas, largely Pacific bluefin tuna, when available. Anecdotal accounts indicate bycatch in the small-vessel coastal purse seine fishery is relatively low, but this fishery has not been subject to a formal observer program under the MSA or MMPA authority. This fishery is classified on the MMPA List of Fisheries as a Category III fishery with remote likelihood of and no known incidental death or serious injury of marine mammals. Bycatch that may occur would likely consist of tuna species (e.g., skipjack) discarded, although in the absence of comprehensive direct observations, bycatch estimates may be uncertain. This fishery is required to submit logbooks when targeting HMS MUS that provide information on kept and discarded catch by species. Given that available information does not indicate a concern for the amount or type of bycatch in the fishery, which can be characterized by type with reasonable certainty, logbooks represent the most feasible data collection method. Logbooks are relatively low in cost compared to other methods such as onboard observers.

California large-mesh drift gillnet fishery

Bycatch has been identified as a concern in this fishery (see Appendix C), although the majority of non-target finfish catch is marketable and usually retained. The most common bycatch species are mola mola and blue shark, with observer data indicating that the vast majority of mola and a large proportion of blue shark are returned alive. While the post-release mortality rate of both is unknown, mola are believed to have a very high survival rate. Striped marlin, bigeye thresher shark, smooth hammerhead shark, pelagic stingray, and bat ray also occur as bycatch in this fishery.

The SBRM for this fishery includes 20-30 percent observer coverage annually. The data contains catch, effort, bycatch, and biological data collected by NMFS observers aboard California-based large-mesh drift gillnet vessels fishing off the California coast. The main objective of this program is to monitor marine mammal interactions and mortality as required under the MMPA; however, finfish bycatch data are also collected. At the inception of the observer program, a minimum 20 percent observer coverage level was recommended in MMPA legislation for monitoring of marine mammal mortality in "Category 1" fisheries (Barlow 1989); this is the level that was adopted for use in the DGN observer program. Given that monitoring finfish bycatch is fundamentally similar to monitoring marine mammal bycatch, the 20 percent coverage level standard is considered sufficient for SBRM purposes.

Subsequently, NMFS evaluated the costs relative to revenues and variable profits of the fleet and reported on the feasibility of industry funding to cover costs of onboard observers or electronic monitoring (Agenda Item G.7, Attachment 3, June 2018) . Additionally, NMFS funded a study to consider the potential uncertainty for reliably estimating bycatch when some vessels in the fleet were unobservable (Agenda Item F.1.a, NMFS Report 2, June 2021). The results did not detect any observer bias and support current observer coverage levels as sufficient and practicable to estimate finfish bycatch.

Under the HMS FMP, the DGN fishery also has a logbook requirement. Until 2019, this requirement was met using a logbook distributed by the state of California for all gillnet fisheries. In 2019, CDFW removed the state requirement for the large-mesh DGN fishery to complete these logs, and NMFS developed a Federal logbook specific to this fishery. The Federal logbooks are used to collect information on catch by species, effort, and disposition by date and area of catch (CDFG block).

While estimation of bycatch for marine mammals and turtles has been completed for many years by NMFS scientists, with new methodologies being developed to more accurately model the fishery's catch of protected species, estimated catch of finfish species of concern (such as billfish other than swordfish, prohibited sharks, etc.) had not been produced. To address this, the Council adopted finfish performance metrics, using the regression tree methodology recently developed and applied to estimate marine mammal,

sea turtle, and seabird bycatch in the fishery, as described in Carretta et al. (2020). These were first presented to the Council in June 2019 and updated in June 2021.

Pelagic longline fishery

Almost all pelagic longline (both deep and shallow-set pelagic longline [DSLL, SSLL]) vessels making landings on the West Coast are permitted and managed under the WPFMC Pelagics FEP; fewer than six DSLL vessels are exclusively permitted under this FMP. Considering that swordfish-targeting SSLL gear is not authorized under the HMS FMP, these vessels mainly target bigeye tuna and also catch some related species at depth.

Bycatch has been identified as a concern in both longline fisheries (see Appendix C). Similar to the DGN fishery, a large proportion of finfish catch in DSLL is marketable and often retained and sold. The largest areas of bycatch concern are those of incidentally caught striped marlin, which cannot be legally landed to the West Coast, resulting in regulatory discards, and blue shark bycatch, where economic discards reflect the absence of a West Coast consumer market.

SBRM elements for this fishery include 20 percent observer coverage and mandatory logbooks. The fishery was subject to 100 percent observer coverage for the first decade of its operation under the HMS FMP and higher than 20 percent coverage in years since. As noted above, this level of observer coverage is sufficient to estimate commonly caught finfish bycatch. Observers collect information on catch, effort, and biological data are also used to monitor and manage the fishery and to contribute to stock assessments of billfish and tunas. Therefore, there is a high level of certainty in bycatch estimates for this fishery.

Commercial Passenger Fishing Vessel fishery

Albacore is targeted coastwide in recreational fisheries while catch of other HMS is largely confined to the Southern California Bight.

Bycatch in the commercial passenger fishing vessel (CPFV, or party/charter boat) fleet is minimal when targeting HMS and consists largely of catch and release due to overage on bag limits, or release of striped marlin and large sharks (off Southern California). CPFV trips that target HMS generally fish in areas where other species (such as groundfish) are not present or common, such as far offshore. Most non-target catch is landed as long as it is legal (not prohibited, within bag limits, correct size, etc.). Bycatch on CPFV trips is unlikely to cause any significant impacts to stocks. There is also anecdotal information on size-grading in the fishery, where smaller, often dead fish are thrown back once an angler lands a larger fish of the same species. The degree of this practice is unknown, but it is not believed to be substantial. There is uncertainty about post-release mortality for many species, although studies do exist for some and vary greatly from species to species. Given the nature of the fisheries, that bycatch is not of concern based on the best available information, and the existing CPFV logbook program, additional methods of collecting bycatch data are not feasible considering the costs.

State-run monitoring programs, with some variation among the three U.S. West Coast states, are sufficient to satisfy federal monitoring requirements for this fishery. In California, data collection includes onboard observers/samplers and dockside sampling through the California Recreational Fishing Survey (CRFS), and mandatory state daily logbook reporting. Logbooks require information on both kept and released catch.

In Oregon, the Oregon Department of Fish and Wildlife's (ODFW) Ocean Recreational Boat Survey (ORBS) is responsible for estimating the effort and catch of the recreational ocean boat fishery (CPFV and private). CPFV fishing for HMS must submit daily logbooks reporting the amount of retained species and any bycatch.

In Washington, most all anglers access marine waters from just four ports. Washington Department of Fish and Wildlife (WDFW's) Ocean Sampling Program tracks and estimates recreational catch and effort from Washington ports and from both CPFV and privately owned vessels.

Recreational data for the CPFV fleet in Oregon and Washington is submitted to PSMFC's RecFIN program and reported in the SAFE. Estimates of California CPFV catch, including discards (bycatch), are reported in the HMS SAFE.

Private recreational boat fishery

Bycatch characteristics in the private recreational boat fishery for HMS are similar to those in the CPFV fleet. As is the case for the CPFV fishery, state-run monitoring programs, with some variation among the three U.S. West Coast states, are sufficient to satisfy federal monitoring requirements for the private recreational boat fishery.

In California, the SBRM includes samplers stationed at public boat ramps and marinas and phone surveys of recreational license holders are also conducted. Since samplers cannot reach anglers returning to private marinas, the phone survey component of CRFS is the only sampling method. However, it is not believed to accurately estimate bycatch from this portion of the fleet, although bycatch is believed to be similar in composition to both the CPFV fleet and other private vessel sectors. Anecdotal information suggests vessels docked at private marinas are larger and can fish farther offshore, targeting HMS that are typically found farther offshore like North Pacific albacore, Pacific bluefin tuna and swordfish. Given the nature of the fisheries, that bycatch is not of concern based on best available information, and the existing data collection, additional methods of collecting bycatch data are not feasible considering the costs.

In Oregon and Washington anglers go on offshore trips targeting North Pacific albacore with few other species encountered. In general, few fish are reported released on these trips. Similar to California, Oregon and Washington samplers monitor private recreational activity in recreational ports and randomly select vessels to conduct interviews including information on released catch, examine landed catch, and collect biological data. Recreational data for the private recreational fleet are submitted to PSMFC's RecFIN program. Estimates of private recreational catch, including discards (bycatch), are reported in the HMS SAFE.

Deep-set Buoy Gear

Prior to authorization of standard and linked DSBG under this FMP, bycatch was characterized by data collected during research and exempted fishing permit (EFP) trials by observers, from fishing reports for each EFP vessel, and landings to West Coast ports. Initially, 100 percent observer coverage was required for DSBG EFPs, consistent with Council recommendations. With 100 percent observer coverage, there was no uncertainty about bycatch in this fishery. Subsequently, the observer coverage was scaled back to less than 100 percent for vessels that completed initial trips with 100 percent coverage. Nonetheless, this data is sufficient to characterize catch and bycatch in the fishery. This data indicates that the fishery is highly selective for swordfish, with minimal bycatch.

The observer, logbook, and landing data from research and EFP DSBG trips was integrated to characterize bycatch occurring in the fishery. Other species caught in DSBG include marketable non-target species such as opah and escolar. Of unmarketable bycatch species, the most commonly caught is bigeye thresher shark. Data indicate the majority of bigeye thresher shark caught in DSBG are released alive. Preliminary post-release mortality studies conducted by the Pfleger Institute of Environmental Science indicate that over 90 percent of bigeye thresher sharks caught and released in DSBG fishing survive the acute effects of capture (NMFS 2021).

As an authorized fishery under this FMP, vessel logbooks must be submitted to characterize catch and bycatch on fishing trips. Logbook data can be integrated to determine compliance with reporting requirements and to characterize bycatch, despite the lack of observer requirements for the fishery. Without 100 percent observer coverage, there is uncertainty about self-reported bycatch data in logbooks. However, when considering observer and logbook data for EFP trips, catch rates derived from the different data collection types were similar. The selectivity of the fishery and the low volume of target catch indicated in the EFP data indicate that the costs of on-board observers or electronic monitoring may not be necessary from a technical perspective because the fishery is not managed to a catch or bycatch limit. Operationally, the fishery, which primarily operates in the Southern California Bight, is accessible to smaller vessels, some of which may not have the ability to accommodate on-board observers.

6.3.2 Minimizing Bycatch and Bycatch Mortality

Additional actions that will have the effect of reducing bycatch and bycatch mortality are discussed in Appendix C and under the various fishery-specific actions in Sections 6.6.1 (drift gillnet fishery), and 6.6.2 (pelagic longline fishery).

The FMP provides for a fishery-by-fishery review of measures to reduce bycatch and bycatch mortality (see Appendix C); establishes a framework for implementing bycatch reduction, adopts measures to minimize bycatch in pelagic longline and drift gillnet fisheries (Section 6.6), and adopts a formal voluntary "catch-and-release" program for HMS recreational fisheries. This meets the goals of the MSA and of this FMP and the requirements for estimating bycatch and for establishing measures to reduce bycatch and bycatch mortality in HMS fisheries.

The framework procedure may be used to implement additional bycatch reduction measures. Potential measures/methods include but are not limited to:

- time/area closures
- gear restrictions or modifications, or use of alternative gear
- educational programs
- performance standards

The voluntary "catch-and-release" program promotes reduction of bycatch mortality and waste by encouraging the live release of unwanted fish. Its rationale and origination for recreational fisheries is explained in Appendix C, Section C.7. The establishment of the catch-and-release program removes live releases in the recreational fisheries from the "bycatch" category as defined in the MSA in Section 3(2) and also promotes the handling and release of fish in a manner that minimizes the risk of incidental mortality, encourages the live release of small fish, and discourages waste.

Shared EC Species, identified in Section 3.3, could continue to be taken incidentally without violating Federal regulations, unless regulated or restricted for other purposes, such as with bycatch minimization regulations. The targeting of Shared EC Species is prohibited.

6.3.3 Protected Species

Various Federal laws provide protection for special resources, including those for protected species under ESA, MMPA, and MBTA. Interactions of HMS fishing gears with protected species are described in Appendix D. This FMP authorizes the adoption of measures to minimize interactions of HMS gears with protected species and to implement recommendations contained in Biological Opinions (ESA), Take Reduction Plans (MMPA), Seabird Management Plans, or other relevant documents pertaining to HMS fisheries. The FMP also authorizes programs to collect information on interactions in any or all HMS fisheries.

Fishery-specific measures affecting protected species are included in the initial management measures for drift gillnet and longline fisheries (Sections 6.6.1, 6.6.2). Protected species interactions with the other gear types are not major issues (Appendix D), and no alternatives were considered for those gears.

The FMP adopts a framework authorization for protected species conservation measures and implements initial conservation and management measures for drift gillnet and pelagic longline fisheries as described in section 6.6, Appendix D, and the HMS FMP FEIS (PFMC 2003, sections 9.2.5.1-2). The FMP requires general provision for its proposed protected species measures and also for future measures to reduce the takes of protected species and to minimize the risk of adverse impacts from those takes. The framework provisions of the FMP would be used to address new protected species concerns as they are identified.

Both through the SAFE Report and through special reports from interested parties (which could include the U.S. Fish and Wildlife Service or environmental organizations), the Council

- will be advised of new protected species concerns;
- would direct the HMSMT or others to investigate and recommend action;
- will determine if action is needed and, if it is viewed as a matter of substantial concern, will direct the completion of necessary documents to analyze the issues and evaluate alternatives; and
- will submit recommendations for corrective action to NMFS for consideration.

If an action is recommended by the Council and approved by NMFS, the action will be implemented by NMFS.

In fisheries where protected species takes are already being addressed, as by the Pacific Offshore Cetacean Take Reduction Team (POCTRT) for the drift gillnet fishery, any recommendations and supporting analyses by the POCTRT, will be provided by NMFS to the Council for consideration. The Council will make recommendations as it deems appropriate to NMFS, which will make final decisions on whether to proceed with rulemaking under the MMPA or MSA, as appropriate.

6.3.4 Prohibited Species

As indicated in Section 3.4, certain species are proposed to be designated as "prohibited species" under the FMP, meaning that they cannot be retained, or can be retained only under specified conditions, by persons fishing for management unit species. Three species of shark, as well as Pacific halibut and Pacific salmon, are recommended for this designation. The designation of prohibited species could be changed using framework procedures.

This FMP prohibits retention of great white, basking, and megamouth sharks (except for sale or donation of incidentally-caught specimens to recognized scientific and educational organizations). This FMP also prohibits retention of Pacific halibut and salmon (except when caught with authorized gears during authorized seasons). Neither the populations of these rare or low productivity sharks nor the strict management of halibut and salmon should be compromised by HMS fisheries. The prohibited species status of halibut and salmon is also consistent with U.S. policy and other FMPs.

The great white shark's low productivity, its accessibility in certain localized areas, and its appeal to trophy hunters make it especially vulnerable to depletion. The species has been protected in the State of California since 1995; it may not be taken except for scientific and educational purposes under State permit. The sale (or donation) of incidentally-caught specimens, live or dead, to recognized scientific and educational organizations for research or display purposes would be allowed.

Megamouth sharks are extremely rare, though they are taken in the drift gillnet fishery on rare occasions. Protection is recommended because of extreme rarity and uniqueness. Sale (donation) of incidentally

caught specimens to recognized scientific and educational organizations for research or display purposes would be allowed.

Basking sharks occur in greatest numbers in the Eastern Pacific in autumn and winter months. The fins are valuable in East Asian markets. This species is recommended for protection because it is thought to be among the least productive of shark species and thus highly vulnerable to depletion. The north Pacific stock is listed as endangered by the World Conservation Union (IUCN Red List of Threatened Species). The sale (donation) of incidentally-caught specimens, live or dead, to recognized scientific and educational organizations for research or display purposes is allowed.

Pacific halibut and Pacific salmon, while not HMS, are important as incidental catch in some HMS fisheries and so are recommended to be prohibited to ensure they are not targeted by HMS fishers, unless with authorized gear during authorized seasons. The fisheries that target halibut and salmon are already overcapitalized. Further, some runs of salmon are listed as threatened or endangered.

6.4 Controlling Catch

6.4.1 Quotas or Harvest Guidelines

A *quota* is a specified numerical harvest objective for a stock, the attainment (or expected attainment) of which causes the complete closure of the fishery or fisheries for that species. A *harvest guideline* is a numerical harvest level that is a general objective and is not a quota. A harvest guideline and an annual catch target (ACT) are functionally equivalent. Attainment of a harvest guideline or ACT does not require a management response, but it does prompt review of the fishery. This will include an HMSMT meeting to evaluate the status of the stock and to make recommendations.

Factors involved in choosing between a quota or harvest guideline/ACT include:

- the status of the stock and the need to prevent overfishing or rebuild overfished stocks;
- effects on bycatch;
- impacts on fisheries;
- achievement of the FMP goals and objectives;
- ability to monitor catches during the season; and
- U.S. obligations under an international agreement.

Harvest guidelines/ACTs can help prevent overfishing or localized depletion of vulnerable species, or can be used in implementing management decisions by international HMS management bodies. Allocation of guideline amounts among fisheries may be necessary (see Section 6.4.2).

This FMP establishes harvest guidelines for selected shark species and authorizes establishment or modification of quotas or harvest guidelines under the framework provisions. These harvest guidelines are based on a "local MSY" concept. Initial harvest guidelines for common thresher and shortfin mako sharks, are set equal to an OY estimate specified as 0.75MSY. The MSY used is the local MSY (LMSY), as the stock-wide maximum sustainable harvests are not known.

The initial harvest guidelines are OY=0.75xLMSY, as follows:

common thresher	340 mt (round weight)
shortfin mako	150 mt (round weight).

The rationale for these harvest guidelines is that, as vulnerable species in this FMP and with total catches

and extent of stocks poorly known, management of these sharks under precautionary harvest guidelines is appropriate. The thresher shark harvest guideline is lower than the recommended harvest limit set in the tri-state fishery management plan for thresher shark in place prior to FMP implementation.

These harvest guidelines pertain only to the portion of the stocks that are vulnerable to capture by West Coast vessels as they now fish. They are particularly conservative because local MSY necessarily underestimates stock-wide MSY. The guidelines are catch benchmarks that warn of possible approach to the local sustainable maximum.

The HMSMT 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 September and/or November meetings to be reviewed and approved for public review. Final action on management measures would be scheduled for the Council's March meeting in the biennial cycle.

6.4.2 Allocation

This FMP authorizes allocation of HMS quotas or harvest guidelines among U.S. West Coast-based HMS fisheries if necessary using the full rulemaking framework process. In addition to other requirements of the FMP, the Council will consider the following factors when adopting allocations of HMS among domestic fisheries:

- present participation in, and dependence on, the fishery, including alternative fisheries;
- historical fishing practices in, and historical dependence on, the fishery;
- economics of the fishery;
- agreements or negotiated settlements involving the affected participants;
- potential biological impacts on any species affected by the allocation;
- consistency with the MSA National Standards; and
- consistency with the goals and objectives of the FMP.

The FMP does not establish initial quota allocations to different fisheries or fishery sectors, except that the commercial sale of striped marlin is prohibited, a de facto allocation to the recreational sector. No compelling argument was raised for repealing the long-standing (since 1937) no-sale status of striped marlin in California and for establishing it as a commercial species on the West Coast. Future allocations could be made using framework procedures. There is no pressing need to establish allocations as long as constraining ACLs are not implemented consistent with the international exception.

6.4.3 Incidental Catch Allowance

Incidental catch refers to harvest of HMS that are unavoidably caught while fishing for other species or fishing with gear that is not legal for the harvest of HMS. This FMP authorizes the harvest and landing of incidental catches by gears not listed as legal HMS gears in the FMP, up to a maximum number or percentage of the total weight, per landing. The incidental limit may be adjusted, or separate limits may be established, for different non-HMS fisheries, in accordance with framework procedures described in this chapter. The objectives of allowing incidental catches are to:

- Minimize discards in fisheries using gear that is not legal for harvesting HMS, while increasing fishing income by allowing retention and sale of limited amounts of HMS.
- Discourage targeting on HMS by non-HMS fisheries; also reduces any associated take of marine mammals, sea turtles, and seabirds.

This FMP allows incidental commercial landings of HMS, within limits, for non-HMS gears (e.g., bottom

longline, trawl, pot gear, small mesh drift gillnet, set/trammel gillnets). These landing limits are:

- Small-mesh and set-net gillnetters may not land swordfish (consistent with California law), but are be permitted to land other HMS, with the restriction of 10 fish per landing of each non-swordfish highly migratory species.
- Bottom longline landings are restricted to three HMS sharks in total or 20% of total landings by weight of HMS sharks, whichever is greater by weight.
- Trawl, pot gear, and other non-HMS gears are restricted to a maximum of 1% of total weight per landing for all HMS shark species combined (i.e., blue shark, shortfin mako shark, and common thresher shark) or two HMS sharks, whichever is greater.

These limits discourage targeting of HMS with non-HMS gears by limiting the allowed landings; reduces wastage of HMS by still allowing traditional levels of incidental catch by those gears.

These allowances are based on the frequency of HMS in landings by non-HMS gears, and are intended to be practical with respect to the levels of HMS expected to be taken by non-HMS gears while not targeting HMS. A description of analysis used to determine these limits may be found in the HMS FMP FEIS (PFMC 2003, section 9.2.4.2).

6.4.4 Prohibition on the Sale of Striped Marlin

This FMP prohibits the sale of striped marlin by vessels under Council jurisdiction. Greater regional and national net benefits are obtained from continuing coastwide under Federal authority the long-standing California policy of reserving this species for sport use only. Striped marlin is considered to have far greater value as a recreational rather than commercial target species, and is only available seasonally. Prohibiting its sale removes the incentive for its taking by commercial fishers.

6.5 Other Measures

6.5.1 Treaty Indian Fishing

This FMP authorizes adoption of measures and procedures to accommodate treaty fishing rights in the initial implementing regulations for the FMP. The FMP also authorizes revisions to the initial regulations through regulatory amendments, without the need to amend the FMP. The initial implementing regulations would contain the measures and procedures specified below. This action is a practical procedure for accommodating treaty fishing rights, without need of plan amendments for revisions.

Initial Measures and Procedures

Under the FMP, the initial measures and procedures for accommodating treaty fishing rights are as follows:

(a) Pacific Coast treaty Indian tribes have treaty rights to harvest HMS in their usual and accustomed (u&a) fishing areas in U.S. waters.

(b) Pacific Coast treaty Indian tribes means the Hoh, Makah, and Quileute Indian Tribes and the Quinault Indian Nation.

(c) The NMFS recognizes the areas set forth below as marine u&a fishing grounds of the four Washington coastal tribes. The Makah u&a grounds were adjudicated in U.S. v. Washington, 626 F.Supp. 1405, 1466 (W.D. Wash. 1985), affirmed 730 F.2d 1314 (9th Cir. 1984). The u&a grounds of the Quileute, Hoh, and Quinault tribes have been recognized administratively by NMFS. See, e.g., 64 Fed. Reg. 24087-24088 (May 5, 1999) (u&a grounds for groundfish); 50 C.F.R. 300.64(i) (u&a grounds for halibut). The u&a grounds recognized by NMFS may be revised as ordered by a Federal court.

(d) Procedures. The rights referred to in paragraph (a) will be implemented by the Secretary of Commerce, after consideration of the tribal request, the recommendation of the Council, and the comments of the public. The rights will be implemented either through an allocation of fish that will be managed by the tribes, or through regulations that will apply specifically to the tribal fisheries. An allocation or a regulation specific to the tribes shall be initiated by a written request from a Pacific Coast treaty Indian tribe to the NMFS West Coast Regional Administrator, at least 120 days prior to the time the allocation is desired to be effective, and will be subject to public review through the Council process. The Secretary recognizes the sovereign status and co-manager role of Indian tribes over shared Federal and tribal fishery resources. Accordingly, the Secretary will develop tribal allocations and regulations in consultation with the affected tribe(s) and, insofar as possible, with tribal consensus.

(e) Identification. A valid treaty Indian identification card issued pursuant to 25 CFR Part 249, Subpart A, is prima facie evidence that the holder is a member of the Pacific Coast treaty Indian tribe named on the card.

(f) Fishing (on a tribal allocation or under a Federal regulation applicable to tribal fisheries) by a member of a Pacific Coast treaty Indian tribe within that tribe's u&a fishing area is not subject to provisions of the HMS regulations applicable to non-treaty fisheries.

(g) Any member of a Pacific Coast treaty Indian tribe must comply with any applicable Federal and tribal laws and regulations, when participating in a tribal HMS fishery implemented under paragraph (d) above.

(h) Fishing by a member of a Pacific Coast treaty Indian tribe outside that tribe's u&a fishing area, or for a species of HMS not covered by a treaty allocation or applicable Federal regulation, is subject to the HMS regulations applicable to non-treaty fisheries.

6.5.2 Procedures for Reviewing State Regulations

Any state may propose that the Council review a particular state regulation for the purpose of determining its consistency with the FMP and the need for complementary Federal regulations. Although this procedure is directed at the review of new regulations, existing regulations affecting the harvest of HMS managed by the FMP may also be reviewed under this process. The state making the proposal will include a summary of the regulation in question and concise arguments in support of consistency.

Upon receipt of a state's proposal, the Council may make an initial determination whether or not to proceed with the review. If the Council determines that the proposal has insufficient merit or little likelihood of being found consistent, it may terminate the process immediately and inform the petitioning state in writing of the reasons for its rejection.

If the Council determines sufficient merit exists to proceed with a determination, it will review the state's documentation or prepare an analysis considering, if relevant, the following factors:

- How the proposal furthers, or is not otherwise consistent with, the objectives of the FMP, the MSA, and other applicable law
- Likely effect on or interaction with any other regulations in force for the fisheries in the area concerned
- Expected impacts on the species or species group taken in the fishery sector being affected by the regulation
- Economic impacts of the regulation, including changes in catch, effort, revenue, fishing costs, participation, and income to different sectors being regulated as well as to sectors that might be indirectly affected.
- Any impacts in terms of achievement of harvest guidelines or harvest quotas, maintaining year-round fisheries, maintaining stability in fisheries, prices to consumers, improved product quality, discards, joint venture operations, gear conflicts, enforcement, data collection, or other factors.

The Council will inform the public of the proposal and supporting analysis and invite public comments before and at the next scheduled Council meeting. At its next scheduled meeting, the Council will consider public testimony, public comment, advisory reports, and any further state comments or reports, and determine whether or not the state regulation is consistent with the FMP, and whether or not to recommend implementation of complementary Federal regulations or to endorse state regulations as consistent with the FMP without additional Federal regulations.

If the Council recommends the implementation of complementary Federal regulations, it will forward its recommendation with the proposed rule and rationale to the NMFS Regional Administrator for review and approval. The NMFS Regional Administrator will publish the proposed regulation in the *Federal Register* for public comment, after which, if approved, he/she will publish final regulations as soon as practicable. If the Regional Administrator disapproves the proposed regulations, he/she will inform the Council in writing of the reasons for disapproval.

6.5.3 Exempted Fishing Permits

Existing Federal Procedures. Exempted fishing is defined to be fishing practices that are new to a fishery and not otherwise allowed under an FMP. The NMFS Regional Administrator, using Federal exempted fishing permit (EFP) procedures, may authorize the targeted or incidental harvest of HMS for experimental or exploratory fishing that would otherwise be prohibited. Applicants must submit their application package at least 60 days before the desired effective date of the EFP, provide a statement of purpose and goals of the EFP activity, the species (target and incidental) expected to be harvested, arrangements for disposition of all regulated species and any anticipated impacts on marine mammals or endangered species, and provide the times and places fishing will take place and the type, size, and amount of gear to be used. There are no specific requirements. The NMFS Regional Administrator may restrict the number of experimental permits by total catch, time, area, bycatch, incidental catch, or protected species takes. The NMFS Regional Administrator may require any level of industry-funded observer coverage for these experimental permits.

Exempted fisheries are expected to be of limited size and duration and must be authorized by an EFP issued for the participating vessel in accordance with the criteria and procedures specified in 50 CFR 600.745. The duration of EFPs will ordinarily not exceed one year. Permits will not be renewed automatically. An application must be submitted to the Regional Administrator for each year. A fee sufficient to cover administrative expenses may be charged for EFPs. An applicant for an EFP need not be the owner or operator of the vessel(s) for which the EFP is requested as long as the proposed activity is compatible with limited entry and other management measures in the FMP.

The Regional Administrator or Director may attach terms and conditions to the EFP consistent with the purpose of the exempted fishing, including, but not limited to:

(a) The maximum amount of each regulated species that can be harvested and landed during the term of the EFP, including trip limitations, where appropriate.
(b) The number, size(s), name(s), and identification number(s) of the vessel(s) authorized to conduct fishing activities under the EFP.
(c) The time(s) and place(s) where exempted fishing may be conducted.
(d) The type, size, and amount of gear that may be used by each vessel operated under the EFP.
(e) The condition that observers, a vessel monitoring system, or other electronic equipment be carried on board vessels operated under an EFP, and any necessary conditions, such as pre-deployment notification requirements.
(f) Reasonable data reporting requirements.
(g) Other conditions as may be necessary to assure compliance with the purposes of the EFP, consistent with the objectives of the FMP and other applicable law.

(h) Provisions for public release of data obtained under the EFP that are consistent with NOAA confidentiality of statistics procedures at set out in Federal regulations, Chapter 50, Part 600, subpart E. An applicant may be required to waive the right to confidentiality of information gathered while conducting exempted fishing as a condition of an EFP.

Additional FMP Requirements for an Exempted Fishing Permit. This FMP places additional requirements for authorizing an EFP for targeting HMS species, including EC species shared between all four Council FMPs. An EFP proposal will be required to follow a specific Council protocol and be reviewed by the Council prior to application to NMFS. EFP proposals targeting management unit species or HMS EC species will be subject to the protocol for EFPs for HMS Fisheries (Council Operating Procedure #20). EFP proposals targeting EC species shared between all four FMPs, including the HMS FMP, will be subject to the protocol for Shared EC Species (Council Operating Procedure #24). The protocols are intended to ensure the Council has adequate information on all aspects of the proposed fishery and has adequate time to consider, review, and formulate recommendations. These protocols will be available from the Council. They will require additional detailed information and analysis beyond those specifically required for a NMFS EFP. The protocol*s* will specify timing for submissions and timing for Council review.

This FMP authorizes mandatory data reporting and mandatory on-board observers for vessels with exempted fishing permits (PFMC 2003, see section 9.2.4.6). Installation of vessel monitoring units (VMS) aboard vessels with exempted fishing permits may be also required.

The FMP requires that applicants submit for Council review and approval an initial EFP plan prior to formal application to NMFS, following the protocol in the Council Operating Procedure specific to HMS fishery EFPs. The protocol as adopted or modified will include, but not be limited to, the following elements:

- schedule and procedure for submitting EFP applications
- format for applications
- qualification criteria for applicants
- Council internal review procedures
- relevant laws and regulations that must be followed

To serve its constituents, the Council needs this formal process through which it can review and make recommendations on the EFP applications to NMFS.

The Council will review, comment, and make recommendations on the EFP application or plan and may require changes or request additional information. The final EFP application or plan and Council recommendations will then be provided by the applicant to NMFS for action. NMFS review and any subsequent issuance of an EFP will then proceed according to regulations specified at 50 CFR 600.745.

6.5.4 Temporary Adjustments due to Weather

The Council will consider and may provide, after consultation with the U.S. Coast Guard (USCG) and fishery participants, temporary adjustments for access to the fishery by vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safety of the vessels, except that the adjustment shall not adversely affect conservation efforts in other fisheries or discriminate among participants in the affected fishery. No adjustments due to weather are proposed at this time, as the Council has no information from fishery participants or others to indicate that particular accommodations are needed to provide reasonable opportunity to harvest HMS. There are no quotas or allocations that could not be harvested due to poor weather.

6.5.5 Safety of Life at Sea

National Standard 10 (NS 10) requires that conservation and management measures shall, to the extent practicable, promote the safety of human life at sea. The substantive requirements of NS 10 are fulfilled by Council, NMFS, USCG, and fishing industry consultation on the nature and extent of any adverse effects that proposed management measures may have on safety of human life at sea. The purpose of consultation is to identify and mitigate, to the extent practicable, any adverse effects. 50 CFR 600.355, which implements NS 10, provides lists of safety considerations and mitigation measures that could be considered. To fulfill NS 10, the Council will utilize existing Council and Council subgroup meeting procedures, and the framework provisions of the FMP. Except for automatic actions such as quota closures, the framework provisions require public comment and Council action before management actions are implemented. Safety and weather issues can be considered during the Council process. The USCG has a Council representative who regularly comments on proposed management measures. In addition, the USCG participates on the Council's Enforcement Consultants Committee, which is another forum for considering safety and weather issues. The HMSMT and HMSAS also hold public meetings where safety and weather concerns can be raised and addressed. Mitigation measures may be incorporated into pre-season and in-season actions under the framework procedures.

A NMFS regulation at 50 CFR 600.745 applies to any fishing vessel required to carry an observer as part of a mandatory observer program or carrying an observer as part of a voluntary observer program under the MSA, MMPA (16 U.S.C. 1361 et seq.), the South Pacific Tuna Act of 1988 (16 U.S.C. 973 et seq.), or any other U.S. law. Observers may not depart on a fishing trip aboard a vessel that does not comply with USCG safety requirements or that does not display a current commercial fishing vessel safety examination decal. All vessels required to carry an observer must meet USCG safety requirements and display a current safety decal (issued within the previous two years). Vessels not meeting these requirements are deemed unsafe for purposes of carrying an observer and must correct deficiencies before departing port. The vessel owner or operator must also allow an observer to visually inspect any safety or accommodation requirement if requested. Observers are required to complete a pre-trip safety check of the emergency equipment and are encouraged to review emergency instructions with the operator before the vessel departs port.

6.5.6 Domestic Annual Harvest, Total Allowable Level of Foreign Fishing, and Domestic Annual Processing

The MSA at 16 U.S.C. §1853(a)(4) requires that each FMP assess and specify 1) the capacity and extent to which U.S. fishing vessels, on an annual basis, will harvest the OY from the fishery (DAH); 2) the portion of the OY which, on an annual basis, will not be harvested by U.S. fishing vessels and can be made available for foreign fishing (TALFF); and 3) the capacity and extent to which U.S. fish processors, on an annual basis, will process that portion of the OY that will be harvested by U.S. fishing vessels (DAP). Regulations implementing the MSA at 50 CFR 600.516 further define the total allowable level of foreign fishing, as—with respect to any fishery subject to exclusive U.S. fishery management authority (i.e., the portion of the fishery that occurs within the U.S. EEZ)—that portion of the OY of such fishery that will not be caught by U.S. vessels.

All species in the management unit of this FMP are highly migratory and range far beyond the EEZ. As presently defined, the OY for each species is based on MSY for the entire stock, both within and beyond the U.S. EEZ. However, the U.S. domestic fleet harvests only a small portion of the OY, and only a small portion of the U.S. harvest is taken in the EEZ. The rest of the U.S. harvest is taken beyond the EEZ.

Presently, no highly migratory species in excess of U.S. harvest capacity are available for foreign fishing (TALFF) in the EEZ. The DAH of HMS from 1995 through 1999 has averaged 24,349 mt (HMS FMP FEIS Chapter 2, Table 2-1). During this period, an average of 1,074 vessels landed HMS on the West Coast

(HMS FMP FEIS Chapter 2, Table 2-64). The amount of fishing gear actually deployed on an annual basis to take management unit species depends on availability of the resource. In all instances, the harvesting capacity of the U.S. fleet along the West Coast exceeds the amount of the resource available in the EEZ.

Similarly, no HMS are available for foreign processing. Chapter 2 of the HMS FMP FEIS documents the characteristics of 20 HMS communities, including the number of processors/buyers in each area. U.S. processors process fish caught within and outside the EEZ by U.S. vessels, and import additional HMS to meet market demand. Therefore, the capacity and extent of domestic annual processing (DAP) exceeds the amount of HMS harvested by U.S. vessels in the EEZ.

A review of the capacity and extent of domestic annual harvest and processing may be conducted periodically if warranted.

6.6 Fishery-Specific Conservation and Management Measures

This section describes fishery-specific management measures for the drift gillnet, longline, purse seine, and deep-set buoy gear fisheries. Other HMS fisheries do not have Federal regulations except for general requirements and prohibitions, such as permits and logbooks.

Management measures may be modified in the future, or new regulations may be implemented, using framework adjustment procedures in the FMP. These measures would stay in effect until revised or removed by specific action.

Management of recreational fishing is mainly deferred to the states in this FMP, reflecting the mainly localized nature of sportfishing issues and values that are best addressed at that level. Although this FMP does have a proposed catch-and-release measure for the recreational fishery that could affect fishing practices, that program is voluntary.

6.6.1 Drift Gillnet Fishery Management Measures

The drift large-mesh (14" minimum mesh size) gillnet fishery for swordfish and shark is managed under numerous complex and detailed Federal and state regulations to protect the populations fished as well as the protected species incidentally taken. These regulations for large-mesh drift gillnets include:

- In addition to State permits, a Federal HMS permit is required.
- Gear restrictions identified in the Pacific Offshore Cetacean Take Reduction Plan are required.
- A drift gillnet can be no longer than 6,000 ft.
- The gear is prohibited in waters off of Washington. This reflects an existing state of Washington prohibition on the use of drift gillnet gear.
- Protected resource area closures include the Pacific Leatherback Conservation Area and the Pacific Loggerhead Conservation Area. The Pacific Loggerhead Conservation Area is effective June, July, and August during a forecasted or occurring El Niño event.
- Mainland area closures include a complete closure of the fishery off of California February 1-April 30, within 75 nm May 1-August 14, and within 25 nm December 15-January 31 the following year; and east of a line approximating 1,000 fm off of Oregon.
- There are other discrete area closures along the California coast and around the Channel Islands.

Regulations implemented through this FMP reflect Federal conservation and management measures in place under the MMPA and ESA and all state regulations for swordfish/shark drift gillnet fishing However, at the time of the original adoption of the FMP, the Council concluded it was premature to federalize the states' limited entry programs, with its increase in Federal costs and administrative burdens. Existing time/area closures in Federal and state regulations were deemed appropriate for adopting intact. Closures

off Washington and Oregon are intended to protect common thresher shark, sea turtles, and marine mammals. Oregon does not allow drift gillnets to target thresher shark, although drift gillnet vessels have fished off both states and landed their catch in California.

6.6.2 Pelagic Longline Fishery Management Measures

The pelagic longline measures differ according to their application inside or outside the EEZ:

- The use of pelagic longline gear is prohibited in the EEZ. This avoids/prevents potential bycatch, protected species, and fishery competition problems by continuing the de facto longline prohibition throughout the EEZ. Proposals for research or an EFP for the use of longline gear under this prohibition will be evaluated when the proposals are submitted, according to EFP guidelines.
- Outside the EEZ, the use of pelagic longline gear to make shallow sets to target swordfish is prohibited.[5] A shallow set is defined as one where the deepest point of the main longline between any two floats, i.e., the deepest point in each sag of the main line, is at a depth less than or equal to 100 m (328.1 ft or 54.6 fm) below the sea surface.

Regulations consistent with those applicable to vessels fishing under a western Pacific longline limited entry permit in 2003 were implemented for pelagic longline vessels permitted under this FMP.[6] These include:

- Area restrictions (in addition to the prohibition on shallow sets): From April 1 through May 31, a vessel may not use longline gear in waters bounded by 0° latitude and 15° N. latitude, and 145° W. longitude and 180° W. longitude, receive fish caught in that area, or land fish caught in that area.
- Gear restrictions applicable when fishing west of 150° W. longitude and north of the equator: Float lines must be longer than 20 m (65.6 ft or 10.9 fm); the use of light sticks is prohibited; when using conventional longline gear at least 15 branch lines between floats must be attached between any two floats; the deepest point of the main longline between any two floats must be deeper than 100 m at its deepest point. When using basket-style longline gear at least 10 branch lines must be must be attached between any two floats.
- Limits on the retention and landing of incidentally caught swordfish apply.
- Sea turtle mitigation measures including equipment, handling and resuscitation methods, and training are required.
- Seabird mitigation measures including equipment, handling and resuscitation methods, and training are required.
- Other measures for the proper release and handling of turtles and seabirds may apply.[7]
- VMS: Eligible units are specified and must be deployed at the direction of NMFS.

6.6.3 Purse Seine Fishery Management Measures

These measures pertain to the small purse seine vessels (< 364 mt carrying capacity) fishing HMS.

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[5] Originally the FMP would have allowed the use of longline gear to target swordfish with shallow sets east of 150° W. longitude and north of the equator. However, as a consequence of the ESA section 7 consultation for the FMP, the use of shallow sets to target swordfish was prohibited in all waters beyond the EEZ (in addition to the general prohibition on the use of pelagic longline gear inside the West Coast EEZ). This prohibition does not apply to vessels fishing under a western Pacific longline limited entry permit.

[6] At the time the FMP was drafted the use of shallow-set longline to target swordfish was prohibited for vessels fishing under a Western Pacific longline limited entry permit. Selected measures, including this prohibition, would have applied to the pelagic longline fishery authorized under this FMP for vessels fishing west of 150° W. longitude and north of the equator. However, the prohibition on using shallow sets to target swordfish by vessels fishing under a Western Pacific longline limited entry permit was lifted in 2004 with measures to mitigate take and mortality of ESA-listed sea turtles.

[7] Full description of all applicable measures are in 50 CFR Part 660, see 66 FR 63630 (turtles) and 67 FR 34408 (seabirds).

This FMP opens the entire EEZ to purse seine fishing for HMS. With few data to suggest any potential harmful bycatch or gear conflicts, this action provides additional opportunity for purse seiners to fish for Pacific bluefin tuna in those years when they travel in fishable schools off Oregon and Washington, and could raise a potential for purse seining for albacore in the northwest portion of the EEZ.

Purse seine fishers targeting HMS from any state can fish anywhere in the EEZ, although there has been little interest in such fishing off Oregon and Washington.

6.6.4 Deep-Set Buoy Gear Management Measures

In addition to the general requirements described elsewhere in this FMP, the following measures will be specified in Federal regulations for DSBG fishing. As described in Section 6.1, DSBG includes two gear configurations, standard (SBG) and linked (LBG).

- Maximum amount of gear deployed
- Gear tending requirements
- Time of gear deployment/retrieval
- Simultaneous use of DSBG and other gear types on a single trip

The Council may amend these measures through the biennial management process (Chapter 5).

7.0 Essential Fish Habitat (EFH)

7.1 Background

The MSA, as amended by the Sustainable Fisheries Act in 1996, requires that fishery management plans (FMPs):

"Describe and identify essential fish habitat, …minimize to the extent practicable adverse effects on such habitat caused by fishing and identify other actions to encourage the conservation and enhancement of such habitat" (§303(a)(7)).

The MSA provides the following definition:

> The term 'essential fish habitat' means those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. (16 U.S.C. 1802 (10)).

The EFH regulations (at 50 C.F.R. 600 Subpart J) provide additional interpretation of the definition of EFH:

> 'Waters' include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include aquatic areas historically used by fish where appropriate; 'substrate' includes sediment, hard bottom, structures underlying the waters, and associated biological communities; 'necessary' means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and 'spawning, breeding, feeding, or growth to maturity' covers a species' full life cycle.

The regulations provide guidance for implementing the EFH provisions of the MSA and set forth the following four broad tasks:

- Identify and describe EFH for all species managed under an FMP;
- Describe adverse impacts to EFH from fishing activities;
- Describe adverse impacts to EFH from non-fishing activities; and
- Recommend conservation and enhancement measures to minimize and mitigate the adverse impacts to EFH resulting from fishing and non-fishing related activities.

The EFH regulations require that EFH be described and identified within waters of the U.S. and the U.S. EEZ for all life stages of each species in a fishery management unit (FMU) if they occur within that geographic scope. FMPs must describe EFH in text and maps, and should use tables and figures as appropriate, to provide information on the biological requirements for each life history stage of the species. An initial inventory of available environmental and fisheries data sources should be taken to compile information necessary to describe and identify EFH and to identify major species-specific habitat data gaps. The EFH regulations also state that FMPs should identify Habitat Areas of Particular Concern (HAPCs), which are subsets of EFH that can be useful to focus conservation efforts.

Conservation and enhancement measures may be recommended by NMFS during consultation with Federal agencies, as required by section 305(b) of the MSA, on projects which may potentially impact HMS EFH. Specific conservation measures, however, will be developed on a case-by-case basis. NMFS' authority includes the direct management of activities associated with fishing for marine, estuarine, and anadromous resources; NMFS' role in Federal interagency consultations with regard to non-fishing threats is, more often than not, advisory. This document does not assume any new authority or regulatory role for NMFS in the control of non-fishing activities beyond the statutory requirements to recommend measures to conserve living marine resources, including their habitats.

This chapter identifies and describes EFH for MUS. Improved descriptions of EFH may be possible with more basic research on life history, habitat use, behavior, and distribution of life stages. Research also is needed to identify HAPC. This FMP authorizes changes to the identification and description of EFH, and of HAPCs, as new information is collected.

The FMP also authorizes the adoption of management measures to prevent, mitigate, or minimize adverse effects on EFH from fishing when there is evidence for such effects. These management measures may include, but are not limited to, fishing gear restrictions, time/area closures, and harvest limits. Presently, however, there is no clear evidence of adverse impacts from any fisheries' practices or gear on HMS EFH

This FMP adopts species and stage-specific EFH designations for individual MUS as described in Section 7.2 and Appendix F. Designating EFH according to the best understanding of species' requirements enables informed assessments of the impacts of habitat alterations or disturbances. The EFH regulations require a description of a process to periodically review and revise EFH. The Council adopted a two-phase EFH review process. Phase 1 consists of a literature review and summary of new and newly available information and data. If the information warrants consideration of updated EFH information, the review process moves to Phase 2, which consists of developing proposed EFH modifications for Council consideration. The Council's EFH review process is described in Council Operating Procedure 22.

7.2 Description of Designated EFH by Species

In general, the MUS are found in temperate waters within the Pacific Council's region. Variations in the distribution and abundance of the MUS are affected by ever-changing oceanic environmental conditions including water temperature, current patterns and the availability of food. Sea surface temperatures and habitat boundaries vary seasonally and from year to year, with some HMS much more abundant from northern California to Washington waters during the summer and warm waters years than during winter and cold water years, due to increased habitat availability within the EEZ. There are large gaps in the scientific knowledge about basic life histories and habitat requirements of a few. The migration patterns of the stocks in the Pacific Ocean are poorly understood and difficult to categorize despite extensive tagging studies for many species. Little is known about the distribution and habitat requirements of the juvenile life stages of tuna and billfish after they leave the plankton until they recruit to fisheries. Very little is known about the habitat of different life stages of most HMS which are not targeted by fisheries (e.g., certain species of sharks). For these reasons, the Council recommends a precautionary approach in designating EFH for the MUS.

7.2.1 Common Thresher Shark

Common thresher shark EFH is defined using a combination of data sources described in Appendix F as well as expert opinion. While common thresher sharks may occur in shallow water <12 m, they occur primarily in deeper waters, seaward of 12 m, and these shallow regions including enclosed bays and estuaries are not considered essential. Including all age classes, common thresher shark EFH includes the U.S. West Coast EEZ from the U.S.-Mexico border to the U.S.-Canada border, to approximately 100 nautical miles offshore, seaward of the 12 m depth contour. While small schooling fish appear to be their preferred prey, diets vary temporally and spatially and include squid and crustaceans. The high productivity and presence of diverse small schooling fish, squid and crustacean species and relatively warm shallow shelf waters make the California Current, out to approximately 100 nautical miles, a suitable habitat for feeding and growth to maturity for common thresher sharks.

- Neonate and Early Juveniles (<102 cm FL): In shallow neritic water over the continental shelf, with a geographic range extending from the U.S.-Mexico border north to Morro Bay, California (35° N), but found most frequently in the SCB. Little is known of the food of early juveniles; they

presumably feed on small northern anchovy and other small, schooling fishes and invertebrates. The broad continental shelf and relatively warmer waters in the SCB make this region a suitable nursery habitat for common thresher sharks.

- Late Juveniles and Subadults (males > 102 cm FL and < 188 cm FL; females >1 cm FL and < 216 cm FL): Epipelagic, neritic and oceanic. Habitat of subadults extends northward up the coast, as far north as 48° N. They are found most frequently in nearshore areas over the continental shelf, especially within the SCB. Known to feed primarily on northern anchovy, Pacific sardine, Pacific hake, Pacific mackerel, and market squid; secondarily on a variety of other fishes, squid and pelagic red crab (in warm water years). Northern anchovy was a more important prey component for juvenile fish < 160 cm FL.

- Adults (males > 181 cm FL; females > 216 cm FL): Epipelagic, neritic and oceanic waters along the West Coast of North America, seasonally distributed in coastal water from the U.S.-Mexico border to the U.S.-Canada border. Known to feed primarily on northern anchovy, Pacific sardine, Pacific hake, Pacific mackerel, and market squid; secondarily on a variety of other fishes, squid, and pelagic red crab (warm water years).

7.2.2 Shortfin Mako Shark

Shortfin mako shark EFH is defined using the combination of data sources described in Appendix F as well as expert opinion. Combining all age classes, mako shark EFH includes the entire U.S. West Coast EEZ seaward of the 12 m depth contour. While mako sharks may occur in shallow water <12 m, they occur primarily in deeper waters, and these shallow regions including bays and estuaries are not considered essential. Studies have shown that mako sharks of all sizes can feed opportunistically on a high diversity of prey. The high productivity and presence of diverse fish, squid and crustacean species and relatively warm and shallow shelf waters make the California Current a suitable habitat for feeding and growth to maturity for shortfin mako sharks.

- Neonate and Early Juveniles (< 100 cm FL): The SCB ecoregion has long been considered a pupping and nursery area for mako sharks based primarily on the prevalence of juveniles in this region. Current data show that the mako shark nursery extends along the continental margins of the SCB ecoregion, south to the U.S.-Mexico border. The broad continental shelf and relatively warmer waters in the SCB make this region a suitable nursery habitat. A range of coastal pelagic fish species are important prey for small mako sharks. Pacific saury was the most important prey item for juvenile sharks (FL < 110 cm), followed by Pacific sardine, Pacific mackerel, and jumbo squid with diets varying over time.

- Late Juveniles and Subadults (males > 100 cm FL to < 180 cm FL; females >1 cm FL to < 249 cm FL): Epipelagic, neritic, and oceanic waters from the U.S.-Mexico border to the U.S.-Canada border offshore to the 200 nautical mile EEZ boundary. Mako sharks of this size feed opportunistically on a high diversity of prey.

- Adults (males > 180 cm FL; females > 249 cm FL): Epipelagic, neritic, and oceanic waters from U.S.-Mexico border to the U.S.-Canada border offshore to the 200 nautical mile EEZ boundary. Studies have shown that adult mako sharks feed opportunistically on a high diversity of prey including larger and faster prey, such as marine mammals and small sharks.

7.2.3 Blue Shark

Blue shark EFH is defined using a combination of data sources described in Appendix F as well as expert

opinion. Combining sexes and age classes, blue shark EFH includes the entire U.S. West Coast EEZ seaward of the 12 m depth contour. While blue sharks may occur in shallow water <12 m, they occur primarily in deeper waters and these shallow regions including bays and estuaries are not considered essential. The high productivity and presence of diverse fish, squid and crustacean species and habitat along the continental margins make the California Current a suitable habitat for feeding and growth to maturity for blue sharks.

- Neonate and Early Juveniles (< 83 cm FL): YOY blue sharks spend most of their time over the continental margin, but off the continental shelf. Blue shark nursery areas extend along the continental margins of the SCB ecoregion, north through Oregon (approximately 32−46.2° N). Young blue sharks off California have been found to feed heavily on pelagic cephalopods, with Gonatus spp. and paper nautiluses (Argonauta spp.) being the most important.

- Late Juveniles and Subadults (males > 82 cm FL and < 175 cm FL; females > 82 cm FL and < 170 cm FL): Epipelagic, oceanic waters from the U.S.-Canada border to the U.S.–Mexico border. Within the U.S. West Coast EEZ they are known to feed on northern anchovy, Pacific hake, squid, spiny dogfish, Pacific herring, flatfishes, and opportunistically on surface-swarms of euphausiids, and inshore spawning aggregations of market squid. A study showed Gonatus spp. ranked first in importance followed by jumbo squid and Argonauta spp.

- Adults (males > 175 cm FL; females > 170 cm FL): Epipelagic, oceanic waters in the region from northern California to the U.S.–Mexico border. A study showed jumbo squid ranked first in importance followed by Gonatus spp. and Octopoteuthis spp. Larger specimens may feed on marine mammals, including pinnipeds and cetaceans. The relatively warmer and productive waters off California make this a suitable feeding habitat for adult blue sharks.

7.2.4 Albacore Tuna

Albacore tuna EFH is defined using a combination of data sources described in Appendix F as well as expert opinion. Combining all age classes, albacore tuna EFH includes the entire U.S. West Coast EEZ seaward of the 12 m depth contour. While albacore tuna may occur in shallow water <12 m, they occur primarily in deeper waters and these shallow regions including bays and estuaries are not considered essential. The high productivity and presence of diverse fish, squid, and crustacean species make the California Current a suitable habitat for feeding and growth to maturity for juvenile albacore tuna.

- Eggs and Larvae: No habitat within the U.S. West Coast EEZ.

- Juvenile (~50 to < 85 cm FL): Oceanic, epipelagic waters from the U.S.-Mexico border north to the U.S.-Canada border. Albacore feed on small fishes (northern anchovy, rockfish species, boreal clubhook squid, and crustaceans (amphipods, euphausiids).

- Adult (>85 cm FL): Adulthood is defined by the ability to reproduce rather than size. Thus, while some fish >85 cm are landed in the EEZ these fish are not reproductively mature and thus, not adults. Following this logic, adult albacore are not found in the EEZ and consequently adult albacore EFH is not found within the U.S. West Coast EEZ.

7.2.5 Bigeye Tuna

Bigeye tuna EFH is defined using a combination of data sources described in Appendix F as well as expert opinion. The occurrence of bigeye tuna in the U.S. West Coast EEZ is not common, and typically occurs in warm water years. Bigeye tuna EFH includes oceanic, epipelagic, and mesopelagic waters of the U.S.

West Coast EEZ from the U.S.-Mexico border to just north of Point Conception, California (34° 34' N), seaward of the 12 m depth contour. Habitat is concentrated in the SCB primarily south of 34° N latitude. While bigeye tuna may occur in shallow water <12 m, they occur primarily in deeper waters and these shallow regions including bays and estuaries are not considered essential. The high productivity and presence of diverse fish, squid, and crustacean species make the California Current a suitable feeding habitat for juvenile and adult bigeye tuna.

- Eggs and Larvae: No habitat within the U.S. West Coast EEZ.

- Juvenile (< 108 cm FL): Oceanic, epipelagic, and mesopelagic waters from the U.S.-Mexico border to just north of Point Conception, California (34° 34' N). Feeding appears to be opportunistic at all life stages, with prey items consisting primarily of crustaceans, cephalopods, and fishes. Sternoptychids, gempylids, paralepidids, and myctophids are important prey items.

- Adult (>108 cm FL): Oceanic, epipelagic, and mesopelagic waters from the U.S.-Mexico border to just north of Point Conception, California (34° 34' N). Feeding appears to be opportunistic at all life stages, with prey items consisting primarily of crustaceans, cephalopods, and fishes. Sternoptychids, gempylids, paralepidids, and myctophids are important prey items.

7.2.6 Pacific Bluefin Tuna

Pacific bluefin tuna EFH is defined using a combination of data sources described in Appendix F as well as expert opinion. Pacific bluefin tuna EFH includes the entire U.S. West Coast EEZ seaward of the 12 m depth contour. While Pacific bluefin tuna may occur in shallow water <12 m, they occur primarily in deeper waters and these shallow regions including bays and estuaries are not considered essential. The high productivity and presence of diverse fish, squid and crustacean species make the California Current a suitable habitat for feeding and growth to maturity for juvenile Pacific bluefin tuna.

- Eggs and Larvae: No habitat within the U.S. West Coast EEZ.

- Juvenile and Adult (>50 cm FL): Oceanic, epipelagic waters from the U.S.-Mexico border north to the U.S.-Canada border, and westward to the 200 nm EEZ boundary. Major prey of Pacific bluefin across sizes in our region are the northern anchovy, Pacific sardine, Pacific mackerel, jumbo squid, midwater eelpout, Pacific saury, squid, and pelagic red crab. Overall, this is a highly opportunistic predator that can exploit a broad range of available prey species across habitats. In a study in the eastern Pacific Ocean using gonad histology none of the females were mature although a few males were considered mature (Dewar*, et al.* 2022). Thus, males would be considered adults whereas the females of the same size would not. Regardless, from the perspective of EFH, they share the same habitat, and separation by life history stage is not useful.

7.2.7 Skipjack Tuna

Skipjack tuna EFH is defined using a combination of data sources described in Appendix F as well as expert opinion. Skipjack tuna EFH includes the oceanic, epipelagic waters of the U.S. West Coast EEZ from the U.S.-Mexico border to just north of Point Conception, California (34° 34' N), seaward of the 12 m depth contour. While skipjack tuna may occur in shallow water <12 m, they occur primarily in deeper waters and these shallow regions including bays and estuaries are not considered essential. The high productivity and presence of diverse fish, squid, and crustacean species make the SCB during warm years a suitable feeding habitat for adult skipjack tuna.

- Eggs and Larvae: No habitat within the U.S. West Coast EEZ.

- Juvenile: No habitat within the U.S. West Coast EEZ.

- Adult (~56 cm FL): Oceanic, epipelagic waters from the U.S.-Mexico border to just north of Point Conception, California (34° 34' N) to the 200 nm U.S. EEZ boundary. Pelagic red crab, northern anchovy, Euphausiids, Pacific saury, and squid are important components of their diets.

7.2.8 Yellowfin Tuna

Yellowfin tuna EFH is defined using a combination of data sources described in Appendix F as well as expert opinion. Based on landings data and information on size at maturity for Baja California, Mexico, the majority of fish occurring in the U.S. West Coast EEZ are immature although a small percentage may be adults. Yellowfin tuna EFH includes oceanic, epipelagic waters of the U.S. West Coast EEZ from the U.S.-Mexico border to just north of Point Conception, California (34° 34' N), seaward of the 12 m depth contour. While yellowfin tuna may occur in shallow water <12 m, they occur primarily in deeper waters and these shallow regions including bays and estuaries are not considered essential. The high productivity and presence of diverse fish, squid, and crustacean species make the SCB a suitable feeding habitat for yellowfin tuna.

- Eggs and Larvae: No habitat within the U.S. West Coast EEZ.

- Juvenile and Adults (>35 cm): Oceanic, epipelagic waters from the U.S.-Mexico border to just north of Point Conception, CA (34° 34' N) to the 200 nm U.S. EEZ. Pelagic red crab is an important constituent of the diet in southern California (warm water years), as well as northern anchovy, Pacific jack, sardine, and squid species.

7.2.9 Striped Marlin

Striped marlin EFH is defined using a combination of data sources described in Appendix F as well as expert opinion. Based on catch data the majority of fish landed in the U.S. EEZ are adults. Striped marlin EFH includes oceanic, epipelagic waters of the U.S. West Coast EEZ from the U.S.-Mexico border to just north of Point Conception, California (34° 34' N), seaward of the 12 m depth contour. While striped marlin may occur in shallow water <12 m, they occur primarily in deeper waters and these shallow regions including bays and estuaries are not considered essential. The relatively warmer temperature, high productivity and presence of diverse fish, squid and crustacean species make the SCB a suitable foraging habitat for adult striped marlin.

- Eggs, Larvae and Juveniles: No EFH within the U.S. West Coast EEZ.

- Subadult (males < 144 cm EFL; females <160 cm EFL): No EFH is identified in the U.S. West Coast EEZ. Based on landings data and the size at first reproduction few subadult striped marlin are expected in the U.S. EEZ.

- Adult (males > 144 cm EFL; females >160 cm EFL): Oceanic, epipelagic waters of the SCB, from the U.S.-Mexico border to just north of Point Conception California (34° 34' N) and to the 200 nm U.S. EEZ. Diets off California include a range of fish, squid and crustaceans including Pacific saury, northern anchovy, Pacific sardine, jack mackerel, squid, and pelagic red crab.

7.2.10 Swordfish

Swordfish EFH is defined using a combination of data sources described in Appendix F as well as expert opinion. Swordfish EFH, including adults and juveniles, includes the entire U.S. West Coast EEZ seaward

of the 12 m depth contour. While swordfish may occur in shallow water <12 m, they occur primarily in deeper waters and these shallow regions including bays and estuaries are not considered essential. The high productivity and presence of diverse fish, squid, and crustacean species make the California Current a suitable habitat for feeding and growth to maturity for swordfish.

- Eggs and Larvae: No habitat within the U.S. West Coast EEZ.

- Juvenile (males <102 EFL or 118 cm LJFL; females <144 cm EFL or <163 LJFL): Oceanic, epipelagic, and mesopelagic waters from the U.S.-Mexico border north to 41° N latitude and to the 200 nm U.S. West Coast EEZ. Diet is thought to be largely opportunistic on suitable-sized prey. In the SCB, swordfish feed on jumbo squid, *Boreopacific gonate,* Barracudinas, market squid, Pacific hake, northern anchovy, and myctophids.

- Adult (males > 102 cm EFL or 117 LJFL; females > 144 cm EFL or 162 LJFL): Oceanic, epipelagic and mesopelagic waters from the U.S.-Mexico border to the U.S.-Canada border and to the 200 nm U.S. West Coast EEZ. Large swordfish feed on similar prey as the smaller size group but jumbo squid, Gonatus spp., Luvar and Pacific hake are significantly more important.

7.2.11 Dorado or Dolphinfish

Dolphinfish EFH is defined using a combination of data sources described in Appendix F as well as expert opinion. Dolphinfish EFH includes the epipelagic and oceanic waters of the U.S. West Coast EEZ from the U.S.-Mexico border to just north of Point Conception, California (34° 34' N), seaward of the 12 m depth contour. While dolphinfish may occur in shallow water <12 m, they occur primarily in deeper waters and these shallow regions including bays and estuaries are not considered essential. The relatively warmer waters, high productivity, and presence of diverse fish, squid, and crustacean species make the SCB a suitable feeding habitat for adult dolphinfish.

- Eggs, Larvae and Small Juveniles (<13.7 cm FL): No EFH within the U.S. West Coast EEZ. Occurrence is rare.

- Juveniles and Subadults (> 13.6 cm FL and < 35 cm FL): No EFH within the U.S. West Coast EEZ. Based on the size composition of landings data, juveniles and subadults would be rare in the U.S. EEZ.

- Adults (>35 cm FL): Epipelagic and oceanic waters from the U.S.-Mexico border to just north of Point Conception, California (34° 34' N) and to the outer edge of the U.S. EEZ. Flying fishes, epipelagic cephalopods, tetraodontiform fishes, and several mesopelagic fishes are important prey species.

7.3 Habitat Areas of Particular Concern (HAPCs)

The EFH regulations state that FMPs should identify specific types or areas of habitat within EFH as HAPCs, based on one or more of the following considerations:

1. the importance of the ecological function provided by the habitat.
2. the extent to which the habitat is sensitive to human-induced environmental degradation.
3. whether, and to what extent, development activities are, or will be, stressing the habitat type.
4. the rarity of the habitat type.

The goal of identifying HAPCs is to provide additional focus for conservation efforts. While the HAPC designation does not add any specific regulatory process, it highlights certain habitat types that align with one or more of the considerations listed above. HAPCs should be spatially discrete, with clearly defined geographic boundaries. Councils may implement conservation actions such as time/area closures, gear restrictions, or other mechanisms to protect designated HAPCs, and a HAPC designation helps inform EFH consultations in which federally permitted projects with potential adverse impacts to HAPC are more carefully scrutinized during the consultation process on non-fishing activities.

HAPCs were considered but not adopted when the HMS FMP was originally approved. Habitats such as shark pupping grounds, nursery areas, and migratory routes were considered as potential HAPCs during the 2023 EFH review. However, no HAPCs were ultimately recommended for inclusion, based primarily on the lack of sufficient information to identify discrete areas with clearly defined geographic boundaries, or to provide a thorough qualitative description of the HAPC boundaries. There are no HAPCs designated at this time, but through this FMP, a framework is authorized to ensure review and updating of EFH based on new scientific evidence or other information as well as incorporation of new information on HMS HAPCs as it becomes available in the future.

Research is needed to identify HAPCs, such as shark pupping grounds, key migratory routes, feeding areas, and areas of concentration of large adult females. Some of the more transitory MUS that invade the region only at the far fringes of their distributions (e.g., the tropical tunas and dorado), probably do not occupy habitats within the EEZ that are essential to the health and survival of their populations. If HAPCs for these species, and those of others that have more regional distributions, become identified in the future (such as shark pupping or nursery areas), the Council should consider management actions to protect those habitats.

7.4 Effects of Fishing Activities on Fish Habitat

Section 600.815(a)(2) of the EFH regulations lists the mandatory contents of FMPs regarding fishing activities that may adversely affect EFH. The adverse effects from fishing activities may include physical, chemical, or biological alterations of the substrate, and loss of, or injury to, benthic organisms, prey species and their habitat, and other components of the ecosystem. FMPs must identify management measures which minimize adverse effects on EFH from fishing, to the extent practicable, and identify conservation and enhancement measures. FMPs must also contain an assessment of the potential adverse effects of all fishing activities in waters described as EFH. In completing this assessment, councils should use the best scientific information available, as well as other appropriate information sources, as available. This assessment should consider the relative impacts of all fishing gears and practices used in EFH on different types of habitat found within EFH. The assessment should also consider the establishment of research closure areas and other measures to evaluate the impact of any fishing activity that alters EFH.

Councils must act to minimize, prevent, or mitigate any adverse effects from fishing activities, to the extent practicable, if there is evidence that a fishing activity adversely affects EFH in a manner that is more than minimal and not temporary in nature. In determining whether it is practicable to minimize an adverse effect from fishing, councils should consider; the nature and extent of the adverse effect on EFH; and whether the management measures are practicable, taking into consideration the long- and short-term costs and benefits to the fishery and EFH, along with other appropriate factors, consistent with National Standard 7 (conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication).

In general, fishing gear deployed in the ocean water column is not known to directly affect or alter HMS water column habitat, and any adverse impacts to HMS EFH from the presence of deployed fishing gear would be considered minimal and temporary. This would apply to other lost gear (light sticks, buoys, etc.) as well. However, habitat can be affected by inadvertent loss of gear that is left to "ghost fish," or to create

marine debris that can cause harm to other species. Other potential impacts to HMS EFH include discharge of processing waste (offal) and the removal of prey species, both of which could decrease the quality of HMS EFH. These are described further below.

7.4.1 Impacts of Fishing Gear on HMS EFH

HMS fisheries are associated with hydrographic structures of the water column (e.g., the marine pelagic and mesopelagic zone and convergence boundary areas between currents and major features such as the thermocline). Thus, the approved gears that are used in the HMS fisheries do not contact the bottom substrate; therefore, the only opportunity for damage to benthos or EFH for any species in fishing for HMS is from lost gear. The quality of HMS EFH in the water column could potentially be degraded due to the presence of derelict gear, although any impacts would not be expected to be more than minimal and temporary in nature. Although derelict gear could degrade the quality of benthic habitat, the benthos is not considered EFH for HMS species. If gear is lost, diligent efforts should be made to recover the lost gear to avoid further disturbance of the underwater habitat through "ghost fishing." Under Federal law, it is illegal for any vessel to discharge plastics or garbage containing plastics into any waters, but plastic buoys, light sticks, monofilament line and netting, and other plastic items have been known to enter the system from fishing operations, mostly as a result of damage to gear. The full extent of this problem in our HMS fisheries is not known, but is unlikely to have more than a minimal impact on HMS EFH because of the agility of these large pelagic species in avoiding debris in the open ocean, and the tendency of at least some of this material to sink to the bottom, and the relatively inert nature of plastic. Non-HMS fisheries and non-MSA managed fisheries also operate in Pacific Coast waters but are similarly unlikely to have more than a minimal effect on HMS EFH.

It has been reported that lost and discarded sections of driftnet ball up fairly quickly and cease to ghostfish in a short period of time (Mio, *et al.* 1990), but these loose balls may trail streaming sections of net that may continue to fish for extended periods (Ignell, *et al.* 1986; Von Brandt 1984). It is most likely, however, that HMS, particularly tunas and billfish, are less vulnerable to the ghost fishing effects of streaming sections of netting than are less mobile or scavenging species which may blunder into the net (e.g. *Mola mola*) or become entangled in attempts to feed on remains of the catch (e.g. seabirds and pinnipeds). Nonetheless, sharks may be more vulnerable, and blue shark and pelagic hammerhead shark have been reported as caught in four sections of derelict squid driftnet retrieved by U.S. observers in 1985 (Ignell, *et al.* 1986).

Discharge of offal and processing slurry may affect EFH for HMS. Prolonged offal discards from some large-scale fisheries have redistributed prey food away from mid-water and bottom-feeding organisms to surface-feeding organisms, such as tuna, usually resulting in scavenger and seabird population increases. Offal discards in low-current environments can collect and decompose on the ocean floor, creating anoxic bottom conditions which may affect HMS. Pacific coast marine habitat is generally characterized by strong current and tide conditions, but there may be either undersea canyons affected by at-sea discard, or bays and estuaries affected by discard from shoreside processing plants. As with bottom trawling off the Pacific coast, little is known about the environmental effects of mid-water trawling and processing discards on habitat conditions. The Environmental Protection Agency (EPA) prohibits seafood processor vessels from discharging seafood processing waste in nearly 3,770 square miles of Federal waters off Oregon and Washington because of the potential for high-volume, oxygen-consuming organic waste to exacerbate hypoxia in the region (EPA NPDES Permit No. WAG520000).

The presence of prey species can contribute to waters functioning as feeding habitat, and thus the removal of prey species could conceivably affect the quality of HMS EFH. HMS species feed on a broad range of prey including fish, squid and crustaceans (Preti 2020). Prey can include anchovy, jack mackerel, Pacific hake, flatfishes, spiny dogfish, rockfishes, squids and pelagic crustaceans including euphausiids (Tricas

1979; Harvey 1989; Brodeur et al. 1987, Preti 2020). The removal of prey species by HMS fishing, other MSA-managed fishing, and non-MSA managed fishing could conceivably reduce the quality of HMS EFH. Purse seine fisheries managed under the Council's CPS FMP capture Pacific sardine, northern anchovies, Pacific mackerel, squid, and other species that serve as HMS prey. Several species captured in the directed Pacific Coast groundfish fishery or as bycatch are included in the suite of HMS prey species. Fisheries not managed under the MSA (e.g., state-managed shrimp fisheries) also capture HMS prey species, in the directed fishery or as bycatch. However, the majority of HMS prey species are Ecosystem Component Species and therefore not subject to directed harvest, or they are not under Federal or state management and thus would not be subject to fishery management measures.

The EFH literature search and review completed in 2023 produced no information indicating that fishing adversely affects HMS EFH via removal of HMS prey species, and HMS in this FMU are known to be opportunistic feeders and switch prey. For instance, data on stomach content analysis for albacore tuna from the Pacific Northwest and swordfish from Central and Southern California demonstrate that principal prey species vary widely between years. Anchovy, Pacific saury, and rockfish were particularly important prey for albacore, while hake and market squid were important for swordfish. Both species consume a broad range of prey with significant shifts in diet composition over relatively short time periods (SWFSC 2022; Iglesias 2023). However, the energetic balance of HMS could be affected if they need to forage further afield to obtain adequate nutrition, or if they are forced to rely on prey species of lower nutritional benefit.

7.4.2 Mitigation Considerations for Fishing Effects

Fishery management options to prevent, mitigate, or minimize adverse effects from fishing activities may include, but are not limited to:

Fishing gear restrictions: Seasonal and areal restrictions on the use of specified gear; gear modifications to allow escapement of particular species or particular life stages (e.g., juveniles); prohibitions on the use of explosives and chemicals; prohibitions on anchoring or setting gear in sensitive areas; and prohibitions on fishing activities that cause significant physical damage in EFH.

Time/area closures: Closing areas to all fishing or specific gear types during spawning, migration, foraging, and nursery activities; and designating zones for use as marine protected areas to limit adverse effects of fishing practices on certain vulnerable or rare areas/species/life history stages.

Harvest limits: Limits on the take of species that provide structural habitat for other species assemblages or communities, and limits on the take of prey species. As noted previously, the majority of HMS prey species are not under Federal or state management and thus would not be subject to fishery management measures (SWFSC 2022). However, recognizing the importance of forage fish to Council-managed species and the broader ecosystem, the Council implemented a forage initiative in 2015 (i.e., Comprehensive Ecosystem-Based Amendment 1) to protect shared ecosystem component species identified under the four West Coast FMPs. The initiative, which resulted in amendments to all four FMPs, prohibits new directed commercial fishing of currently unmanaged and unfished forage fish until the Council can assess the relevant scientific information and consider impacts to existing fisheries, communities, and the marine ecosystem. The initiative protects a wide variety of important prey, including species of herring, mesopelagic fishes, smelts, pelagic squids, and others.

Compliance and Enforcement of Marine Pollution Laws: Fishers are required to save light sticks for disposal on land as required by the International Convention of the Prevention of Pollution from Ships, or MARPOL established in 1973. Annex V of the Protocol deals with plastics and garbage disposal from ships and prohibits dumping of all ship-generated plastics. The Coast Guard is in charge of enforcing MARPOL Annex V within the U.S. EEZ. All vessels, regardless of nationality, are bound by these

MARPOL restrictions within the territorial waters of the treaty nations. In addition, vessels should ensure compliance with EPA National Pollution Discharge Elimination System (NPDES) permits for fish processing waste discharge.

Globally, there is an increasing amount of research to measure the effects of fishing activities on marine habitat, and some general conclusions about the effects of some gear types on marine habitat have been drawn from this research. However, there has been little research on gear effects (including derelict gear) of Council-managed fisheries on HMS EFH. While HMS are generally not associated with the sea bottom topography and inshore waters, the SCB has long been considered to support pupping grounds and nursery habitat for some shark species, based largely on the prevalence of juveniles in this region. Identifying measures to mitigate HMS gear impacts on HMS EFH may require research that specifically describes and quantifies these effects as well as identifying spatially discrete nursery and pupping grounds along the west coast. At that point, the Council could evaluate the magnitude of any potential impacts and consider exploring management measures to protect these habitats.

Research to identify and evaluate potential impacts to HMS EFH from fishing activities is recommended. This may be particularly important to protect life stage-specific EFH such as nursery and pupping grounds for sharks. In considering mitigation measures to minimize impacts to EFH, the Council should include potential impacts to EFH identified and described under other Council FMPs.

7.4.3 Findings

The most recent review of HMS EFH, completed in 2023, produced no evidence that HMS fishing practices or gear adversely affect EFH in a manner that is more than minimal in nature. Therefore, the West Coast HMS FMP meets the MSA requirement to minimize to the extent practicable, the adverse effects of fishing on EFH, and no minimization measures are warranted.

7.5 Effects of Non-fishing Activities on Fish Habitat

Section 600.815(a)(4) of the EFH regulations pertains to identifying non-fishing related activities that may adversely affect EFH. The section states that FMPs must identify activities that have the potential to adversely affect, directly or cumulatively, EFH quantity or quality, or both. Broad categories of activities which can adversely affect EFH include, but are not limited to: dredging, filling, excavation, mining, impoundment, discharge, water diversions, thermal additions, actions that contribute to non-point source pollution and sedimentation, introduction of potentially hazardous materials, introduction of exotic species, and the conversion of aquatic habitat that may eliminate, diminish, or disrupt the functions of EFH. For example, Sheehan and Tasto (2001) provide a good summary of various sources of impairment of water quality and habitats in California waters, and Kiffney et al. (2002) includes comprehensive descriptions of non-fishing activities and potential conservation measures. FMPs should describe known and potential adverse impacts to EFH. These descriptions should explain the mechanisms or processes that may cause adverse effects and how these may affect habitat function. A Geographic Information System (GIS) or mapping system should be used to support analyses of data and to present these data in an FMP in order to geographically depict impacts identified in this paragraph.

The MSA requires Federal agencies undertaking, permitting, or funding activities that may adversely affect EFH to consult with NMFS. Under section 305(b)(4) of the MSA, NMFS is required to provide EFH conservation and enhancement recommendations to Federal and state agencies for actions that adversely affect EFH; however, state agencies and private parties are not required to consult with NMFS. EFH consultations will be combined with existing interagency consultations and environmental review procedures that may be required under other statutes, such as the Endangered Species Act, Clean Water Act, the National Environmental Policy Act, the Fish and Wildlife Coordination Act, the Federal Power

Act, or the Rivers and Harbors Act.

EFH consultation may be at either a broad programmatic level or project-specific level. Programmatic is defined as "broad" in terms of process, geography, or policy (e.g., "national level" policy, a "batch" of similar activities at a "landscape level", etc.). Where appropriate, NMFS will use a programmatic approach designed to reduce redundant paperwork and to focus on the appropriate level of analysis whenever possible. The approach would permit project activities to proceed at broad levels of resolution so long as they conform to the programmatic consultation. The wide variety of development activities over the extensive range of EFH, and the MSA requirement for a cumulative effects analysis warrants this programmatic approach.

The following are general descriptions of non-fishing activities which may directly or cumulatively, temporarily or permanently, threaten the physical, chemical, and biological properties of the habitat utilized by HMS and/or their prey. The direct result of these threats is that EFH may be eliminated, diminished, or disrupted. The list includes common activities with known or potential impacts to EFH; it is not prioritized nor is it to be considered all-inclusive. However, the potential adverse effects described below do not necessarily apply to the described activities in all cases, as the specific circumstances of the proposed activity or project must be carefully considered on a case-by-case basis. Furthermore, some of the activities described below may also have beneficial effects on habitat, which need to be considered in any analysis.

Non-fishing related effects on EFH for HMS may not be as adverse relative to other EFH types, because adults and juveniles are highly mobile, and all life stages are pelagic (in the water column near the surface and not associated with substrate) and dispersed in a wide band along the West Coast. Table 4-1 summarizes the potential adverse impacts of these non-fishing activities and conservation/enhancement measures to minimize those effects.

7.5.1 Description of Non-fishing Activities

This section describes several non-fishing activities that may adversely affect HMS EFH and provides conservation recommendations. A NMFS White Paper (Kiffney et al. 2022; NMFS-NWFSC-WP-2022-01) identifies a wide range of non-fishing activities and is incorporated by reference into the HMS FMP. Although not described in detail here, offshore wind (OSW) energy planning and development is a prominent renewable energy national initiative. Floating OSW is the most likely design for such facilities on the U.S. West Coast. Potential adverse impacts include loss and alteration of habitat; sedimentation, siltation, and turbidity; direct impacts to marine biota; alteration of magnetic fields; and noise effects. In addition, energy extraction by turbines can reduce wind speeds at the sea surface, which could affect wind-driven upwelling processes (Raghukumar et al. 2023). OSW facilities require cables connecting individual turbines (inter-array cables) and transmission cables connected to the shore, both of which have potential impacts to benthic biogenic habitats. Numerous conservation measures should be considered related to OSW installation and operation. These include avoiding HAPCs or other sensitive habitats, burying cables at sufficient depths to minimize impacts, conducting pre-construction and operation monitoring for impacts to species, evaluating and addressing electromagnetic effects on aquatic organisms, and minimizing noise effects. These potential impacts and conservation measures are more fully described in Kiffney et al. (2022).

Dredging

Dredging navigable waters has a periodic impact on benthic and adjacent habitats during construction and operation of marinas, harbors and ports. Periodic or constant dredging is required to maintain or create ship (e.g., ports) and boat (e.g., marinas) access to docking facilities. Dredging is also used to create navigable channels or to maintain existing channels which periodically fill with sediments from rivers, or transported by wind, wave, and tidal processes. In the process of dredging, large quantities of the seafloor are removed,

disturbed, and resuspended and the biological characteristics of the seafloor are changed, and turbidity plumes may arise.

Dredging events using certain types of dredging equipment can result in increased levels of fine-grained mineral particles, usually smaller than silt, and organic particles in the water column habitat utilized by HMS. These turbidity plumes of suspended particles may reduce light penetration and decrease the rate of photosynthesis, and lower the primary productivity of an aquatic area if suspended for variable periods of time. HMS may suffer reduced feeding ability if suspended particles persist. The contents of the suspended material may react with the dissolved oxygen in the water and result in short-term oxygen depletion to aquatic resources. Toxic metals and organics, pathogens, and viruses absorbed or adsorbed to fine-grained particles in the material may become biologically available to organisms either in the water column or through food chain processes.

Dredging, as well as the equipment used in the process (e.g., pipelines), may damage or destroy spawning, nursery habitat, and other sensitive areas important to HMS, particularly sharks, or the habitat of coastal pelagic forage fish and invertebrates that are important prey of HMS. Within bays and harbors, dredging may also modify current patterns and water circulation of the habitat by changing the direction or velocity of water flow, or otherwise changing the dimensions of the water body potentially utilized by HMS.

Dredged Material Disposal/Fills

The disposal of dredged materials resulting from dredging operations or the use of fill material in the development of harbors results in sediments (e.g., dirt, sand, mud) covering or smothering existing substrates. Usually these covered sediments are of a soft-bottom nature as opposed to rock or hard-bottom substrates.

The disposal of dredged or fill material can result in varying degrees of change in the physical, chemical, and biological characteristics of the substrate. Subsequent erosion or lateral displacement of such deposits can also adversely affect the substrate outside the perimeter of the disposal site by changing or destroying benthic habitat. The amount and composition of the discharged material and the location, method, and timing of discharges may all influence the degree of impact on potential HMS EFH or that of HMS prey species. The discharged material can also alter the chemistry of the receiving water at the disposal site by introducing chemical constituents in suspended or dissolved form.

The discharge of dredged or fill material can result in greatly elevated levels of fine-grained mineral particles, usually smaller than silt, and organic particles in the water column thereby affecting HMS. These suspended particles may reduce light penetration and decrease the rate of photosynthesis and lower the primary productivity of an aquatic area if suspended for lengthy intervals. HMS or their prey may suffer reduced feeding ability leading to limited growth and reduced resistance to disease if high levels of suspended particles persist. The contents of the suspended material may react with the dissolved oxygen in the water and result in oxygen depletion. Toxic metals and organics, pathogens, and viruses absorbed or adsorbed to fine-grained particles in the material may become biologically available to organisms either in the water column or through food chain processes.

Fossil Fuel Production and Exploration

Oil exploration/production occurs at a wide range of water depths and usually over soft-bottom substrates, although hard-bottom habitats may also be present in the general area. Oil exploration/production areas are vulnerable to an assortment of physical, chemical, and biological disturbances as oil and gas deposits are located using high energy seismic surveys. EFH may be disrupted by the use and/or installation of anchors, chains, drilling templates, dredging, pipes, and platform legs. During actual operations, chemical

contaminants may also be released into the aquatic environment.

The impacts of oil exploration-related seismic energy release may interrupt and cause HMS to disperse, which may disrupt feeding. Exploratory activities may also result in resuspension of fine-grained mineral particles, usually smaller than silt, in the water column. These suspended particles may reduce light penetration and decrease the rate of photosynthesis and lower the primary productivity of the aquatic area especially if suspended for lengthy intervals. The contents of the suspended material may react with the dissolved oxygen in the water and result in oxygen depletion.

The discharge of oil drilling muds can change the chemistry and physical characteristics of the receiving water at the disposal site by introducing toxic chemical constituents thereby potentially affecting HMS EFH. Changes in the clarity and the addition of contaminants can reduce or eliminate the suitability of water bodies for habituation by fish species and their prey.

Water Intake Structures

Withdrawing ocean water through the use of offshore water intake structures is a common occurrence coastwide. Water may be withdrawn to provide cooling water for coastal power generating stations or as a source of potential drinking water as in the case of desalinization plants. If not properly designed, these structures may create unnatural and vulnerable conditions to various fish life stages and their prey. Various life stages of HMS can be affected by water intake operations by entrapment through water withdrawal, impingement on intake screens, and entrainment through the heat-exchange systems or discharge plumes of both heated and cooled effluent.

Aquaculture

The culture of marine and freshwater species in coastal areas can reduce or degrade the habitats used by native stocks. The location and operation of these facilities will determine the level of impact on the marine environment.

A major concern of aquaculture operations is the discharge of organic waste from the farms. Wastes are composed primarily of feces and excess feed, and the buildup of waste products into the receiving waters depends on water depths and circulation patterns. The release of these waters may introduce nutrients or organic materials into the surrounding water body and lead to a high biochemical oxygen demand which may reduce dissolved oxygen, thereby potentially affecting the survival of many aquatic organisms in the area. Net effects to HMS may be either positive or negative.

Aquaculture operations also have the potential to release high levels of antibiotics and disease, as well as allowing cultured organisms to escape into the environment. These events have unknown but potential adverse impacts on fish habitat.

Wastewater Discharge

The discharge of point and non-point source wastewater from activities including municipal wastewater treatment plants, power generating stations, industrial plants (e.g., pulp mills, desalination plants) and storm drains into open ocean waters, bays, or estuaries can introduce pollutants detrimental to estuarine and marine habitats. These pollutants include pathogens, nutrients, sediments, heavy metals, oxygen-demanding substances, hydrocarbons, and other toxins. Historically, wastewater discharges have been one of the largest sources of contaminants into coastal waters. However, wastewater discharges have been regulated under increasingly more stringent requirements over the last 25 years, while non-point source/stormwater runoff continues to be a significant remaining source of pollution to the coastal areas

and ocean. Outfall-related changes in community structure and function, health, and abundance may result; many of these changes can be long-lasting.

Wastewater effluent and non-point source/stormwater discharges may affect the growth and condition of fish associated with wastewater outfalls when high contaminant levels (e.g., chlorinated hydrocarbons; pesticides; herbicides) are discharged. In addition, the high nutrient levels downcurrent of these outfalls may also be a concern. If contaminants are present, they may be absorbed across the gills or accumulate as a result of consuming contaminated prey. This is especially true for benthic-feeding fish frequenting wastewater discharge outfalls. Due to turbation, diffusion, and other upward transport mechanisms, buried contaminants may migrate to surface layers and become available.

Localized sources of pollution, which may affect HMS in bays and harbors along the coast, may not affect HMS stocks as a whole because HMS are distributed over large areas of the open coast and respond quickly to adverse changes in their environment by moving away.

The use of biocides (e.g., chlorine; heat treatments) or the discharge of brine as a byproduct of desalinization may reduce the suitability of water bodies for populations of fish species and their prey within the general vicinity of the discharge pipe. The impacts of chlorination and heat treatments, if any, are minimized as a result of their intermittent use and regulation pursuant to state and/or Federal national pollutant discharge elimination system (NPDES) permit requirements. These compounds may change the chemistry and the physical characteristics of the receiving water at the disposal site by introducing chemical constituents in suspended or dissolved form. In addition to chemical and thermal effects, discharge sites may adversely impact sensitive areas such as emergent marshes, seagrasses, and kelp beds if located improperly.

High discharge velocities may cause scouring at the discharge point as well as entrainment of particles with resulting turbidity plumes. Turbidity plumes may reduce light penetration and decrease the rate of photosynthesis and lower the primary production in an area if suspension persists. Fish may suffer reduced feeding ability, especially if suspended particles persist. The contents of the suspended material may react with the dissolved oxygen in the water and result in oxygen depletion.

A significant portion of impacts to coastal waters may also be caused by non-point source pollution from agriculture and urban runoff. Other significant sources include faulty septic systems, forestry, marinas and recreational boating, physical changes to stream channels, and habitat degradation, especially the destruction of wetlands and vegetated areas near streams. Runoff can include heavy metals, pesticides, fertilizers, synthetic and petroleum hydrocarbons, and pet droppings. Unless proper management measures are incorporated, these contaminants can find their way into the food web through benthic infaunal communities and subsequently accumulate in numerous fish species.

Discharge of Oil or Release of Other Hazardous Substances

The discharge of oil or release of hazardous substances into estuarine and marine habitats, or exposure to a product of reactions resulting from such discharge can have both acute and chronic effects on fish resources and their prey.

Exposure to petroleum products and hazardous substances from spills or other unauthorized releases can also potentially reduce the marketability of target species. Direct contact with discharged oil or released hazardous substances (e.g., toxins; oil dispersants; mercury) or indirect exposure through food chain processes can produce a number of biological responses in fish resources and their prey; these responses can occur in a variety of habitats including the water column, seafloor, bays, and estuaries. Chronic and large oil spills have a significant impact on fishery populations.

Mercury contamination of EFH is a potential concern because higher level predators such as HMS contaminated with this neurotoxin tend to accumulate mercury in their tissues either directly or through the food chain. Mercury is a natural occurring element, but an estimated two-thirds of environmental mercury is the result of human activities. It is a by-product of gold and zinc mining and the fossil fuel, solid waste management, and smelting industries. Other sources include cement plants and gasoline combustion. Primary sources of mercury in the U.S. are the combustion of fossil fuels (notably coal) and municipal waste incinerators. Like water, mercury can evaporate and become airborne, and because it is an element, does not break down into other substances. Once mercury escapes from the environment, it circulates in and out of the atmosphere into lakes and oceans. Harbor dredging can mix mercury contaminated sediments into the water column. Bacteria and chemical reactions in wetlands change mercury into a much more toxic form known as methylmercury. In this form it undergoes biomagnification toward the upper ends of the aquatic food chain, with HMS species such as swordfish and tunas at times known to exceed the 1 ppm action level of acceptability. State and Federal agencies now regulate industrial discharges of mercury, and mercury use in agriculture, to provide an increased margin of safety (R.J. Price. 1995. Mercury in Seafood. California Sea Grant College Program U.C.). Preventative measures include compliance with emission-related legislation to lower or eliminate incineration of mercury-bearing materials and industrial processes that promote removal of mercury from the waste stream. Little work has been done on the direct effect of mercury contamination on HMS except there is recent evidence that this toxin can affect the nervous system of fish by circumventing the blood-brain barrier that usually prevents toxins from entering the brain. Fish depend on their nervous systems to find food, communicate, migrate, orient themselves, and to recognize predators. In addition to uptake through the food chain, dissolved mercury is taken in by fish through their gills and dispersed by blood as it circulates through the body. (Rouleau, C. et al. 1999).

Other related issues include efforts to cleanup spills or releases that in themselves can create serious harm to the habitat. For example, the use of potentially toxic dispersants to break up an oil spill may adversely affect various life stages of HMS.

Coastal Development Impacts

Coastal development involves changes in land use by the construction of urban, suburban, commercial, and industrial centers and the corresponding infrastructure. Vegetated and open forested areas are removed to enhance the development potential of the land. Portions of the natural landscape are converted to impervious surfaces resulting in increased runoff volumes. Runoff from these developments include heavy metals, sediments, nutrients and organics, including synthetic and petroleum hydrocarbons, yard trimmings, litter, debris, and pet droppings. As residential, commercial, and industrial growth continues, the demand for water escalates. As ground water resources become depleted or contaminated, greater demands are placed on surface water through dam and reservoir construction or other methods of freshwater diversion. The consumptive use of redistribution of significant volumes of surface freshwater causes reduced river flows that can affect salinity regimes as saline waters intrude further upstream.

Development activities within watersheds and in coastal marine areas may impact fish habitat on both long-term and short-term scales. Runoff of toxins reduces the quality and quantity of water column and benthic EFH for HMS by the introduction of pesticides, fertilizers, petrochemicals, and construction chemicals (e.g., concrete byproducts, seals, and paints).

7.5.2 Mitigation Considerations for Non-Fishing Effects

FMPs must describe options to avoid, minimize, or compensate for the adverse effects and identify actions to encourage the conservation and enhancement of EFH. Generally, non-water-dependent actions should not be located in EFH if such actions may have adverse impacts on EFH. Activities which may result in significant adverse effects on EFH should be avoided where less environmentally harmful alternatives are

available. If there are no alternatives, the impacts of these actions should be minimized. Environmentally sound engineering and management practices should be employed for all actions which may adversely affect EFH. Disposal or spillage of any material (dredge material, sludge, industrial waste, or other potentially harmful materials) which may destroy or degrade EFH should be avoided. If avoidance or minimization is not possible, or will not adequately protect EFH, compensatory mitigation to conserve and enhance EFH should be recommended. FMPs may recommend proactive measures to conserve or enhance EFH. When developing proactive measures, the Council may develop a priority ranking of the recommendations to assist Federal and state agencies undertaking such measures.

Established policies and procedures of the Council and NMFS provide the framework for conserving and enhancing essential fish habitat. This framework includes components to avoid and minimize adverse impacts; provide compensatory mitigation whenever the impact is significant and unavoidable; and incorporate enhancement. New and expanded responsibilities contained in the MSA will be met through appropriate application of these policies and principles. In assessing the potential impacts of proposed projects, the Council and NMFS are guided by the following general considerations:

- The extent to which the activity would directly and indirectly affect the occurrence, abundance, health, and continued existence of fishery resources.
- The extent to which the potential for cumulative impacts exists.
- The extent to which adverse impacts can be avoided through project modification, alternative site selection or other safeguards.
- The extent to which the activity is water dependent if loss or degradation of EFH is involved.
- The extent to which mitigation may be used to offset unavoidable loss of habitat functions and values.

The following activities have been identified as potentially, directly or indirectly, affecting the habitat utilized by all or some HMS: dredging, fills/dredge material disposal, oil/gas exploration/production, water intake structures, aquaculture, wastewater discharge, discharge of oil or release of hazardous substances, and coastal development. While we recognize that HMS, because of their more pelagic, oceanic and migratory habits, may be less vulnerable to coastal development and degradation than more coastal and benthic fishes, they are not immune. They may be indirectly affected by the disruption or tainting of key organisms within the food web upon which they depend; and being upper level predators, are also especially efficient at accumulating various toxins within their tissues. The following measures are suggested in an advisory, not mandatory, capacity as proactive conservation measures which would aid in minimization or avoidance of the adverse effects of these non-fishing activities on essential fish habitat.

Dredging

1. To the maximum extent practicable, new, as opposed to maintenance dredging, should be avoided. Activities which require dredging (such as placement of piers, docks, marinas, etc.) should be sited in deep water areas or designed in such a way as to alleviate the need for maintenance dredging. Projects should be permitted only for water dependent purposes, when no feasible alternatives are available. Open coast dredging and beach replenishment should be conducted in a manner that minimizes disruption of existing surf grass beds, which provide habitat for certain HMS prey species.
2. Where the dredge equipment employed could cause significant long-term impacts due to entrainment of prey species, dredging in estuarine waters shallower than 20 feet in depth should be performed during the time frame when prey species are least likely to be entrained.
3. All dredging permits should reference latitude-longitude coordinates of the site so information can

be incorporated into GIS for tracking cumulative impacts. Inclusion of aerial photos may also be required to help geo-reference the site and evaluate impacts over time.

4. Sediments should be tested for contaminants as per the Environmental Protection Agency and U.S. Army Corps of Engineers requirements to determine proper removal and disposal procedures.
5. The cumulative impacts of past and current dredging operations on EFH should be considered and described by Federal, state, and local resource management and permitting agencies and considered in the permitting process.
6. Where a dredging equipment type is used that is expected to create significant turbidity (e.g., clamshell), dredging should be conducted using adequate control measures to minimize turbidity.

Fills/Dredge Material Disposal

1. Upland dredge disposal sites should be considered as an alternative to offshore disposal sites. Fills should not be allowed in areas with subaquatic vegetation or other areas of high productivity. Surveys should be undertaken to identify least productive areas prior to disposal. Use of clean dredge material meeting Army Corps of Engineers and state water quality requirements for beach replenishment and other beneficial uses (e.g., creation of eelgrass beds/surf grass beds) is encouraged, but dredging itself must be carried out along the coast so as to have minimum impact on open coast surf grass beds, which provide habitat for certain prey species.
2. The cumulative impacts of past and current fill operations on EFH should be addressed by Federal, state, and local resource management and permitting agencies and considered in the permitting process.
3. Any disposal of dredge material in EFH should meet applicable state and/or Federal quality standards for such disposal.
4. When reviewing open water disposal permits for dredged material, state and Federal agencies should identify the direct and indirect impacts such projects may have on EFH. Benthic productivity should be determined by sampling prior to any discharge of fill material. Sampling design should be developed with input from state and Federal resource agencies.
5. The areal extent of the disposal site should be minimized. However, in some cases, thin layer disposal may be less deleterious. All non-avoidable, adverse impacts (other an insignificant impacts) should be fully mitigated.
6. All spoil disposal permits should reference latitude-longitude coordinates of the site so information can be incorporated into GIS systems. Inclusion of aerial photos may also be required to help geo-reference the site and evaluate impacts over time.

Oil/Gas Exploration/Production

1. Benthic productivity should be determined by sampling prior to any exploratory operations. Areas of high productivity should be avoided to the maximum extent possible. Sampling design should be developed with input from state and Federal resource agencies.
2. Mitigation should be fully addressed for impacts.
3. Containment equipment and sufficient supplies to combat spills should be on site at all facilities that handle oil or hazardous substances.
4. Each facility should have a “Spill Contingency Plan” and all employees should be trained in how to respond to a spill.

5. To the maximum extent practicable, storage of oil and hazardous substances should be located in an area that would prevent spills from reaching the aquatic environment.

Water Intake Structures

1. New facilities which rely on surface waters for cooling should be located in areas of low productivity or areas not prone to congregating HMS and their prey. New discharge points should be located in areas which have low concentrations of living marine resources, or they should incorporate cooling towers that employ sufficient safeguards to ensure against release of blow-down pollutants into the aquatic environment in concentrations that exceed state and/or Federal limits established pursuant to state and/or Federal NPDES regulations.
2. All intake structures should be designed to minimize entrainment or impingement of prey species. Power plant intake structures should be designed to meet the "best technology available" requirements as developed pursuant to section 316b of the Clean Water Act.
3. Discharge temperatures (both heated and cooled effluent) should comply with applicable temperature limits established pursuant to state and/or Federal NPDES regulations.

Aquaculture Facilities

1. Facilities should be located in upland areas as often as possible. Tidally influenced wetlands should not be enclosed or impounded for mariculture purposes. This includes hatchery and grow-out operations. Siting of facilities should also take into account the size of the facility, the presence or absence or submerged
2. aquatic vegetation, proximity of wild fish stocks, migratory patterns, and competing uses. Areas of high productivity should be avoided to the maximum extent possible.
3. Water intakes should be designed to avoid entrainment and impingement of fish species.
4. Water discharge should be treated to avoid contamination of the receiving water, and should be located only in areas having good mixing characteristics.
5. Where cage mariculture operations are undertaken, water depths and circulation patterns should be investigated and should be adequate to preclude the buildup of waste products, excess feed, and chemical agents.
6. Any net pen structure should have small enough webbing to prevent entanglement by prey species.
7. Measures should be taken to avoid escapement of farmed animals.
8. Mitigation should fully address all impacts.

Wastewater Discharge

1. New outfall structures should be placed offshore sufficiently far enough to prevent discharge water from impacting productive areas. Discharges should be managed to comply with applicable state and/or Federal NPDES permit requirements, including compliance with applicable technology-based and water quality-based effluent limits.
2. The establishment of management programs to address non-point source/stormwater pollution water quality issues on a watershed basis is supported and encouraged.

Discharge of Oil or Release of Hazardous Substances

1. Containment equipment and sufficient supplies to combat spills should be on-site at all facilities

that handle oil or hazardous substances.

2. Facilities should have a "Spill Contingency Plan" where required by applicable local, state, Federal requirements, and employees identified in the plan as having responsibility for responding to a spill should receive appropriate training.
3. To the maximum extent practicable, storage of oil and hazardous substances should be located in an area which would prevent spills from reaching the aquatic environment.

Coastal Development Impacts

1. Prior to installation of any piers or docks, benthic productivity should be determined and areas with high productivity avoided. Sampling design should be developed with input from state and Federal resource agencies.
2. Fueling facilities should be equipped with all necessary safeguards to prevent spills. A spill response plan should be developed and gear necessary for combating spills should be located on site.
3. Filling of any aquatic areas should be curtailed as much as reasonably possible.

Table 7–1. Adverse non-fishing activities, impacts and conservation/enhancement measures for HMS EFH.

ACTIVITY	IMPACTS (Potential)	CONSERVATION MEASURES (Advisory)
1. Dredging	$ Bottom-dwelling organisms $ Turbidity plumes $ Toxins becoming biologically available $ Damage to sensitive habitats	$ Curtail/minimize new dredging activities as practicable $ Take actions to prevent impacts to flora/fauna $ Geo-reference all dredge sites $ Containment assays $ Address cumulative impacts $ Minimize turbidity
2. Dredge Material Disposal/Fills	$ Bottom-dwelling organisms $ Turbidity plumes $ Toxins becoming biologically available $ Damage to sensitive habitats $ Loss of habitat function	$ Place dredge spoils upland if possible; avoid fills in productive areas $ Address cumulative impacts $ Meet applicable quality requirements for disposal of dredge material in EFH $ Identify direct and indirect impacts on EFH $ Minimize areal extent of the disposal site $ Geo-reference the site
3. Oil/Gas Exploration Production	$ Seismic energy release $ Discharge of exploratory drill muds and cuttings $ Resuspension of fine-grained mineral particles $ Composition of the substrate altered	$ Avoid areas of high productivity $ Provide mitigation $ On-site containment equipment $ Maintain "spill contingency plan" $ Keep oil and hazardous substances from reaching the aquatic environment
4. Water Intake Structures	$ Entrapment, impingement, and entrainment $ Loss of prey species	$ Locate new facilities away from productive areas $ Minimize entrainment or impingement of prey species per CWA 316(b) $ Discharge temperature to meet applicable discharge limits

ACTIVITY	IMPACTS (Potential)	CONSERVATION MEASURES (Advisory)
5. Aquaculture	$ Discharge of pollutants from the facility $ Escapement	$ Minimize water/habitat quality impacts $ Avoid entrainment and impingement losses $ Treat and mix water discharges $ Preclude waste product buildup $ Prevent entanglement of prey species $ Prevent escapement $ Mitigate impacts
6. Wastewater Discharge	$ Wastewater effluent with high contaminant values $ High nutrient levels downcurrent of outfall $ Biocides to prevent biofouling $ Thermal effects $ Turbidity plumes $ Stormwater runoff	$ Avoid areas of high productivity with new discharge points $ Watershed management programs
7. Oil Discharge/ Hazardous Substances Release	$ Direct physical contact $ Indirect exposure resulting $ Cleanup $ Mercury Contamination	$ Maintain on-site containment equipment and supplies $ On-site “spill contingency plan” $ Prevent spills from reaching the aquatic environment $ Compliance with industrial mercury discharge standards
8. Coastal Development Impacts	$ Contaminant runoff $ Sediment runoff $ Filling of aquatic areas	$ Shoreline construction should avoid productive areas $ Prevent fuel spillage $ Curtail fills in estuaries, wetlands, and bays

7.5.3 Findings

Federal action agencies must consult with NMFS regarding any of their actions authorized, funded or undertaken, or proposed to be authorized, funded or undertaken, that may adversely affect EFH (MSA 305(b)(2)). For actions that were completed prior to the approval of EFH designations for HMS, consultation is not required.

7.6 Summary

- This chapter includes updated EFH information based on a review completed in 2023, for the 11 individual management unit species as described above and in Appendix F. EFH designations are based primarily on Level 1 (presence/absence) fishery-dependent and fishery-independent data.
- No specific EFH impacts were identified at this time that could be addressed by fisheries management actions to protect and enhance EFH. After conducting a review of new and existing data on MUS’ habitat and possible sources of impacts to these habitats, the Council found no clear evidence of adverse impacts on HMS EFH that are more than minimal in nature. Thus, no new fishery management measures or regulations are proposed.
- This chapter includes updated information on non-fishing impacts and associated conservation recommendations to mitigate the possible effects of these practices. It incorporates by reference numerous additional non-fishing impacts and associated conservation measures described in Kiffney et al. 2022.
- Current fisheries management measures to protect EFH appear to be adequate, but should future research demonstrate a need, the Council will act accordingly to protect habitat necessary to

maintain a sustainable and productive fishery in the eastern Pacific region.

- No HAPCs have been designated at this time, but the FMP provides a framework which will ensure review and updating of EFH based on new scientific evidence or other information as well as incorporation of new information on HMS HAPCs as it becomes available in the future. The Council is authorized to proceed with establishing such a framework procedure for reviewing EFH and identifying HAPCs, particularly critical areas such as shark pupping and core nursery areas.

7.7 Research and Information Needs

The EFH regulations state that FMPs should identify research and information needs *"for research efforts that the Councils and NMFS view as necessary to improve upon the description and identification of EFH, the identification of threats to EFH from fishing and other activities, and the development of conservation and enhancement measures for EFH*." The following are based on research needs identified during the EFH review process and contained in the Council's Research and Data Needs database.

- Support efforts to better understand and describe the dynamic nature of HMS habitats, and the potential for shifts in both HMS and their prey in response to changing climate and oceanic conditions. Given that all HMS come to the U.S. EEZ to forage, understanding forage is critical to understanding HMS movements and distributions.

- Continue research that may help to identify important shark habitats such as pupping grounds, key migratory routes, feeding areas, prey species, and areas of concentration of large adult female sharks. Although the SCB has long been considered to support pupping grounds and nursery habitats, discrete areas have not yet been identified and further study is needed to identify those discrete areas. These areas may not only concentrate pups, but also pregnant females at certain times of the year. This information may help to identify future HMS HAPCs.

- Support efforts to better understand the migratory corridors and habitat dependency, including benthic habitats, of HMS fishes, how they are distributed by season and age throughout the Pacific and within the West Coast EEZ, and how oceanographic changes in habitat and prey species availability affect production, recruitment, and migration. More research is needed in these areas to better define EFH and potential HAPCs.

- Support efforts to better understand the importance of deep-water canyons, offshore banks and seamounts to the various life stages of HMS stocks.

- Continue efforts to identify and evaluate potential impacts to HMS EFH from fishing activities, including efforts to quantify derelict gear in the fishery and assess its impact on the marine environment and other species.

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