FISHERY MANAGEMENT PLAN

FOR

PELAGIC FISHERIES

OF THE

WESTERN PACIFIC REGION

FINAL

JULY 1986

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL
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2.0 PREFACE

2.1 Title and Location of Proposed Action

This document is a combined revised Fishery Management Plan (FMP), Environmental Assessment (EA), and Regulatory Impact Review (RIR) for Billfish and Associated Species of the Western Pacific Region. The FMP would establish regulations applicable to domestic and foreign fishing for billfish, mahimahi, wahoo and oceanic sharks in the fishery conservation zone (FCZ) around Hawaii, American Samoa, Guam and U.S. island possessions in the Pacific. The FCZ is the area beyond the seaward boundary of a state, territory, or U.S. island possession out to 200 nautical miles from shore. Midway island is a part of the Hawaiian archipelago although it is not a part of the State of Hawaii. Rather, Midway island is a possession of the U.S. The U.S. FCZ of the Western Pacific Region also includes waters off the Commonwealth of the Northern Mariana Islands (CNMI). However, this FMP proposes no management measures there at this time. The application of the Magnuson Fishery Conservation and Management Act (MFCMA) to the CNMI has been in contention from the very beginning, with the Executive Branch of the Federal Government maintaining that the statute applies to the CNMI, and the Government of the CNMI contending that the statute does not apply there. This longstanding agreement, was seemingly patched up in March of 1986 when the Governor of the CNMI announced that he would be submitting nominations to the Secretary of Commerce for appointment to the Western Pacific Regional Fishery Management Council (Council).

2.2 Synopsis of Proposed Actions

The Council proposes to replace the Preliminary Management Plan (PMP) presently governing foreign longline fishing for billfish and associated species in the FCZ of the Western Pacific Region with this FMP. However, the PMP would remain in effect for the FCZ of the CNMI until new Council members from this area can decide on desirable management measures with input received from their fishermen constituents. The PMP would also stay in effect for the U.S. West Coast, since the Pacific Council has chosen not to develop a FMP for billfish and associated species.

The PMP is specific to foreign longline fishing. The FMP, however, would also cover drift-gillnet vessels, pole-and-line vessels, as well as purse seine vessels. This FMP proposes to prohibit the use of drift-gillnets by foreign vessels anywhere in the FCZ of the Western Pacific Region. Domestic vessels would be allowed to use drift-gillnets but only under a special experimental fishing permit. Foreign longline fishing would be prohibited within certain areas of the FCZ surrounding the Hawaiian islands, Guam, and American Samoa.

Foreign longline vessels would be required to file effort plans prior to entering the open areas of the FCZ for fishing purposes. Domestic longline fishing would be unaffected by the FMP. Foreign and domestic purse seine and pole-and-line tuna vessels would not be restricted in any way from fishing within the FCZ of the Hawaiian islands, Guam, American Samoa, and U.S. possessions in the Pacific. No Federal requirements would be added at this time for other classes of domestic vessels which take billfish and associated species in the FCZ. Existing State and Territorial licensing and data reporting and collection programs would be retained regarding catch and effort for the management unit species.

2.3 Responsible Agencies

The FMP has been prepared by the Council which was established by the MFCMA. The Council is comprised of private and public sector members from the State of Hawaii, the Territories of Guam and American Samoa, and U.S. government agencies. Two new members of the Council are expected to be added from the CNMI. The primary function of the Council is development of FMPs which recommend Federal fisheries regulations and other actions in the Council's area of authority.

An earlier version of a FMP for Pacific Billfish Fisheries of the Western Pacific Region was officially submitted to the National Marine Fisheries Service (NMFS) in August, 1981 for approval and implementation. That proposed FMP was disapproved by the NMFS in January, 1982 for the following reasons:*

1. The species in the management unit included only species of billfish and did not include other non-tuna species taken in the fisheries for pelagic species.

2. It was not clearly apparent that the benefits of managing the fisheries for billfish would exceed the costs.

3. The area closures to foreign longline fishing proposed in the initial plan appeared to be larger to the NMFS than necessary in order to protect domestic fishing interests and did not appear to be fully justified with the data available in the billfish FMP.

4. The need for the FMP was not strongly established given that NMFS' Preliminary Fishery Management Plan (PMP) was in effect denying foreign longline fishing from occurring in the FCZ.

* See Appendix A for correspondence between the Council and the NMFS regarding the approvability of the Council's initial Billfish FMP.

This revised FMP addresses these concerns by expanding the management unit to include dolphin fish (mahimahi), wahoo (ono) and oceanic sharks; by adding more recent data on the domestic fisheries which have become available to better demonstrate the growth and importance of domestic fisheries and the benefits of the FMP's management measures; by strengthening data collection to assure the availability of an adequate data base to evaluate the effectiveness of the FMP in the future; and by providing for a re-evaluation of the need to adjust the measures of this plan after five years.

This FMP has been submitted to the NMFS for approval and implementation. The NMFS and U.S. Coast Guard have authority to implement and enforce FMPs, and to the extent necessary and appropriate, will do so in cooperation with state and territorial agencies. For further information, please contact:

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2.4 Public Review and Comment

The Council is required to obtain public input and to hold public hearings before approving a plan for Federal approval and implementation. Early versions of this plan were reviewed many times by fishermen on the Council's advisory panel and the Council held twelve public hearings on the final version of the plan as follows:

Date:	Time:	Location:
May 8, 1985	7:30 p.m.	Marianas Ballroom II Hilton International Guam Agana, Guam
May 13, 1985	7:30 p.m.	First Hawaiian Bank Conference room Kailua-Kona, Hawaii, Hawaii
May 14, 1985	7:30 p.m.	Hawaii County Council Room Hilo, Hawaii, Hawaii
May 15, 1985	7:00 p.m.	Guam Fishermen's Coop Agana Boat Basin
May 16, 1985	7:30 p.m.	Kauai County Council Office County Building Lihue, Kauai, Hawaii

Date:	Time:	Location:
May 20, 1985	7:30 p.m.	Waianae High School Cafeteria Waianae, Oahu, Hawaii
May 21, 1985	7:30 p.m.	McCoy Pavillion, Ala Moana Park Honolulu, Oahu, Hawaii
May 22, 1985	7:30 p.m.	Haleiwa Elementary School Cafeteria Haleiwa, Oahu, Hawaii
May 23, 1985	7:30 p.m.	Benjamin Parker Elementary School Cafeteria Kaneohe, Oahu, Hawaii
May 28, 1985	7:30 p.m.	Maalaea Boat & Fishing Club House Maalaea Harbor, Maui, Hawaii
May 29, 1985	7:30 p.m.	Lahaina Civic Center Lahaina, Maui, Hawaii
May 29, 1985	7:30 p.m.	Convention Center Fagatogo, Pago Pago, Am. Samoa

2.5 Relationship to Applicable Laws and Policies

This revised FMP presents biological, environmental, economic, social and legal information on the problems of managing fishing for migratory billfish and associated species in the FCZ. The information and analyses are presented in a manner intended to satisfy MFCMA requirements as well as requirements of other applicable laws and policies. Section 4 describes the problems being addressed, the need for action through the FMP, and the context in which the FMP was prepared. Section 5 summarizes the present data collection and management programs and research activities covering these species. Section 6 describes the fisheries for billfish, tuna, and other species, including a description of the stocks and their habitat (i.e., the physical environment) and a description of domestic and foreign fishing for these stocks (i.e., the social and economic environment). Section 7 discusses the relative advantages and disadvantages of alternative management strategies and presents an analysis and comparison of measures under the more effective strategies for meeting the Council's objectives and sets forth specific recommendations for Federal agency actions to govern fishing for the affected species in the U.S. FCZ of the Western Pacific Region. Section 8 defines the optimum yield (OY) from the fisheries and contains determinations of domestic annual harvest (DAH), joint venture processing (JVP), and the total allowable levels of foreign fishing (TALFFs) for the pelagic fisheries in the FCZ. Section 9 discusses relationship of the FMP to other

applicable laws and policies. Section 10 identifies the FMP's administrative and enforcement costs. Section 11 identifies references used in the preparation of this revised FMP, and Section 12 contains the appendices.

2.6 List of Preparers

This revised FMP was prepared by the Pelagic Species Plan Development Team and the Council Staff. Justin Rutka, Fisheries Analyst/Economist for the Council Staff, coordinated the approach taken in the preparation of this document. The Members of the Pelagic Species Plan Development Team are Dr. Richard Brill, Fishery Biologist, Honolulu Laboratory, NMFS who served as Chairman of the Team; Mr. Paul Kawamoto, Fishery Biologist, Hawaii State Division of Aquatic Resources; Dr. Robert Skillman, Fishery Biologist and Dr. Jerry Wetherall, Fishery Biologist, both of the Honolulu Laboratory, NMFS. Svein Fougner, with the National Marine Fiseries Service, Southwest Region also contributed to sections of this FMP.

The Council would also like to acknowledge the contribution of the Members of its Scientific and Statistical Committee and especially its Billfish Advisory Subpanel Members from Hawaii, Guam and American Samoa. The Chairman of the Subpanel since its beginning in 1977 is Mr. Jim Sutherland of Honolulu. A special thank you is hereby given to Mr. Sutherland.

2.7 Glossary of Terms

Definition of terms frequently used in this FMP.

Abundance: The number or density of fish of a species present in an area of interest over a specified unit of time.

Advisory Panel (AP): A Council appointed panel of fishing industry representatives whose purpose is to guide and advise the Council on the development and issues of the fishery management plan (FMP).

Availability: The proportion of a stock that is within the area of a fishery or the range of the type of fishing gear used. Availability may vary yearly and seasonally even when abundance remains nearly constant. For example, the abundance of blue marlin in the North Pacific may be constant over several years, but their availability to the Hawaiian fishery may change from year-to-year because of local changes in the oceanic climate or for other reasons.

Billfish Stock Assessment Workshop: A workshop held in Honolulu, Hawaii, from December 5-14, 1977, to produce a scientific assessment of the status of the billfish stocks in the Pacific and Atlantic Oceans along with a summary of appropriate background information, supporting analysis, and recommendations (Shomura, 1980).

Catch: The number of weight of a particular species or group of species taken in a unit of time.

Catch-Per-Unit-of-Effort (CPUE): The average catch taken by a defined unit of fishing effort. In a longline fishery, for example, the number of blue marlin caught per vessel per day or per thousand hooks set.

Charter Boat: A commercial fishing boat that takes recreational fishermen fishing in return for the payment of a fee. Such boats generally are designed for the comfort and convenience of the passengers rather than taking and storing large quantities of fish. The boat may sell the fish caught or the charterer may keep the fish depending on prior agreement with the skipper.

Coastal Zone Management Act (CZMA): The principal objective of the Coastal Zone Management Act of 1972 is to encourage and assist States in developing coastal zone management programs, to coordinate State activities and to safeguard the regional and national interests in the coastal zone. CZMA requires that any Federal activity directly affecting the coastal zone of a State be consistent with that State's approved coastal zone management program to the maximum extent practicable.

Domestic Annual Processing (DAP): An estimate of that portion of the harvest made by domestic fishing vessels that will be processed on an annual basis by domestic processors.

Domestic Annual Harvest (DAH): An estimate of the total catch of the management unit species that the domestic fleets will make in one year. DAH is equal to the total domestic catch of the management unit species made by all domestic fishing methods in any one year.

Domestic Fishery or Fishing: A fishery conducted by vessels of the United States.

Effort: A numerical measure of the amount of gear used in an attempt to catch fish. Effort may be expressed in terms of number of hooks fished per day, number of boat days, man hours, trolling line hours, etc.

Endangered Species Act (ESA): The Endangered Species Act of 1973 provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The program is administered jointly by the Department of the Interior (DOI) and the Department of Commerce (DOC).

Environmental Assessment (EA): A document prepared by a Federal agency which presents a brief analysis of the environmental impacts of the proposed action and its alternatives, including sufficient evidence to determine that either: (1) an environmental impact statement is required; or (2) a finding of no significant impact should be declared (CEQ sec. 1508.9).

Executive Order (E.O.) 12291: This Executive Order applies to the issuance of new rules, the review of existing rules, and the development of legislative proposals concerning regulations. The Order requires that (1) regulatory objectives and priorities be established with the aim of maximizing net benefits to the United States, taking into account the condition of particular industries, State and local governments, and consumers affected by the rule; (2) rules be developed with a cost/benefit approach when possible; (3) the chosen regulatory approach or alternative should be the one with the least net cost to society, if practicable; and (4) regulatory action should not be undertaken unless the potential benefits outweigh the potential costs to society.

Fishery: A fishery is a composite of: a resource consisting of a population of a species or set of species usually with similar ecological requirements or characteristics; a number of fishermen who regularly exploit the resource, together with their boats and equipment for harvesting and handling fish; and a market in which fishermen can sell their catch.

Fishery Conservation Zone (FCZ): U.S. waters from the seaward boundary of a State or Territory to 200 nautical miles from the shoreline.

Fishery Management Plan (FMP): A plan prepared by the Council and implemented by the Department of Commerce and the Coast Guard for the conservation and management of fishery resources in the Fishery Conservation Zone of the U.S.

Highly Migratory Species: Species of tuna which in the course of their life cycle, spawn and migrate over great distances of the ocean, including but not limited to: albacore, tuna, *Thunnus alalunga*; bigeye tuna, *T. obesus*; bluefin tuna, *T. thynnus*; skipjack tuna, *Katsuwonus pelamis*; southern bluefin tuna, *T. maccoyii*; and yellowfin tuna, *T. albacares*. This definition comes from the MFCMA.

Magnuson Fishery Conservation and Management Act (MFCMA): Federal law (P.L. 94-265, passed in 1976 and amended several times since then) covering fishing activity in U.S. waters between State waters and 200 nautical miles from the coastline.

Main Hawaiian Islands (MHI): The high islands of the State of Hawaii consisting of Niihau, Kauai, Oahu, Molokai, Lanai, Maui, Kahoolawe, and Hawaii (from 154°W. longitude to 161° 20' Longitude).

Management Unit: A species or a group of fish species affected or exploited by the same fishery or fisheries.

Management Unit Species (MUS): In this Fishery Management Plan (FMP), the MUS include six species of billfish, two species of mahimahi, wahoo, and various species of oceanic sharks. Tuna are not included in the MUS because they are exempt by the MFCMA.

Marine Mammal Protection (Act (MMPA): The Marine Mammal Protection Act (MMPA) enacted in 1972 establishes a moratorium on the taking of marine mammals and a ban on the importation of marine mammal products with certain exceptions. Responsibility is divided between the Department of Commerce (whales, porpoises, seals, and sea lions) and the Department of Interior (other marine mammals) to issue permits and to waive the moratorium for specified purposes, including incidental takings during commercial fishing operations. The Magnuson Act amended the MMPA to extend its jurisdiction to the FCZ.

Maximum Sustainable Yield (MSY): The greatest average amount, in concept, that can be harvested from a population of fish on a continuing basis.

Metric Ton (MT): Unit of weight measure which is equal to 1000 kilograms or approximately 2200 pounds.

Mortality: Refers to the death rate in a population from natural and fishery causes. Together these constitute total mortality. Mortality rates can be considered on an instantaneous or an discrete (e.g. annual) basis. (Instantaneous mortality rates are the limits approached by average rates over progressively shorter time periods).

National Environmental Policy Act (NEPA): The National Environmental Policy Act requires that the effects of Federal activities on the environment be assessed. NEPA's basic purpose is to insure that Federal officials weigh and give appropriate consideration to environmental values in policy formulation, decision-making and administrative actions, and that the public is provided adequate opportunity to review and comment on the major Federal actions. NEPA requires preparation of an EIS for major Federal actions which significantly affect the quality of the human environment.

National Marine Fisheries Service (NMFS): The NMFS has primary Federal responsibility for the conservation, management, and development of living marine resources in Federal waters and for the protection of certain marine mammals and endangered species placed under Federal laws. The Agency also has responsibilities to the U.S. commercial and marine recreational Fishing industry, including fishermen, and to the States and the general public.

Northwestern

Western Pacific Regional Fishery Management Council (WPRFMC): The Western Pacific Regional Fishery Management Council consists of private and public members from the State of Hawaii, the Territories of American Samoa and Guam, and the Commonwealth of the Northern Mariana Islands and members from Federal agencies. It has authority over the fisheries in the U.S. Fishery Conservation Zone in the Pacific Ocean out to 200 nautical miles from shore from the State of Hawaii, the Territories of Guam and American Samoa, the Commonwealth of the Northern Mariana Islands, and possessions of the U.S. in the Pacific Ocean.

3.0 SUMMARY

This revised FMP proposes a program for regulating and monitoring the harvesting of billfish, mahimahi, wahoo and oceanic sharks in the U.S. FCZ of the central and western Pacific Ocean. The FMP presents regulations and reporting requirements governing the take of billfish, mahimahi, wahoo and oceanic sharks by foreign fishing vessels in U.S. waters surrounding Hawaii, Guam, American Samoa and U.S. island possessions in the Pacific Ocean. Other than proposing to control the use of drift-gillnet gear through issuance of special experimental fishing permits, the revised FMP does not propose any other controls on the catches of billfish and associated species by domestic fishing vessels. The FMP proposes strengthening of State and Territorial data collection programs and the sampling activities to better monitor participation in the domestic fisheries for billfish and associated species. The effectiveness of the management program in meeting the Councils objectives and the need for changes in the FMP will be evaluated at least every five years.

3.1 Proposed Actions

The Council proposes the following measures in this FMP:

Foreign Longliners

1. Area closures: It would be prohibited for foreign longline vessels to fish in the following areas of the U.S. FCZ of the Western Pacific Region:

   a. Within 150 miles of the main Hawaiian islands (east of 161° W. longitude);

   b. Within 100 miles of the Northwestern Hawaiian Islands (west of 161° W. longitude) including Midway island;

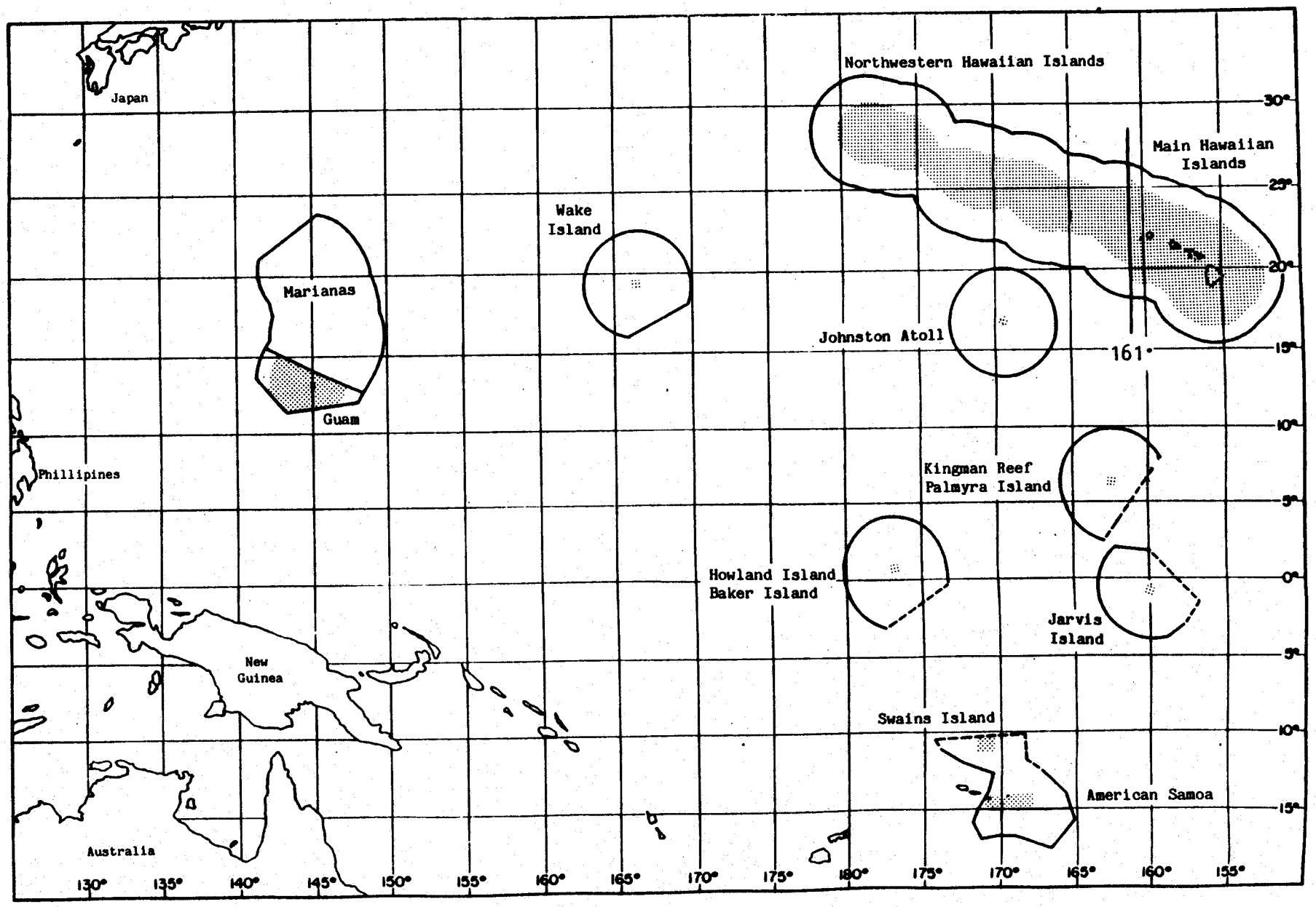
   c. Within 150 miles of Guam;

   d. Within a rectangle around the principal islands of American Samoa bounded by 14° S. and 15° S. latitude and 168° W. and 171° W. longitude, and within a one degree (1°) square surrounding Swains island; and

   e. Within 12 miles of each U.S. Pacific island possession except for Midway island. While Midway island is a possession of the United States, it is being treated as if it were a part of the State of Hawaii for the purpose of the FMP.

These areas which would be closed to foreign longline fishing are graphically depicted in Figure 3.1.

FIGURE 3.1 - AREAS (SHADED) OF THE US.S. FCZ SURROUNDING HAWAII, GUAM, AMERICAN SAMOA, AND U.S. POSSESSIONS RECOMMENDED TO BE CLOSED TO FOREIGN LONGLINE FISHING UNDER THE PROPOSED ACTION



2. Permits: Foreign longline vessels would be required to obtain permits prior to fishing in the open areas of the FCZ.

3. Effort plans: Foreign longline vessels would be required to file effort plans two (2) months prior to entering the open areas of the FCZ for fishing purposes.

4. Catch and effort limits: There would be no limit on the amount of fishing or the amount of catch of any species of fish made by foreign longline vessesl in the open areas of the FCZ.

5. Reporting: Foreign longline vessels would be required to collect catch and effort data and data on sea turtle and marine mammal interactions on forms provided by the NMFS and to submit those data to the NMFS within two (2) months of leaving the FCZ.

6. Observers: Foreign longline vessels would be required to carry observers when so directed by the Regional Director, Southwest Region, NMFS, in accordance with the MFCMA.

Foreign Drift-Gillnetters

1. Prohibition: It would be prohibited for foreign vessels to use drift-gillnets anywhere in the FCZ of the Western Pacific Region.

Domestic Drift-Gillnetters

1. Experimental permits: It would be unlawful for domestic vessels to use drift-gillnets in the FCZ unless first authorized by a special experimental fishing permit issued by the Regional Director of the NMFS.

2. Reporting: Domestic drift-gillnetters would be required to collect catch and efort data and data on sea turtle and marine mammal interactions on forms provided by the NMFS and to submit such data to the NMFS within three (3) days of landing.

Foreign Pole-and-Line Tuna Vessels, Foreign Purse Seine Tuna Vessels, and Domestic Purse Seine Tuna Vessels

1. Catch and effort limits: There would be no limit on the amount of fishing or the amount of catch of tuna and non-tuna species made by these classes of vessels in the U.S. FCZ of the Western Pacific Region.

2. Data collection: The State Department, in cooperation with the NMFS, shall request voluntary submission of catch records for the species in the management unit taken incidentally to tuna fishing by these classes of vessels. These vessels should be

encouraged to collect data on their catches of the management unit species made in the U.S. FCZ. If information on incidental catches is not obtained within one year of the effective date of this FMP, then the Council shall consider making it mandatory to report incidental catches made by these vessels on a fishery-by-fishery basis and on a Country-by-Country basis.

Other Domestic Vessels

1. No restrictions: No Federal requirements would be added at this time.

2. Data collection: The Western Pacific Fishery Information Network (WPACFIN), a central source of region-wide fisheries data maintained by the NMFS, would be used to monitor the activities of domestic vessels, assisted by existing Territorial and State licensing and data reporting and collection programs . Sampling would be used for estimating the levels of fishing effort and catches in the recreational fisheries for the management unit species in Hawaii and Guam.

Annual Reports

The NMFS, in cooperation with State and Territorial agencies, shall prepare an annual report for the Council by June 30 of each year covering the domestic and foreign fisheries addressed by this plan for the previous year, including a summary of catch (by species), effort, areas of fishing, changes in catch rates for individual species by different gear types and other significant changes in the various fisheries for the management unit species and tuna in tropical waters of the widely dispersed American flag islands in the Pacific Ocean.

Five-Year Review

The Council in cooperation with the NMFS and State and Territoral agencies shall conduct a full review of the FMP in five years. The review will assess the effectiveness of the FMP in meeting the Council's objectives, the need to revise the objectives, and the need for making changes in any of the management measures including adjustments of area closures, and adding new measures such as data collection or reporting requirements for the domestic fisheries which take the management unit species in conjunction with the tunas.

3.2 Need for the FMP

The FMP is needed to provide a framework for promoting domestic recreational and commercial fisheries for billfish, mahimahi, wahoo and oceanic sharks in the FCZ, while eliminating the inherent weaknesses of the PMP which is now in force. The PMP which has been in effect since April 1, 1980, was intended to provide an interim response to MFCMA requirements for a plan to govern foreign fishing for tuna which would continue under the PMP. It was assumed that longline vessels would catch approximately as much tuna and non-tuna species in the FCZ under the PMP as they did before the PMP went into effect. In fact, the stated intent of the PMP is to perpetuate the status quo. The effect of the PMP, however, has been just the opposite from the intended outcome. This demonstrates the inherent weaknesses of the PMP. First of all, there has been no legal foreign longline fishing in the FCZ of the entire Western Pacific Region since the PMP became effective in April 1980, although many permits have been issued. Nearly two thousand foreign longline vessels have obtained permits since the inception of the PMP but no vessel has actually fished in the FCZ with the permits issued under the authority of the PMP. The PMP's complex of quotas, non-retention requirements, check-in and check-out procedures, and observer requirements is apparently being viewed by foreign longline fishermen as being too burdensome to comply with and simply not worth the hassle. The avoidance of the entire FCZ of the Western Pacific Region, an area larger than 1.5 million square miles, by foreign longline vessels is neither necessary nor desirable. The PMP, in result, has turned out to be a contradiction of U.S. tuna policy. The FMP, on the other hand, proposes to simplify the management program for foreign longline vessels so that they will have a reasonable opportunity to fish for tuna in relatively large parts of the FCZ of the Western Pacific Region. The FMP would be much more equitable to the foreign participants in the tuna fisheries conducted in the U.S. FCZ.

There is also no certainty with respect to outcomes under the PMP. While foreign longline vessels so far have stayed out of the FCZ under the PMP, there is always the prospect that they might enter any part of the FCZ and start fishing in fairly large numbers. The number of permit applications has risen steadily since 1983 when no foreign longline vessels applied for a permit to fish in the FCZ of the Western Pacific Region. This poses several problems. If many foreign longline vessels were to simultaneously enter the FCZ, it would be virtually impossible to enforce the provisions of the PMP without first having a very large increase in current enforcement budgets. Also, while it appears that carches and catch rates for billfish and associated species made by domestic fishermen have increased during the past five years, it is not known if this is due to natural changes in the abundance or availability of the pelagic species in the management unit, or is due to increases in the local abundance of the management unit species because of relocation of foreign longline effort out of the FCZ, or due to other conditions. Normally, there is considerable variability in stock abundance and availability for pelagic species in general, and more years of catch and effort data on fishing for the species in the management are needed in order to more confidently establish relationships between the foreign and domestic fisheries for the management unit species. However, under the PMP, foreign longline vessels could enter any part of the FCZ. This would make moot or, at best, greatly complicate efforts to establish whether domestic

fishermen have, in fact, benefited from the relocation of foreign longline vessels out of the FCZ, especially from areas which are considered most important to domestic fishermen. The FMP would minimize the problem of uncertainty by establishing a fixed set of area closures to foreign longline fishing for five years to allow reasonable time for the effects of area closures to be better documented.

The PMP is not easy or cost-effective to administer and to enforce. As long as foreign longline vessels refrain from fishing in the FCZ, this is not a problem. At present, aerial surveillance is sufficient for monitoring foreign fishing activity in the FCZ, and fairly large areas of the U.S. FCZ can be covered at reasonable cost. If a substantial number of foreign longline vessels do begin fishing in the FCZ, however, the problem would become serious. At-sea enforcement would be required to check on compliance with the PMP's quotas, non-retention zones, and manner of releasing fish requirements in the FCZ once the quotas of individual species are reached. Neither the NMFS nor the Coast Guard have the staff and ships needed for such at-sea enforcement on a continuing basis. The FMP deals with the enforcement problem by establishing area closures to foreign longlining fishing and by allowing the retention of all fish caught in open areas of the FCZ. The FMP would provide much more freedom for foreign longliners to use their gear effectively in areas of the FCZ which would be open to foreign fishing. Aerial surveillance would be the primary enforcement mode to check for violations in the areas of the FCZ closed to foreign fishing and for unauthorized fishing in the open areas.

The PMP is narrow in scope since it only deals with foreign longline vessels. It does not address other types of foreign fishing for pelagic species, nor can a PMP deal with domestic fisheries. The FMP would address these problems in several ways. The FMP proposes to prohibit foreign vessels from using drift-gillnets anywhere in the FCZ of the Western Pacific Region. The FMP also proposes to control the use of drift-gillnets in the FCZ by domestic fishermen through an experimental fishing permit procedure in order to prevent gear conflicts and to maintain the values associated with the established domestic fisheries for the managment unit species. The FMP also proposes that the State Department and NMFS establish systematic data collection procedures through voluntary means in order to determine the magnitude of incidental catches of the management unit species made in the FCZ by foreign pole-and-line tuna vessels and by foreign and domestic purse seine vessels. This information is needed to determine if any controls covering the management unit species might be needed for these fisheries in the future. Prohibiting the use of drift-gillnets by foreign vessels would eliminate the risk of adverse effects on endangered and threatened species and marine mammals such as Hawaiian monk seals, sea turtles, humpback whales and porpoises. In addition, the FMP would establish a fishery monitoring system so that the effectiveness of the management program can be evaluated, and problems can be identified and resolved should they arise, whether in the domestic or the foreign fisheries which take the management unit species.

Finally, the FMP provides a better vehicle than the PMP for furthering the development of international agreements initially for securing access for fishing for tuna and eventually for managing all migratory pelagic fish species throughout their range in the Pacific. The easing of access to the FCZ for

foreign longline fishing for tuna should be viewed as a demonstration of the U.S. Government's interest in maintaining good relations with nations which are equally interested in the long-term productivity of stocks of highly migratory species and in gaining access to fish for tuna in exclusive economic zones. The U.S. is now engaged in negotiations with sixteen Pacific Island States regarding a regional tuna access agreement. Areas closed to fishing by the U.S. purse seine fleet is an important issue in these negotiations. This FMP is not precedent setting in any way regarding establishing of area closures to fishing for highly migratory species.

In summary, the FMP is needed to achieve the objectives chosen by the Council (Section 4.2) while at the same time avoiding the problems associated with the PMP. The program proposed in this FMP provides a more equitable, certain, cost-effective, and comprehensive program for monitoring and managing the fisheries for pelagic species in the FCZ much better than under the PMP.

3.3 Consistency with MFCMA National Standards

The measures proposed by the FMP are intended to achieve optimum utilization of billfish and associated fishery resources in the FCZ in accordance with the National Standards of the MFCMA:

1. Prevent overfishing of the management unit species while achieving the optimum yield (OY) - Not much can be done in the FCZ alone to prevent overfishing of billfish, mahimahi, wahoo and oceanic sharks because only a small portion of total fishing mortality of these species throughout their range is the result of fishing pressure on these species in the FCZ. There are, however, conservation benefits stemming from the FMP which do not arise under the existing PMP. The FMP would eliminate the waste of fish associated with the PMP's non-retention approach which requires the release of dead or dying fish hooked on longline gear. Under the FMP, foreign longline vessels would be allowed to retain all of their catches. Second, the proposed fishery monitoring program will provide a sounder basis for implementing conservation measures in the FCZ if they are found to be needed in the future. The revised FMP incorporates an annual report requirement designed to identify problems in the future so that they can be acted on rapidly. There also will be a thorough re-evaluation of the plan at least every five years to determine the need for adjustments in area closures or changes in other measures. In the meantime, the OY for billfish, mahimahi and wahoo will be achieved by domestic fishing for these species in areas of the FCZ which are important to domestic fishing interest. Foreign longline, pole-and-line, and purse seine fishing in the FCZ would remain unaffected without immediate constraints placed on their effort or catch.

2. Best scientific information available - The FMP acknowledges the limitations of the available data, but the Council has used the best scientific information available in developing this FMP. The Plan

Development Team has determined that the revised FMP contains the best scientific information and analyses available relating to the impacts on domestic catch rates of the management unit species due to closures to foreign longline fishing in the FCZ. The Council's Scientific and Statistical Committee has concluded that the evidence presently available supports the presumption that domestic catch and catch rate increases will result as a result of area closures to foreign longline fishing as recommended in this FMP.

3. Management of a stock (or interrelated stocks) as a unit throughout its range - The management unit of this FMP includes mahimahi, wahoo and oceanic sharks in addition to six species of billfish. Each of the pelagic fisheries discussed in Section 6.0 takes a mix of the management unit species and tuna although in different proportions.

4. No discrimination between residents of different states - The plan does not propose any differential licensing programs or requirements for residents of different states. Tourists are principal customers of the charter sport fishing industry and out-of-State fishermen are encouraged to participate in the fishery.

5. Promote efficiency in utilization of fishery resources - Other than requiring an experimental fishing permit for domestic drift-gillnet fishing, the FMP does not restrict the times, places, or methods of fishing for the management unit species by domestic fishermen. The evidence available indicates there will be increases in domestic catch rates around the main Hawaiian islands as a result of the area closures to foreign longline fishing. Increased catches by U.S. vessels in American Samoa and Guam also are likely. At the same time, foreign longliners, purse seiners and pole-and-line vessels will be permitted to retain all fish caught in open areas. They will not be required to discard dead fish or to release fish by cutting the line or leader while a fish is in the water as is presently required. Thus, domestic and foreign fishing vessels should become more efficient under the FMP than under the PMP presently in effect.

6. Allow for variations and contingencies - Annual reports on the fisheries and the five-year review requirements of the FMP allow for variation and contingencies to be considered. Year-to-year availability, abundance, and vulnerability of billfish and associated species in the FCZ vary considerably. The FMP cannot control this in any way. However, by restricting the potential for considerable interception of the management unit species by foreign longliners and gillnet vessels in the FCZ before they reach grounds used by domestic fishermen, the FMP is intended to safeguard the potential for good domestic catches in years of high abundance, of the management unit species, and reduce the chance of poor domestic catches in years of their low abundance.

7. Minimize costs and avoid duplication - The FMP proposes a more cost-effective approach than the PMP to regulate foreign fishing; and proposes that current State and Territory data collection procedures

regarding domestic fishing for the management unit species be upgraded and augmented through sampling. Federal costs will remain the same or possibly even decrease relative to the PMP, and there will not be any duplication of effort between Federal and State and Territorial fisheries agencies.

3.4 Alternatives Considered

The Council considered a large number of alternatives in selecting the proposed actions (Section 7). These alternatives include different management strategies and different combinations of management measures. The alternatives were found to offer less chance of achieving the objectives of the FMP compared to the proposed action(s).

Continued reliance on the PMP was rejected because the PMP has undesirable impacts regardless of whether or not foreign fishing occurs. If foreign fishing did occur, there would be a waste of billfish and other species, enforcement burdens would be extremely high, and compliance by foreign vessels would be next to impossible to monitor. There could be gear conflicts, and there would be little likelihood that catches and catch rates of the management unit species of domestic fishermen would increase. On the other hand, while domestic vessels are benefiting from the virtual de facto closure of the entire FCZ of the Western Pacific Region under the PMP, a closure of such extent is unnecessary. Some of the constraints on foreign fishing vessels can be reduced so that a reasonable opportunity to fish for tuna is maintained especially in the FCZ of U.S. island possessions in the Pacific.

Amendments to the PMP could address some of the concerns about unnecessary limitations on foreign tuna vessels, but there are drawbacks to this approach. An amended PMP will not provide a basis for addressing current or future domestic fishery problems. For example, a PMP could not establish restrictions on domestic vessels' use of drift-gillnets to catch the management unit species in the FCZ. Implementation of an existing FMP or a preparation of an amendment thereof are more likely to proceed rapidly than preparation, approval and implementation of a new PMP. Amendment of the PMP would take additional time, since the MFCMA, National Environmental Policy Act (NEPA), and other laws would require developing a new draft and final document for public review. This would duplicate what the Council has already done, with no apparent gain from the decisions ultimately reached.

Alternative FMP strategies considered include limits on foreign catch, limits on foreign fishing effort, different area closures to foreign longliners applied on an annual or seasonal bases, and combinations of catch and effort limits. The common failing of catch and effort limits is the difficulty of establishing rationally-based limits for highly migratory species just for the FCZ and of implementing or enforcing those limits. A workable foreign catch or effort quota system invariably leads to a requirement for at-sea enforcement and high levels of observer coverage on foreign vessels. The area of the U.S. FCZ

of the Western Pacific Region involved is so large, and there can be so many vessels involved in fishing, that numerical catch and effort quotas are essentially impossible to enforce. In addition, great perplexity can be involved in arriving at appropriate quotas, by area and by species, in any mixed species fishery. The prospect of continuing on with a wasteful non-retention approach is unacceptable to the Council. The Council concluded that area closures to foreign longline and to drift gillnet fishing, with removal of catch and effort limits, would be the best, easiest, and most cost-effective approach to follow.

The Council explored in considerable detail a large number of area closure combinations to foreign longline vessels (Section 7). It is the Council's judgment that any closures smaller than those proposed in this draft FMP (Figure 3.1) would not provide sufficient protection and benefits to domestic interests and would not promote the "optimum use" of billfish and associated species in the FCZ to the extent possible. Small area closures also could result in gear conflicts. Larger area closures to foreign longline fishing would likely not result in significantly larger catches of the management unit species for domestic fishermen but could significantly affect foreign tuna catches in the FCZ. The proposed area closures will promote conservation of the management unit species to the extent possible in the FCZ, by eliminating wastage of fish caused by a non-retention approach, will promote a more optimum utilization of pelagic species in the FCZ by domestic and foreign vessels compared to the PMP; will provide a reasonable opportunity for foreign vessels to maintain (or even increase) their tuna catches in the FCZ; and the fishery can be effectively patrolled and enforced with available resources.

The Council considered starting with smaller area closures to foreign longline fishing and phasing in larger closures as the domestic fisheries for the management unit species expanded. However, such a strategy would not serve the interest of domestic fishermen in the island areas served by the Council. Implementation of the closures to foreign longline fishing and to drift-gillnet fishing recommended in this FMP is very important to domestic fishermen to assure that domestic catch benefits can continue into the future. It will take time to get adequate data to confirm and quantify "cause-and-effect relationships" between the foreign and domestic fisheries for the management unit species and to explain the reasons for the success or lack of success in the domestic catches and catch rates of the management unit species. Potential gains in domestic annual harvests of the management unit species due to the area closures to foreign longline fishing cannot now be estimated with much reliability until there are enough data on domestic harvests and catch rates with area closures to foreign longliners in effect for a continuous series of years. Therefore, the Council has concluded that the FMP should start with relatively large area closures which could be adjusted downward if they are found to be larger than necessary and still provide sufficient protection to domestic fishing interests. A complete evaluation of the effectiveness of this approach will be made in five years.

The Council concluded that no restrictions on domestic fishing effort (except for controlling drift-gillnet gear) or catches are necessary at this time for ecological, economic or social reasons. It would be irrational to control catches of the management unit species by domestic island fishermen in the absence of international cooperation and agreements for conservation of

highly migratory pelagic species when the catches by fishermen in island areas served by the Council are a small fraction of ocean-wide catches. Domestic fishermen would suffer with no measurable improvement in the productivity of the stocks of the management unit species. Further, domestic fishermen clearly place a much higher value on the management unit species than do foreign long-line and pole-and-line fishermen and purse seiners who instead prefer catching tunas.

There are no economic or social conflicts in the domestic fisheries that need to be resolved under the FMP at this time. Charter, trolling, longline and handline fishing by domestic fishermen have expanded in recent years, and there is even crowding in highly productive fishing areas such as around fish aggregating devices. However, this is not a severe problem warranting Federal controls at this time. Drift-gillnet gear is not now being used by domestic fishermen, but there have been expressions for testing drift-gillnets by some domestic fishermen in the island areas served by the Council. There is no indication that significant economic or social gains would accrue from any allocations of fish or fishing space to different domestic fishery sectors. Furthermore, monitoring and enforcing such allocations could be quite costly. Domestic vessels will be free to allocate their effort in the most efficient way possible. However, purse seines and drift-gillnets will be kept away from areas fished with traditional gears and from areas known to have concentrations of marine mammals and threatened and endangered species. The FMP requires that the Council will receive an assessment of the status of the domestic fisheries annually to determine whether actions are necessary to address user conflicts. Monitoring of catches and catch rates for domestic and foreign fishermen will alert the Council to the need for more rapid responses to problems relating to the status of the stocks themselves should they arise in the future.

3.5 Determinations in the FMP

The FMP acknowledges the limitations of available data for precise assessments of stocks of the management unit species throughout their assumed range in the Pacific. The Council concludes that maximum sustainable yield (MSY) levels for the various species of billfish on a Pacific-wide basis are as derived by the Billfish Stock Assessment Workshop (Shomura, 1980), and the MSY levels for mahimahi, wahoo, and oceanic sharks are as presented in the PMP (Section 8).

The OYs for the management unit species in the FCZ are defined in non-numerical terms. The large annual variability in abundance of pelagic species in the FCZ, the large annual variability in historical fishing effort expended by foreign longline vessesl in the FCZ of the Western Pacific Region, and the present inability to accurately forecast future catches and catch rates of the management unit species made by foreign and domestic vessels all argue against using a nummerical determination of OY. Therefore, the OY for each of the species in the management unit is defined as "the amount of that species which will be caught by domestic and foreign vessels fishing in accordance with the measures contained in this plan" (Section 8).

The domestic annual harvest (DAH) and total allowable level of foreign fishing (TALFF) are likewise defined in non-numeric terms (Section 8). Most of the management unit species caught by domestic fishermen will either be sold to fresh fish markets through established local channels, or be consumed directly by family and friends of local fishermen. Other than what goes into processing of local catches for the fresh fish market and for home consumption, there is virtually no processing of domestic catches of the management unit species in Hawaii, Guam and American Samoa, other than small amounts of marlin used in smoked fish and manufacture of fish cake in Hawaii. The amount of management unit species available for joint venture processing (JVP) with foreign vessels is zero.

3.6 Benefits of the Proposed Action

3.6.1 Conservation

The FMP is unlikely to result in a significant effect on the condition of stocks of the management unit species. This is so because the FCZ is believed to comprise only a small portion of the range of each of the management unit species. However, keeping foreign longliners largely away from the FCZ of the main Hawaiian islands and Guam could be beneficial to conservation of blue marlin since this species is quite abundant in the waters of Guam and the main Hawaiian islands. Hawaii may be an important spawning ground for billfish. Results of plankton collections show that the Hawaiian islands and the waters just to the west of the island chain support large numbers of larvae not only of blue marlin, but of striped marlin and shortbill spearfish as well. However, domestic catches of blue marlin will likely increase thereby offsetting the decreases in catches made by foreign longliners. The FMP will be beneficial in eliminating wasting of the management unit species due to the non-retention provisions of the PMP. The FMP will contribute to conservation in the "wise use" sense of the word. The FMP also will generate better data to identify future problems (if any), and the annual report requirement will provide a basis for taking short-term actions, if necessary, in between the required five-year review of the FMP.

3.6.2 Optimum Yields

The FMP will promote optimum utilization of billfish, mahimahi, wahoo and oceanic sharks in the FCZ. Domestic charter and private sport fishing interests in Hawaii, Guam and American Samoa place extremely high value on all billfish species and on blue marlin in particular. The values associated with mahimahi and wahoo are also very high. Domestic longline and handline fishermen in Hawaii place high values on striped marlin, swordfish, mahimahi and wahoo. These species collectively

contribute as much as 5-20% of the total value of the catch in certain years in the handline and longline fisheries. The fisheries for pelagic species are the largest of the domestic fisheries in Hawaii, Guam and American Samoa and the relative importance of the management unit species is far greater to domestic fishermen than to foreign longliners and drift-gillnetters. In American Samoa, optimum utilization of the management unit species will be achieved by keeping foreign longliners away from the nearshore areas fished by local fishermen and by keeping drift gillnet vessels out of the FCZ altogether. It is important that relatively free access to fish in waters farther from shore be given to foreign longliners in the FCZ of American Samoa since they still deliver significant quantities of tuna processed by canneries in American Samoa. There is very little domestic fishing in the FCZ of U.S. Pacific island possessions and in the FCZ beyond 100 miles from shore of the Northwestern Hawaiian Islands, and optimum utilization may be achieved if all pelagic species are available to foreign vessels throughout those parts of the FCZ of the Western Pacific Region. In the Council's view, the pattern of use likely to occur under the FMP will result in optimum utilization of the management unit species in the FCZ of the Western Pacific Region.

3.6.3 Domestic Fishery Values

Catches of billfish, mahimahi, wahoo and oceanic sharks made in the FCZ by domestic fishermen are expected to increase under the FMP, but catches are but one index of their values. The economic and social values associated with recreational fisheries and supporting businesses are very large, as reflected in the willingness to pay very high costs and to invest large amounts of money in vessels and gear to pursue billfish and associated species and tuna. Sportfishing tournaments have become larger, more numerous, and held more frequently than in the past with participants at some tournaments coming from all over the world. Fishermen would not participate in trophy or jackpot tournaments if there were not a reasonable likelihood or expectation of catching fish. The FMP will not necessarily guarantee an increase in catches and catch rates of billfish, but it will maximize the chances for successful sportfishing opportunities. Precluding foreign drift-gillnet fishing and limiting the risk of foreign longline interceptions of the management unit species in the FCZ will maximize the potential for increased availability of fish for domestic catches and ultimately increased recreational fishery values. Higher catch rates could also be achieved by recreational fishermen by limiting catches made by domestic commercial fishermen in and adjoining the areas fished by recreational fishermen. However, the Council has decided that there is no need to regulate the domestic commercial fisheries for the management unit species at this time, other than drift-gillnet fishing.

Similarly for commercial fishermen, the FMP will provide a greater likelihood that fish will be more available for harvest in the waters around the main Hawaiian islands, along the NWHI chain, Guam, and

in the closure zone around American Samoa. In the Council's view, it is especially important for vessels in a developing fishery to achieve hi[illegible] catch rates while they are still experimenting to [illegible] fishing patterns and techni[illegible]

the general premise of the text of the LOS convention requiring the coastal state to be responsible for the conservation of the fisheries (Article 61) and to promote the optimum utilization of the fishery resources (Article 62) should apply unilaterally in the absence of agreements for international cooperation regarding highly migratory species. The Council endorses the State Department's ongoing negotiations with island nations in the Pacific to achieve international tuna access and management agreements. The Council proposes that the FMP be adopted while such agreements are being developed. In the Council's view, the FMP liberalizes foreign longline vessels' access to tuna and to other highly migratory species in the FCZ and is thus a more consistent basis for negotiating international treaties than the PMP.

3.7 Summary

In summary, the FMP is intended to improve domestic recreational, commercial and subsistence fishery values associated with catches of the management unit species in the long run. The areas most important to domestic fishermen will be reserved for domestic use. Gear conflicts with foreign vessels will be precluded in these areas. Domestic catches are expected to increase in response to these measures. Foreign vessels will have a more reasonable opportunity to fish for tuna in the FCZ compared to what they have now under the PMP. Foreign longline effort and catches can be relocated to open areas without limits or to the high seas. No negative effects on total foreign longline catches in the FCZ or in the Pacific are expected.

The FMP will not have a significant impact on the overall health and productivity of stocks of billfish and associated species throughout their assumed range in the Pacific Ocean. There will not be any negative impact on endangered and threatened species as a result of the proposed action. There will be no irreversible or irretrievable commitments of resources made under this plan, nor will there be any unavoidable adverse effects which would require mitigation. The plan is not expected to affect use of energy or other depletable resources by domestic or foreign vessels. The plan is consistent with the coastal zone management plans of Hawaii, Guam and American Samoa. (Appendix B).

4.0 INTRODUCTION

4.1 Goal of Fisheries Management in the FCZ

The goal of the Council is to secure the approval and implementation of a FMP for billfish, mahimahi, wahoo and oceanic sharks in the FCZ which will be fair and equitable to both domestic and foreign fishermen; will be cost-effective to administer and enforce; and will not impede negotiations toward international agreements for conservation and management of highly migratory species of tuna, billfish, and other migratory pelagic fishery resources throughout their range in the Pacific Ocean.

4.2 Objectives of the FMP

1. To promote the growth of domestic harvests of the management unit species and domestic fishery values associated with these species.

2. To enhance the opportunity for successful recreational fishing experiences for the management unit species by fishermen.

3. To improve the opportunity for domestic commercial fishermen to engage in profitable fishing operations for pelagic species.

4. To enhance the marketability of sportfishing charter-boat services.

5. To promote domestic marketing of the management unit species in lieu of some marketing of these species in Guam and American Samoa by purse seine fishermen and foreign longline fishermen.

6. To eliminate waste of billfish and other management unit species which are taken along with tuna on foreign longline gear, and by purse seine and pole-and-line tuna vessels.

7. To diminish the risk of domestic/foreign gear conflicts in the FCZ, and to preclude the possibilities of gear conflicts in areas of concentrated domestic fishing.

8. To the extent consistent with the above objectives, to minimize interference with fishing for tuna in the U.S. FCZ, with special regard for the need to maintain deliveries of tuna to American Samoa canneries.

9. To improve the statistical base for better stock assessments and for making better decisions to conserve and manage highly migratory fish resources throughout their range in the Pacific Ocean.

10. To promote international/regional management of highly migratory species throughout their range as long as domestic fishery benefits under this plan are enhanced or maintained.

11. To conserve billfish and associated species in the FCZ to the extent possible while international agreements are being developed to conserve and manage these species through out their range along with the tunas.

4.3 Relationship Between Objectives

The Council recognizes that several of these objectives are mutually exclusive to some degree. To provide the maximum potential for the growth of domestic fisheries for pelagic species, for example, would seemingly require prohibition of foreign longline fishing for tuna from the FCZ around the populated islands in order to eliminate the potential for interception of the management unit species by foreign tuna fishing gear in the FCZ. This would, however, result in an unacceptable degree of interference with foreign fishing for tuna in the FCZ, could possibly affect the willingness of foreign longliners to continue deliveries of tuna to American Samoa canneries, and could result in a further curtailment of the flow of foreign catch data to the U.S. On the other hand, if minimal controls on foreign fishing for tuna were established, the potential for successful domestic fisheries and increased catches of the management unit species would decline, while the risk of gear conflicts would increase. The measures proposed in the FMP attempt to strike a reasonable balance between these objectives to the extent that they conflict with each other. The FMP proposes to prohibit foreign longline fishing in only about 25% of the FCZ of the Western Pacific Region (see Figure 3.1; p. 3-2). Moreover, the FMP would not limit the activities of foreign pole-and-line and purse seine tuna vessels at this time anywhere in the FCZ.

Objectives 1-5 reflect the Council's view that transfers of catch of billfish and associated species from foreign longliners to domestic vessels will generate increases in the economic and social values of the domestic fisheries for these species. Domestic fishermen have the capability and desire to harvest a larger number of billfish, mahimahi, wahoo and oceanic sharks than are now taken. Domestic recreational and commercial fisheries for the management unit species and tuna have expanded in recent years, and further expansion is likely in the future. Newer domestic longline vessels have longer range and better equipment to catch and maintain fish at sea in a high quality condition. The increase in the overall level of recreational fishing effort, and in the number of tournaments and catches of billfish in tournaments, attests to the rapidly growing importance and value of the recreational fishery. The social value of the domestic fisheries for the management unit species by far exceeds the ex-vessel value of the catch. The PMP does not provide assurance of adequate protection for domestic fishery interests and will not promote higher values from

the domestic fisheries in the long run. Under the PMP, foreign longline vessels can operate throughout the FCZ with limits only on the retention of billfish and associated species, not on hooking or killing of fish. The majority of billfish, mahimahi, and ono released by longliners would probably not be available to domestic vessels, since released fish, more frequently than not, are dead or moribund upon release. Also under the PMP, foreign fishing vessels can set longlines anywhere in the FCZ, with possible gear conflicts or with the result of discouraging domestic fishing in an area to avoid gear entanglement. Domestic fishermen generally avoid fishing in areas where foreign longline gear has been set because they expect low catch rates in such areas. Thus, the PMP does not assure a high probability of increased domestic catches and subsequent enhancement of domestic fishery values. The FMP is intended to redress this situation.

Objectives 6 and 11 reflect the Council's concern that the FMP should result in a wiser use of the fish resources in the FCZ compared to the situation prevailing under the PMP. First, elimination of the PMP's non-retention approach is essential in order to avoid waste. Where fish are taken, they should be retained and used unless there's a good probability of their survival upon release. The PMP can result in substantial waste of fish. Second, while not much can be done in the FCZ alone to control fishing mortality to improve or maintain healty stocks of the management unit species throughout their assumed range, relocation of foreign fishing vessels away from areas of high blue marlin catches to areas of lower incidental catches may be beneficial to blue marlin stocks. The catch rate for blue marlin on foreign longline gear is nearly twice as high in the FCZ of the main Hawaiian islands compared to the FCZ of the NWHI. The catch rate for blue marlin on foreign longline gear is significantly higher in the FCZ of Guam and American Samoa than it is in the FCZ off the Hawaiian islands (Table 6.5). The FMP can signal foreign interests about the Council's and the U.S. Government's concerns about the health of billfish stocks; and so far as the FCZ is concerned, the FMP may eventually result in some decreases in blue marlin mortality since there are data which show that this species spawns in the waters near Hawaii and Guam which would be closed to foreign longline fishing if the FMP is adopted.

Objective 7 is intended to assure that U.S. fishermen will not suffer gear damage or losses as they fish in new areas. This is not assured by the PMP. While there has not yet been any legal foreign longlining in the FCZ under the terms of the PMP, foreign vessels have continued to obtain fishing permits and could enter all parts of the FCZ under the rules established by the PMP. As of June, ninety two foreign longline vessels have applied for permits to fish in the FCZ in 1986. This demonstrates a continuing interest of foreign longline vessels to fish in the FCZ, and fishing by these vessels in non-retention zones established by the PMP would result in a waste of the management unit species. A foreign longline set may be 50 or 60 miles long, and even a small number of longlines can cover and effectively foreclose domestic fishing in large areas of fishing grounds. The Council believes action is needed to provide certainty that foreign-domestic gear conflicts will not occur.

Objectives 8, 9, and 10 recognize the international concerns related to management of tuna, billfish and other highly migratory species. First, the Council notes that foreign vessels have a conditional right to pursue tuna in

the FCZ under the MFCMA. The PMP, however, is having the effect of keeping foreign longline vessels out of the FCZ entirely. The Council believes action is necessary to provide a reasonable opportunity for foreign vessels to fish for tuna in the FCZ with less red tape and less cost. The Council believes some relocation of foreign effort to different parts of the FCZ is preferable from a tuna policy standpoint to a de facto full closure of the entire FCZ of the Western Pacific Region to foreign longline fishing. Second, the Council recognizes the importance of continuing foreign longliners' tuna deliveries to American Samoa. The PMP apparently is viewed by some American Samoa-based longliners as being too difficult to comply with. Liberalized access to the FCZ around American Samoa and especially in the FCZ of U.S. Pacific island possessions may benefit these fishing interests considerably. Third, international cooperation is necessary for effective protection against overfishing of migratory pelagic species throughout their range. The de facto closure of the entire FCZ of the Western Pacific Region to foreign longline tuna vessels under the PMP does not provide a backdrop which is highly conducive to such agreements. The Council's view is that action under a FMP to give foreign vessels greater fishing opportunities in the FCZ for tuna and the management unit species will be more effective in advancing international negotiations between the U.S. and other nations than under the prevailing circumstances of the PMP. Meanwhile, by allowing more freedom for foreign fishing for tuna, a FMP can once again promote the flow of data for stock assessments, for better determination of the species distribution and seasonal migration patterns, and other analyses needed for improved management of highly migratory fish.

The Council also is concerned with the potential costs of administration and enforcement of the management system ultimately chosen. The Council notes the immense size of the FCZ in the central and western Pacific and the limited NMFS and Coast Guard resources available for enforcement. The PMP to date has not generated any enlarged enforcement or administrative cost requirements because there has not been any legal foreign longline fishing in the FCZ of the Western Pacific Region since the PMP became effective in 1980. Foreign permit processing and data collection activities in the NMFS are in place. Routine Coast Guard surveillance flights have occurred with no significant deviation and with no additional costs due to PMP requirements. The Council must point out, however, that the PMP would be unenforceable with current resources if foreign longline vessels with secured permits were to enter the FCZ even in fairly modest numbers. The Council believes that a more cost-effective approach must and can be established under the FMP. Enforcement activities could be targeted to specific areas of the FCZ for the most efficient deployment of available resources. The Council's proposed program for the management unit species should pose less need for increased enforcement budgets and achieve greater enforcement coverage under current budgets as compared to the PMP.

In conclusion, the Council has adopted a set of objectives which are consistent with the Council's management goals, with the polices and purposes of the MFCMA, and with established U.S. policy regarding highly migratory species of tuna. The listed objectives reflect the Council's view that the FMP can enhance domestic fishery values stemming from catches of the management unit species and can affect needed changes to correct the weaknesses of the PMP especially regarding its unintended contradiction of U.S. tuna policy.

4.4 Framework for Consideration of the FMP

4.4.1 Effects of the PMP

As emphasized previously, the PMP is, and was intended to be, a means to control foreign longlining in the FCZ until a FMP developed by the Council could be put in place. It was originally anticipated that the PMP would be a relatively short-lived and simple response to the immediate problem of managing the harvests of the management unit species by foreign longline vessels in the FCZ. The very first approach considered by the NMFS in developing the PMP was a series of area closures to foreign longline fishing to eliminate the risk of gear conflicts in waters heavily used by domestic fishermen. This simple approach was rejected because of Federal government's concerns over prevailing U.S. tuna policies. Instead of being simple, the PMP strategy turned out to be a complex set of quotas, non-retention zones, advance notification by foreign vessels of intentions to enter the FCZ to fish, and other complicated provisions (Section 5.2).

Unwittingly, the effect of the PMP has been just the opposite from the intended outcome. There has been no documented legal foreign longlining in the FCZ since April 1980 when the PMP went into effect. In 1980 and 1981, large numbers of longlining permits were obtained by foreign nations, but none were actually used. For all practical purposes, foreign longliners have effectively been shut out of the entire FCZ. This effect is neither necessary nor desirable. While this situation theoretically maximizes the gains to domestic fishermen who fish in the FCZ for pelagic species, it also maximizes the disruption of historical foreign longline fishing patterns for tuna in the FCZ. The Coast Guard and the NMFS still must make random flights throughout the FCZ to check for illegal entry. There has been no willful curtailment of foreign longliners' tuna deliveries to American Samoa canneries, nor of foreign longliners' port calls in Honolulu and Maui to obtain fuel, equipment, and supplies. These activities still continue today. However, there is no flow of data on foreign fishing in the FCZ, and foreign data on fishing elsewhere in the Pacific has ceased to be exchanged. The Council has had several informal discussions with Japanese and Korean tuna federation representatives concerning voluntary abstentions from certain areas of the FCZ, but no formal negotiations to develop bilateral agreements for the management of fishing for billfish, tuna, and other migratory species in the central and western Pacific have been successfully achieved to date. Although the U.S. is presently involved in negotiations with sixteen Pacific island nations regarding access of U.S. purse seiners to fish for tuna in the 200 mile zones of those nations, these negotiations are limited to tuna access and do not concern themselves with the management unit species, at least not yet.

This is not to say the PMP has not resulted in some beneficial effects. Domestic catches of billfish, mahimahi, and ono have increased since the PMP went into effect in April 1980. Foreign longline vessels

have abstained from fishing in the FCZ since that date. However, there is no assurance foreign vessels will continue to avoid fishing in the areas of the FCZ most important to domestic interests.

In short, the PMP may, in theory, provide a reasonable opportunity for foreign longline fishing for tuna in the FCZ, but the conditions associated with that opportunity - permits, quotas, non-retention, observers, reporting, and check-in and check-out provisions - are such that legal foreign longline fishing is not occurring. The Council's FMP should achieve a more balanced and better outcome for all participants.

4.4.2 Geographic Context

The Council's present area of jurisdiction is the FCZ around Hawaii (648,000 square miles), American Samoa (75,000 square miles), Guam (60,000 square miles) and U.S. Possessions (476,000 square miles). However, the Council's immediate area of jurisdiction cannot be looked at in isolation. The following points are important to keep in mind:

1. The PMP established controls over foreign longline fishing for billfish, mahimahi, wahoo, and oceanic sharks for the FCZ off the U.S. west coast as well as for the FCZ of the Western Pacific Region including the Commonwealth of the Northern Mariana Islands (CNMI). Since Council members have not yet been appointed from the CNMI, the FMP, however, will only have an immediate, direct effect around Hawaii, American Samoa, Guam, and the U.S. Possessions. Therefore, if a degree of regional consistency is to be eventually achieved, amendments to the FMP will be needed for the CNMI. Area closures to foreign longline fishing vessels in the FCZ of the CNMI or, perhaps, other measures, remain to be negotiated.

2. Foreign fishing vessels operate throughout the Pacific (63,800,000 square miles). Total annual catch of billfish in the Pacific by foreign longliners averaged more than 56,000 metric tons (MT) during 1973-1977; the total longliners' annual tuna catch was more than 245,000 MT. during this period. Only about 1.3% of the billfish and about 2.2% of the Pacific Ocean tuna were taken in the U.S. FCZ of the Western Pacific Region, including U.S. Possessions (Palmyra, Kingman, Wake, Jarvis, Johnston, Howland-Baker) and the Commonwealth of the Northern Mariana Islands (CNMI). At the same time, the average annual tuna catch by foreign baitboats in the Pacific was about 553,700 MT; less than 2% of that amount was taken in the FCZ of the Western Pacific Region. Catches of mahimahi, wahoo and sharks are not documented.

3. Stocks of billfish and associated species and tuna range throughout the Pacific. As a result, the extent to which their harvests are only controlled in parts of the FCZ will not have a meaningful effect on overall stock sizes. At the same time, there is not much apparent difference in the annual foreign longline catch rates within and outside of the FCZ for many species of tuna. Billfish catch rates can vary considerably, however. Thus, to the extent foreign longlining might be allowed in only certain parts of the FCZ, vessels could catch equal amounts of tuna with equal value in other parts of the FCZ or beyond the FCZ with current levels of effort, but might reduce their catch of billfish and other non-tuna species which are important to domestic fishing interests in the island areas served by the Council.

4. Except for some Hawaii-based longliners, most U.S. vessels in the Council's region fish for billfish and associated species almost exclusively within the FCZ. They are either not of a size capable of ranging vast distances, or they prefer to stay within striking range of home islands, or they are unable to find crew members willing to spend time at sea for long periods. Unlike far-ranging foreign vessels which fish mostly for tuna, domestic vessels, are almost totally dependent on the FCZ for their catches of the management unit species and tuna.

The Council has attempted to maintain a regional and, to a certain extent, an ocean-wide perspective in this plan.

4.4.3 Legal Context

The Magnuson Act establishes the authority of the U.S. to exercise exclusive management control over foreign taking of billfish and other non-tuna migratory fish in the FCZ. Foreign longliners, though primarily pursuing highly migratory species of tuna (which are not subject to U.S. authority), nonetheless catch large numbers of blue and striped marlin, swordfish, spearfish and other species in the management unit. Mahimahi, wahoo, and oceanic sharks also are taken, although the amount is unknown because most foreign longliners do not log the catch of these species. Foreign longliners do catch "fish" as defined in the Magnuson Act and their activities in the FCZ are thus subject to U.S. authority. This was established as a legal fact by the NMFS in preparing and implementing the PMP.

However, the degree of control which can be exercised over foreign longline fishing is a judgmental decision. The National Oceanic and Atmospheric Administration (NOAA) has provided legal guidance on how

to reach conclusions or judgments in these matters. In a legal opinion (Appendix C), NOAA concluded that:

> A billfish management plan may contain management measures which affect foreign longline fishing for tuna in the FCZ, including area closures and season or gear restrictions, if the measures will (1) provide a reasonable opportunity for foreign longline vessels to fish for tuna in the FCZ and (2) impose the least burden on such vessels that will achieve conservation and management of the billfish covered by the plan...Regulation of the foreign longline take of billfish must be carried out so that it does not constitute the exercise of exclusive jurisdiction over tuna fishing.

It can be inferred from the legal opinion that control over foreign longline fishing for tuna was equated with "exclusive jurisdiction over tuna fishing". That is, the opinion implies that management measures cannot be so restrictive that longlining (i.e., tuna fishing) is prohibited in any of the FCZ areas covered by the plan. This reflects the fact that the opinion was prepared in response to questions raised by the Atlantic and Gulf of Mexico Regional Fishery Management Councils. Foreign longlining is the only form of foreign fishing for tuna in the FCZ of those areas. Therefore, control over foreign longline fishing in the U.S. FCZ of these two areas would in fact be tantamount to control over foreign fishing for tuna.

In the U.S. FCZ of the central and western Pacific Ocean, however, foreign pole-and-line (baitboat) vessels can be very active and in some years they have caught twice as much tuna as the foreign longliners. Even with the price differentials for skipjack tuna considered, the baitboats' catches (1973-1977 average) almost equalled the longliners' catches (1973-1977 average) in the FCZ in total value. Therefore, in the Council's view, even an absolute prohibition of foreign longlining in the Western Pacific FCZ would not constitute "exclusive jurisdiction over tuna fishing" since foreign pole-and-line fishing for tuna would not be affected beyond 12 miles from shore from any American flag islands in the central and western Pacific.

During recent years, the Council has also heard reports of increased purse seine and drift-gillnet fishing in the western and central Pacific in the vicinity of the U.S. FCZ. As a result, the Council requested guidance on the legal limits of regulating foreign gillnet and purse seine fishing in the U.S. FCZ. In September 1983, the General Counsel of the Southwest Region of the National Oceanic and Atmospheric Administration provided guidance (Appendix C) to the Council on this issue:

> The catching, taking, or harvesting of any fish other than tuna, or the use of any fishing gear which can reasonably be expected to catch, take, or harvest any fish other than tuna is fishing under the Magnuson Act... The Magnuson Act does not distinguish

between direct and incidental catches in defining what constitutes fishing. Therefore, fish, other than tuna, caught by gillnets and purse seines are covered by the Magnuson Act, and the use of these gears is also covered if they can reasonably be expected to catch fish other than tuna... the United States Government has consistently taken the position that both tuna longliners and tuna gillnetters can reasonably be expected to catch fish other than tuna, and therefore, are required to obtain a permit... Seizures of both longliners and gillnetters have been made to enforce this position... Likewise, if the United States concludes that purse seiners in the FCZ can reasonably be expected to catch fish other than tuna, foreign purse seine vessels would be fishing in the FCZ in violation of the Act unless they had a permit from the United States... Once Federal management jurisdiction is established or asserted, the content of management regulations must satisfy the Act and other applicable law. In the case of foreign fishing involving tuna, this means that the balancing considerations in the Agency's (NOAA's) legal opinion of 1979 on longlining and billfish are relevant. Although the 1979 opinion addressed longliners and billfish exclusively, the same considerations should apply in dealing with other gear types which take both tuna and non-tuna species (emphasis supplied).

On June 6, 1985, the Coast Guard boarded a Japanese pole-and-line vessel which had retained 107 mahimahi, 3 wahoo (ono) and 3 bags of squid caught inside the FCZ off Midway and Kure Island. This vessel did not have a fishing permit. However, seizure of this vessel was not authorized. Instead, this vessel's non-tuna catch was turned over to the NMFS and an "Offense Investigation Report" was forwarded to the NOAA General Counsel's office for resolution. Subsequently, the Coast Guard worked with the State Department to clarify the U.S. Government's enforcement posture vis-a-vis foreign pole-and-line tuna vessels. Eventually, a policy decision was reached that foriegn pole-and-line tuna vessels may only retain tuna, although the PMP is totally silent on this matter. If pole-and-line tuna vessels operating in the U.S. FCZ are retaining non-tuna species, then seizure of all non-tuna is now authorized. If foreign pole-and-line tuna vessels are previous offenders or if the amount of non-tuna is unusually large, then additional sanctions may be imposed. Also, NOAA Office of General Counsel of the Southwest Region has recently opined that foreign purse seine tuna vessels cannot retain non-tuna species which they catch in the U.S. FCZ (Appendix C). The PMP is also silent on this matter.

The Council is not proposing to prohibit foreign baitboat, purse seine, and longline vessels from fishing in the U.S. FCZ of the Western Pacific Region. Instead, the Council recommends that there be reasonable limits placed on foreign longline fishing in parts of the FCZ of the Western Pacific Region which are important to domestic fishermen. Under the Council's proposals, foreign fishing by pole-and-line and purse seine tuna vessels may be conducted at any time and place in the FCZ only subject to voluntary reporting of incidental catches of the management

unit species and voluntary placement of U.S. observers on board some of these vessels. In the Council's view, the proposals of this revised FMP provide a very reasonable opportunity for foreign fishing vessels to fish for tuna in the FCZ. They impose much slighter burdens on foreign longliners than under the PMP, and do not, in any reasonable way, constitute exercise of exclusive jurisdiction over tuna fishing.

Another side of the "legal framework" is the MFCMA mandate to achieve "optimum yield" (OY) from the fishery. The Act defines OY as the amount of fish "which will provide the greatest overall benefit to the Nation, with particular reference to food production and recreational opportunities" (Section 3(18)). Under the Act, domestic fishermen are to be given priority access to fish in the FCZ. There would be little apparent benefit to domestic fishermen if foreign longliners were granted access to areas of the FCZ which are now or may soon become important to U.S. fishermen. "Optimum utilization" is domestic utilization of the management unit species in parts of the FCZ. There is no net loss to foreign longliners if their activities in some areas of the FCZ are curtailed while they are given more liberalized access to other areas of the FCZ. The Council is proposing a geographic shift of historical foreign longlining patterns in the FCZ rather than a prohibition. Domestic fishermen would then have priority to fish for billfish and associated species in waters most important to them, consistent with the MFCMA mandate.

4.4.4 Inter-Fishery Aspects

The Council is aware of perceptions that this FMP could somehow be taken as a precedent by other nations to prohibit U.S. purse seine fishing for tuna in those nations' Exclusive Economic Zones (EEZ). The Council does not believe that this FMP constitutes a basis for such belief or action. Tuna fishing techniques which are known to be quite selective such as pole-and-line fishing, and fishing for tuna which is presumed to be fairly selective such as purse seining would be permitted throughout the FCZ subject only to voluntary reporting of incidental catches and voluntary observer coverage. Longline vessels would be subject to control only in certain areas of the FCZ to limit the large incidental take of billfish, mahimahi, and wahoo. Large parts of the FCZ of the Western Pacific Region (about 75%) would remain open with no limits on catch and effort by foreign longline vessels but they would be subject to permit and reporting requirements. However, the use of drift-gillnets to capture pelagic species would be prohibited in the FCZ for foreign fishermen because of this gear's great non-selectivity in the species composition of the catch of fish and possible interactions with marine mammals and sea turtles. The use of drift-gillnets by foreign vessels in the FCZ is presently prohibited as a matter of U.S. policy. The FMP would simply institutionalize this policy.

Foreign fisheries generate revenues in Hawaii, American Samoa, Guam and the CNMI. Local businesses supply foreign fishing vessels with fuel, foodstuffs, and recreational opportunities for the crews. Figures are not available on the net benefits derived from these services in each area. The FMP, however, is not expected to affect these activities in any way.

Although U.S. purse seiners are now supplying most of the frozen tuna delivered to the tuna canneries in American Samoa, foreign longline vessels' tuna deliveries to the canneries still remain important. Other than the relatively small rectangular closures proposed by this plan for the FCZ of American Samoa, the FMP would give foreign longliners unlimited access to the remaining areas of the FCZ around American Samoa. Tuna deliveries to the canneries by foreign longliners are not expected to be affected by this plan.

Nations claiming authority to exercise exclusive jurisdiction over tuna in their EEZs will do so regardless of the actions taken by the Federal Government on this plan. Pacific island nations are not seeking ways to justify their actions under their domestic laws. The risk that this plan will be "precedent-setting" and detrimental to U.S. tuna purse seiner interests is, therefore, essentially non-existent.

4.4.5 Enforcement and Administrative Feasibility

The capabilities of the NMFS and the U.S. Coast Guard to patrol and enforce fishery regulations in the vast ocean area of the U.S. FCZ of the Western Pacific Region (1.5 million square miles) are extremely limited. The U.S. Coast Guard in the Council's Region has two high endurance cutters, two buoy tenders, three patrol boats, three C-130 aircraft, and two helicopters available in Hawaii, and one buoy tender and one patrol boat to patrol Guam and the CNMI. Some of these ships and planes are subject to frequent redeployment to other areas (e.g., Alaska) to address serious fishery enforcement problems as they arise. Some of these platforms are also used for emergency search and rescue missions as well as for enforcing a variety of ocean laws (pollution control, maritime theft, smuggling, drugs) and for aids to navigating and merchant marine safety, among other services traditionally provided by the Coast Guard. The vast distances involved in FCZ fisheries make it highly unlikely that there could be a necessary at-sea capability to enforce the provisions of the PMP should foreign fishing for tuna arise in the future under the rules of the PMP.

This illuminates a major weakness of the PMP. Quotas and non-retention requirements for foreign fishing vessels are impossible to enforce without either a cadre of on-scene observers or a large increase in the number Coast Guard vessels to inspect foreign fishing vessels at sea. An observer program can be useful, but the large numbers of vessels that can potentially get involved in the fishery argue against a wide use

of observers especially given the shortage of trained observers presently available to the NMFS and the realities of Federal budgets. Even if only a small number of foreign longline fishing vessels entered the FCZ in different areas at approximately the same time, the surface enforcement capability of the Coast Guard would be insufficient to verify compliance with catch quotas or non-retention procedures under the PMP. This does not imply criticism of either NMFS or U.S. Coast Guard capabilities. It simply demonstrates the reality for the need to consider a simpler, more cost-effective enforcement plan.

A much simpler plan for enforcement purposes is especially critically needed now since the Coast Guard had to make a 50% cutback on all fishery patrols and to eliminate routine surface patrols in the FCZ of the Western Pacific Region by the Gramm-Rudman Balanced Budget Law unless there is a certainty of interception of known violators of fishing laws. The Coast Guard may be subject to even larger budget reductions in the future. This situation is both ironic and debilitating at a time when local fishermen are worried about foreign vessels illegally fishing in the FCZ waters of the Western Pacific Region.

While closures of ocean areas of the FCZ by the FMP do not remove the requirements for the Coast Guard to patrol these areas, the patrols could be conducted much cheaper mostly by aircraft instead of ships. Since U.S. Coast Guard aircraft normally carry NMFS enforcement agents as part of their surveillance patrols, the documentation of violations by foreign fishing vessels could easily be substantiated by aerial photographs taken of foreign fishing vessels in the act of fishing (as defined in the MFCMA). Such documentation of violations could be used in the civil penalty process.

Consideration of the Council's management alternatives in this plan involves evaluation of the relative simplicity and effectiveness of enforcement regimes which mandate the stretching of shrinking enforcement assets and budgets to meet a substantial challenge in the FCZ areas. The management option of area closures best utilizes the realities of the enforcement capabilities of the U.S. Coast Guard and the NMFS. Enforcement cost-effectiveness will be greatly improved under this FMP compared to essentially unenforceable provisions of the PMP presently in effect.

4.5 Achieving a Balanced Approach

The MFCMA establishes the basis for recognizing the priority of managing and developing domestic fisheries for pelagic species and the maintenance of U.S. policy on highly migratory species of tuna. The Council proposes to achieve a reasonable balance by giving priority to domestic fishing interests in areas where domestic vessels are active and on which they are or may soon be dependent. There would be unrestricted access to highly migratory species of tuna in all parts of the FCZ by gear types which are believed to be quite selective in taking tuna. The use of drift-gillnets in the FCZ would be prohibited

for foreign fishermen and tightly controlled for domestic fishermen because of the gear's effectiveness in taking a full and non-selective mix of pelagic species of fish, marine mammals, and sea turtles. There would be controlled access to tuna in some parts of the FCZ for longline gear which inevitably takes many management unit species, but liberalized access for foreign longliners to fish in the FCZ of U.S. Possessions and American Samoa. In the Council's view, the management approach proposed in this FMP achieves the required balance in that:

1. The plan increases the potential for enhancing the overall values of domestic recreational fisheries for the management unit species;

2. The plan promotes the growth of domestic commercial fisheries for pelagic species;

3. The plan provides a reasonable opportunity for foreign vessels to to fish for tuna in the FCZ and to maintain their historical levels of tuna catches;

4. Foreign tuna fishery interests would not subject to excessive and unnecessary controls;

5. The area closure approach is relatively simple and easier to enforce than the PMP because of a tighter geographical focus on area closures rather than the PMP's non-retention approach and quotas.

5.0 HISTORY OF DATA COLLECTION, MANAGEMENT AND RESEARCH

5.1 State and Territorial Licensing and Data Collection Programs

There are no State or Territorial restrictions (e.g., seasons, bag limits, size limits, or gear restrictions) on fishing for billfish or for the other pelagic fishes in the management unit. There are, however, certain licensing and reporting requirements in Hawaii. Hawaii regulations require a person to obtain a "Commercial Marine License" in order to sell any fish caught; and all such licensed fisherman must file a monthly report listing all fishing trips taken during the month and all fish caught, whether any of the fish are sold or not. Recreational and subsistence fishermen who do not sell any of their catch are not required to obtain licenses nor to report their catches. Charterboat operators, however, are required to obtain a "Commercial Marine License" and to submit monthly trip and catch reports. Specialized catch reports are required for longline (flagline) vessels and skipjack tuna (aku) baitboat vessels in Hawaii along with an annual "Commercial Marine License".

Neither commercial, recreational, or subsistence fishermen are required to obtain fishing licenses in the Territory of Guam or to report their catches. Presently, there are two principal sources of data in Guam which contain some catch/effort information on billfish and the other management unit species: (a) commercial fish wholesalers, and (b) the offshore creel survey conducted by the Guam Division of Aquatic and Wildlife Resource (DAWR). The largest and oldest of the fish wholesalers is the Guam Fishermen's Cooperative (Coop) which has been collecting data on its fish purchases from fishermen since July 1979 and submitting this information to the Western Pacific Fishery Information Network (WPACFIN) on a voluntary basis. The Southwest Fisheries Center (SWFC) of the NMFS developed the concept of the Fishery Information Network (FIN) to provide a central source of region-wide fisheries data. WPACFIN is a component of the FIN system and it is administered by the Honolulu Laboratory of the NMFS. During 1984, two additional wholesalers in Guam started submitting their purchase data to the WPACFIN on a similar basis. The DAWR has conducted an intercept creel survey (sample) data collection program for offshore (boat-based) fisheries since the 1970's. Sample catch and effort data on the management unit species and tuna can be obtained from this data base. The offshore creel sample data are expanded into island-wide estimates of catch and effort by fishing method or gear type used.

The Territory of American Samoa does not have any licensing requirements for either commercial, subsistence, or recreational fishermen. Other than data on the Samoa-based foreign longline fishery for tuna which are maintained by the Southwest Fishery Center (SWFC) of the NMFS, virtually all of the fisheries data on the management unit species for American Samoa come from the Office of Marine and Wildlife Resources (OMWR), American Samoa Government. The OMWR relies upon voluntary catch reports and back-up interviews with commercial fishermen to obtain catch and effort information on the management unit species. Because

this data base is a result of a sampling program, the sample data are expanded to get estimates of total commercial landings of the management unit species. The OMWR has also taken "standardized" troll fishing trips in Samoan waters since 1975 to ascertain the seasonality of abundance of pelagic species and to compute measures of their relative abundance. The OMWR generally gets involved in organizing and operating several fishing tournaments held by the American Samoa Gamefishing Association. Estimates on catch-per-unit-effort (CPUE) can be derived from these tournament data but inferences on the seasonal and annual abundances of the management unit species in the waters of American Samoa are difficult to make from these data sets because of the "spotty" nature of the tournament data sets.

5.2 Preliminary Fishery Management Plan (PMP)

The PMP is the only Federal endeavor affecting fishing for billfish, mahimahi, wahoo, and oceanic sharks in the island areas served by the Council. The PMP applies only to foreign longline fishing in the FCZ around Hawaii, American Samoa, Guam, the Northern Mariana Islands, the U.S. possessions, and the mainland West Coast (except Alaska).

The PMP became effective on April 1, 1980 (Federal Register, Vol. 45, No. 46, March 6, 1980, pages 14581-14588). Any foreign vessel desiring to engage in longline fishing in the FCZ must possess a permit, whether billfish and associated species would be retained or not. The PMP established retention and non-retention zones for billfish within the FCZ of each regulatory area (Table 5.1). National allocations for individual species of billfish must be taken in areas beyond the non-retention zones. All billfish caught by foreign vessels within the non-retention zones must be returned to the sea without removing the fish from the water. Billfish hooked and released in the non-retention zones are not counted against national allocations.

The TALFF (total allowable level of foreign fishing) for each species in the management unit and area of the FCZ is shown in Table 5.2. A zero TALFF for any particular billfish species in a particular area of the FCZ means that a fish of that species hooked in the FCZ of that area must be returned to the sea by cutting the leader or line without removing the fish from the water. The "Reserve" component may be granted to foreign fishermen but only if domestic catches of that species do not meet expected levels. Once TALFF and the "Reserve" are taken for any species in the management unit in a FCZ area, that species becomes a prohibited species and cannot be retained anywhere in the FCZ of that area.

During 1980, the first year the the PMP was in effect, a total of 912 permits were issued to Japanese, Taiwanese, and Korean longline vessels to fish in the FCZ of the Western Pacific Region. None of these vessels chose to fish in FCZ waters even though they each paid a nominal permit fee. The number of permits issued to foreign longline vessels dropped to 592 in 1981. Each of

TABLE 5.1

RETENTION AND NON-RETENTION ZONES FOR BILLFISH
WITHIN EACH REGULATORY AREA OF THE FCZ UNDER THE PMP

Regulatory Area	Billfish Retention Zones	Billfish Non-Retention Zones
West Coast	None	Between 12 and 200 nautical miles
Guam and Northern Mariana Islands	(1) Beyond 50 nautical miles from Guam, Rota, Tinian, Aguijan, and Saipan, and (2) Beyond 12 nautical miles of the remaining islands of the Northern Mariana Islands	Between 12 and 50 nautical miles from Guam, Rota, Tinian, Aguijan, and Saipan No non-retention zone
Hawaii and Midway Islands	(1) Beyond 100 nautical miles from the islands of Hawaii, Kahoolawe, Kauai, Lanai, Maui, Molokai, Niihau, and (2) Beyond 50 nautical miles from the remaining islands of the State of Hawaii and Midway Islands	(1) Between 12 and 100 nautical miles form the islands of Hawaii, Kahoolawe, Kauai, Lanai, Maui, Molokai, Niihau, and Oahu, and (2) Between 12 and 50 nautical miles from the remaining islands of the State of Hawaii and Midway Islands
American Samoa	Beyond 12 nautical miles from American Samoa	No non-retention zone
U.S. Possessions	Beyond 12 nautical miles from any other possession of the United States in the Central and Western Pacific Ocean	No non-retention zone

these permit holders also declined to fish in the FCZ. During 1981, there were four requests by vessels which held permits to enter the FCZ of the Western Pacific Region for fishing purposes. In each case, the vessel was instructed to pick up a U.S. observer prior to commencing fishing operations. All four vessels declined to pick up an observer and chose not to fish in the FCZ. During 1982, the number of permits granted to foreign longline vessels dropped

TABLE 5.2

1986 TALFF AND RESERVE FOR PACIFIC BILLFISH, MAHIMAHI, WAHOO AND OCEANIC SHARKS BY AREA OF THE FCZ UNDER THE PMP
(Metric Tons)

Species	Quotas	Area of the FCZ				
		West Coast	Hawaii (Including Midway)	Guam and N. Mariana	American Samoa	U.S. Pacific Isl. Possessions
Swordfish	TALFF	0	78.9	3.5	2.4	28.1
	Reserve	0	8.8	0.4	0.0	0.0
Blue Marlin	TALFF	0	0.0	0.0	34.9	76.3
	Reserve	0	8.6	23.9	0.0	0.0
Black Marlin	TALFF	0	0.0	0.5	5.3	6.2
	Reserve	0	0.0	0.1	0.0	0.0
Striped Marlin	TALFF	0	139.8	4.2	7.8	46.6
	Reserve	0	15.5	0.5	0.0	0.0
Sailfish/ Spearfish	TALFF	0	17.4	4.1	2.2	14.3
	Reserve	0	1.9	0.5	0.0	0.0
Sharks	TALFF	0	1000.5	31.9	101.6	651.4
	Reserve	0	111.1	0.0	0.0	0.0
Wahoo	TALFF	0	0.0	0.0	2.0	0.0
	Reserve	0	0.0	0.0	0.0	0.0
Mahimahi	TALFF	0	0.0	0.0	2.0	0.0
	Reserve	0	0.0	0.0	0.0	0.0

SOURCE: 51 Federal Register, No. 20, page 3790-3791; January 30, 1986.

to 121, and during 1983 foreign longline vessels did not apply for permits to fish in the FCZ of the Pacific Ocean at all (Table 5.3). Since then, longline vessels from Taiwan and Korea have once again applied for and received permits to fish in the FCZ. Forty-three permits were issued to Taiwanese vessels in 1984. The number of permits granted to Taiwanese and Korean vessels more than doubled to 103 in 1985. Through June of 1986, ninety-two permit applications were were received from Korean and Taiwanese longline vessels for fishing in the FCZ of the Pacific Ocean, presumably in the FCZ around American Samoa. Some of these vessels are large (up to 494 gross tons). The permit applications demonstrates a continuing interest of foreign longliners to fish in the FCZ, and fishing by these vessels in non-retention zones would result in a waste of billfish and other management unit species. However, there has not been any legal foreign longlining in the U.S FCZ of the entire Western Pacific Region to date under the regulations of the PMP. There have been three seizures of foreign longline fishing vessels for illegal fishing in the FCZ of the Western Pacific Region. Two vessels were seized for fishing without permits and one permitted vessel was sized in American Samoa for failing to comply with the regulatory requirements of the PMP.

TABLE 5.3

NUMBER OF PERMITS ISSUED TO FOREIGN LONGLINE VESSELS
TO FISH IN THE U.S. FCZ OF THE PACIFIC OCEAN,
1980 THROUGH 1986

Nationality	1980	1981	1982	1983	1984	1985	1986*
Japan	789	464	53	-	-	-	-
Taiwan	92	108	68	-	43	84	53
Korea	31	20	-	-	-	19	39
TOTAL	912	592	121	0	43	103	92
	===	===	===	=	==	==	==

* As of June, 1986

SOURCE: NMFS, Western Pacific Program Office.

Foreign fishing permit applications are not issued for any specific area in the FCZ around Hawaii, Guam, American Samoa, the Commonwealth of the Northern Mariana islands, U.S. island possessions in the Pacific, or the U.S. West Coast. Rather, permit applications and the permits themselves are lumped together for the FCZ of the Pacific Ocean.

For calendar year 1986, a permit application fee of $167 is charged to each foreign vessel. If a nation chooses to accept an allocation for any of the management unit species, an irrevocable letter of credit must be established to cover the poundage fees for at least 25% of the previous year's total allocations at the rate structure shown in Table 5.4. The poundage fee is a price that foreign vessels pay for the privilege of retaining the management unit species. Foreign fees are required by the Magnuson Act to return to the United States the cost of carrying out the provisions of the Act in at least the same proportion as foreign vessels share in the total harvest from the FCZ. Foreign fishing vessels may also be subject to a surcharge of up to 20% on fees paid in order to capitalize the Fishing Vessel and Gear Damage Compensation Fund. If the Fund is sufficiently capitalized, NMFS may reduce or waive the surcharge. NMFS has waived the surcharge for 1986 fees.

So far, no nation has requested allocations for any of the management unit species, thus, all permit holders entering the FCZ to fish would be fishing under full nonretention rules in all areas at all times. None of the management unit species could be retained.

This revised FMP will supercede the provisions of the PMP in the U.S. FCZ of Hawaii, Guam, American Samoa, and U.S. island possessions in the Pacific. Foreign longlining in the FCZ of the Commonwealth of the Northern Mariana Islands (CNMI), as well as off the U.S. West Coast, will continue to be regulated under the provision of the PMP. The FMP will be amended regarding foreign and domestic fishing for the management unit species in the FCZ of the CNMI after the Secretary of Commerce appoints Council members from this area who, in turn, will nominate fishermen to serve on the pelagic species Advisory Panel. The decision to alter the PMP or to develop a FMP covering the FCZ off the U.S. West Coast lies with the Pacific Council.

5.3 Source of Data

5.3.1 Data on Domestic Fisheries

Hawaii - Aggregate monthly data on reported commercial landings of the management unit species and ex-vessel sale revenues are available from the Hawaii Department of Land and Natural Resources, Division of Aquatic Resources for 1948 through June 1985. Catch and trip reports of licensed fishermen in Hawaii covering the management unit species are maintained in the NMFS Southwest Fishery Center (SWFC), Honolulu Laboratory data base through June 1984. Skillman et. al., (1984) presented cross tabulations of reported commercial catches of the management unit species among domestic fishing gear types and by distance zones from shore around the Hawaiian islands covering the period from January 1976 to April 1981.

TABLE 5.4

POUNDAGE FEES* ($ PER METRIC TON) BY SPECIES

Species	1984+	1985++	1986+++
Blue Marlin	$234	$ 314	$ 707
Striped Marlin	585	428	660
Black Marlin	234	516	707
Swordfish	366	514	832
Sailfish/Spearfish	234	514	707
Mahimahi	312	1,428	1,965
Wahoo	312	571	786
Sharks	156	286	44

* Poundage fees are not broken down by FCZ area; instead, they are lumped together for the U.S. FCZ of the Pacific Ocean.

\+ 49 Federal Register, Page 595; January 5, 1984.

++ 50 Federal Register, Page 460; January 4, 1985.

+++ 51 Federal Register, Page 208; January 3, 1986.

The NMFS National Marine Recreational Fishing Statistical Survey (MRFSS) collected sample data on marine recreational fishing in 1979-1981 in Hawaii as well as in American Samoa, Guam and the CNMI, and preliminary estimates of recreational catches of inshore and offshore marine species are available. However, the "raw" sample data derived from this survey were examined by the Honolulu Laboratory of the NMFS to determine whether the sample sizes were sufficiently large enough for deriving area-wide estimates of total catches of the management unit species made by recreational fishermen. The sample sizes are apparently not large enough to yield accurate estimates of recreative catches of the management unit species. To date, final estimates of recreational catches of the management unit species from the MRFSS are unavailable.

The Council has collected purchase data on each of the management unit species from major wholesale fish dealers in Hawaii covering the years 1979 through 1983. Data were sought from these sources because reasonably complete data on commercial catches of the management unit

species were not available from the Hawaii Division of Aquatic Resources for analyses by the Plan Development Team at this time. The Council, the NMFS, and the State of Hawaii and the Territories of Guam and American Samoa have cooperated in developing an inventory of fishing vessels in each island area in order to establish a "universe" of fishing vessels from which future surveys or samples can be drawn.

American Samoa - Estimates of landings of the management unit species are available from the Office of Marine and Wildlife Resources, American Samoa Government via the SWFC's Western Pacific Fishery Information Network (WPACFIN) for 1982-1984. Preliminary estimates of recreational catches are available from the MRFSS as mentioned previously.

Guam - Estimates of landings of the management unit species derived from the offshore creel surveys are available from the DAWR, Government of Guam for 1980-1985 and preliminary estimates of recreational catches are available from the MRFSS for 1979-1981. Dealer purchases of the management unit species are avialble from the WPACFIN system for 1980-1984.

5.3.2 Data on Foreign Fisheries

Catch and effort statistics are available on the Japanese tuna longline fishery for the years 1962-1979, the Korean tuna longline fishery for 1966-1970, the Taiwanese tuna longline fishery for 1967-1974, and for the foreign tuna longline fishery based in American Samoa for 1960-present. Some of these data are available by 1° squares of longitude and latitude while others are by 5° squares; some are also available on a daily basis while some have been summarized by month. All of these data sets are maintained by the SWFC.

Yong and Wetherall (1980) summarized and tabulated available information on estimated nominal effort and catch of billfishes and tunas in the foreign longline fishery conducted within the FCZ of the Western Pacific Region during the period 1965-1977. Foreign longliners only rarely maintain records of incidental catches of mahimahi, wahoo and oceanic sharks. The estimates of billfish and tuna catches presented by Yong and Wetherall (1980) are incomplete. They do not include data on operations of Korean longline vessels other than those based at American Samoa. Korean longliners have been known to operate in all areas of the FCZ, and while some catch and effort data are available, Yong and Wetherall declined to include them in their report because of unresolved problems with the accuracy of the data. In addition, the catch and effort records examined by Yong and Wetherall did not include Taiwanese longliners under 50 gross tons or any Japanese longliners and baitboats under 21 gross tons. Estimates of tuna catches made by Japanese baitboats (pole-and-line vessels) in the U.S. FCZ were also derived by Yong and Wetherall (1980) for the years 1970-77.

The Japanese Fisheries Agency (1982) prepared an unpublished paper for the International North Pacific Fisheries Commission describing the operations of Japanese drift-gillnet vessels and their catches of billfish and tuna for 1973-1981. An earlier paper translated from the Japanese from Suisan Sekai (1978) presents a compact but very interesting and revealing account of the activities of the Japanese billfish drift-net vessels and the conflicts they have generated.

There is information available on catches of the management unit species and tuna made by foreign purse seine vessels in the FCZ of the Western Pacific Region. Iizuka and Watanabe (1983), however, persent an account of the Japansese "southern-water" purse seine fishery for 1973-1982 together with the species composition of the catches. (Section 6.12.2)

5.3.3 Biological Data Sources

Honda (1983) compiled a bibliography of materials relating to the management unit species in the western and central Pacific originating from the SWFC and other agencies. Most biological information on the management unit species used in the preparation of this FMP was gleaned from the many sources listed in the References. The best basic biological and distributional information on billfish are available in the proceedings of an international billfish symposium held in Hawaii in 1972 (Shomura and Williams - 1975). Stock assessment information is available in a summary of a meeting on tuna and billfish held in Japan in 1979 (NMFS and Far Seas Fisheries Research Laboratory - 1980).

An excellent synopsis of biological information on dolphin fishes (mahimahi) is available in a FAO fisheries report (Palko, et. al., 1982). Very limited biological information on wahoo is available in an unpublished fisheries resource atlas of the Northwestern Hawaiian Islands (Uchida, et. al., 1984). Several studies on the biology of oceanic sharks are listed in the References section.

5.4 Research

Discussions held in the early 1970's at a NMFS-sponsored workshop at the NMFS Tiburon Laboratory and at a special session of the 22nd Annual Tuna Conference at Lake Arrowhead, California identified a need for a symposium to bring together the available information on billfish. The culmination of these discussions was an International Billfish Symposium, co-sponsored by the NMFS and the Hawaiian International Billfish Tournament (and subsequent founding body for the Pacific Gamefish Foundation). The Symposium was held during August 9-12, 1972 at Kailua-Kona, Hawaii (Shomura and Williams, eds., 1975). Research papers contributed at the Symposium outlined the state of knowledge on species

indentification, life histories, and the [illegible]
fisheries. Discussion [illegible]

The difficulties and frustrations presented by this situation can be understood by examining some examples of the effect of not having complete data and predictive analytical tools for thorough assessments of impacts:

1. There is no available data base, nor can one be developed, from which to draw conclusions on foreign fishing patterns likely to emerge in response to different management approaches. This makes it generally infeasible, other than through guesswork, to estimate benefits and costs of alternative management approaches. The "analyses" and comparisons in Chapter 7 imply that foreign longliners could "lose" varying amounts of tuna under different area/season closure options. As pointed out earlier, however, tuna catch rates for longliners in and outside of the FCZ are quite similar, so what would be likely to happen as a result of closures of portions of the FCZ is that longlining effort and catch would be relocated elsewhere. There may be a slight shift in the total catch, or in the species composition of the catch, with some impact on total value of the catch and operating costs. Changes in costs of fishing or in catches, however, would most likely be small. There is, however, no statistical evidence to indicate whether shifts in effort will, in fact, occur. We do, however, know that foreign longliners have stopped fishing legally altogether in the FCZ since the PMP became effective more than six years ago. Therefore, any fishing by foreign longliners in the FCZ qould be a benefit to them compared to the status quo of the PMP and a clear benefit to U.S. tuna policy.

2. If billfish or other species in the management unit are migrating toward domestic fishery areas, and if those fish are caught by foreign longliners before the fish arrive at areas used by domestic fishermen, then those fish would not be caught by U.S. fishermen. If the density or number of fish available in a domestic fishing area is increased and assuming catchability remains constant, then domestic catches would increase, and the values associated with the domestic fishery would also increase. The value increase may or may not be proportional to the catch increase depending on the timing and location of the catch and the fishery sector making the catch. Ideally, the Council should have information or analyses that present the level and values of such "transfer" effects of alternative closure options. Unfortunately, such "hard" information and predictive analyses are not available.

   The first attempt to suggest potential catch shifts of blue and striped marlin from foreign longliners to domestic longliners and trollers in the FCZ around Hawaii, depending on different closure alternatives, was made by Lovejoy (1977). The "Lovejoy model" was based on sparse information available about blue and striped marlin stock levels, seasonal migration directions of these two species, and tenuous foreign longline catch and effort patterns. A large number of assumptions had to be made concerning relative abundance, catchability coefficients, seasonal variations in abundance, among other factors. The model <u>simulates</u> the relative changes in density of blue

and striped marlin from one area to the next, leading to estimates of amounts of fish transferred from foreign to domestic fishermen over time. Assuming relatively fixed fishing areas and effort levels for recreational and commercial fisheries, estimates of changes in domestic catch associated with changes in foreign longline catch in the FCZ are derived by the model. Domestic recreational trollers' catches of blue marlin and striped marlin would increase by 2% and 7% respectively if foreign longlining were eliminated from the FCZ around Hawaii according to the estimates derived in the model. Domestic longline catches of blue marlin might be expected to rise by 2%. Catches of striped marlin on domestic longline gear would remain unaffected according to the results of the Lovejoy study.

A more recent study by Wetherall and Yong (1983) attempts to better determine the significance of foreign longline fishing in the FCZ of Hawaii on the catches and catch rates for blue marlin experienced by domestic longline fishermen in Hawaii. Closures of the FCZ to foreign longline fishing are based on a perception that foreign longline vessels compete significantly with domestic vessels in catches of the management unit species and tuna on local grounds or, in the outer reaches of the FCZ, intercept fish migrating to local grounds from distant waters. Domestic fishermen could benefit from the exclusion of foreign vessels from particular areas of the FCZ to the extent that this perception or conviction is valid. The Wetherall and Yong study examined the validity of the "transfer effect" concept but only with respect to blue marlin and their study was limited to longline gear.

The results of their study suggest that the success rate of catching blue marlin on domestic longline gear in local waters is influenced more heavily by events occurring outside of the FCZ than by foreign longline fishing within the FCZ. Year-to-year changes in blue marlin catch rates on domestic longline gear tend to reflect similar changes in the catch rates of blue marlin on foreign longline gear in the mid-Pacific. The implication here is that blue marlin taken in local waters originate elsewhere and are a part of a common, wide-ranging stock since local catch rates for blue marlin follow the same basic trends as those beyond the FCZ in the mid-Pacific. The expulsion of foreign longliners would not necessarily lead to higher local catch rates of blue marlin <u>if</u> the displaced vessels were redeployed in other regions of the blue marlin's range. Foreign longliners could still affect local catch rate by reducing the number of blue marlin migrating from those regions to local waters.

This is not, however, to say that there would be little impact on domestic catch rates of blue marlin stemming from closures of the FCZ to foreign longline fishing. The net effect of removing foreign competitors from the FCZ, or from parts of the FCZ, would depend on the relative concentrations of blue marlin in the FCZ and beyond the FCZ and their vulnerability to foreign longline gear. It is conceivable that benefits could accrue to domestic blue marlin fishermen from various exclusionary policies. However, Wetherall and Yong were

unable to predict the results of exclusionary policies with any statistical confidence. Their belief is that quantitative predictions are not yet possible because of the inadequacy of scientific understanding of blue marlin dynamics and the present inability of scientists to explain, much less forecast, changes in local abundance of blue marlin. Previous studies such as that by Lovejoy, have also stressed that, at best, only qualitative conclusions could be reached, and that even these are based more on assumptions than on established facts. As Lovejoy concluded, the most that can be said is that some benefit will accrue from excluding foreign longliners from the FCZ, provided catchability of blue marlin by foreign longliners is constant. A major conclusion reached by Wetherall and Yong as a result of their exercise is that a meaningful comparative study of alternative exclusionary policies in the FCZ is not possible and "would be out of the question" to undertake at this time.

The Wetherall and Yong "foreign/domestic blue marlin catch competition" study was extended by Skillman and Kamer (1985) to include striped marlin as well as blue marlin, and to cover domestic trolling and handline gears in addition to both foreign and domestic longline gears. Data on catch and fishing effort for each of these four fisheries were assembled covering a 17-year period (1962 through 1978). The catch-per-unit-effort (CPUE), or the catch rate, was calculated for both blue and striped marlin for each of these fisheries by month, quarter, and year. The degree of the relationship with respect to catch rates for blue and striped marlin between the Japanese longline fishery and the domestic fisheries for the species was then evaluated using correlation analyses.

Their results with respect to blue marlin were in tandem with Wetherall and Yong's finding: Since the abundance estimates (CPUEs) for both the domestic longline and troll fisheries and the Japanese longline fishery vary from year-to-year in a consistent fashion (are positively correlated), these results indicate that both local and Japanese fishermen fish a common stock of blue marlin. Changes occurring in the mid-Pacific stock as a whole are also reflected in changes in the portion of the blue marlin stock fished by local fishermen in local waters.

The situation for striped marlin is similar to that of blue marlin. Estimates of annual abundance for striped marlin for domestic longline gear, with time lags behind Japanese CPUE data in areas adjacent to the FCZ, are all positively correlated. That is, CPUE data for both fisheries change in a similar fashion. These results again suggest that the domestic and Japanese longline fisheries operate on a common stock and that changes in abundance of striped marlin to the local fishery are a reflection of comparable changes for the whole stock.

Skillman and Kamer, however, also examined the relationship between Japanese longline fishing effort and the abundance (CPUE) estimates for blue and striped marlin derived from domestic gears. They in effect were looking at whether marlin mortality on foreign longline gear in the FCZ, in waters adjacent to the FCZ, and in the mid-Pacific waters is associated with marlin abundance in local waters. They found that the abundance of blue marlin in Hawaii as calculated from catch/effort statistics from the local troll and longline fisheries is negatively correlated with Japanese longline effort expended in the FCZ and adjacent areas during the same quarter of the year and in the local area one quarter previously. Thus, increases in the amount of foreign longline fishing in waters close to where the domestic fisheries operate are associated with decreases in the abundance of blue marlin available to the domestic fisheries. Likewise, decreases in the amount of foreign longline fishing in the FCZ is associated with increases in the abundance of blue marlin available to domestic fishermen. There is an apparent catch competition effect between the foreign and domestic fisheries operating in the FCZ. Skillman and Kamer have statistically confirmed the experiences of local fishermen.

The abundance estimates of striped marlin calculated from domestic longline data are also negatively correlated with Japanese longline fishing effort expended in the FCZ and in waters adjacent to the FCZ during the same quarter and in the adjacent area one to four quarters earlier. As with blue marlin, the correlation analysis for striped marlin also shows that increases in Japanese fishing effort in the FCZ and in adjacent areas around Hawaii is associated with decreases in the abundance of striped marlin available to the domestic fishery (and vice versa). A catch competition effect between the foreign longline fishery and the domestic longline fishery apparently also exists with respect to striped marlin. Their results provide confirmation that Japanese longline fishing effort in local waters and in waters adjacent to the FCZ is, in fact, associated with reduced abundance of both blue and striped marlin available to the domestic fleets. While catch competition effects do exist between the foreign and domestic fisheries for the two principal species in the management unit, Skillman and Kamer's study did not address the magnitude of the catch competition effects. Also, it was not possible to test for interactions between foreign and domestic fisheries which take mahimahi, wahoo, and sharks because catch statistics for these species are only available for domestic gear types. Nor was it possible to test for foreign/domestic fisheries catch competition effects with respect to black marlin, sailfish, and shortbill spearfish because it was not possible to derive statistically valid estimates of abundance (CPUEs) for these species for both domestic and foreign fisheries that take these species.

The Lovejoy simulation study is the only one which attempted to quantify possible magnitudes of a transfer effect stemming from alternative area closures of the FCZ surrounding Hawaii to foreign longline fishing. Over the years, the model has been subject to a

variety of criticisms questioning the validity of many untested assumptions underlying the workings of the model, and the model's results which cannot be statistically tested. Nevertheless, the Lovejoy study has been helpful in understanding qualitative or directional catch effects of area closures of the FCZ to foreign longline fishing, although the Lovejoy study is certainly not definitive in determining either the amount or value of catch transfers of blue and striped marlin from foreign to domestic fishermen which could result from different area closure options. The central conclusion which is common to the Lovejoy study, the Wetherall and Yong study, and the study done by Skillman and Kamer is that a transfer effect would in fact occur and that domestic fishermen are bound to benefit by restricting foreign longline fishing in the FCZ off Hawaii. The transfer efect is equally important in Guam and American Samoa.

3. The available information on the domestic fisheries is limited. In part, this reflects the fact that before passage of the MFCMA, it was not thought to be very important to collect complete and accurate records of catches and fishing effort. In part, this also reflects the relatively limited resources that have been and are presently available for fisheries data collection in the island areas represented by the Council.

In summary, the "best scientific informative" is of limited value in practical terms although the Plan Development Team and the SSC both certified that the best scientific information available was used in developing this revised FMP. In reviewing the draft of this plan, NMFS "Reviewers indicated that in their view, the analyses of benefits and costs needs to be improved". However, they failed to recognize that it would indeed be very difficult or impossible to accurately quantify the benefits and costs of the alternatives considered in the FMP in the absence of hard data and proofs regarding the magnitude of the relationship between foreign and domestic fisheries. There are not many proofs in the whole subject of fisheries science, and this FMP is no exception. The attempt in this revised FMP to quantitatively assess the tradeoffs of different management options is recognized as having a weak statistical foundation. There too, normative judgements bearing on reasonableness, equity, and consistency should be recognized as having at least as much validity than the quantitative measures which have been incorporated in this plan.

5.6 International Management

At present, there are no international treaties or bilateral agreements to which the U.S. Government is a party for the management of billfish and the other species in the management unit in the Pacific. However, since late 1984, the U.S. Government has been negotiating with sixteen Pacific island countries aimed at developing an international agreement which would provide access to U.S. purse seine vessels to rich tuna resources in the south and western Pacific. Adoption of this FMP is not expected to affect the course of these negotiations. There is at least one bilateral agreement under which the catch

of billfish by longliners is being restricted. The Governments of Australia and Japan have reached an agreement whereby Japanese longline vessels are prohibited from fishing in black marlin and tuna grounds north of Queensland (NMFS, Market News, November, 1980).

6.0 DESCRIPTION OF FISHERIES FOR PELAGIC SPECIES

6.1 Species Included in the Management Unit

The management unit consists of six species of billfish, two species of dolphin fish, wahoo and various species of oceanic sharks. The term billfish collectively embraces the various marlins, spearfish and sailfish, all taxonomically placed in the family Istiophoridae; and the broadbill swordfish, placed in the family Xiphiidae. Of the six species of billfish in the management unit, the blue and striped marlin are the most important to fishermen in the Council's area. These two species alone generally comprise around 90-95% of the annual billfish catch in Hawaii. The two species of mahimahi, or dolphinfish (Coryphaena hippurus and C. equiselis) and ono, or wahoo (Acanthocybium solanderi) are target species for domestic fishermen in each of the island areas served by the Council as well as being taken incidentally by foreign and domestic fishing for tuna by longline, pole-and-line and purse seine gears. The various oceanic sharks in the family Carcharhinidae (oceanic whitetip shark, silkey shark, tiger shark, blacktip shark, silvertip shark, Galapagos shark) are included in the management unit as are sharks in the families Alopiidae (thresher-shark), Sphyrnidae (hammerhead sharks), and Lamnidae. These oceanic sharks are pelagic and are caught in association with the other species of fish included in the management unit. The management unit species occupy a pelagic environment during all stages of their lives.

At this time, there is little information available on mahimahi, wahoo and oceanic sharks. Estimates of MSY cannot be derived for these species, stock structure and condition of stocks are unknown, and catches and catch values of these species have not been determined. The foreign longline, drift-gillnet, and pole-and-line fisheries and the foreign and domestic purse seine fisheries normally do not record the volume of their incidental catch (by species) of mahimahi, wahoo and oceanic sharks. Also, domestic recreational catch data are incomplete on these species. In the absence of good catch information on these species, analyses cannot be made of the potential impacts of alternative management strategies regarding mahimahi, wahoo or shark catches. However, the area closures to foreign drift-gillent and longline vessels are likely to provide some protection against overfishing of these species in the FCZ at this time. When sufficient information becomes available, the Council may subsequently develop amendments to this FMP to address special concerns about mahimahi, wahoo and oceanic sharks should any concern arise in the future.

6.2 Ecologically Related Species

The species in the management unit occupy the same general habitat as the highly migratory species of tuna. The young of these species are prey for pre-

dators that inhabit the upper surface layer of tropical and subtropical oceans. Although there are differences in food intake, such as the ability of large marlins to ingest larger specimens than the other predators can, the management unit species and tuna species essentially compete for the same kind of food. Many species of fish and squid are common to the diets of the members of this predatory complex. At times, tuna species may constitute more than 85% of the food of blue marlin. Although there are some pronounced commonalities in the occurrences of the pelagic predators, there is no conclusive evidence of any direct ecological associations and relationships among the species in the management unit and the tunas.

6.3 Life History of the Management Unit Species

6.3.1 Fecundity

Billfish are all highly fecund, pelagic spawners, producing large number of eggs. The number of eggs per spawn are estimated to range from a low of 1.8 million for sailfish to a high of 29 million for striped marlin, (Eldridge and Wares, 1974). Fertilization is external. Fertilized eggs hatch quickly and the larvae subsist for only a few days on nutrients stored in the yolk sack. Larvae then survive by foraging on planktonic organisms. The larvae survival rate has not been determined but is assumed to be very low. It takes from three to seven years for billfish to reach sexual maturity depending on the species in question.

Information on the fecundity of mahimahi and wahoo is less well documented. Based on specimens of mahimahi taken in the Atlantic Ocean, Beardsley (1967) suggested that the number of eggs could run from 240,000 to almost 3 million eggs per year for mahimahi, increasing with the size of the female. A study by Shcherbachev (1973), also in the Atlantic, found 700,000 - 730,000 eggs in a sample of two commom mahimahi (C. hippurus), and in another sample of three pampano mahimahi (C. equiselis) he found 66,000 - 180,000 eggs. For wahoo, Iversen and Yoshida (1957) estimated that there were 6.1 million eggs in a 131 cm female taken from the Line Islands, lying some 1,500 miles south of Hawaii. This compares favorably with an estimate of 6.9 million eggs per spawning for a 139 cm wahoo from Atlantic waters (Finucane, 1980).

The fecundity of sharks is much lower compared to bony fishes. However, the survival rate of shark juveniles is much higher than the survival rate of fish larvae.

6.3.2 Areas and Seasons of Spawning

Pacific blue marlin appear to spawn throughout the year in tropical and subtropical waters in between 10° to 20° on either side of the equator. In higher latitudes, up to 30° on either side of the equator, blue marlin spawn during the northern and southern hemispheres' respective summer months. The highest spawning densities are thought to generally occur in the western Pacific, with the density decreasing eastward (Strasburg, 1970; Matsumoto and Kazama, 1974; Rivas, 1975). Larvae are most commonly found in surface waters of 26° - 29°C (Howard and Ueyanagi, 1965; Matsumoto and Kazama, 1974; Ueyanagi, 1964; Jones and Kumaran, 1964). Larval blue marlin are common and plentiful in surface plankton tows around Hawaii and in the central Pacific; they comprise 61% of all billfish larvae collected by the SWFC Honolulu Laboratory of the NMFS from 1950 - 1971 (Matsumoto and Kazama, 1974).

Spawning of striped marlin takes place during the respective summer months in both hemispheres of the Pacific. In the northern hemisphere, striped marlin larval occurrence is concentrated in the western area, which includes the Northern Mariana Islands and Guam. No larval striped marlin have ever been found in Hawaiian waters, nor are mature, ripe females. Mature females have only been found near equatorial islands in the eastern Pacific. While striped marlin larvae have been reported from the northeastern Pacific, the report's authenticity has been questioned. In the southern hemisphere, striped marlin larvae have been found across the entire south Pacific Ocean (Howard and Ueyanagi, 1965; Kume and Joseph, 1969; and Matsumoto and Kazama, 1974).

Spawning of black marlin takes place in October and November in the northwest Coral Sea lying between New Guinea and eastern Australia (Ueyanagi, 1960), and is believed to take place in other areas inhabited by the species in the eastern Pacific near Panama and Ecuador.

Spawning of broadbill swordfish occurs throughout the year in the equatorial western Pacific (Nishikawa and Ueyanagi, 1974) and eastern Pacific waters (Kume and Joseph, 1969). At higher latitudes, spawning takes place in spring and summer (Matsumoto and Kazama, 1974; Uchiyama and Shomura, 1974). While not common, swordfish larvae have been found in waters near American Samoa, Guam, Hawaii and the Northern Mariana Islands.

Information on the seasonality of spawning of shortbill spearfish is sparse and contradictory in some respects. Spawning in the northern and western Pacific appears to peak in late fall, while in the central Pacific, shortbill spearfish larvae are present in the second through fourth quarters of the year. Spearfish larvae are found across a broad area of the subtropical North Pacific which includes Hawaii. In Hawaiian waters, shortbill spearfish larvae comprised 24% of all billfish larvae collected between 1950 - 1971 by the SWFC Honolulu Laboratory of the NMFS. Evidence of spearfish larval occurence in the south Pacific is

sparse, but some larvae have been collected from the central south Pacific near American Samoa into the eastern Pacific (Matsumoto and Kazama, 1974).

Spawning of sailfish occurs throughout the year in tropical waters of the western Pacific near coastal areas. In the north Pacific at higher latitudes, spawning takes place in summer (Ueyanagi, 1964; Eldridge and Wares, 1974). No sailfish larvae were taken in surface plankton tows in Hawaiian waters by the SWFC Honolulu Laboratory of the NMFS between 1950 and 1971 (Matsumoto and Kazama, 1974).

Larvae of both the common mahimahi and the pompano mahimahi are distributed in tropical and subtropical waters of all oceans. Shcherbachev (1983) stated that mahimahi are intermittent spawners and that spawning occurs year round in the tropics but is limited to the warm seasons of the year in the subtropics and semi-temperate zones. Staff of the Honolulu Laboratory of the NMFS have observed that mahimahi held in captivity spawn only at night and that captive mahimahi spawn repeatedly over periods of months.

Wahoo appear to spawn year-round in tropical waters and during the summer months in higher latitude, including Hawaii, as evidenced by dates and locations of larval collection in the central Pacific Ocean (Matsumoto, 1967). Larval wahoo are found in tropical and subtropical waters of the Pacific ocean between 30°N latitude and 25°S latitude and between 175°E longitude and 115°W longitude. The catch rate of wahoo larvae in the central Pacific by the Honolulu Laboratory of the NMFS was the same inshore (within 110 km from shore) as for plankton tows offshore (Matsumoto, 1967). No seasonal trends are apparent in wahoo larval catches in equatorial areas, but larval catches become greater during the summer near Hawaii.

Very few data are available to indicate the areas of concentration and seasons of mating for the many species of oceanic sharks in areas of the Pacifc and in the U.S. FCZ of the Western Pacific Region.

6.3.3 Age and Growth

Length-weight to age relationships for some species of Pacific billfish have been determined by various investigators. However, age estimates are tenuous since age determinations for billfish species are difficult to make. Nonetheless, the comparative growth rate of selected species of billfish can be surmised by listing the average weights for specimens that were thought to be 5 years old: blue marlin, 146 kg (322 lbs); striped marlin, 64 kg (141 lbs), sailfish, 55 kg (121 lbs); and swordfish, 51 kg (112 lbs). Age weight data for black marlin and shortbill spearfish are not available.

Growth in mahimahi appears to be very rapid and their lifespan very short. A 4-year-old specimen examined by Beardsley (1967) weighed 35 kg (77 lbs), at that time the all-tackle sport fishing record for the species. However, larger mahimahi have since been taken. In 1979, a male mahimahi weighing over 46 kg (102 lbs) was captured off Puerto Rico (Florida Sportsman, 1979). In the Pacific, Kojima (1966c) reported that common mahimahi reach about 38 cm in length (15 in.) the first year, 68 cm (27 in.) the second year, 90 cm (35 in.) the third year, 108 cm (42 in.) the fourth year, and 122 cm (48 in.) the fifth year (all measures are in fork length). Mahimahi have a voracious appetite, a cosmopolitan diet, fast growth, and a life span much shorter than billfish.

Kramer (1985) examined daily growth rings on otoliths from 5 wahoo taken in the Northwestern Hawaiian Islands. He discovered that at 1 year of age, wahoo are about 51 cm (20 in.) long; and at 2 years of age, wahoo are about 122 cm (48 in.) long. At this rate of growth, wahoo appear to grow even faster than the fast-growing mahimahi.

Not much information is not available on the age and growth of Pacific oceanic sharks.

6.4 Distribution

The management unit species are widely distributed throughout the tropical and subtropical oceans. Most of the pelagic species in the management unit are pantropical. They occur in the Atlantic, Indian, and Pacific Ocean. Billfish are generally regarded as being as highly migratory as the pelagic tunas, although there may be considerable variation among billfish species in the degree of wandering and in the degree of localized concentrations between stocks at certain times. There is very little evidence from tag recovery studies of migrations of any of the species in the management unit across the Pacific. Migrations are hypothesized largely on the basis of shifting abundance patterns of billfish as derived from foreign longline catch data. There have been only two recoveries of striped marlin in Hawaii waters, both of which were tagged and released in the eastern Pacific. There have been no tag recoveries of blue or black marlin in Hawaiian waters although blue marlin is the principal species of billfish caught in Hawaii.

The distribution of blue marlin in the Pacific varies seasonally. A high concentration of blue marlin is found in the western and central south Pacific during December to March, and another in the central north Pacific during May to October. During April to November, a high density of blue marlin is found in the equatorial region between latitude 10°N and 10°S (Rivas, 1975). In the eastern Pacific, blue marlin have been observed in relatively heavy concentrations west of 100°W longitude between 20°S and 13°N latitude (Kume and Joseph, 1969), but blue marlin are not an important item in eastern Pacific fisheries compared to striped marlin and sailfish.

Striped marlin are distributed in the Pacific in a horsehoe or U-shaped band with the base of the U along the central American coast (Nakamura, 1974). The open ends of the horseshoe pattern extend to the Asian coast in the north Pacific and to Australia and New Zealand in the south Pacific. In the eastern Pacific, striped marlin range from Chile to southern California with major areas of concentration off Mexico. In southern California, striped marlin appear mainly between August and October. In Hawaii, striped marlin are taken in greatest numbers from fall through spring, although striped marlin are caught year round.

Black marlin are most abundant in the western and southwestern Pacific around Taiwan and northwest Australia and in the East China, Arafura, Sulu, Celebes and Coral Seas. Catch rates derived from the foreign tuna longline fisheries show a very low population density of black marlin throughout the open ocean except for certain coastal areas. In the eastern Pacific, black marlin are found predominantly off Panama and Ecuador (Nakamura, 1975). Black marlin are infrequently taken around the Hawaiian Islands and off Guam. They are more frequently taken in American Samoa waters.

Swordfish occur mainly from California to Chile in the eastern Pacific, throughout the central Pacific and from Japan to Australia and New Zealand in the western Pacific. In California, swordfish are most abundant in the summer and early fall. In Hawaii, swordfish are usually most plentiful during the spring months. Virtually all swordfish caught in Hawaiian waters are taken by commercial longliners and handline fishermen, though a few sport-caught fish are taken on bait while drift fishing at night.

Shortbill spearfish are found throughout the tropical and subtropical Pacific. They generally appear in offshore areas and are not abundant close to shore.

Sailfish are found throughout the tropical and subtropical Pacific. In the western Pacific, the highest concentrations are found around New Guinea, the Caroline Islands, the Solomons, and in the Banda, Timor and East China Seas (Koto et. al., 1959). In the eastern Pacific, sailfish are concentrated near the coast from the Gulf of California to northern Peru (Kume and Joseph, 1969). Few sailfish are taken around Hawaii by sport and commercial fishermen. Sailfish are more abundant in Guam and American Samoa, compared to Hawaii.

Mahimahi are distributed in tropical and subtropical waters of all the oceans. In the Pacific, the greatest concentrations appear to occur along the eastern and western margins. In the eastern Pacific, mahimahi are found in greatest abundance near Mexico, along Ecuador and Peru, Panama Bay and near the Galapagos islands. In the western Pacific, mahimahi are widely distributed between 46°N and 38°S latitude. The largest numbers of juvenile mahimahi are taken in the western Pacific near Taiwan and Guam, but some adult fish are also found there but catches of large adults are infrequent (Shcherbachev, 1973). Mahimahi are common in Hawaiian waters and some are found year round. However, pronounced seasonal variations in abundance of mahimahi are very evident in Hawaii, American Samoa, Guam and the Northern Mariana Islands.

Wahoo are widely distributed in the tropical Atlantic, Pacific and Indian Oceans. Wahoo appear to be year round residents in tropical waters, but they expand their range to higher latitudes during the summer months (Welsh, 1949); Rathjen, 1960). Surface catches indicate that wahoo associate with banks, pinnacles, and flotsam. However, tuna longline catches indicate that this species is also widely distributed in oceanic waters far from shore.

Oceanic sharks are widely distributed in tropical and semi-tropical/temperate seas worldwide. Very little data are available to indicate the relative concentrations of individual species of oceanic sharks in different areas of the Pacific during different times of the year.

6.5 Stock Structure

Although information on stock structure is of foremost importance in formulating a management plan for any species, there are virtually no hard data on stock structure for any of the management unit species at present. Instead, views on stock structure of the management unit species must be based on the distribution of adults derived from catch data and from distribution of larvae, assessment of morphometric characteristics of individuals from different localities, mark-recapture studies of tagged individuals, and biochemical analyses of genetic similarities and differences of individuals captured from different areas.

Foreign records of longline catch and effort are the only presently available data sources for attempting to define the geographical range of the stocks of billfish species in the management unit. Preliminary hypotheses on possible stock structures of Pacific billfish populations were made by the participants of the Billfish Stock Assessment Workshop (Shomura, ed. 1980):

Blue marlin:	A single equatorally-centered Pacific-wide stock, or separate north and south Pacific stocks with possible intermixing across the equator.
Striped marlin:	One Pacific-wide stock, or separate north and south Pacific stocks with intermixing in the eastern Pacific.
Black marlin:	Western and eastern Pacific stocks, or three stocks (northwest Pacific, southwest Pacific and eastern Pacific).
Swordfish:	A single Pacific-wide stock or possibly three separate stocks (northwestern Pacific, south Pacific and eastern Pacific).
Shortbill spearfish:	North and south Pacific stocks.

Sailfish: Eastern and western Pacific stocks.

No information is available for even posulating possible stock structure(s) for mahimahi. However, Kojima (1966c) stated that because the seasonal migrations of the common mahimahi in the southern hemisphere of the Pacific ocean show a reverse tendency to that in the northern hemisphere, there are apparently at least two stocks of mahimahi in the Pacific ocean separated by the equator.

Nothing is known about stock structure of wahoo or oceanic sharks in the Pacific. Foreign longline catches of these species are not recorded as to species if they are recorded at all.

The available information on the distribution of the species in the management unit seems to indicate that none of these species are sufficiently localized at all stages of their life cycle to be managed as a stock specific to the FCZ of Hawaii, American Samoa or Guam.

A single Pacific-wide stock of blue marlin has been assumed by the participants of the Billfish Stock Assessment Workshop in their production model analyses and by this draft FMP. There has not yet been either firm confirmation or rejection of this assumed stock structure for blue marlin although Wetherall and Yong (1983) and Skillman and Kamer (1985) have shown a high degree of consistency in the catch-per-unit-of-effort statistics between the foreign longline fishery and the various Hawaii fisheries which take blue marlin to indicate that the foreign and domestic fisheries appear to be operating on a common mid-Pacific stock of blue marlin. However, Skillman and Kamer's correlation analyses (Section 5.5) also demonstrated that increases in foreign longline fishing in the FCZ are clearly associated with decreases in the abundance of blue and striped marlin which is available to domestic fishermen. Therefore, area closures of the FCZ to foreign longline fishing should result in increased catch rates of blue and striped marlin for domestic fishermen. Eloctrophoretic studies for Pacific blue and striped marlin have been undertaken by Shaklee and Brill (1980), with Council support, to determine by biochemical means whether or not subpopulations or stocks of Pacific blue and striped marlin may exist, and to determine the genetic characteristics and geographical and temperal boundaries of such stocks if genetically isolated stocks of blue and striped marlin do indeed exist in the Pacific. Findings by Shaklee (August 1982, per. comm.) stemming from his examination of blue marlin tissue samples suggest that blue marlin samples taken from Hawaiian waters during the summer months of two subsequent years exibit a high degree of genetic uniformity, but that the summer-month tissue samples are genetically different from blue marlin tissue samples collected in Hawaii during the winter months. Moreover, both the summer-month and winter-month sets of tissue samples collected in Hawaii appear to be genetically distinct from a few tissue samples taken from blue marlin caught near Guam. The possibility of distinct stocks or subpopulations of blue marlin and possibly striped marlin in the Pacific implies both genetic divergence and reproductive isolation. More direct measures to test for stock heterogenecity of blue and striped marlin throughout the Pacific range of the species are necessary for detecting and defining the geographic limits of such stocks if they are to be managed with stock conservation reasons in mind.

6.6 Probable Condition of Stocks

6.6.1 Present Condition

The most recent report available on the condition of the Pacific blue marlin population considers it to be overfished at present. Yuen and Miyake (1978) reported that the longline fishing effort is about twice that suitable for maximum sustainable yield. Because the catch-per-unit-effort (CPUE) for Pacific blue marlin has steadily declined over the past 10 years, in spite of a fairly constant level of effort, Yuen and Miyake (1978) reported "... that continued (foreign longline) fishing at high levels will continue to reduce the abundance of the stock and recruitment failure will become a distinct possibility". The level of fishing effort for the other species of billfish in the management unit is believed to be generally at or somewhat below what is necessary to take the MSY, and stocks are believed to be generally healthy.

Nothing is known about the status of stocks of mahimahi, wahoo or pelagic sharks in the Pacific Ocean. However, the existence of established, fairly large-scale, surface fisheries for mahimahi off Japan and Taiwan in the western Pacific and off Ecuador in the eastern Pacific as well as numerous small-scale fisheries throughout the Pacific basin would suggest that the stock or stocks of mahimahi are far removed from a virgin state. Historically, the largest fishery for wahoo has probably been the ocean-wide, distant water tuna longline fishery. With increased fishing effort of tuna purse seiners in the central and western Pacific, particularly around flotsam, incidental catches of wahoo and mahimahi from this fishery have probably increased substantially. However, estimates of the magnitude of the incidental catch from these fisheries have not been made, and no attempt to assess the status of the stocks of wahoo and mahimahi has been made. For sharks, the largest fishery in the tropical and subtropical Pacific has probably been the tuna longline fishery. Again, no attempt can be made to assess the status of the stocks of oceanic sharks because species-specific records of catches are not available.

6.6.2 Estimate of Future Condition

The species covered by the management unit are generally believed to be migratory and reside in the U.S. FCZ or transit the FCZ seasonally. If this is so, then at any given time, the largest part of the population(s) of any of these species occurs outside of the U.S. FCZ, and the vast majority of the fishing effort for any of these species also occurs outside of the FCZ. As a consequence, any fishing regulations covering these species affecting fishing only in the FCZ would have

very little detectable effect on the populations of the management unit species over their complete range. The magnitude of the effect of fishing regulations applied only in the FCZ would, of course, depend on the proportion of the populations of the management unit species in the FCZ relative to the total population throughout the full range of a species in question.

The workshop analysis of the Pacific blue marlin population indicated that the population has been overfished since the early 1960s and that continued fishing at high levels could further reduce the abundance of the species. For striped marlin, in a Pacific-wide perspective, the analysis indicated tht the population could, perhaps, provide increased yields by imposing a modest increase in fishing effort. There is some evidence, however, that striped marlin in the mid-Pacific may be showing a general decline as is the case with blue marlin. Skillman and Kamer (1985) examined catch and effort statistics for the Japanese longline fishery from 1963-1978. Starting in 1969, they observed a marked decline thereafter. Although the data examined by the workshop participants did not allow a production model analysis for black marlin, the substantial decline in longline catch rates from the early 1950s to 1975 for black marlin suggests that a large increase in total catch over recent levels is probably not sustainable in the long-run. Swordfish stocks in the Pacific appear to be capable of sustaining increased yields with increased effort. For sailfish, the analysis of catch rates for the western Pacific stock suggested that any increase in effort probably will not result in a substantial increase in catch. For the eastern Pacific stock of sailfish it is possible that an increase in effort will result in a slight increase in catch. Finally, any increase in effort should result in an increase in the catch of shortbill spearfish.

There are no studies available suggesting the possible stock condition of mahimahi, wahoo and oceanic sharks on a Pacific-wide basis. However, Skillman and Kamer (1985) discovered a declining trend in CPUE for mahimahi for the Hawaii longline, troll and handline fisheries over 1962-1978.

From a localized perspective, domestic catches of some of the management unit species could be reflective of the general condition of the stocks throughout their entire range, or serve as indicators of their annual availability in local waters. In general, domestic catches of the management unit species can be expected to increase as the level of participation continues to increase. Domestic catches, however, are influenced by seasonal and annula fluctuations in the avilability of the management unit species in local waters which may be attributable to environmental factors and the availability of prey. At present, domestic fishermen exploit only a part of the resources which migrate into the waters around the islands. Measures proposed in this FMP are not expected to have any significant measurable effect on the future conditions of the stocks throughout their range. The risk of domestic overfishing of the management unit species under this FMP is likely to be extremely low since it is believed that only a small proportion of the

populations of the management unit species are in the FZ relative to the total population of the species in question throughout their range in the Pacific Ocean.

6.7 Ecological Relationships

6.7.1 Other Fish

Other than food chain relationships, there are no pronounced ecological connections between the species in the management unit and other pelatic fishes, principally the tunas. The FCZ of the Western Pacific Region, although encompassing over 1.5 million square miles, is still a small area relative to the Pacific-wide distribution of the management unit species, and the amount of pelagic species taken in the FCZ is correspondingly small as well. Therefore, actions under this FMP to affect foreign longline fishing in the FZ are unlikely to result in any changes in the predator-prey relationships among the management unit species and the tunas. The FMP may alter the historical harvests of the management unit species in the FCZ through a partial shift in harvests from foreign fishermen to domestic fishermen. However, the total harvest amounts of the management unit species and tunas should not be substantially changes in relation to total stock sizes and their ocean-wide distribution, at least not by any actions taken under this FMP.

6.7.2 Marine Mammals and Endangered and Threatened Species

There is very little information available on ecological relationships between the fish species in the management unit and marine mammals and endangered and threatened species which have been recorded in the FCZ of the Western Pacific Region (Table 6.1). However, it is well known that Hawaiian monk seals and sea turtles are vulnerable to shark attacks, principally by tiger sharks. Mahimahi have been observed in association with surface swimming humpback whales. Whales and other cetaceans may possibly serve as aggregators at least for some of the management unit species and tuna. There are frequent reports of porpoises regularly taking bait and hooked fishes off the lines of fishermen in Hawaii (Schlais, J.F. 1984; Kuljis, B.A. 1983; Hawaii Fishing News, June 1983 and April 1984). Most of the stolen fish are tuna but some of them could be small mahimahi and wahoo.

The measures of this FMP are not likely to jeopardize the continued existence of any threatened and endangered species and marine mammals. Rather, they should further the interests of protecting these species (See sections 9.2 and 9.3).

TABLE 6.1

MARINE MAMMALS AND ENDANGERED AND THREATENED SPECIES RECORDED IN THE FCZ OF THE WESTERN PACIFIC REGION

Scientific Name	Common Name
*Megaptera novaengliae	(humpback whale)
Balaenoptera edeni	(Bryde's whale)
*B. physalus	(fin whale)
*Physeter catodon	(sperm whale)
Orcinus orca	(killer whale)
Pseudorca crassidens	(false killer whale)
Steno bredanensis	(rough-toothed dolphin)
Stenella longirostris	(Hawaiian spinner dolphin)
S. attenuata	(spotted dolphin)
S. caeruleoalba	(striped dolphin)
Tursiops truncatus	(bottlenosed dolphin)
Feresa attenuata	(pygmy killer whale)
Kogia sp.	(dwarf and pygmy sperm whale)
Peponocephala electra	(melon-headed whale)
Globicephala macrorhynchus	(short-finned pilot whale)
Grampus griseus	(Risso's dolphin)
Ziphius cavirostris	(goosebeak whale)
Mesoplodon densirostris	(densebeak whale)
*Monachus schauinslandi	(Hawaiian monk seal)
+Chelonia mydas	(green turtle)1/
*Eretmochelys imbricata	(hawksbill turtle)1/
*Dermochelys coriacea	(leatherback turtle)1/
+Lepidochelys olivacea	(olive ridley turtle1/
*Diomedea albatrus	(short-tailed albatross)

* = endangered species

\+ = threatened species

1/ = (Joint National Marine Fisheries Service - Fish and Wildlife Service jurisdiction)

6.8 Habitat of the Management Unit Species

6.8.1 Present Habitat Condition

The management unit species are widely distributed in the surface layer of the Pacific Ocean to a depth of at least 250 m, but they mostly reside above the thermocline. The distribution for the management

species taken together generally extends from 40-45°N latitude to 40°S latitude. Habitat conditions of the FCZ of the Western Pacific Region are of high quality. At present, there are no heavy industries in the island areas under the jurisdiction of the Council, and there are only a few point sources of pollution, principally sewage. There are, however, cases of marine pollution and habitat destruction and modification in U.S. flag islands in the Pacific, but these are coastal in nature and they do not extend into the FCZ. There is a joint Department of Interior/State of Hawaii initiative to lease submerged lands of the FCZ surrounding the Hawaiian archipelago for mining of ferro-manganese crust deposits. The Council has provided input to the State of Hawaii on the scope of environmental impacts that might be expected from marine mining activities. It is conceivable that mining activities could affect the in turn could affect the survival rate of larvae of the management unit species and possibly parts of the food chain(s) on which the management unit species depend on.

At one time, the Government of Japan had proposed to dump nuclear wastes on the high seas in near proximity of the FCZ of the Northern Mariana Islands. This proposal ignited substantial protest from Pacific islanders. The proposal has been shelved but it is not dead. It would be highly conjectural to specify the scope of impacts that this proposal might have on the habitat of the management unit species and on the species themselves if it were implemented. All in all, there is no information at present to suggest that the stocks of the management unit species have been affected in any way by pollution or habitat modification in the U.S. FCZ of the Western Pacific Region.

6.8.2 Habitat Protection

There are many Federal and State laws and regulations to protect habitat conditions in FCZ areas under U.S. jurisdiction and in territorial waters, and to control waste discharges of U.S. vessels on the high seas. There are fewer such controls on foreign vessels on the high seas. However, foreign vessels must conform with U.S. regulations governing waste discharges while they are within the FCZ.

6.8.3 Future Habitat Conditions

Fishing for tuna on the high seas by foreign and domestic vessels and fishing for the management unit species and tuna in the FCZ by domestic vessels will continue whether the FMP is in place or not. Distant-water fishing activities will continue to be widely seperated since the FCZ of the Western Pacific Region and adjacent high seas are expansive areas. Domestic fishing is increasing in the Northwestern

Hawaiian Islands (NWHI) for bottomfish, lobsters, and for the management unit species and tuna. Thus the risk of fuel spills, wrecks and entry onto the Hawaiian Islands National Wildlife Refuge islands is increasing. The risk of negative impacts on the natural environment due to domestic fishing would be more than offset by decreased activity of foreign longline and drift-gillnet vessels in proposed closed areas in the FCZ of the NWHI. In general, habitat conditions throughout the FCZ of the Western Pacific Region are expected to remain favorable well into the future with or without the FMP.

6.9 Foreign Longline Fisheries

6.9.1 Description of Vessels, Gear and Species Landed

Foreign longline fisheries ceased to operate in the U.S. FCZ of the Western Pacific Region in the early spring of 1980, coincidental with the implementation of the PMP. Foreign longline fisheries, however, continue to operate in other parts of the Pacific Ocean but on a reduced scale compared to earlier years.

The management unit species are exploited in the Pacific Ocean mostly by longline vessels of Japan, Taiwan and Korea. In general, these vessels also take the management unit species in the process of catching tuna, their principal target species. However, there are certain areas in the Pacific where billfish are the main targets of longline fleets. In Japan, the term "tunas" includes marlin. Marlin are generally called "kajiki-maguro" (marlin-tuna), and are handled with tuna in the marketing process.

The Japanese developed longlining into a large-scale fishery after World War II, and their modern longliners operate in areas of the Pacific ocean where billfish and large tuna occur. In more recent times, South Korea and Taiwan, following Japan's example and sometimes using old Japanese boats, have also developed major tuna longline fishing industries. In tropical waters, foreign longliners catch large bigeye and yellowfin tuna, lesser quantities of large albacore tuna, all of the billfish species which occur in the Region, oceanic sharks, and mahimahi and wahoo. Other miscellaneous fishes, such as moonfish and pomfrets, are also taken. While sashimi quality tuna are generally the prime targets of Japanese longliners, their by-catch of billfish is an important component of the catch. Billfish command a fairly high price as table-fish or as raw material for fish sausages and fishcake in Japanese markets. Billfish generally have been commanding a higher ex-vessel price than yellowfin and albacore tuna in fish auctions in Japan, and striped marlin and swordfish have been fetching a better price than even bigeye tuna in recent years (Table 6.2). It is clear that billfish are really not an incidental catch nor an unwanted by-product of Japanese longline operations. Billfish are as valuable or more valuable than the tunas except for bluefin tunas.

TABLE 6.2

AVERAGE EX-VESSEL PRICES FOR SPECIES OF TUNA AND BILLFISH LANDED AT YAIZU, JAPAN, FEBRUARY 1980*, 1983**, 1984** AND JANUARY 1986***

Species	February 1980 1/	1983 2/	1984 3/	January 1986 4/
	$1/Pound	$1/Pound	$1/Pound	$1/Pound
Southern Bluefin Tuna	4.40	6.12	6.07	6.88
Bluefin Tuna	4.32	2.33	2.97	5.29
Bigeye Tuna	1.90	1.42	1.81	1.36
Swordfish	1.30	1.48	1.72	1.56
Striped Marlin	1.29	1.81	2.25	1.76
Blue Marlin	1.08	0.98	0.85	1.01
Yellowfin Tuna	0.98	0.76	0.72	0.49
Albacore Tuna	0.97	0.73	0.78	0.74
Black Marlin	0.79	1.88	1.00	1.13
Skipjack Tuna	0.66	0.36	0.30	0.40

1/ = Based on 240 yen per 1 U.S. dollar for February, 1980.
2/ = Based on 237 yen per 1 U.S. dollar for 1983.
3/ = Based on 234 yen per 1 U.S. dollar for 1984.
4/ = Based on 202 yen per 1 U.S. dollar for January, 1986.

* SOURCE: NMFS, Foreign Fishery Information Release No. 80-4, April 16, 1980.
** SOURCE: NMFS, Foreign Fishery Information Release No. 85-3, Feb. 19, 1985.
*** SOURCE: NMFS, Foreign Fishery Information Release No. 86-5, March 13, 1986.

Foreign longline vessels range in size from 60 to 120 ft (18-36 m). The larger boats have ultra-low temperature freezer cargo holds and can make trips of several months duration. The larger longline vessels use buoyed set lines 50 to 60 miles in length with 1,500 to more than 2,000 hooks per set. Hooks are generally baited with frozen or salted

fish. This is essentially a fishery in which a passive type of fishing gear is deployed diffusely over a large area of ocean to catch large fish which have a high unit value on the market. The fish are probably solitary or in loose aggregations so that they are not vulnerable to more concentrated, intensive fishing methods.

6.9.2 Fishing Effort in the FCZ

Estimates of the amount of fishing effort expanded by foreign longliners in the U.S. FCZ surrounding Hawaii, American Samoa, Guam, the Commonwealth of the Northern Mariana Islands (CMNI), and U.S. island possessions are presented in Table 6.3 covering the years 1971 through 1977. These are the most recent years for which fairly complete data on foreign longline fishing effort are available for each island area in the Western Pacific Region. The estimates of fishing effort reported in Table 6.3, however, do not present a complete picture since no Korean statistics were used except for American Samoa-based Korean longline vessels. Korean tuna longliners are known to fish in all areas of the FCZ, and while extensive catch and effort data are available, Korean statistics were not used because of unresolved questions on sampling procedures, raising factors and reliability. In addition, the longline effort data in Table 6.3 do not include Japanese longliners under 20 gross tons, or any Taiwanese longliners under 50 gross tons. It is likely that both of these classes of small longline vessels have fished in the FCZ around Guam and the Northern Marianas Islands.

Foreign longliners spent an annual average (1971-77) of nearly 5,500 vessel days fishing in the U.S. FCZ of the Western Pacific Region as a whole. This is equivalent to roughly 11 million hooks fished each year, on the average, in the U.S. FCZ at approximately 2,000 hooks fished per vessel per day. There were about 7.25 hooks fished per yer per square mile of the FCZ of the Western Pacific Region as a whole.

The predominant part of the effort expended by foreign longliners in the FCZ around Hawaii has been by Japanese vessels. Taiwanese longliners did a slight amount of fishing (about 50 vessel days) in 1972 and 1977. There was a small amount of fishing in the Hawaii FCZ by Korean longline vessels based in American Samoa. With the single exception of 1974, Japanese longline fishing in the FCZ of the Northwestern Hawaiian Islands (NWHI) was about double their longline effort in the FCZ of the main Hawaiian Islands (Table 6.3). Foreign longline effort in Hawaii's entire FCZ remained fairly stable during this period averaging close to 2,000 vessel days per year over 1971-1977.

TABLE 6.3 - FISHING EFFORT (VESSEL DAYS*) EXPENDED BY FOREIGN LONGLINERS** IN THE FCZ OF U.S. FLAG ISLANDS IN THE PACIFIC, 1971-77

FCZ Surrounding:	1971	1972	1973	1974	1975	1976	1977	Average 1971-77	Number of Hooks Fished* Avg. 1971-77	Average Number of Hooks Fished Per Square Mile of the FCZ Per Year
Main Hawaiian Islands (a)	550	362	592	1,289	342	823	852	687	1,374,000	
Northwestern Hawaiian Islands (b)	1,553	1,697	963	433	828	1,856	1,508	1,263	2,526,000	
HAWAIIAN ARCHIPELAGO [Total = (a) + (b)]	2,103	2,059	1,555	1,722	1,170	2,679	2,360	1,950	3,900,000	6.02
Commonwealth of the Northern Mariana Islands	1,021	593	233	337	342	500	877	558	1,116,000	4.45
Guam	19	20	55	273	278	735	1,199	368	736,000	12.27
American Samoa	769	462	887	1,056	855	819	271	731	1,462,000	19.49
U.S. Possessions+	2,210	2,432	1,325	2,207	1,699	1,714	1,977	1,866	3,732,000	7.84
TOTAL WESTERN PACIFIC REGION	6,122	5,566	4,055	5,595	4,344	6,447	6,184	5,473	10,946,000	7.24

SOURCE: Data from Yong and Wetherall (1980).

* = Approximately 2,000 hooks fished per vessel day.
\+ = Wake, Johnston, Palmyra-Kingman, Jarvis and Howland-Baker islands.
** = Japanese and Taiwanese Longliners mostly. Except for American Samoa-based longliners, no Korean longline statistics were used because of questions of reliability.

An annual average (1971-1977) of 560 vessel days was spent fishing by Japanese longliners in the FCZ of the Commonwealth of the Northern Mariana Islands (CMNI). Out of the U.S. flag islands in the Western Pacific Region, the FCZ of the CMNI had the lowest density of foreign longline fishing, in terms of the number of hooks fished annually per square mile of the FCZ.

A small amount of Japanese longline effort was expended in the U.S. FCZ surrounding Guam prior to 1974. Beginning in 1974, however, Japanese longline effort in this zone increased fivefold, compared to earlier years, and by 1977, Japanese longline effort skyrocketed to nearly 1,200 vessel days, a tremendous increase in such a small FCZ area relative to earlier years (Table 6.3). The average number of hooks fished by foreign longliners per square mile of the Guam FCZ was 12 per year, a hook density nearly three times as high as for the CMNI, Guam's immediate neighbor to the north.

Longline vessels from South Korea and Taiwan are based in American Samoa and they have fished in the FCZ of American Samoa on a regular basis. Longline effort by Korean and Taiwanese vessels remained fairly stable averaging around 700-800 vessel days fished per year during the 1970's. The FCZ of American Samoa has the distinction of having more intense foreign longline fishing than any other FCZ area of the Western Pacific Region. On the average, about 20 hooks were fished in each square mile of the FCZ of American Samoa per year, a rate nearly three times greater than for the FCZ of the Western Pacific as a whole.

An annual average (1971-77) of nearly 1,900 days were spent by Japanese and Taiwanese longliners fishing in the U.S. FCZ of the widely scattered U.S. possessions in the Pacific. More foreign longline fishing effort was expended in the U.S. FCZ of the U.S. possessions than in the FCZ of the CMNI, Guam and American Samoa combined, and nearly as much as in the FCZ of the Hawaiian Archipelago.

6.9.3 Catches of Billfish and Tuna in the FCZ

Annual estimates of catches of billfish and tuna made by foreign longliners within sub-areas of the FCZ of U.S. flag islands in the Pacific for the most recent 5-year period (1973-77) for which fairly comprehensive data are available are shown in Appendix D. The average annual catch of billfish species and tuna (all species combined) made by foreign longliners during 1973-1977 in the U.S. FCZ of each island area is shown in Table 6.4. The average (1973-77) catch rates (expressed in metric tons per vessel day) for individual species of billfish and for tuna (all species combined) achieved by foreign longliners in the FCZ of each island area are shown in Table 6.5. Catch statistics for mahi-mahi, wahoo and oceanic sharks are not available for foreign longline gear. A five year period (1973-1977) for examination of catch and effort

data was chosen for this FMP to be comparable with the PMP, which also presented catch and effort information on the foreign longline fishery over a 5-year period (1971-75). These were the most recent years of data availability when the PMP was being prepared.

The average annual catch of all species of billfish made on foreign longline gear in the FCZ around the Hawaiian archipelago averaged a bit over 300 metric tons (mt), and ranged from a low of 162 mt (1975) to a high of 497 mt (1976) during this 5-year period (Appendix D). The catch of blue marlin fluctuated between 20 and 83 mt, and averaged 49 mt. Striped marlin catches averaged 119 mt per year, and ranged between 78 and 168 mt. Annual catches of swordfish fluctuated between a high of 267 mt and a low of 34 mt, averaging 111 mt per year. Catches of black marlin and spearfish/sailfish were quite small compared to the catches of other species of billfish.

The annual pattern of foreign longline catches (all species combined) in the FCZ of Hawaii corresponds closely to the annual effort pattern even though there is much variability in the species composition of catches from year to year. During 1973-77, foreign longliners took an average of about 7 ½ times more tuna than billfish from the FCZ of the Hawaiian islands as a whole. Billfish made up about 12% of the total average annual catch for 1973-77. The foreign longline catch of billfish taken in the FCZ of the Northwestern Hawaiian Islands (NWHI) was about twice as large (in terms of total weight) than the catch of billfish taken in the main Hawaiian islands. The waters of the NWHI appear to be significantly richer in striped marlin and swordfish as measured by catch-per-unit-of-effort (CPUE) statistics than the waters of the main Hawaiian islands (Table 6.5). However, the catchability of blue marlin on foreign longline gear is nearly twice as large in the FCZ of the main Hawaiian islands than in the FCZ of the NWHI.

The annual catch of billfish on foreign longline gear in the FCZ surrounding Guam averaged 54 mt, most of which was blue marlin. The annual foreign longline catch of billfish during 1973-77 around Guam fluctuated greatly from 9 to 104 mt, largely because foreign longline effort also ranged widely from 19 to 1199 vessel days during this period. During 1973-77, between 5 and 20 times more tuna than billfish were taken by foreign longliners in the FCZ around Guam. Foreign longliners experienced the highest CPUE for blue marlin in the FCZ of Guam, although the foreign longline CPUE for all species of billfish combined is lower in Guam than in any other portion of the FCZ of the Western Pacific Region. However, the CPUE for tuna taken on foreign longline gear is higher in Guam waters than in any other FCZ area in the Western Pacific Region (Table 6.5).

An annual average of 71 metric tons of billfish were harvested by foreign longliners in the FCZ of the Commonwealth of the Northern Mariana Islands (CMNI). Compared to Guam, the waters of the CMNI are richer in striped marlin and swordfish, but poorer in blue marlin, sailfish, spearfish, and tuna. (Table 6.5).

TABLE 6.4 - AVERAGE ANNUAL (1973-77) CATCH (METRIC TONS) OF SPECIES OF BILLFISH AND TUNA (ALL SPECIES COMBINED) MADE BY FOREIGN LONGLINERS IN THE U.S. FCZ OF HAWAII, COMMONWEALTH OF THE NORTHERN MARIANAS, GUAM, AMERICAN SAMOA AND U.S. POSSESSIONS

FCZ Surrounding:	Blue Marlin	Black Marlin	Striped Marlin	Sword-fish	Spearfish & Sailfish	Total Billfish	Total Tuna	Total Catch
Main Hawaiian Islands								
within 50 miles	3	<1	5	3	1	11	106	117
within 100 miles	8	<1	11	7	3	28	246	274
within 200 miles	28	1	36	23	15	103	868	971
Northwestern Hawaiian Islands								
within 50 miles	3	<1	16	14	1	33	274	307
within 100 miles	8	<1	42	34	3	87	640	727
within 200 miles	21	1	83	88	7	200	1,407	1,607
TOTAL HAWAIIAN ARCHIPELAGO within 200 miles	49	2	119	111	22	303	2,275	2,578
Commonwealth of Northern Marianas								
within 50 miles	5	<1	2	3	<1	10	95	105
within 200 miles	27	1	21	21	1	71	475	546
Guam								
within 50 miles	6	<1	<1	1	<1	6	100	106
within 200 miles	43	2	2	5	2	54	678	732
American Samoa								
within 50 miles	12	3	4	1	1	21	87	108
within 200 miles	62	14	17	7	8	108	472	580
U.S. Possessions within 200 miles	121	4	42	41	36	244	1,605	1,849
TOTAL WESTERN PACIFIC REGION within 200 miles	302	23	201	185	69	780	5,505	6,285

SOURCE: Data from Yong and Wetherall (1980). Catches of < 1 MT are not included in the totals.

TABLE 6.5 - CATCH-PER-UNIT-EFFORT (METRIC TONS/VESSEL DAY) FOR SPECIES OF BILLFISH AND FOR TUNA* MADE BY FOREIGN LONGLINERS IN THE FCZ OF U.S. FLAG ISLANDS IN THE PACIFIC (AVERAGED OVER 1973-77)

FCZ Surrounding:	Blue Marlin	Black Marlin	Striped Marlin	Sword-fish	Spearfish & Sailfish	Total Billfish	Total Tuna*	Total (Billfish & Tuna)
Main Hawaiian Islands	0.036	0.001	0.046	0.029	0.019	0.132	1.113	1.245
Northwestern Hawaiian Islands	0.019	0.001	0.074	0.079	0.006	0.179	1.259	1.437
HAWAIIAN ARCHIPELAGO	0.026	0.001	0.063	0.059	0.012	0.160	1.199	1.359
Commonwealth of the Northern Mariana Islands	0.059	0.002	0.046	0.046	0.002	0.155	0.935	1.090
Guam	0.085	0.004	0.004	0.010	0.004	0.106	1.335	1.441
American Samoa	0.080	0.018	0.022	0.009	0.010	0.139	0.685	0.824
U.S. Possessions+	0.068	0.002	0.021	0.023	0.020	0.134	0.884	1.018
TOTAL = WESTERN PACIFIC REGION	0.056	0.004	0.036	0.034	0.013	0.143	1.015	1.158

SOURCE: Data from Yong and Wetherall (1980).

* = All species of tuna combined.
\+ = Wake, Johnston, Palmyra-Kingman, Jarvis and Howland-Baker islands.

In the FCZ around American Samoa, the estimated annual average catch of billfish made by foreign longliner's was 108 mt. Samoan waters appear to be the richest in black marlin and second richest in blue marlin compared to the FCZ of other U.S. flag island groups in the Western Pacific Region (Table 6.5). However, the CPUE for tuna on foreign longline gear in the FCZ of American Samoa was lower than in any other area of the U.S. FCZ of the Western Pacific Region.

The amount of billfish harvested by foreign longliners in the FCZ of U.S. Possessions during 1973-77 was second only to billfish harvests made in the FCZ of the Hawaiian archipelago. An annual average of over 1,605 mt of tuna was taken by foreign longliners in addition to 244 mt of billfish. (Table 6.4).

6.9.4 Derived Estimates of Catches of Mahimahi and Wahoo

It is not possible to derive estimates of total catches of mahimahi, wahoo, and oceanic sharks from records of foreign longliners because catches of these species are either not recorded at all or they are lumped together in a miscellaneous catch category. Catches of wahoo, however, are recorded by Taiwanese and Korean longliners based at Pago Pago, American Samoa. These vessels operate primarily in the South Pacific.

Estimates of catches of mahimahi and wahoo made in the U.S. FCZ of the Western Pacific Region by foreign longliners were derived by assuming that the ratio (percent) of the mahimahi and wahoo catch to the total catch of domestic longliners based in Hawaii is representative of the ratio of mahimahi and wahoo catches made by foreign longliners in the FCZ of the Western Pacific Region. Table 6.6 presents the species composition of catches of tuna and the management unit species made by Hawaii longline vessel from 1978 to 1983. Catches of mahimahi ranged from 0.67% to 1.87% of the total catch, averaging 1.02% of the total catch over 1978-83. The catch of wahoo ranged from 0.56% to 1.23% of the total catch, averaging 0.74% of the total catch for the period examined. The share of the total catch of Hawaii-based longliners attributed to sharks is not representative of actual catches of sharks because, until recently, only three species of sharks (mako, thresher and white) had some market value in Hawaii. Other species of oceanic sharks are caught more frequently by Hawaii longliners, but they are generally thrown overboard and not reported or under reported in the longline (flagline) catch reports.

TABLE 6.6

SPECIES COMPOSITION+ OF THE CATCH
OF HAWAII LONGLINE VESSELS, 1978-1983*
(Percent of the Total Catch)+

Tuna	1978	1979	1980	1981	1982	1983**	1978-1983 Average
Yellowfin	28.27	28.46	72.11	69.38	9.34	15.85	33.46
Bigeye	41.24	39.55	8.42	13.26	73.03	56.22	38.44
Albacore	12.09	6.88	4.37	0.41	6.46	13.10	9.39
Skipjack	0.01	0.01	0.02	0.05	0.00	0.24	0.03
TUNA SPECIES COMBINED	81.61 =====	74.90 =====	84.92 =====	83.10 =====	88.83 =====	85.41 =====	81.32 =====

Management Unit Species (MUS)	1978	1979	1980	1981	1982	1983	1978-1983 Average
Blue Marlin	3.61	3.09	3.86	3.75	3.82	3.90	3.57
Striped Marlin	9.75	15.42	7.03	11.10	4.75	5.81	10.13
Black Marlin	0.00	0.04	0.05	0.00	0.80	0.00	0.05
Swordfish	2.00	3.70	0.64	0.05	0.21	1.65	1.98
Shortbill Spearfish	1.12	1.07	0.17	0.00	0.00	0.00	0.80
Sailfish	0.00	0.00	0.08	0.00	0.00	0.00	0.01
Mahimahi	0.92	1.01	1.87	1.08	0.67	0.67	1.02
Wahoo	0.66	0.56	0.98	0.91	0.70	1.23	0.74
Sharks	0.32	0.22	0.40	0.00	0.22	1.32	0.37
MUS COMBINED	18.39 =====	25.10 =====	15.08 =====	16.90 =====	11.17 =====	14.59 =====	18.68 =====

* = Hawaii Division of Aquatic Resources (HDAR) data.
\+ = Percent of total catch by weight.
** = January - June only.

Table 6.7 presents an estimate of the average catch of mahimahi and wahoo made by foreign longliners in the FCZ of each island area of the Western Pacific Region. The annual average catch of mahimahi and wahoo was estimated at 64 mt and 46 mt respectively for the FCZ of the Western Pacific Region as a whole. Foreign longline catches of these two species accounted for less than 2% of their total catch of billfish and tuna combined.

TABLE 6.7

ESTIMATE OF THE AVERAGE (1973-77) ANNUAL CATCH (METRIC TONS) OF MAHIMAHI AND WAHOO MADE BY FOREIGN LONGLINERS IN THE FCZ OF U.S. FLAG ISLANDS IN THE PACIFIC

FCZ Surrounding:	(A) Average Annual Catch (MT) of Billfish and Tuna Combined (1973-77)*	Estimate of the Average Annual Catch of Mahimahi: 1.02%** of (A)	Estimate of the Average Annual Catch of Wahoo: 0.74%** of (A)	Estimates of Mahimahi and Wahoo Catches Combined
Main Hawaiian Islands (a)	971	10	7	17
Northwestern Hawaiian Islands (b)	1,607	16	12	28
TOTAL = HAWAIIAN ARCHIPELAGO: (a) + (b)	2,578	26	19	45
Commonwealth of the Northern Mariana Islands	546	6	4	10
Guam	732	7	5	12
American Samoa	580	6	4+	10
U.S. Possessions	1,849	19	14	33
TOTAL = WESTERN PACIFIC REGION	6,285	64	46	110

* = Table 6.4

** = Table 6.6

\+ = Catches of Wahoo made in the FCZ of American Samoa by Korean and Taiwanese longliners based at Pago Pago ranged from 0.30 to 1.91% of their tuna and billfish catches and averaged 0.84% of the total catch during 1965-76 - Yong and Wetherall (1980).

6.10 Foreign Baitboat (Pole-and-Line) Fisheries

6.10.1 Description of Vessels, Gear and Species Landed

The pole-and-line fishery for tuna, using chummed live bait to take schools of tuna at the surface of the ocean, has been the most productive of the fisheries undertaken by foreign vessels in the U.S. FCZ of the Western Pacific Region. Foreign baitboats have taken twice as much tuna (in terms of weight) in the FCZ of the Western Pacific Region than longliners during 1973-77 on the average. Although all species of tuna can be taken by the live-bait, pole-and-line method, the catch of Japanese baitboats is predominantly skipjack tuna (85%), and the fishery is commonly referred to as the skipjack tuna fishery. Surface swimming schools of small yellowfin, bigeye, and albacore tuna are also fished by foreign pole-and-line vessels in the Western Pacific Region, but these species make up a far smaller share of the catch compared to skipjack tuna. While the main targets of foreign baitboats in the Western Pacific Region are tuna, their catch at times also includes mahimahi and lessor quantites of other species. Small billfish can be caught by baitboats but only on rare occassion.

The live-bait chumming technique is very effective wherever schools of tuna can be found at the sea surface. Many times, finding schools of tuna is a matter of sighting flocks of seabirds and evaluating their behavior. Seabirds gather where schools of tuna, feeding near the surface, drive baitfish up to the surface where the birds can dive in and share in the forage. Tuna schools are attracted to a fishing boat by scattering live baitfish in the water. Tuna are caught on feathered lures with barbless hooks attached to stout poles by short lengths of line. Automatic fishing poles are used on more than 80% of the Japanese skipjack tuna vessels of over 200 tons. Since smaller, coastal water vessels (less than 50 tons) do not have as much problems in recruiting fishermen compared to distant-water vessels, only about 40% of such vessels utilized automatic fishing poles (Maruyama, 1980).

Although there are reports that foreign pole-and-line boats sometimes obtain baitfish on the high seas by the use of underwater lights to attract baitfish, most bait used by Japanese pole-and-line vessels is purchased from coastal fishermen in Japan. The bait is "conditioned" and is transported to the fishing grounds.

6.10.2 Fishing Effort in the FCZ

Estimates of the amount of fishing effort expended by Japanese pole-and-line vessels in the FCZ of the U.S. flag islands in the Pacific during 1971-77 are presented in Table 6.8. During these years, Japanese

TABLE 6.8

FISHING EFFORT (VESSEL DAYS) BY FOREIGN** BAITBOATS
IN THE FCZ OF U.S. FLAG ISLANDS IN THE PACIFIC, 1971-77

FCZ Surrounding:	1971	1972	1973	1974	1975	1976	1977	Average 1971-77
Main Hawaiian Islands (a)	*	*	*	1	3	51	52	15
Northwestern Hawaiian Islands (b)	*	213	96	186	266	598	715	596
HAWAIIAN ARCHIPELAGO [Total = (a) + (b)]	*	213	96	187	269	649	767	311
Commonwealth of the Northern Mariana Islands	2,646	1,648	1,603	1,375	1,696	744	1,109	1,546
Guam	164	118	54	67	206	50	333	142
American Samoa	*	*	*	*	13	8	*	3
U.S. Possessions+	12	63	105	88	539	232	937	282
TOTAL WESTERN PACIFIC REGION	2,822	2,042	1,858	1,717	2,723	1,683	3,146	2,284

SOURCE: Data from Yong and Wetherall (1980).

* = < 1 vessel day

** = Japanese.

\+ = Wake, Johnston, Palmyra-Kingman, Jarvis and Howland-Baker islands.

baitboats increased their activities in the FCZ of Hawaii, nearly tripling their effort in 1976-77 compared to earlier years. Japanese baitboats have fished fairly extensively for skipjack tuna mostly in the vicinity of the NWHI. Pole-and-line fishing in the FCZ near Guam by Japanese vessels has been a common occurrence since the 1960's when the "Southern Waters" fishing ground of the Japanese fleet was confined to the vicinity of the Mariana islands. By far, the area of the U.S. FCZ fished most extensively by Japanese baitboats is the FCZ of the Commonwealth of the Northern Mariana Islands (CMNI). Two-thirds of the total effort expended by Japanese baitboats in the entire FCZ of the Western Pacific Region during 1971-77 was in the FCZ of the CMNI (Table 6.8). Very little fishing has been done by baitboats in the FCZ surrounding American Samoa. There was a consistent increase in baitboat activity in the U.S. FCZ of the U.S. Possessions in the Pacific during 1971-77.

6.10.3 Catches of Tuna in the FCZ

Estimates of the annual catch of tuna (all species combined) during 1973-77 made by Japanese baitboats in the FCZ of each U.S. island area in the Pacific are shown in Table 6.9. Japanese baitboats caught more than twice as much tuna in the FCZ than foreign longliners during 1973-77 on the average.

In the FCZ surrounding the Hawaiian islands archipelago, average catches of tuna made by Japanese baitboats during 1973-77 were about one and one half times larger than tuna catches made by foreign longliners during this period. In the FCZ of Guam, slightly more tuna, on the average, were taken by Japanese baitboats (723 mt) than by foreign longliners (678 mt) during 1973-77. Japanese baitboats, however, took over 3 times more tuna in the FCZ of the CMNI compared to longline catches of tuna made there. There was a very large increase in the catch of tuna made by Japanese baitboats in the U.S. FCZ of U.S. Possessions during 1976-77, generally corresponding to the increase in fishing effort there. Catches of skipjack tuna made by Japanese baitboats in the FCZ of American Samoa were reported to be 65 mt in 1975 and 50 mt in 1976 (South Pacific Commission, 1980).

TABLE 6.9

ESTIMATES OF TUNA CATCHES (METRIC TONS) MADE BY FOREIGN BAITBOATS IN SUBZONES OF THE U.S. FCZ OF HAWAII, COMMONWEALTH OF THE NORTHERN MARIANAS, GUAM, AMERICAN SAMOA AND U.S. POSSESSIONS, 1973-77

FCZ Surrounding:	1973	1974	1975	1976	1977	Total	Average
Main Hawaiian Islands							
within 50 miles	0	0	0	56	29	85	17
within 100 miles	0	0	0	245	154	399	80
within 200 miles	0	0	0	458	397	855	171
Northwestern Hawaiian Islands							
within 50 miles	245	1,190	955	2,483	2,013	6,886	1,377
within 100 miles	581	1,707	1,623	4,032	3,248	11,151	2,230
within 200 miles	952	2,168	2,258	4,510	5,495	15,383	3,077
TOTAL HAWAIIAN ARCHIPELAGO within 200 miles	952	2,168	2,258	4,968	5,892	16,238	3,248
Commonwealth of the Northern Marianas							
within 50 miles	3,075	1,900	2,951	596	910	9,432	1,886
within 200 miles	7,378	4,922	6,626	2,553	3,445	24,924	4,984
Guam							
within 50 miles	85	8	68	9	94	264	53
within 200 miles	234	83	1,127	110	2,059	3,613	723
American Samoa							
within 50 miles	*	*	*	*	*	*	*
within 200 miles	*	*	65+	50+	*	*	23
U.S. Possessions within 200 miles	3,351	2,519	16,046	7,178	31,969	61,063	12,212
TOTAL WESTERN PACIFIC REGION within 200 miles	11,915	9,692	26,057	14,809	43,365	105,838	21,168

SOURCE: Data from Yong and Wetherall (1980). *Catches of < 1 MT are not included in the totals.

+ South Pacific Commission, 1980.

6.10.4 Estimates of Miscellaneous Catches of Mahimahi Made by Foreign Baitboats

No records are available on catches of the management unit species made by foreign baitboats. The catch reports of domestic pole-and-line skipjack tuna vessels based in Hawaii were, therefore, examined for evidence of miscellaneous catches. The only species in the management unit which was caught in any significant amount by the local baitboats is mahimahi. Table 6.10 compares reported landings of mahimahi to total landings of tuna made by baitboats in Hawaii for 1978-83. Landings of mahimahi accounted for between 0.1 to 0.2% of tuna landings during 1978-82, but rose to 1.14% of their total tuna landings during the first half of 1983. For 1978-83 as a whole, landings of mahimahi averaged only 0.17% of the tuna landings made by local baitboats. However, the landings of mahimahi made by the local baitboats, while seemingly insignificant compared to their tuna landings, still accounted for between 1.3 to 7.4% of the reported commercial landings of mahimahi for all gear types in Hawaii.

TABLE 6.10

LANDINGS (LBS) OF MAHIMAHI REPORTED BY HAWAII SKIPJACK TUNA (AKU) VESSELS COMPARED TO THEIR LANDINGS OF TUNA, 1978-1983

Year	Tuna Landings	Mahimahi Landings	Mahimahi Landings As A Percent Of Tuna Landings	Mahimahi Landings Reported By Baitboats As A Percent Of Reported Landings Of Mahimahi For All Gear Types Combined
1978	6,848,740	9,273	0.14	6.8
1979	5,877,046	7,221	0.13	4.2
1980	5,628,873	11,265	0.21	5.0
1981	4,377,708	7,617	0.18	3.4
1982	2,990,759	2,624	0.09	1.3
1983+	698,629	7,937	1.14	7.4
AVERAGE 1978-1983	4,403,626	7,656	0.17	4.9
	=========	=====	====	===

+ = January to June only.

HDAR data.

Estimates of mahimahi catches made by Japanese baitboats in the FCZ of the Western Pacific Region were derived by multiplying Japanese baitboat catches of tuna (Table 6.9) by 0.17% - the average share of total catches of local baitboats ascribed to mahimahi. Table 6.11 shows their estimates of catches of mahimahi in the FCZ of the Western Pacific Region made by Japanese baitboats. Baitboat catches of other species in the management unit are so infrequent as to be largely inconsequential.

Japanese baitboat catch and effort statistics for 1978 and 1979 have been published for the Pacific Ocean by 1° square. The catch and effort statistics include the FCZ areas of the Western Pacific Region but the data have not been statistically manipulated to provide estimates of tuna catches made by Japanese baitboats in the FCZ of U.S. flag islands in the Pacific during 1978 and 1979. There are no data presently available on Japanese baitboat catches in the Pacific for years beyond 1979.

TABLE 6.11

ESTIMATES OF MAHIMAHI CATCHES (METRIC TONS)
MADE BY JAPANESE BAITBOATS IN THE FCZ OF U.S. FLAG ISLANDS IN THE PACIFIC

FCZ Surrounding:	1973	1974	1975	1976	1977	Average 1971-77
Main Hawaiian Islands (a)	0	0	0	*	*	*
Northwestern Hawaiian Islands (b)	2	4	4	8	9	5
HAWAIIAN ARCHIPELAGO [Total = (a) + (b)]	2	4	4	8	10	6
Commonwealth of the Northern Mariana Islands	13	8	11	4	6	8
Guam	*	*	2	*	4	1
American Samoa	*	*	*	*	*	*
U.S. Possessions+	1	*	5	2	11	4
TOTAL = WESTERN PACIFIC REGION	16	12	22	15	31	19

* = < 0.5 MT.

6.11 Foreign Drift-Gillnet Fisheries

6.11.1 Description of Vessels, Gear and Species Landed

A drift-gillnet fishery for billfish and tuna began in 1972 off the coast of Japan. In addition to striped marlin and swordfish, the principal species taken in this fishery include yellowfin, albacore, and skipjack tuna, sharks, and some mahimahi. From the very beginning, this fishery was faced with considerable opposition from skipjack tuna pole-and-line fishermen, from fishermen who jig for squid, and from Japanese fishermen engaged in coastal fisheries. The opposition against drift-gillnet fishing stems from the method's adverse effect on fishery resources due to the gear's high efficiency and non-selectivity of species taken. It has been reported that the number of billfish that appear off Japan during the summer months of each year declined considerable by the late 1970's compared to years prior to when the fishery first started in 1972 (Suisan Sekai, February 1978).

The fishery gradually expanded eastward during the late 1970's and early 1980's, and it now stretches into the Pacific as far east as Hawaii. The fishery is not conducted in the FCZ of the Hawaiian islands but just north of the FCZ boundary. Coast Guard patrols in recent years have indicated a rise in foreign fishing activity during the spring months just beyond the border of the FCZ northwest of Kure Atoll. The majority of the Coast Guard sightings of fishing vessels during these months were foreign gillnetters. In March of 1983, the Coast Guard apprehended a 140 foot Japanese gillnetter hauling in a net approximately 20 miles inside the FCZ near Hancock Seamount. The vessel's catch was composed of 57 striped marlin, 12 swordfish, 401 mahimahi, 872 albacore tuna, 2,191 skipjack tuna, 659 pomfret, 152 amberjack, 32 sharks, 23 bigeye tuna, 682 squid, and 2 longnose tuna (probably billfish). The vessel's catch log also indicated that 69 porpoises were caught outside of the FCZ and they were not retained. The vessel was fishing for 29 days.

During August 4 to September 25, 1983, the Honolulu Laboratory of the NMFS undertook a research cruise in an area north of the U.S. FCZ near the NWHI to gather information on the abundance and distribution of species of squid. Fourteen stations were fished with surface gillnets. The catch from this exploratory fishing experiment consisted of 55 squid, 350 skipjack tuna, 5 albacore tuna, 23 mahimahi, 1 kahala (amberjack), and 4 sharks (NMFS Honolulu Laboratory Cruise Report, 83-03 (TC-103), October 12, 1983). It is evident that drift-gillnet fishing can result in a hodgepodge of species taken. Incidental catches can at times exceed the catch of the target species.

6.11.2 Fishing Effort

In 1981, there were 559 Japanese vessels of more than 10 gross tons engaged in surface gillnetting for billfish and tuna (Table 6.12). The size of these boats varies considerable but most of them are between 60 to 100 gross tons (Japan Fisheries Agency, March 1982). There is no information available regarding the number of vessels of other nationalities engaged in surface gillnet fisheries for pelagic finfish species. However, Taiwanese vessels are engaged in this fishery. There is a large drift-gillnet fishery for squid undertaken by Japanese and Taiwanese vessels in the north Pacific. However, this fishery is generally conducted north of 40°N latitude in waters that are too cool for most, but not all, of the management unit species.

In the drift-gillnet fishery for billfish and tuna, casting of the net normally begins at around 5 p.m. The net is cast from the stern while the vessel cuts across the prevailing sea currents. It takes 2 to 3 hours to finish casting the net which is set in a straight line not to exceed 12 km according to regulations of the Japanese government. Hauling in the net starts at around 1 a.m. of the following day and finishes at around 7 in the morning. The height of the net is 8 to 10 m (26 to 33 ft.). Mesh size in this fishery is generally 17 to 18 cm (approximately 7 inches). The drift-gillnet fishery for billfish and tuna is seasonal in that most of the vessels are also engaged in other types of fisheries. A majority of the vessels make one fishing trip per year, generally not exceeding 100 days.

6.11.3 Catches

Table 6.12 shows the number of Japanese vessels engaged in the drift-gillnet fishery for billfish and tunas, and the amounts and species categories of their catches for 1973-81. The species composition of the catch varies considerably from year-to-year. The proportion of marlin to the total catch ranged from a high of 74% in 1975 to a low of 22% in 1981. The catch of "incidental" species (other category) ranged from a high of 54% of the total catch in 1980 to a low of 17% in 1981.

Albacore tuna and swordfish are target species for gillnet vessels operating in the cooler waters of the north Pacific. Further south, the target species are the marlins and skipjack and yellowfin tuna which migrate in warm surface currents of the tropical Pacific. It is not known exactly which species constitute the "other" category of the annual catches shown in Table 6.12.

TABLE 6.12

NUMBER OF JAPANESE VESSELS AND CATCHES BY GROUPS OF SPECIES IN THE DRIFT-GILLNET FISHERY FOR BILLFISH AND TUNA, 1973-1981

Year	Number of Boats Engaged in Fishing Operations	Catch (MT) By Species				
		Marlins	Tunas	Skipjack (Bonitos)	Other	Total
1973	501	5,239	220	429	2,595	8,483
1974	380	5,079	587	370	2,022	8,057
1975	351	11,432	780	469	2,711	15,394
1976	396	8,912	2,168	708	5,019	16,807
1977	314	8,851	2,558	1,377	5,937	18,723
1978	292	10,050	6,582	1,965	6,904	25,501
1979	394	4,986	5,388	1,014	12,683	24,071
1980	457	8,050	6,049	1,273	17,777	33,149
1981	559	7,524	17,585	2,828	5,599	33,536

SOURCE: Japanese Fisheries Agency, "Marlin and Others Drift-Gillnet Fishery", prepared for the International North Pacific Fisheries Commission, March 12, 1982, unpublished report.

6.12 Foreign Purse Seine Fisheries

6.12.1 Description of Vessels, Gear and Species Landed

The western Pacific has become a principal area of fishing for yellowfin and skipjack tuna by purse seine vessels of many nationalities (Table 6.13). Although the growth of the tuna purse seine fishery in the western Pacific has been great in recent years, there has been no foreign purse seine fishing in the FCZ of the Western Pacific Region to the best

of the Council's knowledge. The Council has, however, been made aware of a Japanese fishing company's inquiry to the State Department to do test fishing in the FCZ between the main Hawaiian islands and Midway Island using both pole-and-line and purse seine vessels.

TABLE 6.13

ESTIMATED NUMBER AND NATIONALITY OF TUNA PURSE SEINERS OPERATING IN THE WESTERN PACIFIC, 1984

Nationality	Number
United States	65
Japan	32
Korea	11
New Zealand	7
Taiwan	6
Philippines	50
U.S.S.R.	7
Solomon Islands	1
Fiji	2
Indonesia	1
TOTAL	182

SOURCE: NMFS, American Samoa Fisheries Workshop, May 14-15, 1984.

The United States is the undisputed leader in the tuna purse seine fisheries in the central and western Pacific. U.S. seiners are the largest vessels in the international fleet of seiners presently operating in the area. They range in size form 1,200 to 2,000 tons in carrying capacity. Japan's distant-water tuna purse seine fleet is smaller both in the average size of vessels and in the number of vessels operating in the western Pacific. The Japan Fisheries Agency has established a size limit of 500 tons on the nation's purse seiners operating in the so called "southern waters" of the western Pacfic Ocean. The Philippines has 50 or so purse seiners, most of which are relatively small vessels operating in the coastal waters of the Sulu Sea. There are about 11 purse seiners from Korea and 6 purse seiners from Taiwan operating in the tuna grounds of the western Pacific. The catches made by the Korean and Taiwanese vessels are not large compared to the catches made by U.S. and Japanese vessels, but since the Korean and Taiwanese tuna purse seine fisheries have the strong support of their government, their growth can

be expected to increase in the future. New Zealand and the U.S.S.R. each has seven purse seiners operating in the western Pacific, and several island nations have begun to make investments in purse seine vessels. Despite the accelerted pace of purse seine fishing activity in the south and western pacific by many nations, tuna fishing grounds in international waters are actually quite limited reflecting the restrictive nature of 200-mile exclusive economic zones recently declared by the numerous coastal and island nations in the area.

6.12.2 Catches

In 1982, the estimated catch of skipjack and yellowfin tuna made by purse seiners of all nations in the western Pacific was approximately 200,000 tons. This volume equalled the volume of tuna catches made by purse seiners in the traditional grounds of the eastern Pacific. Industry trade journals estimated that a catch of 300,000 tons was made in 1983, for the first time exceeding the catch of the multi-national purse seine fleet operating in the eastern Pacific by some 100,000 tons for the year. Purse seine landings of tuna reached 370,000 tons in 1984, and overall increase of 310 percent compared to 90,000 tons landed in 1980 (Doulman, 1985). Even such levels of catch are not necessarily impressive considering that the South Pacific Commission has estimated the standing stock of skipjack tuna in the southern and western Pacific to be between 2.4 and 3.7 million metric tons.

In view of the apparent abundance of skipjack tuna in the western Pacific, catches made by purse seiners in the area are composed of a surprisingly high proportion of yellowfin tuna. In 1982, the species composition of the tuna catch made by American purse seiners was 51% yellowfin tuna and 49% skipjack tuna. During the same year, the tuna catch made by Japanese purse seiners was 32% yellowfin tuna, 67% skipjack tuna, and 1% bigeye tuna (Table 6.14). The catch ratio between skipjack and yellowfin tuna made on purse seine gear in these years appears to be not in proportion to the apparent abundance of yellowfin tuna in the area.

The incidental catch of billfish, mahimahi, wahoo, rainbow runner, sharks and other miscellaneous species made by Japanese purse seiners is listed in Table 6.14 under the "others" category for the years 1973-1982. The volume of incidental catches has ranged from a low of 0.31% of the total catch to a high of 1.70%, averaging around 1% of the total catch for the entire period. There is very limited information on incidental catches made by American purse seiners. While catches of the management unit species made by purse seiners are small relative to their tuna catches, the absolute quantities of the management unit species taken by purse seiners can be quite large since total catches of purse seiners can be very large relative to island standards.

TABLE 6.14

SPECIES COMPOSITION OF CATCHES (TONS) MADE
IN THE JAPANESE SOUTHERN-WATER PURSE SEINE FISHERY, 1973-1982

Year	Number of Vessels	Total Catch	Species				"Others" As A Percent Of Total Catch (%)
			Skipjack Tuna	Yellowfin Tuna	Bigeye Tuna	Others	
1973	6	1,521	1,087	367	56	11	0.72
1974	7	3,392	2,437	728	208	19	0.56
1975	7	5,549	3,916	1,360	209	64	1.15
1976	10	13,776	10,209	3,246	277	44	0.31
1977	12	23,841	17,010	6,460	158	213	0.89
1978	13	28,815	20,712	6,962	651	490	1.70
1979	14	37,066	25,541	10,712	437	376	1.01
1980	13	39,741	28,439	10,059	933	310	0.78
1981	23	54,195	33,922	19,399	677	197	0.36
1982	32	(80,000)	(53,700)	(25,000)	(1,000)	(300)	0.31

NOTE: Data for 1982 in parentheses are estimated values. All data from Japan Fisheries Agency.

FROM: Mitsue Iizuka and Yoh Watanabe, "Present Status and Problems in the Southern-Water Purse Seine Fishery, Japan Marine Fishery Resource Research Center, February 1983. Translated from the Japanese by Tamio Otsu, NMFS, Honolulu Laboratory, July 1983.

6.13 Domestic Longline Fisheries

6.13.1 Description of Vessels, Gear and Species Landed

The number of vessels declared on State of Hawaii commercial fishing licenses to be in the tuna longline (flagline) fishery declined substantially during the past three decades, 1950 through 1980. Records kept by the Hawaii Division of Aquatic Resources (HDAR) indicate that there were 76 vessels in the fishery in 1950, 38 in 1960, and 22 in 1980 (Table 6.15). Since 1980, however, a major reversal in the longstanding declining trend in the number of vessels engaged in the longline fishery became evident. The number of fishing licenses declared for the longline fishery increased by nearly 50% since 1980. Observations of the principal harbors on Oahu in 1984 by the staff of the Honolulu Laboratory of the NMFS indicated that at least 37 vessels were engaged in tuna longline fishing during the year. Some discrepancy has been noted between the official number of vessels declared to be in the fishery and those actually observed in the fishery. The discrepancy is a consequence of

TABLE 6.15

NUMBER OF VESSELS IN HAWAII LICENSED AS LONGLINERS, BY ISLAND, 1948-1983

Year	Oahu	Hawaii	Kauai	Total
1948	27	30	2	59
1949	29	42	2	73
1950	30	42	4	76
1951	31	32	4	67
1952	31	21	4	56
1953	35	20	3	58
1954	31	20	3	54
1955	33	17	2	52
1956	33	16	2	51
1957	33	14	2	49
1958	31	12	1	44
1959	27	12	2	41
1960	27	10	1	38
1961	25	9	2	36
1962	25	9	1	35
1963	24	7	1	32
1964	24	7	-	31
1965	24	6	-	30
1966	23	5	-	28
1967	21	5	-	26
1968	19	3	-	22
1969	19	4	-	23
1970	20	4	-	24
1971	20	3	-	23
1972	19	4	-	23
1973	17	2	-	19
1974	16	2	-	18
1975	15	2	-	17
1976	15	2	-	17
1977	15	3	-	18
1978	16	4	-	20
1979	16	2	-	18
1980	19	3	-	22
1981	21	4	-	25
1982	23	4	-	27
1983	27	4	1	32

SOURCE: State of Hawaii, Department of Land and Natural Resources, Division of Aquatic Resources, unpublished records.

the fishing license registration process. Many new boats have entered the Hawaii longline fishery in recent years, mostly from the West Coast and Alaska. But on the commercial fishing license forms these boats declare themselves to be general-purpose, or trolling, or bottom fishing vessels. Many of these vessels participate in the tuna longline fishery on a seasonal basis, and switch to the other fisheries at other times of the year.

One domestic tuna longline vessel has been operating in American Samoa since 1983. The vessel has targeted primarily on albacore tuna and has landed its catch at the local tuna canneries there.

Three domestic longline vessels used to operate in Guam (Guam Fisheries Development and Management Plan, Sept. 1980) but have since ceased their operations. The Pacific Fisheries Development Foundation, however, has supported an exploratory longline fishing project in Guam waters. The catch rate for the vessel involved in this project during 1983 was 4.57 fish caught per 100 hooks set. The catch was composed of 21 different species, most of which were mahimahi, yellowfin tuna, and sharks of five different species. Small amounts of marlin, swordfish, and wahoo were also caught.

The composition of the fleet of longline vessels in Hawaii is quite different now from that of five years ago, when most of the vessels in the fleet were old boats of wooden construction and Hawaii-style, sampan design, generally ranging 30-40 feet (9-12 m) in length. The sharp decline in the number of longline vessels prior to 1980 was in these traditional sampans. The decline was caused by attrition, sinking, and changing to other fisheries. The turnabout in the fishery since 1980 is due mostly to new, part-time entrants to the fishery. Most of the vessels that have entered the fishery are of steel or fiber glass construction and of a general purpose design. These newer vessels are around 80-95 feet (25-30 m) in length. Many of these boats left the albacore trolling fleet on the West Coast or Alaska fisheries and relocated in Hawaii.

In the early years of the fishery, the larger sampans carried a crew of four or five while the smaller boats carried only two or three. At present, the larger boats carry up to seven fishermen and the smaller boats two. The larger vessels have automatic line coilers that greatly reduce manpower requirements. The average for the fleet is five crewmen. The crews are of diverse ethnic origin including Japanese, Korean, Caucasian, Samoan, Hawaiian, and Filipino.

The gear used by the domestic longliners is essentially a scaled-down version of the gear used by foreign longline vessels, and the domestic tuna longline fishery in Hawaii is conducted in a similar way as the distant-water tuna longline fisheries conducted by oriental fleets. The length of the droppers is varied depending on the species of tuna being targeted -- deeper for bigeye tuna, and shallower for yellowfin tuna.

The smaller boats, which lack sophisticated navigational aids generally travel some 15-50 nmi to the fishing grounds, and many fish within sight of land. The larger boats travel farther and sometimes fish much greater distances from shore including over submerged seamounts in the FCZ surrounding the main Hawaiian islands. Some vessels now regularly fish as far away as 600 miles from Honolulu (Paul Bartram, pers. comm.). The length of trip varies from a few days for the smaller vessels to as long as two weeks for some of the larger longliners when they make trips to distant grounds. The older sampan-style vessels use the traditional "baskets" of mainline with lengths of 140-200 fm, which are suspended at intervals with floats. Anywhere from 16 to 60 baskets are set each day with 6 to 13 hooks on branchlines per basket. The number of hooks deployed per set can vary from 100 to over 700. Some of the newer boats employ a stern drum for reeling a continuous mainline of 40 nmi in length with 1,500 hooks. Most of the boats use frozen or salted saury as bait, but some catch mackerel scad and big eye scad for the fresh bait.

6.13.2 Fishing Effort

It has not been possible to derive a dependable measure of fishing effort for Hawaii-based longline vessels for a variety of reasons. The "Flagline Catch Report" (Appendix E) which is used by the HDAR for tabulating the catches made by domestic longline vessels is based on a per trip (day of landing) basis. The number of hooks deployed per set varies considerably from vessel to vessel as does the number of days of fishing done per trip. Moreover, catches and the number of fishing trips taken by the "general purpose" vessels which participate in the tuna longline fishery on a seasonal basis only get recorded under the general commercial catch report category. Finally, a considerable number of longline fishing trips taken are not reported, or are under reported, judging from the large number of vessels which are presently engaged in the fishery and the large volumes of tuna and billfish that are sold through major fish dealers and auctions in Hawaii. Compared to catches reported for previous years, there appears to be considerable under reporting of longline catches in recent years.

The best available information on fishing effort expended by the Hawaii longline fleet was derived through a NMFS-sponsored sample survey of the fleet carried out during 1982 (Lyman, A.L. and Hawaii Opinion, Inc., 1984). The survey estimated that there were 494 fishing trips taken in 1982 lasting an average of 5.9 days per trip. The total number of fishing days was estimated to be 2,915. This estimate of domestic longline effort compares quite favorable to the average level of foreign longline effort (1,950 vessel days) expended in the entire FCZ surrounding the Hawaiian archipelago over 1971-77 (Table 6.3). It should be noted, however, that the average number of hooks deployed per set by foreign longline vessels (about 2,000 hooks) is considerably more than the number of hooks set by the "average" Hawaii longline vessel. Also,

much of the fishing done by local longliners is concentrated in the FCZ of the main Hawaiian islands, while foreign longline effort in the past has been spread throughout the FCZ of both the main Hawaii islands as well as the FCZ of the NWHI.

6.13.3 Catches

The Hawaiian longline fishery targets on bigeye, yellowfin, and albacore tuna, and catches billfish, mahimahi, wahoo, and sharks incidentally (Table 6.6). Two species, yellowfin and bigeye tuna, account for between 70 to 80% of the total catch during any single year. However, major shifts in abundance of yellowfin and bigeye tuna are apparent during some years. The pelagic species in the management unit comprised anywhere from 11 to 25% of the total catch made by domestic longliners from 1978 to 1983, averaging 18.7% of the total longline catch during this period. There appears to be less variability in the composition of the annual longline catches of the management unit species than in the species composition of annual catches of tuna (Table 6.6).

For many years, the tuna longline fishery was the second largest and second most valuable fishery in Hawaii behind the skipjack tuna (aku) pole-and-line fishery. During the mid and late 1970's, the worst period of the fishery's decline, the longline fishery had fallen to fourth behind the skipjack tuna fishery, deepsea handline fishery for bottomfish, and trolling for large pelagic species in terms of the volume and value of commercial landings reported to the HDAR. The total annual reported longline landings of yellowfin, bigeye, and albacore tuna varied from a high of 1,505,800 kg (3,319,700 lb) in 1953 to a low of 280,870 kg (619,200 lb) in 1975. By 1978, only 20 vessels, mostly aging sampans, remained in the fishery, and their reported landings of yellowfin and bigeye tuna for that year dropped even further to some 56,000 kg (123,000 lbs). By comparison, 1982 landings of these two species totalled around 770,000 kg (1.7 million lbs). The landed value of yellowfin and bigeye tuna combined made by longliners jumped from $168,000 in 1978 to at least $3.3 million in 1982 (Western Pacific Fishery Management Council, unpublished data, May 1983). Combined landings of blue marlin and striped marlin made by domestic longliners increased at a similar rate -- from only 7,250 kg (16,000 lbs) in 1978 to over 90,000 kg (200,000 lbs) in 1982. This more-than-tenfold increase in the landings of tuna and billfish by Hawaii's longline fleet since 1980 has not had a depressing effect on market prices due, in large part, to the availability of strong local and export markets. The ex-vessel price for yellowfin tuna averaged only $1.18 per pound in 1978, compared to an average price of about $2.40 per pound received for longline catches of this species in 1982. The average ex-vessel price received for bigeye tuna rose from $2.45 per pound in 1978 to over $3.20 pr pound in 1982. Striped marlin now received $1.60 to $1.75 per pound, on the average, compared to $1.00 per pound five years ago.

The principal product from bigeye and yellowfin tuna, as well as from the smaller marlins, is sashimi. The demand for these species in the fresh form has remained strong, even at the high retail prices ($6.00 per lb. and up) now being charged. The taste for sashimi is shared by Hawaii consumers of all ethnic backgrounds. Undoubtedly, the local market has been strengthened by the large numbers of Japanese tourists who now regularly visit Hawaii and who are used to paying sashimi prices as high or higher at home than in restaurants and hotels in Hawaii. The outlook for additional growth in the local longline fleet appears bright considering that a growing portion of the locally caught tuna and billfish are being air-freighted to markets in Japan and the mainland U.S. for sale to sushi bars and Japanese restaurants. Whereas in the past, Hawaii longline fishermen used to rely entirely on selling to local markets, which can be easily flooded, there are now well-developed export markets where high-quality, fresh sashimi is in great demand. Because of the development of export markets, the Council anticipates that the domestic longline fishery will continue to expand in the forseeable future, as it has done in recent years, and extend its range of operations in the FCZ. Maintaining catches of billfish, mahimahi, wahoo, and even sharks will be critical to making investments in the domestic longline fishery profitable since the management unit species can account for up to 20-25% of the total catch during some years and up to 10-15% of sales revenue. Shark species used to be considered a nuisance catch until quite recently. There is now a growing consumer acceptance and a developing market for sharks in Hawaii. Virtually, every supermarket now sells shark steaks in Hawaii but for prices about $1 to $2 less per pound than for billfish.

6.14 Night Handline Fishery for Tunas

6.14.1 Description of Vessels, Gear and Species Landed

The night handline fishery for tunas was first described in detail by Yuen (1979) and updated by Ikehara (1981). The fishery was developed by fishermen operating out of Hilo on the southeast coast of the island of Hawaii. The local name of the fishery consists of two Japanese words, "ika" meaning squid and "shibi" referring to the big species of tuna. Ika-shibi fishing consists basically of attracting squid with a night light, catching them with jigs or gaffs, then using the squid as bait on simple hangline gear to catch tuna. The fishery targets on yellowfin, bigeye, and albacore tuna, but also catches considerable numbers of the pelagic species in the management unit.

The fishing grounds off Hilo are characterized by a marked increase in slope of the bottom beyond the edge of the insular shelf at depths of around 1,200 ft. The fishery also occurs off the South Point of Hawaii and has spread to the island of Kauai in recent years. The

fishery is relatively easy to enter because of the low capital and operating costs and the high productivity of the fishing method during years of high tuna abundance in waters relatively close to shore which are within reach of small boats. A wide assortment of boats is used in this fishery. These range from 20-ft fiberglass skiffs to a 60-ft boat that fishes longlines during the off season. Handline vessels have a mean length of 24 feet, and most of them range from 22 to 28 feet in length.

Attempts have been made to establish a night handline fishery for tuna in Guam, but they have not succeeded.

6.14.2 Fishing Effort

Prior to 1985, there was no seperate category for the ika-shibi fishery in the commercial catch and fishing trip reports maintained by the HDAR. Instead, night handline fishing trips and catches were reported in the "deep-sea handline" category. Because the deep-sea handline category also includes catch by fishing trip for the bottomfish handline fisheries as well as for the day handline fishery for tunas, it was very difficult to seperate out ika-shibi fishing trips and catches from the general deep-sea handline category. Furthermore, the ika-shibi fishery is composed of a considerable number of part-time and/or non-commercial fishermen as well as full-time fishermen. While the non-commercial fishermen may sell all or part of their catch to offset their costs, they do not typically engage in intensive fishing or fish on a regular basis. The catch of part-time, quasi-commercial fishermen can, nontheless, be quite significant when viewed in the aggregate. The hypothesis that the general class of "deep-sea handline" fishermen is composed of many part-time and/or non-commercial fishermen was supported by survey data (1982-83) which indicated that 56% of the "handline" respondents did not consider fishing to be their primary occupation and 59% had another occupation (Lyman, A.L. and Hawaii Opinion, Inc., 1984). However, limited response to many of the survey questions and the failure to explicitly query the ika-shibi and day handline fisheries for tuna, limited the usefulness of the survey's results. The factors cited above are responsible for the lack of better data on fishing effort in the ika-shibi fishery other than the surveys by Yuen and Ikehara which indicated that the fishery grew from 30-40 boats in 1976 to at least 230 boats by 1980. While being very general indicators of fishing effort in the ika-shibi fishery, these statistics are, nevertheless, the best and the most recent statistics available at this time.

6.14.3 Catches

The weight and value of the tuna catch of the night handline fishery for 1973-75 were reported by Yuen. Since his study was limited to tunas, no catch estimates were made for catches of the management unit species for these years. Ikehara, however, updated Yuen's study by including catch and ex-vessel value statistics for 1980, not only for species of tuna but for each of the management unit species as well (Table 6.16).

TABLE 6.16

WEIGHT AND EX-VESSEL VALUE OF THE CATCH
OF THE NIGHT HANDLINE FISHERY, 1973-75 AND 1980

Species	Weight (Metric Tons)				Ex-Vessel Value (1,000 U.S.$)			
	* 1973	* 1974	* 1975	+ 1980	* 1973	* 1974	* 1975	+ 1980
Bigeye Tuna	65.4	120.2	63.1	29.3	102.6	249.8	149.5	108.6
Yellowfin Tuna	23.3	22.9	75.5	814.9	38.0	38.4	157.0	2,618.9
Albacore Tuna	0.4	0.2	16.1	43.6	0.5	0.2	21.0	71.4
ALL TUNAS	89.1	143.2	154.6	887.8	141.1	288.2	327.5	2,798.9
Swordfish				19.7				58.5
Blue Marlin				6.2				7.8
Striped Marlin				2.6				7.1
Sailfish				0.1				0.4
Shortbill Spearfish				**				0.1
Mahimahi				6.7				33.3
ALL MANAGEMENT UNIT SPECIES				35.3				107.2

* = Data from Yuen (1979)
\+ = Data from Ikehara (1981)
** = < 0.1 mt

The landings of all species of tuna made by the ika-shibi fleet amounted to 155 metric tons in 1975 valued at $327,500 for the Hilo segment of the fishery. In 1980, tuna landings by ika-shibi fishermen on the islands of Hawaii and Kauai combined jumped to nearly 890 metric tons

valued (ex-vessel) at nearly $2.8 million. The total weight of tunas caught in 1980 was almost six times larger than that for 1975, and the ex-vessel revenues for tunas increased almost ten-fold. The management unit species added about $110,000 to the 1980 sales revenues of ika-shibi fishermen. The management unit species accounted for about 4% of the total catch of the ika-shibi fleet during 1980 and close to 4% of the sales revenues as well. Swordfish were the largest and most valuable component of the 1980 landings of the management unit species, followed by mahimahi and blue and striped marlin.

6.15 Day Handline Fishery for Tunas

6.15.1 Description of Vessels, Gear and Species Landed

An ancient Hawaiian method of fishing for tuna has been revitalized in recent years. The local name of the fishery consists of two Hawaiian words, "palu" meaning chum and "ahi" referring to large species of tuna. Unlike the ika-shibi fishery which is carried out at night with freshly caught or frozen squid for bait, the palu-ahi fishery is carried out during daylight hours with freshly caught mackeral scad (opelu) being the preferred bait. The palu-ahi handline techinque (also known locally as "drop-stone") involves the use of a stone sinker which takes a baited hook attached to a handline down to a depth of 75-150 ft. A leader with a baited hook is wrapped around a flat stone which is covered with pieces of cut bait ("palu") and is tied with a slip knot. The rock, baited hook, and chum, all bundled together with the leader line, are dropped over the side of the boat, and when the bundle reaches the desired depth, the line is jerked to release the knot spreading the chum and exposing the baited hook. The idea is to attract nearby fish in the area, hopefully causing a feeding frenzy and enhance the possibility of a catch by the use of chum.

Palu-ahi fishing is normally carried out in areas where tuna are known to aggregate during certain times of the year. The Hawaiian word "koa" is applied to certain spots in the deep sea where yellowfin and bigeye tuna or large albacore tuna congregate close to shore. These places are called ahi koas. The palu-ahi fishery is mostly conducted off the leeward (Kona) coast of the island of Hawaii and is made up of small to medium-sized boats, each usually fishing two to three lines. Most of the vessels are powered by gasoline outboard or inboard/outboard engines. Some of the larger vessels have diesel power units. The boats are mostly trailerable, enabling them to move rapidly to a boat landing nearest to reported concentrations of fish.

6.15.2 Fishing Effort

Lyman (1984) made reference to an estimated 100 full and part-time fishermen who used the palu-ahi method of fishing on a regular basis in 1979. Recent dependable estimates of the number of vessels in the palu-ahi fishery are not available, and general numeric information on the fishery itself is lacking since no surveys, specific to this fishery, have ever been conducted. Entry to the fishery is comparatively easy since it requires only a small vessel, simple gear, and one or two fishermen per boat. Expansion of the palu-ahi fishery seemingly would require discovery of additional ahi koas which are reasonably close to ports or boat launches. Artificial ahi koas, however, are being created by State of Hawaii deployment of fish aggregation devices, or FADs as they are popularly known. There are 48 FAD sites in existence in Hawaii at present. The number of fishing trips taken and catches of tuna and the management unit species made on handlines can be expected to increase in the future in response to the deployment of FADs in State waters and in the adjacent waters of the FCZ.

6.15.3 Catches

As with the ika-shibi fishery, a wide variety of pelagic species are caught in the day handline fishery for tunas. Because there is no separate classification for the palu-ahi fishery in the commercial catch reports maintained by the HDAR, reported catches of pelagic species were extracted from summaries of the "deepsea handline" and "inshore handline" categories for 1979 and 1982. This, in effect, is a combination of catches made in the palu-ahi and ika-shibi fisheries. Table 6.17 indicates that yellowfin tuna clearly dominate the catch of handline fishermen, distantly followed by mahimahi, wahoo, swordfish and blue marlin. The management unit species accounted for 7.3% of the catch of handline fishermen in 1979, and 7.7% of their sales revenue. In 1982, the management unit species made up 11.8% of total handline catches (by weight) and 14.7% of the sales revenue of commercial handline fishermen (Department of Land and Natural Resources, 1985).

TABLE 6.17

SPECIES COMPOSITION OF THE CATCH
IN THE HAWAII TUNA HANDLINE FISHERIES, 1979 AND 1982
(Percent of Reported Commercial Landings)

Species	1979 539,035 kg (1,188,348 lbs)	1982 599,153 kg (1,318,302 lbs)
Yellowfin Tuna	87.88%	78.94%
Bigeye Tuna	2.11	0.59
Albacore Tuna	0.73	7.85
Skipjack Tuna	1.32	0.83
Kawakawa	0.57	-
Tuna (unclassified)	-	0.03
ALL TUNAS	92.7 % ======	88.2 % ======
Blue Marlin	1.24%	2.24%
Striped Marlin	0.56	0.17
Black Marlin	0.16	0.10
Swordfish	1.30	2.48
Shortbill Spearfish	0.04	0.05
Sailfish	0.02	-
Mahimahi	1.99	3.24
Wahoo	1.96	3.18
Shark (unclassified)	0.02	0.37
ALL MANAGEMENT UNIT SPECIES	7.3 % =====	11.8 % ======

SOURCE: HDAR data on reported catches of licensed commercial fishermen.

EXTRACTED FROM: Tables 4.7 and 4.8. Hawaii Fisheries Plan, 1985. Department of Land and Natural Resources, Feb. 1986.

6.16 Charter Sport Fishing

6.16.1 Description of Vessels, Gear and Species Landed

There were 102 charter sport fishing boats operating in Hawaii in 1976 (Cooper and Adams, 1978), and 119 charter vessels operating out of all major ports in Hawaii during 1982 (Samples, et. al., 1984). Charter fishing vessels range from 20 to 59 feet in length, averaging 40 ft. Most of them are equipped with an inboard diesel engine and have accommodations for crew plus up to six passengers. Charter fishing vessels in Hawaii range in age from brand new to 35 years of age, and the overall statewide average age is 11 years. A number of the older charter vessels are of a type called "haole sampans", with wooden hulls of a typical sampan design but interior arrangements of conventional cabin motor cruisers. The newer boats are mostly standard fiberglass sport-fishing types brought in from mainland builders. Big game sportfishing rods and reels are used with 4 to 6 lines trolled at any time with the use of outriggers. Both artificial and natural baits are used. Freshly-caught skipjack and small yellowfin tuna are popular live baits which are specially rigged by many charter skippers in Hawaii to catch marlin and large yellowfin tuna.

Currently, there are six vessels in American Samoa which hire out for sportfishing. Ten vessels operate as sportfishing charter boats in Guam at present. These boats are available for half or full-day charters which run almost exclusively during daytime hours. The vast majority of the offshore fishing boats in Guam are not designed to accommodate overnight or multi-day trips to the major fishing grounds. While nearly all of the vessels over 24 feet in length are equipped with VHF radios and depth recording devices, approximately 75% of the smaller boats carry CB radios, and only about half of the latter possess depth sounders. Ten vessels operate as sportfishing charter boats in Guam at present.

The principal target species for sportfishing charter boats in Hawaii, Guam, and Samoa are marlin, but yellowfin tuna provide the greatest share of the revenues generated from fish sales for the charter fleet as a whole in Hawaii. Mahimahi, skipjack tuna, and yellowfin tuna produce the biggest share of fish sales revenue for charter vessels in Guam and American Samoa.

6.16.2 Fishing Effort

It has been estimated that the 102 charter boats operating in Hawaii in 1976 each made 123 trips that year, on the average. The total number of charter fishing trips made during 1976 in the State of Hawaii

was put at 12,500 trips, carrying about 47,000 passengers, averaging 3.8 passengers per trip (Research Associates, Inc. 1977). During 1982, the fleet of 110 charter vessels in Hawaii each made an average of 155 trips that year. The fleet as a whole "produced" 18,600 fishing trips carrying 73,780 pasengers, and averaging nearly 4.0 passengers per trip (Samples, et. al., 1984). Overall, there was an increase of 6,100 fishing trips taken between 1976 and 1982, a very significant gain in charter fishing effort of 48.8%.

While there has been a definite increase in the capacity of the fleet (102 vessels vs. 120 vessels) and in the fleet's overall activity (12,500 trips vs. 18,600 trips), there has not been a corresponding increase in profits. The industry is highly competitive and overcapitalized. Samples found significant over-capacity in the industry in Hawaii with most captains fishing approximately half as many days as they would like, with slightly over half of the charter boats studied losing money during 1982. Although about one half of the vessels suffered losses in 1982, the other half of the vessels which operated on a regular basis made positive net returns.

Samples projected steady growth in sales for the industry as a whole as tourism continues to grow. In 1982, a large majority (71%) of passenger trips were purchased by non-residents of Hawaii. The State of Hawaii expects tourism to grow steadily through the next twenty years with a near doubling of visitor arrivals to Hawaii. This might also mean a near doubling of the number of fishing trips taken by sportfishing vessels by the year 2,000. Samples concluded that "taken together, supply and demand projections indicate a fairly steady growth in sales by the charter fishing industry. Expansion of the fleet is also likely, as long as adequate catch rates are maintained". Samples also noted that the market for used charter boats is quite good, with owners usually making capital gains on the sale of their vessel. This also suggest further expansion in the fleet unless investment conditions and tax laws change.

Similarly, the expansion of tourism in Guam and American Samoa suggests that the market for charter fishing can be further developed in these areas.

6.16.3 Catches

Estimate levels of catches and the species composition of the catches made by charter sportfishing boats in Hawaii during 1976 and 1982 are shown in Table 6.18. Unlike the commercial fisheries where tunas dominate the catches, the management unit species make up over two-thirds of the catches of the sportfishing charter fleet (in terms of weight) in Hawaii. Blue marlin alone accounted for 40-55% of the total weight of the charter fleet's annual landings during 1976 and 1982. The fleet

caught an average of 30 blue marlin per vessel in 1982, with the marlin averaging 225 pounds per fish. Skipjack tuna were the most frequently caught species, accounting for 53% of the total number of fish caught (all species combined) in 1982. Yellowfin tuna led all species in terms of charter boat revenues from fish sales (42%), followed by blue marlin (22%), mahimahi (8%), shark (7%), and 6% for wahoo (Samples, 1984). The total fish catch by the charter fishing fleet was about 2.2 million pounds in 1982. This quantity represents around 15% of the reported commercial fish landings for Hawaii during 1982.

Estimates of catches made by charter sportfishing vessels in Guam and American Samoa are not available.

TABLE 6.18

TOTAL CATCH AND SPECIES COMPOSITION OF THE CATCH OF SPORTFISHING CHARTER VESSELS IN HAWAII, 1976 AND 1982
(Percent Of The Total Catch By Species)

Species	1976+ 102 Vessels Caught 629,663 kg (1,338,155 lbs)	1982* 119 Vessels Caught 1,007,863 kg (2,221,920 lbs)	1982* Average Number of Fish Caught Per Vessel (402)	1982+ Percent of Total Number of Fish Caught
Blue & Black Marlin	54.33%	39.43%	32	7.97%
Striped Marlin	2.89	3.05	8	2.00
Shortbill Spearfish & Sailfish	1.13	1.79	8	2.00
Mahimahi	4.82	3.09	44	10.95
Wahoo	7.58	2.80	28	6.97
Sharks	-	15.77	8	2.00
ALL MANAGEMENT UNIT SPECIES	70.7 %	66.0 %	128	31.9 %
Yellowfin Tuna	22.58%	27.05%	53	13.19%
Skipjack Tuna	6.71	6.09	161	40.05
ALL TUNAS	29.3 %	33.0 %	214	53.2 %
Miscellaneous Species 1/	- %	1.0 %	60 2/	14.9 %

+ = Data from Cooper and Adams (1978)
* = Data from Samples, et. al., (1984)
1/ = 4 Jacks, 2 Barracuda, and 54 bottomfish = 60 fish

6.16.4 Changes in the Fishery

Table 6.19 presents summary data on changes in sport fishing charter activities in Hawaii between 1976 and 1982. The charter fishing fleet in Hawaii increased in size by 17.7% during this period. The average charter vessel in the fleet made 26% more "for hire" fishing trips in 1982 than it did in 1976. The average vessel caught 36% more fish (in terms of weight) in 1982 compared to 1976, and 27% more (weight) of the management unit species were caught. On the average, a typical charter boat caught 110.6 lbs of fish per trip taken in 1976 and 119.5 lbs per trip in 1982, an increase in the catch rate of 8%. The catch rate of the management unit species (all species combined) also improved but very slightly, 78.2 lbs per trip in 1976 to 78.8 lbs in 1982.

Overall, there was quite a bit more activity in the charter fishing business in Hawaii during 1982 than there was in 1976, even though the catch rate for the management unit species stayed virtually unchanged. Samples has projected a steady growth in fishing trip sales for the charter fishing industry in Hawaii in response to increased demand by both resident and non-resident anglers. Additions to the fleet's size will accompany the growth in the demand for the services that charter boats provide. Continued growth in the industry will create additional jobs, income and induce sales impact in other sectors of the local economies. Yet, all of this will occur in a financial environment that leaves a sizeable portion of the boats in the fleet unable to make an after-tax profit. Sales of fish that are not kept by customers accounted for over a quarter of the sales revenue of charter boats from all sources in 1983 (Samples, et. al., 1984). The industry made around $6 million from charter fishing fees in 1982. Maintenance of the catch rates of the management unit species is extremely important to the marketability of charter boat services and to the revenues derived from the sale of freshly-caught fish.

The number of charter fishing vessels nearly doubled in Guam from 1980 to 1985. In American Samoa, the number of charter vessels jumped from two in 1980 to six in 1985.

TABLE 6.19

CHANGES IN THE HAWAII CHARTER SPORTFISHING FISHERY, 1976-1982

Charter Fishing Vessel Description	1976+	1982*	Percent Change Between 1976 & 1982
Number of Vessels Operating	102	120	17.7
Total Number of Trips Made by the Fleet	12,500	18,600	48.8
Average Number of Trips Taken Per Vessel	123	155	26.0
Averge Catch (All Species) Per Vessel Per Year	6,173 kg (13,609 lb)	8,399 kg (18,516 lb)	36.0
Average Catch (Management Unit Species) Per Vessel Per Year	4,364 kg (9,622 lb)	5,543 kg (12,221 lb)	27.0
Average Catch (All Species) Per Vessel Per Trip	50.2 kg (110.6 lb)	54.2 kg (119.5 lb)	8.0
Averge Catch (Management Unit Species) Per Vessel Per Trip	35.5 kg (78.2 lb)	35.8 kg (78.8 lb)	0.9

+ = Data extracted from Cooper and Adams (1978)
* = Data extracted from Samples, et. al., (1984)

6.17 Commercial Trollers

6.17.1 Description of Vessels, Gear and Species Landed

Hawaii. There are essentially three categories of commercial trolling vessels in Hawaii: (1) large west coast-style trollers originally used in the West Coast and the North Pacific albacore tuna fisheries, (2) medium-sized diesel powered trolling vessels, and (3) small, usually trailerable, boats.

The commercial albacore tuna vessels are divided between those who are transient to Hawaii, only passing through the FCZ to and from the North Pacific albacore tuna grounds, and those who have chosen to become home-ported in Hawaii. The albacore vessels average between 65-85 feet

in length and have a carrying capacity of 30-70 tons. There were 75 of these vessels transiting through the FCZ of Hawaii in 1982, and they usually troll for all of the management unit species and for yellowfin tuna on the numerous banks of the NWHI, especially on the return trip from the North Pacific albacore tuna grounds. Some of these albacore vessels have made very impressive catches of the management unit species, especially wahoo, on the banks of the NWHI (Western Pacific Fishery Management Council, unpublished data). Their sales of high-priced fresh fish have supplemented their sales revenue generated from much greater volumes of cannery-grade albacore. Sixteen albacore vessels are home-ported in Hawaii. These vessels, along with the "home grown" medium-sized vessels (45 feet in length) are commonly engaged in mixed-species fisheries employing trolling when they are not trapping for lobster, fishing for bottomfish, or longlining. They normally troll four to six lines using both artificial lures and fresh natural bait.

Cooper and Adams estimated that there were 160 small commercial trolling vessels in Hawaii in 1976. These vessels ranged anywhere between small outboard motorboats (16 feet in length) to inboard/outboard gasoline and diesel powered boats (25 feet in length). The 1976 survey showed that 80% of commercial troll vessels were in the 20 foot range with an average market value (1984 dollars) of $9,300 for vessels and gear. About 75% of the commercial trolling vessels are trailered. These vessels use two or three rods and reels which are often supplemented by handlines. Both natural bait and artificial lures are used.

American Samoa. At present, there are 49 domestic vessels home-ported in American Samoa, including the Manua islands, which are engaged in full-time and part-time commercial fishing. Most of these vessels are engaged in multi-species, mix-gear fisheries. The commercial fishing fleet is composed of: 6 large fiberglass vessels in the 40-50 ft range; 8 fiberglass catamarans in the 28-32 ft range; 30 twin hull plywood/aluminum catamarans locally called alias in the 26-28 ft range; and 5 single hull vessels in the 18-26 ft range. Thirty percent of the commercial fishing trips which were monitored by the Office of Marine Resources (OMR) during FY1985 were trolling trips. Ten percent of the commercial fishing trips taken in FY1985 were combination bottomfish/trolling trips.

Guam. As in Samoa, Guam's commercial fisheries are mixed-species and mixed-gear fisheries. There are about 30 vessels in Guam which make commercial landings of pelagic species on a fairly regular basis. The commercial troll fishery in Guam is largely composed of inboard/outboard motorboats in the 18-25 ft range and outboard-powered skiffs equipped with rods and reels and handlines. A few larger inboard vessels are also engaged in commercial troll fishing in Guam.

Commercial trollers in all three areas (Hawaii, American Samoa, and Guam) employ mixed fishing strategies. Some concentrate on large yellowfin tuna (Hawaii), some concentrate on mahimahi and wahoo (Guam), others concentrate on skipjack and yellowfin tuna (Samoa). All concentrate on whatever pelagic species may happen to be available at the time.

6.17.2 Fishing Effort

There are no precise data available on actual levels of fishing effort for the "commercial trolling" sectors of the islands' fisheries. However, there is some general information available which allows speculation on commercial troll fishing activities in recent years.

Hawaii. There were 160 full-time commercial troll vessels in Hawaii in 1976 acording to an estimate derived by Cooper and Adams based on a sample of fishermen in Kailua-Kona, Hawaii, which was extrapolated statewide. It is not known whether the size of the commercial trolling fleet in Hawaii has increased, decreased, or essentially stayed the same. In an 1981 inventory of U.S. - document and State-registered vessels in Hawaii, 1,450 vessels declared themselves to be commercial fishing vessels (Skillman and Louie, 1984). It is not known what portion of these "commercial fishing" vessels were used by full-time fishermen as opposed to part-time commercial fishermen, nor what type of commercial fishing they engaged in. An unknown, but a presumably relatively small fraction of these 1,450 vessels were full-time commercial trollers in 1981. In a 1982, mail survey of fishing vessels in Hawaii, 46% of all (4,765) respondents indicated that trolling and rod and reel were their most important methods of fishing (Skillman, et. al., 1984). Again, it is not known what proportion of the "troller" respondents were full-time commercial fishermen, part-time commercial fishermen, recreational fishermen, or something in between.

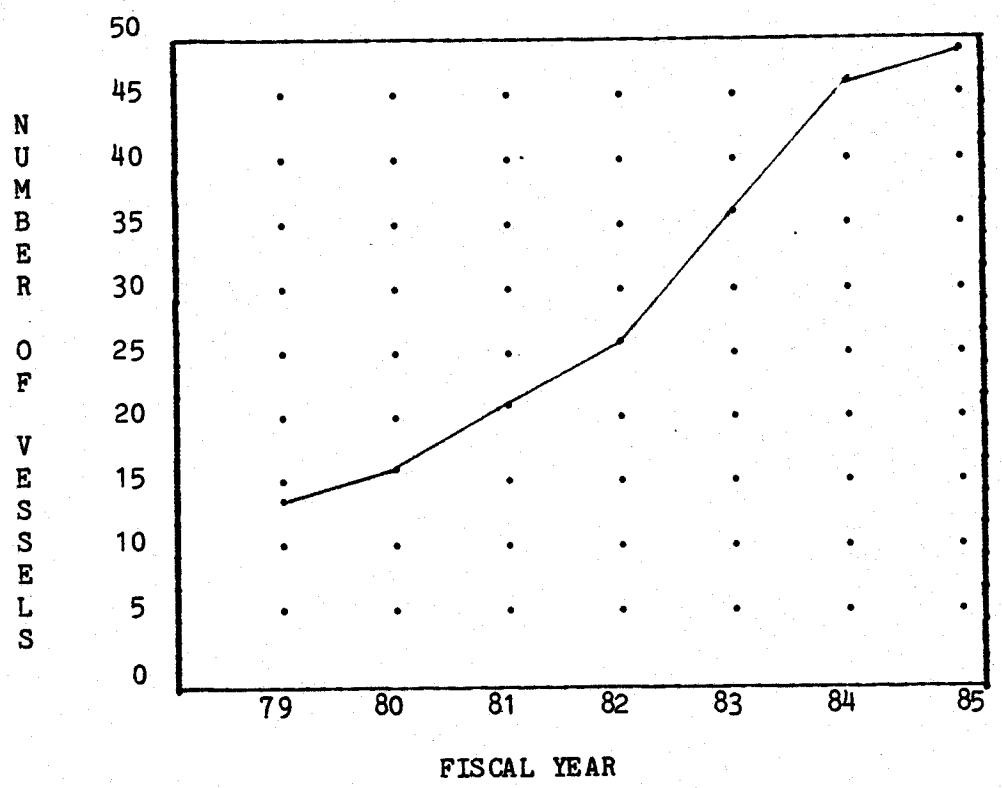
While there is no way to estimate commercial trolling effort for the 1980's relative to 1976, two occurrences suggest that the amount of commercial trolling being done in Hawaii has not increased very greatly since the late 1970's. Rapidly escalating fuel prices in the mid and late 1970's and early 1980's led to a substitution of fuel-saving handline fishing methods (ika-shibi and palu-ahi fisheries) for commercial troll fishing. However, there has been commensurate and considerable growth in market demand for fresh fish, especially for ahi, mahimahi, and wahoo in Hawaii. While rising fuel prices have had the tendancy to lead to less commercial trolling, rising fresh fish prices have probably encouraged more commercial trolling effort. All in all, the amount of commercial trolling being done in Hawaii now is probably somewhat larger than in 1976 since fuel prices have decreased while prices for fresh fish in Hawaii have continued to rise. The deployment of fish aggregating devices (FADs) has also probably induced more trolling during the 1980's than during the past decade.

American Samoa. The OMWR has maintained a manual list of all commercial fishing vessels home based in American Samoa. Figure 6.1 graphically depicts the total number of commercial fishing vessels from FY1974 through FY1985. There were 49 commercial fishing vessels in FY1985 compared to 28 in FY1982 and 12 in FY1979, only seven years ago. The number of domestic commercial fishing vessels home-ported in Samoa

quadrupled in six years from FY1979-FY1985. There was a definite increase in commercal trolling effort during this period but at a rate which is unknown because the OMWR has collected comprehensive catch and effort information from domestic commercial vessels only for recent years. According to data provided by the OMWR, about 43% of the monitored number of fishing trips taken by commercial fishermen during FY1982 were trolling trips, whereas 57% of commercial fishing trips were directed at bottomfish during this year. In FY1985, the share of the fishing trips directed at bottomfish declined to 44% of the total number of commercial fishing trips monitored by OMWR, while trolling trips stayed at about 40% of all commercial fishing trips sampled. The absolute number of commercial trolling fishing trips taken has undoubtedly increased since 1980 because there are so many more commercial fishing vessels in American Samoa now than ever before.

FIGURE 6.1

NUMBER OF DOMESTIC COMMERCIAL FISHING VESSELS
IN AMERICAN SAMOA, FY1979-1985



Source: Office of Marine and Wildlife Resources, American Samoa Government.

Guam, There has been a much greater level of participation in the commercial troll fishery in Guam during the 1980's compared to that of the mid and late 1970's. The number of commercial sales made by Guam fishermen for each of the management unit species and tuna is shown in Table 6.20. The number of sales can be used as a proxy measure of fishing activity (or success) of the commercial trolling fleet in Guam. Each sale does not necessarily mean a seperate trip, as more than one management unit species could have been caught during one trip. These data are biased indicators of fishing effort since they reflect only successful fishing trips that resulted in a sufficient amount of catch to warrant a sale. However biased the data may be, they, nonetheless, are the best and most current measures of fishing effort available for commercial trolling in Guam. Since there are very limited commercial longline or handline fisheries for pelagic species in Guam, virtually all of the reported commercial catches are made by trolling. Oceanic sharks, however, are frequently caught by bottomfishers. During 1984, over 120 boats sold management unit species to two of the major wholesalers in Guam.

TABLE 6.20

NUMBER OF RECORDED COMMERCIAL LANDINGS
OF THE MANAGEMENT UNIT SPECIES IN GUAM, 1980-84

Species	1980	1981	1982	1983	1984
Sharks	0	9	28	44	16
Mahimahi	334	312	452	1,331	435
Marlin	111	142	92	137	183
Sailfish	5	11	4	21	10
Wahoo	258	467	331	757	709
ALL MANAGEMENT UNIT SPECIES (MUS)	708	941	907	2,290	1,353
	===	===	===	=====	=====
Skipjack tuna	369	451	426	675	386
Yellowfin tuna	309	534	461	829	395
Dogtooth tuna	32	39	66	92	56
Unclassified tuna	0	0	9	66	1
ALL TUNAS	710	1,024	962	1,662	838
	===	=====	===	=====	===

6.17.3 Catches

Hawaii. Troll gear is the most important gear type contributing to commercial harvests of the management unit species (Skillman, et. al., 1984). In 1976, commercial trollers in Hawaii landed an estimated 1,326,900 kg (2.9 million lbs) of fish (Table 6.21). The management unit species made up 13% (by weight) of the total catch. Yellowfin tuna alone made up 86% of the total catch of commercial trollers during that year. In 1976, the total revenue derived from the sale of the management unit species was estimated at $256,540 (Cooper and Adams, 1978). If the total supply of the management unit species is the same today, the commercial troll fishery for the management unit species would be worth some $0.5 to $1.0 million in 1984 prices. There has been considerable growth in market demand for the management unit species especially for mahimahi and wahoo. Commercial landings of mahimahi were over 200,000 lbs. in 1984 worth some $600,000. Wahoo landings totaled 220,000 lbs. in 1984 bringing a total ex-vessel value of around $500,000. Not all mahimahi and wahoo is caught by trolling, but most are taken this way. Many part-time commercial and recreational troll fishermen in Hawaii sell fish. Under State law, the right to sell fish in Hawaii simply requires payment of $25 for a "Commercial Marine License" ($50 for non-residents) and monthly reporting of catches and sales.

TABLE 6.21

ESTIMATED CATCHES AND SALES REVENUE
MADE BY FULL-TIME COMMERCIAL TROLLERS IN HAWAII IN 1976

Species	Catch (Kg)	Catch (Lb.)	Percent of Total Catch, (All Species)	Revenue From Sales (1976$s)
Blue & Black Marlin	76,916	169,569	5.8	$ 50,324
Striped Marlin	1,092	2,407	0.1	1,632
Spearfish & Sailfish	4,024	8,871	0.3	3,064
Mahimahi	27,784	61,253	2.1	85,760
Wahoo	62,344	137,444	4.7	115,760
ALL MANAGEMENT UNIT SPECIES	172,160	379,544	13.0	$ 256,540
Yellowfin Tuna	1,144,576	2,523,332	86.2	$2,487,880
Skipjack Tuna	10,164	22,408	0.8	7,880
ALL TUNAS	1,154,740	2,545,740	87.0	$2,495,760
ALL SPECIES	1,326,900	2,925,284	100.0	$2,752,320

SOURCE: Cooper and Adams (1978).

It is not possible to compare commercial troll landings of the management unit species made in recent years to the estimates of commercial troll landings derived by Cooper and Adams for 1976. There is great difficulty in delineating the magnitude of catches of "commercial" trollers in Hawaii. Many commercial license holders in Hawaii do not usually engage in fishing for the primary purpose of sale, but they nonetheless sell excess catches. It is clear, however, that trolling is the primary capture method for reported total landings of mahimahi, wahoo, and blue marlin, and trolling is important for other billfish species as well (Skillman, et. al., 1984). A survey of over 7,000 fishing boat owners in Hawaii (Skillman and Louie, 1984) showed that 27% of the respondents sold some of their catch, 17% sold more than half of their catch, and only 3% reported deriving at least half of their gross income from fishing. If this 3% figure were applied to the total number of fishing boat owners in the State, this would lead to an estimate of 210 "full-time" commercal trollers, a figure not greatly at variance with the size of this group (160 full-time commmercial troll vessels) derived by Cooper and Adams (1978) covering 1976.

American Samoa. The commercial catch of the management unit species in American Samoa in 1984 was estimated at 10,000 pounds (4,500 kg) worth $11,500 (Western Pacific FIN, unpublished data). Table 6.22 shows the species composition of the catch of the management unit species and tuna. An undifferentialed "troll fish" category comprised 10% of commercial landings in 1984. Almost all of the commercial catch of the management unit species is taken by trolling since there are only a few domestic handline vessels in American Samoa and a single longliner which targets on albacore tuna and sells it's catch to the tuna canneries. The troll catch of the management unit species is a part of a much larger mixed catch of skipjack and yellowfin tuna. Tunas and bottomfish dominate commercial landings in American Samoa. The management unit species provided less than 5% of the total commercial catch for all pelagic species combined.

Guam. Table 6.23 shows calendar year summaries of commercial landings of the management unit species and tuna made in Guam during 1980 through 1984 (Western Pacific FIN, unpublished data). These data represent landings made at the Guam Fishermen's Cooperative during 1980-1983. It is estimated that the Coop's landings represent 60-80% of total commercial landings for Guam during these years. Commercial landings for 1984 cover the Guam Fishermen's Cooperative and two other wholesalers representing about 90% of the total commercial landings in Guam. Commercial landings of the management unit species more than tripled between 1980 and 1983 because 1983 was a banner year for mahimahi and wahoo. Unlike in American Samoa where the management unit species make up a marginal portion of the commercial catch of pelagic species, the management unit species make up the majority of the commercial catch in Guam.

TABLE 6.22

ESTIMATED COMMERCIAL LANDINGS OF PELAGIC SPECIES
IN AMERICAN SAMOA, 1984

Species	Catch (lb.)	Catch (kg.)	Percent of Total Catch (All Species)	Ex-Vessel Revenue From Sales
Blue Marlin	5,669	2,571	2.5	$ 4,082
Mahimahi	1,806	819	0.8	2,221
Wahoo	1,636	742	0.7	4,319
Sailfish	988	448	0.4	889
ALL MANAGEMENT UNIT SPECIES (MUS)	10,099	4,580	4.4	$ 11,511
UNDIFFERENTIATED TROLL FISH	23,475	10,648	10.1	$ 18,780
Skipjack Tuna	114,811	52.078	49.5	55,109
Yellowfin Tuna	58,550	26,558	25.2	42,742
Albacore Tuna	20,369	9,239	8.8	15,277
Bigeye Tuna	768	348	0.3	361
Dogtooth Tuna	2,623	1,190	1.1	3,121
Kawakawa	1,404	637	0.6	1,404
ALL TUNAS	198,525	90,050	85.5	$118,014
ALL SPECIES	232,099	105,278	100.0	$148,305

SOURCE: Western Pacific FIN, unpublished data.

TABLE 6.23

COMMERCIAL LANDINGS (KG) OF THE MANAGEMENT UNIT SPECIES (MUS) IN GUAM, 1980-84

Species	1980	1981	1982	1983	1984
Sharks	0 Kg	172 Kg	513 Kg	839 Kg	236 Kg
Mahimahi	11,947	7,049	15,476	44,639	9,225
Marlin	6,615	9,814	6,184	9,475	13,556
Sailfish	119	266	111	664	203
Wahoo	4,822	12,386	6,568	22,529	18,584
TOTAL MUS	23,504 Kg	29,687 Kg	28,853 Kg	78,249 Kg	41,804 Kg
Skipjack Tuna	8,639	13,380	13,782	13,678	13,782
Yellowfin Tuna	6,685	12,830	13,936	19,145	13,936
Dogtooth Tuna	419	930	1,068	1,839	1,068
Undifferentiated Tuna	0	0	176	1,242	176
ALL TUNAS	15,743 Kg	27,140 Kg	28,962 Kg	35,904 Kg	28,962 Kg
ALL SPECIES	39,247 Kg	56,827 Kg	57,815 Kg	114,153 Kg	70,766 Kg

SOURCE: Western Pacific FIN, unpublished data.

6.18 Quasi Commercial, Recreational and Subsistence Trollers

6.18.1 Description of Vessels, Gear and Species Landed

Hawaii. There is every conceivable blend of commercial, recreational and subsistence motivations in the troll fishery in Hawaii. This situation makes it impossible to know exactly what part of the total troll fleet's effort to identify as recreational or subsistence trolling as opposed to commercial trolling. Many fishermen in Hawaii sell some of their catch to help meet trip expenses. In a mail survey of fishing vessel owners in Hawaii, Skillman and Louie (1984) found that 17.4% of the respondents (4,897) sold at least a part of their catch. There are fishermen in Hawaii who sell fish that are surplus to their needs but do not bother to obtain a commercial fishing license or to report their

catches. Others obtain a Hawaii commercial fishing license in anticipation of catching fish in excess of their personal needs, but in fact, deliver little to the market. While many fishermen sell their catch in Hawaii, more apparently do not. Nearly 73% of the respondents to the mail survey of fishing vessel owners in Hawaii claimed that they did not sell any of their catch.

The recreational, subsistence and quasi commercial trollers usually own small boats (15-25 ft), which are trailerable and are similar in most respects to the small boats in the commercial troll fleet. The recreational troll boats are used primarily during weekends and holidays, weather permitting. Many of these boats make up the so-called "mosquito fleet". They are powered by outboard motors, and the larger ones are powered by inboard/outboard drive. The larger recreational fishing vessels, which are moored, make up about 7% of the recreational "blue-water" fishing vessels in Hawaii. Four to six sportfishing rods and reels are used for recreational trolling with artificial lures or natural bait. Although most recreational trolling is done on weekends, some fishermen go fishing more frequently when the market demand for tunas and the management unit species is high. Cooper and Adams (1978) found that nearly 60% of the catch made by weekend fishermen in the Kailua-Kona area of the island of Hawaii was sold during 1976, and much of this catch may have not been recorded in Hawaii's official landing statistics. Recreational troll fishermen catch tunas and all of the management unit species, except swordfish. In Hawaii, virtually all billfish are landed, rather than released. Troll caught fish are used for sale, given away to family and friends, or are retained for personal consumption. Some billfish are mounted. Many tournaments are held in Hawaii each year, either for trophies or for cash prizes. Fishermen who participate in these tournaments either hire charter vessels or use their own private vessels.

American Samoa. Until quite recently, a purely recreational troll fishery was evidently very minor in American Samoa. The 1979-81 NMFS Marine Recreational Fishing Statistical Survey (MFRSS) found no offshore recreational fishing trip in 1981. Landings of the management unit species by recreational fishermen were neglible. The recreational troll fishing situation, however, has changed since the founding of the Game Fish Association of American Samoa. The Association now sponsors at least four tournaments per year on major holidays in American Samoa. However, catches from "tournament" boats are often sold since most of the tournament entrants are commercial or quasi commercial fishermen.

Guam. In Guam, as in Hawaii, there are no clear cut distinctions between recreational, subsistence and quasi commercial troll fisheries. There is also a sizeable "mosquito" fishing fleet in Guam that fishes primarily on weekends and on holidays. Recreational fishermen also regularly sell portions of their catches in Guam.

The majority of Guam's offshore fishing boats are constructed with fiberglass hulls which are between 14 and 24 feet long. Approximately 75% of these boats are driven by outboard, gasoline-powered

engines. In general, the remaining boats use inboard, gasoline-powered engines. Inboard engines are used in virtually all vessels longer than 24 feet, and these may be powered by either gasoline or diesel fuel. The most consistently active fishing boats average between 16 and 18 feet in length, although within the last several years, the number of active boats longer than 18 feet has slowly increased.

6.18.2 Fishing Effort

Hawaii. Cooper and Adams (1978) estimated that the private (non-charter) "recreational" fleet in Hawaii was made up of 1,500 vessels in 1976. The Hawaii fishing vessel inventory project suggests that the 1976 estimate is no longer representative of recreational troll fishing activity in Hawaii. In the fishing vessel inventory study, 5,815 boat owners indicated trolling and rod and reel as methods of fishing employed by them with 2,170 citing trolling and rod and reel as their most important methods of fishing (Skillman and Louie, 1984). The MRFSS estimated that there were 51,200 offshore fishing trips taken in 1981 by privately owned vessels, although these are not all trolling trips, most of them, however, are.

American Samoa. The OMWR generally plays a significant role in organizing and operating several fishing tournaments held by the American Samoa Gamefishing Association each year. Data forms have been created by OMWR to assist in collection of the tournament data by boat per trip. A tournament data base was established in September 1984 to store, summarize, and analyze these data. The OMWR has also implemented an improved fisheries data collection system in October, 1985 due to an increase in offshore fishing by the local community in American Samoa. It is anticipated that this improved system of fisheries data collection will yield better estimates of participation and catch.

Guam. As of December, 1984, there were 1,176 vessels listed in the vessel registration files of the Guam Department of Public Safety of which an unknown number are operational craft used in subsistence, recreational, or commercial fishing activities. It is probably a conservative assumption that around 625 of these vessels participate in fishing of one form or another. Nearly all of these offshore fishing boats are utilized in conducting one or more of the following fishing methods: trolling, bottomfishing, and spearfishing. Longlining, ika-shibi fishing, and other methods are also practiced, but only to very limited extents. DAWR fisheries surveys, encompassing fiscal years 1980 through 1984, show that the average yearly effort expended by trollers, bottomfishers and spearfishers combined is approximately 45,251 boat-hours. The component breakdown of this figure is as follows: trolling = 35,876 boat-hours (80%); bottomfishing = 8,703 boat-hours (18%); and spearfishing = 954 boat-hours (2%). The trolling method has the potential to impact the management unit species (MUS) to the greatest degree. All of the MUS and tunas are regularly caught by trollers. Furthermore, oceanic

sharks are often caught by bottomfishers, and dogtooth tuna are sometimes landed by spearfishermen.

6.18.3 Catches

Hawaii. Cooper and Adams (1978) estimated that 2.3 million pounds (1,032.3 mt) of fish were caught by non-charter recreational fishermen in Hawaii in 1976. The management unit species made up about 44% of the catch and tuna made up 56% (Table 6.24). A surprising 49% of the catches of the management unit species were sold while 68% of the tuna catches were sold. These estimates of sales are much larger than the proportion of fishermen who claimed to sell fish in the vessel inventory project. The 1976 estimates of recreational catches and sales were developed through survey questionnaires completed by fishermen in the Kailua-Kona area which were then extrapolated for the State as a whole by Cooper and Adams. This assumes that trollers in the Kailua-Kona area are representative of trollers statewide. This is probably a faulty assumption. It is interesting to note that yellowfin tuna made up a whopping 82% of the total catch of commercial trollers while yellowfin tuna only made up 49% of the troll catch of recreational fishermen. Marlin made up 21% of the catch of recreational trollers in 1976, and accounted for less than 6% of the commercial troll catch. An ability to target on certain species by troll gear is evident.

No recent study comparable to that of Cooper and Adams has been carried out in Hawaii on recreational troll fishing. However, the MRFSS estimated that recreational fishermen landed 10,000 billfish and 52,000 mahimahi and wahoo in 1981. About 2.9 million pounds of the management unit species were estimated to have been landed by recreational fishermen using privately owned vessels in 1981 according to the MRFSS. This is nearly a threefold increase from Cooper and Adam's 1976 estimate of 998,000 pounds.

American Samoa. There are no data on recreational catches of the management unit species in American Samoa. As in Guam and Hawaii, there are no clear cut distinctions between recreational, subsistence and quasi commercial troll fisheries in American Samoa. Whatever their primary motive for fishing, many American Samoan troll fishermen sell at least part of their catches.

Guam. Table 6.25 shows estimates of total landings of the management unit species made in Guam for FY1980-85 (Western Pacific FIN, unpublished data). These data are expansions of the offshore creel survey data collected by the Guam Division of Aquatic and Wildlife Resources (DAWR). These data also contain information collected during the annual Mariana's Fishing Derby. These estimates of catches should be treated as being broad, "ball park" type estimates of catches by species.

TABLE 6.24

ESTIMATED CATCHES AND SALES REVENUE
FOR THE NON-CHARTER RECREATIONAL TROLL FISHERIES IN HAWAII, 1976

Species	Catch (Kg)	Catch (Lb)	Percent of Total Catches (All Species)	Revenue From Fish Sales (1976*)
Blue & Black Marlin	217,020	478,442	21.0	$ 79,652
Striped Marlin	8,876	19,568	8.6	1,732
Spearfish & Sailfish	11,924	26,288	1.2	4,144
Mahimahi	39,544	87,179	3.8	52,632
Wahoo	175,192	386,228	17.0	141,412
ALL MANAGEMENT UNIT SPECIES	452,556	997,705	43.8	$ 279,572
Yellowfin Tuna	510,748	1,125,995	49.5	$ 765,444
Skipjack Tuna	69,004	152,126	6.7	17,512
ALL TUNAS	579,752	1,278,124	56.2	$ 782,956
ALL SPECIES	1,032,308	2,275,826	100.0	$1,062,528

SOURCE: Cooper and Adams (1978).

The creel survey technique employed in Guam is not designed to produce highly accurate, species-specific estimates of catches. The estimate for black marlin for FY82 is undoubtedly too high, and is a result of expansion of a "rare event" using standard methods. Mahimahi, wahoo and blue marlin constitute the largest shares of troll catches of the management unit species made in Guam. However, yellowfin and skipjack tuna make up sizeable portions of pelagic species caught on trolling gear for any given year. The decline in the catches of mahimahi and wahoo during FY1984 relative to previous years has been attributed to the El Nino phenomenon, coupled to the advent of purse seine fishing, by some fishermen. Catches of blue marlin, however, were excellent during FY84 and 85. About 25 to 40% of the estimated landings of pelagic species are sold in Guam (See Table 6.23). For any given year the management unit species made up 30 to 60% of the landings.

TABLE 6.25

ESTIMATED LANDINGS (KG) OF THE MANAGEMENT UNIT SPECIES (MUS) AND TUNA IN GUAM, FY1980-FY1985

Species	Fiscal Year					
	1980	1981	1982	1983	1984	1985
Blue Marlin	15,781 Kg	14,694 Kg	16,122 Kg	8,474 Kg	27,912 Kg	32,291 Kg
Black Marlin	0	0	2,523	0	0	0
Sailfish	752	251	0	2,737	459	0
Mahimahi	71,966	10,433	68,774	70,446	18,689	46,891
Wahoo	11,672	17,087	46,952	45,437	20,706	54,411
Sharks	6,715	167	959	4,759	175	864
ALL MANAGEMENT SPECIES (MUS)	106,886 Kg	42,632 Kg	135,330 Kg	131,853 Kg	67,941 Kg	134,457 Kg
Skipjack Tuna	52,338	61,734	63,567	52,559	113,329	62,371
Yellowfin Tuna	16,082	35,471	39,779	46,056	48,222	47,985
Dogtooth Tuna	132	2,481	1,477	2,209	458	3,116
Kawakawa	116	31	503	209	473	779
Tuna (Mix)	0	43	1,049	0	0	4
ALL TUNAS	68,668 Kg	99,760 Kg	106,375 Kg	101,122 Kg	162,482 Kg	114,255 Kg
ALL PELAGIC SPECIES	175,554 Kg	142,392 Kg	241,705 Kg	232,995 Kg	230,423 Kg	248,712 Kg

SOURCE: Western Pacific FIN, unpublished data.

6.19 Baitboat (Pole-and-Line) Fishery for Skipjack Tuna in Hawaii

The pole-and-line fishery for skipjack tuna in Hawaii is essentially a scaled-down version of the foreign baitboat fishery described in Section 6.10. At present, there are 12 wooden-hulled, sampan type vessels engaged in the fishery. Skipjack tuna, or aku as they are called locally, are the primary target species in the fishery. Skipjack tuna normally account for 90-99% of the total catch made by pole-and-line vessels. Surface dwelling yellowfin tuna and kawakawa are also taken in the catch. Together, these two species make up between 1 to 10% annual catch.

The fishery is highly selective for tuna. Out of all of the species in the management unit, the pole-and-line fishery only catches mahimahi. Landings of mahimahi made by pole-and-line vessels for 1978-1983 ranged from 1,190 kg in 1982 to 5,110 kg in 1980 (Table 6.26). Mahimahi landings accounted for only 0.1 to 0.2% of total landings during 1978-82, but rose to 1.14% of total landings for the first half of 1983. For 1978-83 as a whole, landings of mahimahi averaged 0.17% of the total landings made by local baitboats. The landings of mahimahi made by baitboats, however, accounted for between 1.5 to 7.4% of the commercial mahimahi landings reported by fishermen for all gear types during 1978-83. Pole-and-line vessels on occasion land billfish, but these are caught by trolling with lures attached to handlines while the vessels are underway.

TABLE 6.26

REPORTED LANDINGS (KG) OF MAHIMAHI
RELATIVE TO TOTAL LANDINGS MADE BY POLE-AND-LINE VESSELS IN HAWAII,
1978-1983

Year	Total Landings	Mahimahi Landings	Mahimahi Landings As A Percent Of Total Landings	Baitboat Landings Of Mahimahi As Percent Commercial Landings Of Mahimahi For All Gear Types Combined
1978	3,106,588 kg	4,190 kg	0.14%	6.8%
1979	2,665,828	3,275	0.13	4.2
1980	2,553,256	5,110	0.21	5.0
1981	1.985,728	3,455	0.18	3.4
1982	1,356,608	1,190	0.09	1.3
1983+	316,898	3,600	1.14	7.4
AVG. 78-82	2,333,602 kg	3,444 kg	0.17%	4.9%
	(5,144,659 lb)	(7,593 lb)		

HDAR data.

+ = January to June only.

6.20 Domestic Purse Seine Fishery

U.S. purse seiners started operating in a big way in the western Pacific in 1982. During that year, there were an estimated 35 U.S. seiners operating in the western Pacific, but by the end of 1983, the number of American purse seiners operating in the area jumped to 65. As U.S. purse seiners left the eastern Pacific to fish in the newly discovered grounds in the western Pacific, the proportions of Pacific-wide catches of tuna made in each area changed dramatically. About 61% of U.S. purse seiners' catch of tuna made in the Pacific (273,000 tons) in 1983 came from the western Pacific.

In 1984, about 110 purse seiners operated in the Pacific islands region. Approximately 65% of these vessels were affiliated with the American Tunaboat Association (ATA) of either U.S., Caribbean, or Central American registration. The ATA formally represents the interests of U.S. tuna vessel owners and informally U.S. citizens and companies operating purse seine vessels under foreign flags. In 1984, U.S. boats harvested 171,000 tons of tuna in the central and western Pacific. However, 1984 catch estimates for the ATA fleet (which is larger than the U.S. fleet) were about 220,000 tons of tuna in the Pacific islands region (Doulman, 1985).

The fishing grounds for U.S. purse seiners in the western Pacific cover an immense area roughly bordered by Guam on the north, New Guinea on the west, New Zealand on the south, and Tahiti on the east. American Samoa, Guam, Tinian island in the CNMI, and Hawaii are visited regularly by U.S. purse seiners to offload their catch. While visits by U.S. seiners have become common occurrences in the U.S. flag islands in the Pacific, it is not known to what extent U.S. purse seiners fish in the U.S. FCZ of the Western Pacific Region, nor to what extent their catches are composed of the management unit species.

In an attempt to gauge the nature, frequency and possible magnitude of incidental catches made with purse seine gear, the Council wrote to many organizations known for their familiarity with purse seine fishing for tuna. The International Commission for the Conservation of Atlantic Tunas reported that sailfish are caught by purse seiners off west Africa in the waters between Senegal and Congo. While the incidental catch rate for sailfish is quite low, the total aggregate quantity could be significant. Mahimahi are also caught by purse seiners in that area. The Southeast Center of the NMFS reported that marlins might be taken occasionally in the tuna purse seine fisheries of the eastern Atlantic off of west Africa, but that marlins are not taken in the purse seine tuna fisheries in the western North Atlantic. In the Pacific, the Fisheries Research Division of the New Zealand Government reported that 107 billfish (a mixture of striped, blue and black marlin and swordfish) were taken in the nets of purse seiners operating in New Zealand waters from late 1975 through mid-1981. Most sets on skipjack tuna that took billfish contained a single marlin. A few sets, however, contained 2-3 marlin. One reported set captured six billfish. The catch rates of incidental species for purse seiners operating in New Zealand waters were not possible to ascertain since the Fisheries Research Division did not specify the total number of sets which were made by purse seiners during this period. Both the Japanse Fisheries Agency and the

Overseas Purse Seine Association reported that no data were available on incidental catches, but that very few billfish and few mahimahi are caught incidentally. The Pacific Tuna Development Foundation (PTDF) sent a summary report of incidental catches made by two U.S. purse seine vessels which operated in the Western Pacific under PTDF charter during 1978-1980. PTDF reported that 346 days of fishing produced 5 marlin, 4 wahoo, 1,000 pounds of mahimahi and 1,500 pounds of rainbow runner.

The Council has been apprised that an observer on a Japanese purse seiner operating in the western Pacific reported that out of 30 or so sets made on skipjack tuna schools, an average of about one blue marlin was taken in each set. A crew member from an American Purse seine vessel operating in the western Pacific told the Council's staff that out of about 35 sets made on one trip, about a half of the sets also contained a blue marlin. Other reports picked up by the Council's staff indicate that purse seiners landing tuna in American Samoa experience similar rates of marlin by-catches. Catches of mahimahi and rainbow runner (called yellowtail by crew), however, can run into thousands of pounds or more per trip. Wahoo are also taken but in smaller quantities than mahimahi. The Tuna and Billfish Assessment Programme of the South Pacific Commission (SPC) reported that purse seiners do take billfish, particularly large blue marlin, and that the catch of this species made by purse seiners will increase with an increase in effort (South Pacific Commission, 1986).

It is clear that the management unit species are taken by tuna purse seiners. However, there is probably considerable variability in the frequency with which the management unit species are captured in purse seining operations on tuna, and in the species composition of the incidental catch. Incidental catches of the management unit species are probably a small fraction of purse seiner tuna catches, but the total aggregate quantity of incidental catches can be significant. The affinity for floating objects shown by many pelagic species and the growing reliance of purse seiners to fish on logs in the western Pacific guarantees that marlin, mahimah, wahoo, rainbow runner and sharks will inevitably be caught in conjunction with purse seine operations on tuna.

6.21 Summary of Domestic Fisheries for Pelagic Species

Hawaii. There are seven fairly distinct fisheries for pelagic species in Hawaii. The management unit species are caught in each of these fishries but in different proportions (Table 6.27). Tuna dominate the landings made in the pole-and-line, handline, longline and commercial troll fisheries. The management unit species dominate the catches of sportfising charter boats, and account for nearly a half of catches made by non-charter recreational fishing vessels. Except for some mahimahi taken, the pole-and-line fishery is virtually a pure fishery for tuna with skipjack tuna accounting for most of the catches while yellowfin tuna is a distant second. The catches in the ika-shibi and palu ahi fisheries are also dominated by tuna which, in most years, account or over 90% of the catches made by handline fishermen. Tuna also dominate the catches of commercial trollers. The management unit species are more important in the catch of the longline fishery.

The management unit species have accounted for 10-25% of the total landings made by domestic longliners in Hawaii in recent years. The management unit species are also very important for recreational trollers in Hawaii since they can constitute up to 50% of the catch made by recreational trollers. The management unit species are most important in the sportfishing charter fishery. On any given year, the management unit species can make up between two-thirds to three-quarters of the total catch (by weight) of the charter fishing fleet in Hawaii. When all of the different pelagic fisheries are combined, tuna dominate the landings by a margin of four to one over the management unit species in Hawaii, on the average.

TABLE 6.27

SPECIES COMPOSITION OF CATCHES IN HAWAII'S FISHERIES
FOR PELAGIC SPECIES

Fishery	Percent of Total Landings (Weight)	
	Tuna	Management Unit Species
Longline	75 - 90	10 - 25
Night Handline (Ika-Shibi)	> 95	< 5
Day Handline (Palu Ahi)	~ 90	~ 10
Sportfishing Charter	~ 25 - 35	~ 65 - 75
Commercial Troll	~ 80 - 90	~ 10 - 20
Recreational Troll	~ 50 - 60	~ 40 - 50
Pole-and-Line (Baitboat)	> 99	< 1
ALL FISHERIES FOR PELAGIC SPECIES	~ 80	~ 20

A summary table on actual catches of each of the fisheries for pelagic species previously described would be helpful in appraising the size and, thus, the importance of each fishery relative to the others. Unfortunately, it is not possible, at present, to put together such a table for comparative purposes for a variety of reasons. The catch information on the different fisheries in Hawaii for pelagic species presented in this report, in many cases, covers different years. Since catches can and do vary widely among the different fisheries from year to year and from species to species, comparing the catches of different fisheries for different years would be tantamount to comparing apples to oranges. The data on catches for several of the fisheries (ika-shibi and pole-and-line fisheries) are actual inventories of total landings for the given years while the catch data on the other fisheries are estimates which do not have a standard error associated with them. Comparing these figures would be a case of comparing oranges to orange juice. The information on catches for other

fisheries are annual aggregates of reported catches maintained by the HDAR. All this means is that fishermen who reported these catches have purchased a "Commercial Marine License" which allows them to sell fish. But what about the fish which are not sold, and the fish which are sold but are not reported? Finally, there inevitably are overlaps in some of the catch data presented, especially in the trolling and handline categories, because fishermen quite often use both gears even on a single fishing trip and because there is every conceivable blend of motivation for fishing in Hawaii ranging from subsistence and purely recreational to quasi commercial to truly commercial. As a result, it is not possible to cleanly separate out these categories and avoid all double counting when deriving estimates of catches made in the recreational and commercial categories. Because of all of these reasons, it is not possible at present to quantitatively compare each fishery for pelagic species in Hawaii relative to all of the other fisheries for pelagic species. Suffice it to say that all pelagic fisheries in Hawaii are important to the fishermen and to fish consumers in Hawaii. There are no compelling reasons for judging one fishery to be more important than another. For a "ball park" estimate of total catches of the management unit species made in Hawaii, see Section 8.3 and Table 8.2.

American Samoa. Not counting the purse seine and the foreign longline fisheries which offload vast quantities of tuna in Pago Pago, trolling accounts for most of the landings of pelagic species made by domestic fishermen in American Samoa. There is also one 50 ft. longliner in the local fleet. Skipjack and yellowfin tuna form a much larger share of total catches of all pelagic species in American Samoa than they do in Guam or in Hawaii (Table 6.22).

Guam. Trolling accounts for most of the landings of pelagic species made in Guam. Table 6.28 shows the species composition of landings made in Guam from FY1980 through FY1985. The management unit species accounted for 29-61% of the total catches during these years, while tuna made up 39-70% of the total weight of the estimated landings.

Mahimahi, wahoo, and blue marlin dominate the landings of the management unit species, while skipjack tuna and yellowfin tuna dominate the landings of tuna species. Landings of the other pelagic species are minor.

6.22 Recent Changes in the Fisheries for Pelagic Species

6.22.1 Domestic Fisheries

Hawaii. In order to ascertain overall changes in the various fisheries which take the management unit species in Hawaii, the Council conducted a survey of major fish dealers in Hawaii covering their sales of species of billfish, mahimahi, and wahoo for 1979-83. The survey was carried out with the assumption that observed changes in Hawaii's fresh

TABLE 6.28

SPECIES COMPOSITION OF LANDINGS OF PELAGIC SPECIES
IN GUAM, FY 1980-1985

Species	Percent of Total Landings (Weight)*					
	FY1980	FY1981	FY1982	FY1983	FY1984	FY1985
Blue Marlin	9.0%	10.3%	6.7%	3.6%	12.1%	13.0%
Black Marlin	0.0	0.0	1.0	0.0	0.0	0.0
Sailfish	0.4	0.2	0.0	1.2	0.2	0.0
Mahimahi	41.0	7.3	28.5	30.2	8.1	18.9
Wahoo	6.6	12.0	19.4	19.5	9.0	21.9
Sharks	3.8	0.1	0.4	2.1	0.1	0.3
ALL MANAGEMENT UNIT SPECIES	60.8%	29.9%	56.0%	56.6%	29.5%	54.1%
Skipjack Tuna	29.8	43.4	26.3	22.6	49.2	25.1
Yellowfin Tuna	9.2	24.9	16.5	19.8	20.9	19.3
Dogtooth Tuna	0.1	1.7	0.6	0.9	0.2	1.2
Kawakawa	0.1	<0.1	0.2	0.1	0.2	0.3
Tuna (Mix)	0	<0.1	0.4	0.0	0.0	0.0
ALL TUNAS	39.2%	70.1%	44.0%	43.4%	70.5%	45.9%
ALL PELAGIC SPECIES	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*SOURCE: Table 6.25

fish trade for these species are reflective of changes that have occurred in the State's fisheries for billfish, mahimahi and wahoo. The actual amounts of the management unit species sold through the State's major fish dealers are shown in Table 6.29. The figures in Table 6.29 underestimate actual catches of the management unit species since not all fish caught are sold and not all dealers were surveyed. They are, however, a proxy of recent trends in the catches of billfish, mahimahi, and wahoo made in Hawaii.

The Statewide growth in sales of billfish (all species combined) increased by an average of 14% each year from 1979-83. Sales of mahimahi by major fish dealers in Hawaii decreased in 1983 compared to 1982 but, nonetheless, mahimahi sales increased since 1979 by an average of 11% per

TABLE 6.29 - AMOUNTS (METRIC TONS) OF THE MANAGEMENT UNIT SPECIES SOLD THROUGH MAJOR FISH DEALERS* IN HAWAII, 1979-83

Species	1979	% Change	1980	% Change	1981	% Change	1982**	% Change	1983+	Average Annual Growth in Sales 1979 - 1983
Blue and Black Marlin	230	(+ 2.4)	235	(+34.3)	316	(+17.2)	370	(+ 0.7)	373	(+13.7)
Striped Marlin	91	(+ 3.0)	94	(+15.2)	108	(- 3.0)	105	(+ 53.0)	162	(+17.1)
Swordfish	23	(+66.0)	38	(-16.9)	32	(+16.3)	37	(- 12.1)	33	(+13.3)
Spearfish	11	(- 2.7)	11	(+65.6)	18	(-26.3)	13	(+124.5)	30	(+40.3)
Sailfish	1	(-32.3)	<1	(+50.2)	1	(-30.7)	<1	(+ 16.2)	1	(+ 0.9)
TOTAL BILLFISH	356	(+ 6.4)	379	(+25.3)	475	(+10.8)	526	(+ 13.4)	599	(+14.0)
Mahimahi	68	(+40.7)	95	(+13.4)	108	(+ 3.7)	112	(- 14.3)	96	(+10.9)
Ono (Wahoo)	46	(+94.3)	89	(+20.0)	107	(-10.4)	96	(- 12.1)	85	(+22.9)
GRAND TOTAL	470	(+20.0)	563	(+22.5)	690	(+ 6.4)	734	(+ 5.8)	780	(+13.7)

* = There are many small fish dealers in Hawaii which were not surveyed. According to the major fish dealers, the purchase of billfish by the small dealers is probably not very significant. However, this may not be the case for mahimahi and ono.

** = The amounts of the management unit species handled during 1982 by one large fish dealer have not yet been processed. When data from this dealer is added in, it will probably raise the 1982 totals by 7% to 9%.

\+ = 1983 dealer handlings of the management unit species are estimates based on a sample of one half of the dealers surveyed in previous years.

year. Wahoo sales increased by an annual average of 23% between 1979-83, although sales of wahoo declined since 1981 which was the peak year for wahoo sold through the major fish dealers over the years covered by the survey. There was a consistent upward swing in the sales of the management unit species (all species combined) in each year. The most pronounced changes in sales occurred between 1979-80 and between 1980-81. The growth in the annual sales of the management unit species taken together averaged nearly 14% per year during 1979-83. These data show without a doubt that increased purchases (landings) of billfish and the other species had occurred over the period. The increased landings of the management unit species could have been due to either increases in their availability to Hawaii fishermen (increases in local stock density), or to increases in fishing effort, or both. Irrespective of the cause for the observed increases in landings, it is clear that the fisheries for the management unit species in Hawaii have grown significantly coincidentally with the cessation of foreign longline fishing in the FCZ of Hawaii.

American Samoa. The commercial catch of the management unit species in American Samoa for FY1985 was estimated at 4,580 Kg not counting the 10,648 Kg in the undifferentiated "troll fish" category (Table 6.22). While some data on commercial landings are available for FY82-84, sampling emphasis on commercial landings by the OMWR in pre-FY84 years placed a bias toward bottomfish and resulted in under reporting of commercial catches of pelagic species in the management unit. Therefore, data for pre-FY84 years were not used for comparative purposes. However, there must have been annual increases in fishing effort for the management unit species and in catches since the number of commercial fishing vessels which are home-ported in American Samoa has nearly tripled in five years from FY1979-84 (Figure 6.1).

The amount of fishing effort expended on the management unit species and on tuna is expected to continue to increase in all three areas (Hawaii, Guam, and American Samoa) in the foreseeable future, but at a rate which is impossible to predict. The level of commercial landings of the management unit species in future years will depend on the rate of increases in vessel operating costs relative to the rate of increase in ex-vessel prices paid for tuna and for the management unit species and on the availability of the fish. Recreational catches of the management unit species presently outstrip commercial catches in Hawaii and Guam, and recreational catches have probably increased at a faster rate than commercial catches of the management unit species. Participation in the recreational fisheries for pelagic species is known to be widespread, but reliable estimates of recreational catches of the management unit species are not available. Beyond the general "crystal ball gazing" on the domestic fisheries provided here, it is hard to reach concrete conclusions or predictions on the future status of the domestic fisheries for pelagic species in the Western Pacific Region.

Guam. There are three indexes of fishing (trolling) activities for the management unit species in Guam: number of recorded landings of the management unit species for 1980-84 (Table 6.20); commercial landings

of the management unit species for 1980-84 (Table 6.23); and estimated total landings of the management unit species for FY1980-85 (Table 6.25). The first two indexes show a general increase in fishing activity between 1980 and 1982, and a huge increase in both catches and sales of the management unit species in 1983, and a decline in 1984. The third index shows an alternating pattern of change in that "good catch" years are followed by a "poor" year and then by several "good catch" years again.

6.22.2 Foreign Fisheries

The foreign longline fisheries ceased fishing in the FCZ of the Western Pacific Region in 1980. This can be explained, in part, as being due to the onerous requirements which were placed on foreign longline vessels by the implementation of the PMP. The departure of foreign longliners from the FCZ can also be explained by economic conditions which prevailed during the early 1980's and still continue into the present. Starting around 1980, many foreign longline vessels, especially the smaller ones, began operating at a loss when the selling price of tuna dropped and their operating expenses increased. Rather than continue operating at a loss, hoping for a better future, many vessels were laid-up or they switched to other fisheries. Japan reduced the number of longline vessels from 877 in 1982 to 770 in 1983. The present focus of the smaller Japanese longline fleet is for bigeye and bluefin tuna, the two species of tuna that are especially prized for sashimi in Japan and, thus, command the highest prices. Similarly, industry trade journals have reported that during 1983, close to 100 Taiwanese longline vessels were laid-up and about another 100 switched to catching squid. By 1983, only 230 to 250 longline vessels which operate out of Kaohsiung Port, Taiwan, were still engaged in fishing for tuna, whereas as many as 600 longline vessels operated there previously (Fishing News International, January 1984). The Korean longline fleet has also shrunk in size in response to the same set of conditions: competition from purse seiners, lower tuna prices due to high inventories of frozen tuna, increases in operating costs, falling catch rates, and an increasing number of prime fishing area falling within 200-mile exclusive economic zones of island and coastal nations. However, the exodus of vessels from the longline fisheries for tuna will not continue indefinitely. Capitol will be redirected into the fishery when prices of tuna begin to rise to sufficently offset operating costs leaving a margin for profits.

The foreign pole-and-line fishery for skipjack tuna has not been immune to the economic depression that has inflicted the longline fisheries. In the mid-1960's, Japan expanded its skipjack fishery throughout the Pacific. By the mid-1970's, a downward trend became apparent in the pole-and-line fishery, and Japan began experimenting with purse seiners as a substitute method of catching surface-dwelling schools of tuna. In 1975, there were 324 vessels in the pole-and-line fleet, 279 of which were vessels larger than 200 tons. By 1983, the number of vessels still

operating in the fishery shrunk to 157 vessels, 116 of which were larger than 200 tons (Wetherall, pers. comm.), Coast Guard sightings of pole-and-line skipjack tuna vessels operating in the FCZ were fairly common occurrences in previous years. Sightings of foreign pole-and-line vessels are still regularly made by the Coast Guard but they are less frequent compared to previous years.

During the same time, the purse seine fisheries for tuna in the western Pacific, both foreign and domestic, have grown phenominally. Purse seine landings of tuna in the Pacific islands have increased from 90,000 tons in 1980 to 370,000 tons in 1984 -- an overall increase of 310% (Doulman, 1985). However, some of the U.S. purse seiners began operating year round in the western Pacific in 1983 were have returned to their traditional fishing grounds in the eastern Pacific during 1985. The Council does not have specific knowledge of the locations where the foreign and domestic purse seine fisheries presently operate in the western and central Pacific, nor on their catches.

6.23 Economic, Social and Cultural Importance of the Domestic Fisheries for Pelagic Species

The fisheries for pelagic species are of considerable importance in Hawaii, Guam, and in American Samoa because of the high value received for fresh fish (Hawaii), the avidity of recreational angling (Hawaii and Guam), and the traditional association of the people of Hawaii, Guam, and American Samoa with the sea. By far, the largest share of Region's total commercial fish landings comes from the fisheries for the highly migratory species, inclusive of tuna and the management unit species. Tuna alone accounted for 71 to 81% of the total reported commercial landings of all species in Hawaii for the years 1979-1983, while the share of the total reported commercial landings attributed just to the management unit species ranged from 9 to 13%. The percent of total commercial landings comprised of the management unit species and tuna is as high or even higher in Guam and American Samoa than it is in Hawaii. The fisheries for pelagic species are clearly the most important fisheries in each of the island areas served by the Council. Commercial landings in Hawaii of tunas, including skipjack tuna caught by baitboats, probably exceed $12 million (ex-vessel). Hawaii's total commercial landings of the management unit species probably exceed $2.5 million (based on Council's survey of major fish dealers). If the commercial values were set at retail prices, then the corresponding values would be at least triple that of ex-vessel value.

The estimated ex-vessel value of reported commercial fish landings of all species in Hawaii was $17.9 million in 1983. The total sales impact stemming from commercial fish landings in Hawaii for 1983 was estimated to be $38.8 million. (Department of Land and Natural Resource, 1986). This includes the direct sales received by fishermen, as well as indirect revenues generated by fishermen's purchases of fuel, gear and other inputs to production. In 1983, 2,940 persons were licensed as commercial fishermen in Hawaii. About 30% of the licensees consider themselves to be full-time fishermen (Department of Land and

Natural Resources, 1986). The remaining commercial licencees in 1983 classified themselves as part-time commercial fishermen (51%) or had left the classification blank (19%). In addition to individuals engaged directly in fish harvesting, an estimated 2,108 persons are employed in seafood marketing (Cooper and Pooley, 1983). Roughly 38% of this employment (800 individuals) stems directly from Hawaii's fresh fish landings; the balance is tied to imported fish products.

The ex-vessel value of total commercial fish landings in Hawaii in 1983 ($17.9 million) amounted to 0.14% of the State's personal income ($12.4 billion), and full-time commercial fishing accounted for 0.12% of total civilian employment in Hawaii (Department of Planning and Economic Development, 1983). By way of comparison, the ex-vessel value of commercial fish landings in California in 1983 ($202.1 million; NMFS, 1985, Current Fisheries Statistics) only amounted to 0.06% of California's personal income ($333.7 billion) for 1983 (Bureau of Census, 1986 Statistical Almanac of the U.S.). The commercial fisheries of Hawaii contribute about twice as much to the economic well-being of the people of Hawaii than the commercial fisheries of California contribute to the economic welfare of Californians in general. There are not enough data available for making comparative judgements on the relative economic importance of the commercial fisheries in the Territories of Guam and American Samoa. Suffice it to say that the commercial fisheries there are quite small in comparison to Hawaii and so is the annual gross state (territorial) product and personal income.

Economic value is but a single measure of the worth of the region's fisheries for the pelagic species. Participation in recreational fishing is widespread and recreational fishing surely contributes a large component to the value which can be attributed to the species in the management unit. The MRFSS estimated that 51,000 offshore fishing trips were taken in 1981 by privately owned vessels in Hawaii, although these were not all trolling trips just for the management unit species. It is not yet possible to derive a reliable estimate on the net economic benefit of recreationally caught fish. However, if one were willing to use the prices charged for charter boat fishing as a proxy for non-commercial values of recreationally caught fish on privately owned vessels, then a rough estimate can be obtained. The rationale here is that charter boat fishing is a close substitute to recreational fishing and the prices charged for charter boat services might be viewed as a rough equivalent to the non-market value of non-charter recreational fishing. At $350 charged for a full-day charter fishing trip in Hawaii, the gross economic value of 51,000 offshore fishing trips is $17.8 million. Since the management unit species account for roughly 50% of the recreational catch, one might reduce the $17.8 million figure by 50% and attribute the resultant value just to the management unit species. But there is a certain absurdity in attributing values in the recreational troll fishery just to certain species. Recreational fishermen go fishing to catch whatever fish species might be striking, regardless of whether they be tuna or the management unit species. These were about 6,700 offshore trolling trips taken in Guam during FY1984. Valued at $350 per trip, this yields a gross market value of about $2.4 million. This proxy value of recreational boat fishing in Guam, however, needs to be reduced since not all of the estimated 6,700 offshore trips were recreational in nature.

Decendents of aboriginal inhabitants of Hawaii, American Samoa, and Guam have a strong cultural bond with the ocean and with fishing. The management unit species were all commonly caught by the aboriginal peoples using deep-sea handlines and by trolling pearl shell lines in swift, double hull canoes. In fact, the names of the pelagic species used in ancient times are still in common use today. The fisheries for pelgaic species were more important to the native peoples of earlier centuries than they are for the present day inhabitants of Hawaii, American Samoa, and Guam because fish undoubtedly constitued a larger portion of protein needs in earlier times then now. The proportion of Hawaiians, Samoans and Chamorros engaged in fishing occupations at present is larger than the share of the total population made up of native Hawaiians, Samoans, and Chamorros. The cultural tradition of deep sea fishing goes on today despite the disrupting influences of modernization, tourism, and defense.

The issue of rights of native peoples is important in each of the island areas served by the Council, but the issue is most keenly felt in Hawaii. Unlike the native Americans in the continental United States, where treaties and agreements have provided formal legal ground for allocation of fishing rights to native Americans, no such treaties were formed in Hawaii. Traditional Hawaiian society was significantly affected in the quarter century prior to annexation of Hawaii by the United States in 1900. Formal agreements between the two governments concerning fishing rights were not incorporated into the Organic Acts relevant to Hawaii's political integration into the United States. However, there is a growing concern about the manner in which Hawaii was annexed and Hawaiian land ceded to the United States government. The relationship between ancient Hawaiian land, water, and fishing rights and the developing commercial fisheries is presently not clearly defined.

However, it appears that this FMP will not affect any native Hawaiian, Samoan, or Chamorran cultural practices or rights so far as can be determined at this time.

6.24 Fisheries Development

The State of Hawaii and the Territories of Guam and American Samoa have established intentions to expand the size and range of their fisheries. The Governors (with the Governor of the CMNI) have formed the Pacific Basin Development Council to coordinate economic development activities in the region. Fisheries development has a high priority in the Council. The Hawaii Fisheries Development Plan was approved by the Governor in 1979 and has been implemented by the Legislature since 1980. An update of this plan was mandated by the Legislature in 1983 and a supplement to the original plan was published in 1986. The Legislature of the State of Hawaii established a Fisheries Coordinating Council and has appropriate funds for fisheries development projects every year since 1980. Guam and American Samoa have also completed fisheries development plans. The Governments of Hawaii, Guam, and American Samoa view fisheries as having significant growth potential. Tuna and the species in the management unit are the principal target-species for fisheries development in all three areas because these migratory species make up 80-90% of the region's commercial landings and that is where the best fisheries development potential lies.

7.0 PROPOSED ACTIONS AND ALTERNATIVES

7.1 Proposed Actions

The Council proposes the following measures for regulating the harvest of the management unit species in the U.S. FCZ of the Western Pacific Region:

Foreign Longliners

1. Area closures: It would be prohibited for foreign longline vessels to fish in the following areas of the FCZ of the Western Pacific Region:

   a. Within 150 miles of the main Hawaiian islands (east of 161° W. longitude);

   b. Within 100 miles of the Northwestern Hawaiian Islands (west of 161° W. longitude) including Midway island;

   c. Within 150 miles of Guam;

   d. Within a rectangle around the principal islands of American Samoa bounded by 14° S. and 15° S. latitude and 168° W. and 171° W. longitude, and within a one degree (1°) square surrounding Swains island; and

   e. Within 12 miles of each U.S. Pacific island possession except for Midway island where a 100 miles closure would apply. While Midway island is a possession of the United States, it is being treated as if it is part of the State of Hawaii for the purpose of the FMP.

   These areas are graphically depicted in Figure 3.1 (Page 3-2).

2. Permits: Foreign longline vessels would be required to obtain permits prior to fishing in the open areas of the FCZ of the Western Pacific Region.

3. Effort plans: Foreign longline vessels would be required to file effort plans two (2) months prior to entering the open areas of the FCZ for fishing purposes.

4. Catch and effort limits: There would be no limit on the amount of fishing or the amount of catch made and retained by foreign longline vessels in the open areas of the FCZ.

5. Reporting: Foreign longline vessels would be required to collect catch and effort data and data on sea turtle and marine mammal interactions on forms provided by the NMFS and to submit those data to the NMFS within two (2) months of leaving the FCZ.

6. Observers: Foreign longliner vessels would be required to carry observers when so directed by the Regional Director, Southwest Region, NMFS, in accordance with the MFCMA.

Foreign Drift-Gillnetters

1. Prohibition: It would be prohibited for foreign vessels to use drift-gillnets anywhere in the FCZ of the Western Pacific Region.

Domestic Drift-Gillnetters

1. Experimental permits: Fishing by domestic vessels in the FCZ with drift-gillnets would be prohibited, except where authorized by an experimental fishing permit issued by the Regional Director of the NMFS.

2. Reporting: Domestic drift-gillnetters would be required to collect catch and efort data and data on sea turtle and marine mammal interactions and to submit those data to the NMFS within three (3) days of landing.

Foreign Pole-and-Line Tuna Vessels, Foreign Purse Seine Tuna Vessels and Domestic Purse Seine Tuna Vessels

1. Catch and effort limits: There would be no limit on the amount of fishing or the amount of catch of tuna and non-tuna species made by these classes of vessels in the FCZ.

2. Data collection: The State Department, in cooperation with the NMFS, shall request voluntary submission of catch records for species taken incidentally to tuna fishing by these classes of vessels. These vessels would be encouraged to collect data on their catches of the management unit species made in the open areas of the FCZ. If information on incidental catches is not obtained within one year of the effective date of this FMP, then the Council shall consider the promulgation of mandatory reporting requirements for incidental catches in the FCZ for these classes of vessels.

Other Domestic Vessels

1. No restrictions: Other than restricting domestic drift-gillnet fishing to an experimental permit, no other Federal requirements would be added at this time.

2. Data collection: The Western Pacific Fishery Information Network (WPACFIN), a central source of region-wide fisheries data maintained by the NMFS, would be used to monitor the activities of domestic vessels. Existing Territorial and State licensing and data reporting and collection programs would be retained. A sampling program would be used for estimating recreational catches and effort levels for the management unit species in Hawaii.

Annual Reports

The NMFS, in cooperation with State and Territorial agencies, shall prepare an annual report for the Council by June 30 of each year on the domestic and foreign fisheries under this plan in the previous year, including a summary of catch (by species), effort, areas of fishing, changes in catch rates for individual species by different gear types and other significant changes in the fisheries for the management unit species and tuna.

Five-Year Review

The Council in cooperation with the NMFS and State and Territoral agencies shall conduct a full review of the FMP in five years. The review will assess the effectiveness of the FMP in meeting the Council's objectives, the need to revise the objectives, and the need for changes in any management measures including adjustments of area closures, and adding new measures such as data collection or reporting requirements for the domestic fisheries which take the management unit species and the tunas.

7.2 Alternatives Management Approaches Considered

Before settling on the specific regulatory measures in this revised FMP, the Council considered two broad alternatives: (a) continue the PMP, and (b) amend the PMP.

7.2.1 Continue the PMP (No Action)

The no action alternative would continue the present regulatory measures applicable to foreign longlining in the FCZ (Section 5.2). The Executive Summary (Section 3) and the Introduction (Section 4) to this FMP indicate why the Council concluded that maintaining the PMP is not desirable. The PMP has apparently caused foreign longline vessels to refrain from authorized fishing in all areas of the FCZ of the Western Pacific Region. This outcome is unintended and unnecessary. It is unnecessary because foreign longline fishing in the FCZ of the widely scattered U.S. possessions (see Figure 3.1) would tend to have the same kind of effect on the domestic fisheries for the management unit species in Hawaii, Guam, and American Samoa as foreign longline fishing in international waters which are beyond national controls. An annual average (1971-77) of nearly 1,900 vessel days were spent by Japanese and Taiwanese longliners fishing in the FCZ of U.S. possessions in the Pacific (Table 6.3). More foreign longline fishing effort was expended in the FCZ of the U.S. possessions than in the FCZ of the CNMI, Guam, and American Samoa combined, and nearly as much as in the FCZ of the Hawaiian archipelago. Foreign longline fishing could be allowed in these areas with no perceivable impact on the domestic fisheries for the management unit species.

If foreign fishing were to occur under the PMP, it would be extremely difficult and costly to enforce the measures of the PMP since at-sea enforcement would be needed in addition to aerial surveillance and observer coverage. The cost of compliance to the PMP's requirements (i.e., fishing under quotas, hold inspections, non-retention and release of fish) would be high for foreign longline vessels. Moreover, the cost in terms of "waste" of dead and dying fish could be high as well (Tables 7.1 and 7.2). Further, the PMP deals only with foreign longline vessels, not with drift-gillnet fishing, pole-and-line and purse seine fishing, nor with any of the domestic fisheries. The PMP does not provide a framework for monitoring the various domestic fisheries for pelagic species to determine if management measures may be needed in the future should problems arise. Therefore, continued reliance on the PMP was rejected by the Council.

TABLE 7.1

CONDITION OF BILLFISH UPON LANDING ON LONGLINE GEAR

Species	Percent Dead	
	Honolulu Laboratory Data	Far Seas Fisheries Research Laboratory Data
Blue Marlin	70.9	44.4
Striped Marlin	45.5	23.3
Swordfish	60.0	45.6
Black Marlin	74.3	45.9
Sailfish/Shortbill Spearfish	75.0	57.8

TABLE 7.2

POTENTIAL "WASTE" OF BILLFISH*

Species	Mortality Rate (%)	Mortality (Metric Tons)		
		Hawaii	Guam	American Samoa
Blue Marlin	70.9	34.8	30.5	51.1
Striped Marlin	45.5	54.7	.9	9.2
Swordfish	60.0	66.7	3.0	4.8
Black Marlin	74.3	1.5	.5	11.8
Sailfish/Spearfish	75.0	16.5	1.5	3.8
ALL BILLFISH SPECIES		174.2	47.4	80.7

* = Assumes 1973-1977 average catch, by area, with mortality rates as determined by NMFS Honolulu Laboratory, and assuming no retention of billfish in the full FCZ of Hawaii, Guam and American Samoa.

7.2.2 Amend the PMP

This approach would involve amending the PMP to address some of the problems identified above. An amended PMP could establish area closures, adopt a non-numeric definition of OY, and simplify some of the administrative requirements applicable to foreign longlining. An amended PMP also could establish a prohibition of foreign use of drift-gillnets, as is proposed in the FMP, incorporate procedures for monitoring incidental catches of the management unit species made by foreign pole-and-line and purse seine tuna vessels, and could serve as a vehicle to generate annual reports on foreign fishing in the FCZ of the Western Pacific Region.

It is important to recognize, however, that a PMP can only establish ground rules for foreign fishing in the FCZ. Only a FMP can establish measures for domestic fishing. Thus, if the PMP were amended, there would be no framework for monitoring the domestic fisheries for the management unit species, and if problems or conflicts arose in the future, a FMP would have to be prepared. The prohibition of domestic use of drift-gillnets, other than through an experimental fishing permit, could not be implemented under an amended PMP, nor would there be a basis for a strengthened State/Territory/NMFS data collection programs. Finally, in amending the PMP, NMFS would essentially be duplicating much of the effort already undertaken by the Council in developing this FMP. Such duplication would be wasteful, especially if a FMP was found to be needed soon thereafter. The Council concluded, therefore, that amendments to the PMP could not address all of the weaknesses of the PMP and, therefore, this was not the preferred alternative.

7.3 Alternative Management Strategies

7.3.1 Foreign Fishing

7.3.1.1 Monitoring Only - Longline Fisheries

The previous discussions point out that alternative measures for managing the foreign longline fisheries are necessary to replace the PMP. Alternative management measures, however, must be more than simply monitoring of the foreign longline fisheries through permit requirements, check-in/check-out procedures, and catch and effort reporting. Such monitoring requirements for the foreign longline fisheries are essential, but they are not sufficient in themselves to achieve most of the objectives of the FMP. Under this option, there would be unlimited opportunity for foreign longline harvests of the management unit species, potential waste of billfish, mahimahi, wahoo

and oceanic sharks if they were not retained, and, most importantly, no demonstrable increase in the catch rates and value of the domestic fisheries for the management unit species. The risk of domestic conflicts with foreign longline gear would increase. The "monitoring only" approach for the foreign longline fisheries was therefore rejected by the Council.

7.3.1.2 Monitoring Only - Pole-and-Line Fisheries

The foreign pole-and-line (baitboat) fishery has taken more tuna in the FCZ of the Western Pacific Region than the foreign longline fisheries. The catch of Japanese baitboats in the FCZ is predominantly skipjack tuna with the remaining portion mostly comprised of small yellowfin and bigeye tuna, and, less frequently, albacore tuna. While the target of foreign baitboats is tuna, their catch in the FCZ also includes mahimahi, some wahoo, and, much more rarely, an occasional small billfish. On June 6, 1985, the Coast Guard boarded a Japanese pole-and-line vessel inside the FCZ near Midway and Kure islands and found that the vessel had retained 107 mahimahi, 3 wahoo and 3 bags of squid which were caught inside the FCZ. The Coast Guard also discovered 75 mahimahi on another Japanese pole-and-line vessel boarded on July 7, 1985, but found no evidence that these fish were taken inside the FCZ.

Data provided by the Hawaii Division of Aquatic Resources on the species composition of the catch of the Honolulu-based aku (skipjack tuna) fleet strongly indicate that mahimahi is the principal species in the management unit which is quite vulnerable to the pole-and-line method of fishing for tuna. Mahimahi accounted for between 0.1 to 1.2% of the total annual landings of the Honolulu-based skipjack tuna fleet covering the years 1978-1983. The reported landings of mahimahi made by the local skipjack tuna vessels, however, comprised between 1.3 to 7.4% of the total reported commercial landings of mahimahi covering all domestic gear types during the same period. The local baitboats also reported catches of several other species (rainbow runner, wahoo) but the quantities of these miscellaneous catches were extremely minor. If catches of mahimahi made by local baitboats are indicative of possible catches of mahimahi made by foreign pole-and-line tuna vessels, then there is cause for developing a procedure to monitor the nature and magnitude of incidental catches made by foreign baitboats in the FCZ of the Western Pacific Region. The Council has determined that data on the species composition of the catches of foreign pole-and-line boats operating in the U.S. FCZ would be beneficial for determining whether or not anything should be done with respect to incidental catches made by foreign pole-and-line vessels. The Council recommends that the U.S. State Department

in cooperation with the National Marine Fisheries Service, should request voluntary submission of catch data for the management unit species taken incidentally by foreign pole-and-line tuna vessels in the U.S. FCZ of the Western Pacific Region compared to the volume of their catches of tuna.

7.3.1.3 Monitoring Only - Purse Seine Fisheries

While the western Pacific has recently become a major area of fishing for tuna by purse seiners of many nationalities, the Council has not received any reports of foreign purse seiners fishing in the U.S. FCZ of the Western Pacific Region. However, the Council has been apprised (February 1985) of a Japanese fishing company's request to the State Department to do test fishing in the U.S. FCZ between Midway Island and the main Hawaiian Islands using both pole-and-line and purse seine vessels. Non-tuna catches made by Japanese purse seiners operating in the western Pacific have ranged between 0.31 to 1.70% (by weight) of their total annual catches during 1973-1982 (Table 6.14). While catches of the management unit species made by purse seiners are small relative to their tuna catches, the actual volumes of the management unit species taken by purse seiners along with the tunas are quite significant since the volumes of tuna taken by purse seiners are so large. Purse seiner catches of tuna in the western Pacific reached 370,000 tons in 1984 (Doulman, 1985). The Council has not been able to acquire sufficient information on the species composition of purse seiner catches of non-tuna species nor on the amounts of the management unit species that might be taken in the FCZ by purse seine vessels. The Council, therefore, recommends that the State Department and the NMFS request voluntary submission of catch data covering foreign purse seine fishing in the U.S. FCZ which would generate information on the species composition of non-tuna catches, the weights of non-tuna catches (by species), and the weights of tuna catches made in the FCZ so that incidental catches of the management unit species made by foreign purse seiners in the FCZ can be compared to their tuna catches. The Council has decided that this information is needed in order to determine if there might be cause to develop management measures for billfish, mahimahi, wahoo and oceanic sharks regarding their take in purse seine gear. If information on incidental catches is not obtained within one year of the effective date of this FMP, the Council shall consider mandatory reporting requirements for incidental catches of foreign purse seine vessels operating in the FCZ of the Western Pacific Region.

7.3.1.4 Control Foreign Fishing Effort - Longline Fisheries

This alternative encompasses several options to affect the amount, location, or timing of foreign fishing effort.

Area closures of the FCZ around Hawaii, Guam, and American Samoa for the full year are the simplest option to effectuate. Depending on their geographic extent, area closures to foreign longline fishing could address some of the weaknesses of the PMP. If foreign longlining were prohibited in the FCZ, a portion of the management unit species that would have otherwise been taken by foreign longline vessels could become available to domestic fishermen. In 1976, the total foreign longline catch of all species of billfish in the FCZ around Hawaii was almost 500 MT (Yong and Wetherall, 1980), while the estimated domestic billfish catch was 732 MT for that year (Cooper and Adams, 1978). Thus, if domestic vessels had taken the foreign catch that year, domestic vessels' catches of billfish would have increased significantly, and the values associated with an increase in billfish catches would be very large. Whether there would be increases in domestic catches of billfish and associated species of a large magnitude is debatable. However, objectives 1-5 (Section 4.2) would be achieved to the greatest extent possible with full area closures. There would be no "waste" associated with non-retention and release of dead and dying billfish (Objective 6), and the risk of domestic foreign/gear conflicts would be eliminated altogether (Objective 7). A prohibition of foreign longlining would not affect other forms of foreign fishing for tuna such as pole-and-line and purse seine fishing which are more selective in taking tuna (Objective 8). The cost of administering and enforcing a full closure would be very low compared to the PMP.

If some foreign longlining were to be permitted, less complete effort restrictions could be imposed. Seasonal restrictions could limit foreign longline effort during the months when incidental catch rates for the principal species in the management unit are highest. Partial area closures to foreign longline fishing could be adopted for areas in which catch rates of the management unit species on foreign longline gear are highest or in areas where domestic fishing for the management unit species is concentrated. Limits could be imposed in terms of the absolute number of foreign longline vessels allowed into the FCZ, or the number of hooks allowed to be set, or the total number of vessel days fished. Combinations of seasonal, area, or gear restrictions could be adopted to limit foreign fishing effort.

Compared to full closures of the FCZ to foreign longline fishing, partial effort restrictions would diminish the attainment of Objectives 1-5. But so long as the level of

foreign catch of the management unit species were reduced and the availability of the management unit species for domestic vessels were increased, then the domestic fisheries would still benefit but not as much as under a full closure of the FCZ to foreign longline fishing. If foreign vessels were not required to release the management unit species in areas of the FCZ open to foreign longline fishing, there would be no waste of the management unit species (Objective 6). The risk of gear conflicts could be reduced substantially (Objective 7), and there would be less interference with foreign longlining for tuna and no interference at all with foreign pole-and-line and purse seine fishing operations for tuna (Objective 8). The statistical data base might be improved, since foreign nations might be more inclined to cooperate in exchanging fishing data provided that their vessels had some access to the FCZ (Objective 9). International cooperation on the management of highly migratory species could conceivably be promoted, but with less immediate priority given to domestic fishing interests (Objective 10). Partial area restrictions could be relatively inexpensive to enforce unless they were combined with effort limits which would require more active monitoring of foreign fishing activities to insure that those limits were being observed. Limits on the number of vessels would be less costly to enforce than limits on number of vessel days allowed or the total number of hooks set.

7.3.1.5 Control Foreign Fishing Effort - Drift-Gillnet Fisheries

There is no history of foreign drift-gillnet fishing in the U.S. FCZ of the Western Pacific Region other than a March 25, 1983 Coast Guard seizure of a Japanese gillnetter caught fishing in the U.S. FCZ of the Northwestern Hawaiian Islands (NWHI) without a permit. The vessel's catch consisted of significant quantities of striped marlin, swordfish, and mahimahi besides tuna (Section 6.11.1). The vessel's catch log also indicated that 69 porpoises were caught outside of the FCZ and they were not retained. Regulations promulgated by the Japanese Government prohibit Japanese gillnet vessels from setting their nets in broad reaches of the Pacific ocean including in most parts of the U.S. FCZ of the Western Pacific Region except for in small areas near the southeast and northwest extremities of the FCZ surrounding the Hawaiian archipelago, the northernmost corner of the FCZ of the Commonwealth of the Northern Mariana Islands, and in the southern half of the U.S. FCZ surrounding Johnston Island. At the Council's urging, the National Marine Fisheries Service (NMFS) informed the Japanese Government that the area closures established by the Government of Japan to control Japanese drift-gillnet fisheries cut across

the U.S. FCZ of the Western Pacific Region in the above-mentioned locations, mistakenly implying to Japanese fishermen that drift-gillnet fishing is permitted in these FCZ waters. The NMFS requested that proper Japanese officials notify the Japanese gillnet fleets about the overlap of permitted Japanese drift-gillnet fishing areas with the U.S. FCZ of the Western Pacific Region so that Japanese fishermen do not assume that gillnet fishing is permitted in U.S. waters. The Council wishes to maintain the present U.S. policy of disallowing all foreign drift-gillnet fishing in the U.S. FCZ of the Western Pacific Region for the following reasons:

(1) Drift-gillnet fishing inevitably results in a high catch of the management unit species and marine mammals;

(2) The area closures established by the Government of Japan to control the "marlin and others" drift-gillnet fishery by Japanese vessels already includes most parts of the U.S. FCZ of the Western Pacific Region; and

(3) There are no compelling reasons for legalizing foreign drift-gillnet fishing in U.S. waters even though the largest portion of catches of drift-gillnet vessels operating in tropical waters probably is tuna.

7.3.1.6 Control Foreign Catch - Foreign Longline Fishery

Besides controlling foreign fishing effort, the Council also considered options to restrict the foreign catch of the management unit species. The most direct limit on catch is quotas for the different species in the management unit. The first difficult step would be to establish appropriate quotas for individual species. Presumably, the catch limits for each of the management unit species would be above zero but less than some average of historic levels to promote increased availability or transfers of catches of the management unit species to domestic fishermen and to provide some opportunity for foreign vessels to fish for tuna. A second difficulty is to agree on what should be done once a quota is reached for a specific species in the management unit in a particular area of the FCZ. Should further foreign longlining be prohibited, or should a non-retention rule be instituted instead? Quotas to foreign longline fishing could be established in areas of the FCZ which are important to domestic fishermen. This could result in a greater probability of transfer of fish from foreign to domestic

fishermen and increased values associated with the domestic fisheries for the management unit species, and a lower risk of domestic and foreign gear conflicts. The difficulties with this approach are determination of the appropriate quotas by area and by species, and determination of appropriate management measures (full closure, non-retention) when a quota for any single species is reached. It might be possible to institute a "value transfer" approach, in which foreign longline vessels would pay to the U.S. a partial or full ex-vessel value of all management unit species caught in open areas and seasons. This would not, however, result in the transfer of catches, but the U.S. would nonetheless receive a measure of the commercial value of the fish taken by foreign vessels.

Catch limits are less useful than effort restrictions in terms of meeting the Council's objectives. A quota approach in which an area of the FCZ would be closed once a quota was reached for any single species in the management unit could have a very similar effect as a general prohibition on foreign longlining. If a quota was set for a species that was quite abundant, such that the single species quota would be reached quickly, then further foreign longline fishing would be prohibited. Lower quotas would tend to be more effective in achieving catch transfers from foreign to domestic fishermen and increased fishery values associated with the domestic fisheries for the management unit species than higher quotas (Objectives 1-5). Waste would be minimized with low quotas (Objective 6), and gear conflicts would be largely precluded (Objective 7). There could be considerable interference with foreign longline fishing for tuna under a low quota approach for the management unit species, but not with other forms of tuna fishing (Objective 8). The data base might be marginally improved (Objective 9), but international cooperation would not necessarily be more likely to occur (Objective 10).

If quotas to foreign longliners for each of the species in the management unit were set at a higher level, and if a non-retention policy for a species was imposed once that species' quota was reached, then transfers of catch to domestic fisheries and increased values stemming from domestic fisheries would be less likely to occur. Waste would still occur under this approach, and gear conflicts could also be likely, but interference with foreign longlining for tuna would be decreased. A better data base could be established with a high quotas policy, and international cooperation might be promoted more effectively than with low quotas or with effort restrictions.

A crucial element in the catch restriction approach through quotas would be the cost of effective monitoring of the foreign longline fishery. Catch restrictions can be meaningful

only with accurate and timely foreign catch reports, and at-sea boardings and inspections to verify the levels of harvest of the management unit species made in the FCZ. To the extent catch restrictions are flexible (e.g., allowing non-retention of a species in the management unit once a quota is reached for that species) such management approaches introduce greater monitoring and enforcement expenses, probably accompanied with a decreasing likelihood of catch transfers of the management unit species from foreign longline to domestic fishermen.

7.3.1.7 Seasonal Variations on Effort Restrictions

There are pronounced seasonal variations in the catches of the different pelagic species in the management unit made in different parts of the FCZ of the Western Pacific Region by foreign and domestic fishermen. Catch or area restrictions to foreign fishing could be based on the variability in the seasonal availability of the different species in the management unit.

In Hawaiian waters, catches of blue marlin made by domestic fishermen peak in late summer, while catches of striped marlin are highest in the winter and spring months. Catch data reported to the HDAR indicate that mahimahi catches have a bimodal distribution with highest catches in spring and autumn. The two distinct peaks in mahimahi catches and the rather low availability of mahimahi catches in Hawaiian waters at other times of the year are suggestive of a band of high stock density moving through the Hawaiian islands first in one direction and then in the other. Wahoo catches in Hawaii are highest in the summer months. The catch of mahimahi in Guam is highest from January through March, while wahoo catches usually peak during October through December. Catches of billfish in Guam, as well as that of tuna, generally peak during the summer months (June - August). In American Samoa, the largest domestic catches of the management unit species are made in the southern hemisphere's spring and summer months, i.e., the months of October through February.

Foreign longline catch records show comparable seasonal variablity for billfish catches with highest catches of blue marlin made in the FCZ of Hawaii in the summer and highest catches of striped marlin made in the spring and fall. The seasonablity of mahimahi and wahoo catches on foreign longline gear is unknown because catches of these species are not logged separately.

On the average, for the years 1973-1977, 76% of the annual foreign longline tuna catch but only 56% of the foreign

longline billfish catch in the FCZ surrounding Hawaii was taken during a 5-month winter period (October through February) (see Table 7.3 through 7.6). Twice as much billfish (mostly striped marlin and swordfish) and more than 4 times as much tuna are caught by foreign longliners during these 5 winter months as compared to an equivalent 5-month summer period. Seventy-five percent of the winter month foreign longline catch (billfish and tunas combined) is taken from the NWHI portion of the FCZ. Striped marlin and swordfish account for over 90% of the NWHI winter billfish catch, while bigeye and albacore tuna dominate the winter month catch of tunas made by foreign longliners in the NWHI. Blue marlin and yellowfin tuna are the principal species taken on foreign longline gear in the FCZ of the main Hawaiian islands during the summer months.

Unlike the winter fishery in which most of the foreign longline catch is made in the NWHI FCZ, the waters surrounding the main Hawaiian Islands become the principal focus of foreign longlining during the summer months. The FCZ of the main Hawaiian Islands accounts for 86% of summer month foreign longline tuna catches and 63% of the summer month foreign billfish catch. Thirty-four percent (34%) of the foreign summer month billfish catch is blue marlin, followed closely by swordfish (27%) and striped marlin (26%). For the Hawaii Islands FCZ in total, only 17% of the average annual (1973-1977 data) foreign longline tuna catch is made during the spring/summer months (April through August). Twenty-seven percent of the annual foreign longline billfish catch is made during this spring/summer period for the FCZ as a whole.

In the FCZ around Guam, the majority of foreign longline catches of billfish occurs in the September through March period (Table 7.7).

The seasonality of foreign longline catches of billfish in the FCZ around American Samoa was not studied. The rectangular areas recommended by the Council for closure to foreign longline fishing within the FCZ of American Samoa are a very small portion (about 14%) of the entire area of the FCZ surrounding American Samoa. The Council, therefore, recommended a year-round closure, and did not feel that there was a need to examine seasonal closures to foreign longline fishing for the FCZ of American Samoa.

The seasonality of domestic and foreign catches and effort can be considered in several ways. First, if certain areas of the FCZ are heavily used at different times of the year by domestic fishermen, or if the principal species in the management unit appear to be especially vulnerable to domestic gear types at certain times of the year, then the area or season closures to foreign longline fishing selected by the Council

TABLE 7.3

AVERAGE CATCH (1973-1977) AND EX-VESSEL VALUE (1980 PRICES) OF BILLFISH AND TUNA TAKEN BY FOREIGN LONGLINERS IN THE VARIOUS SUBZONES OF THE U.S. FCZ AROUND THE MAIN HAWAIIAN ISLANDS AND THE NORTHWESTERN HAWAIIAN ISLANDS MADE DURING THE ENTIRE YEAR

	MAIN HAWAIIAN ISLANDS				
	Miles	0	50	100	200
NORTHWESTERN HAWAIIAN ISLANDS	0	A = 0 B = 0 C = 0 D = 0 E = 0 F = 0	A = 11.0 MT B = $28,349 C = 105.5 MT D = $355,861 E = 116.5 MT F = $384,210	A = 28.1 MT B = $71,211 C = 246.3 MT D = $831,830 E = 274.4 MT F = $903,041	A = 102.6 MT B = $251,805 C = 865.9 MT D = $2,994,856 E = 968.5 MT F = $3,246,661
	50	A = 33.2 MT B = $91,159 C = 273.0 MT D = $915,391 E = 306.2 MT F = $1,006,550	A = 44.2 MT B = $119,508 C = 378.5 MT D = $1,271,252 E = 422.7 MT F = $1,390,760	A = 61.3 MT B = $162,370 C = 519.3 MT D = $1,747,221 E = 580.6 MT F = $1,909,591	A = 135.8 MT B = $342,964 C = 1,138.9 MT D = $3,910,247 E = 1,274.7 MT F = $4,253,211
	100	A = 86.6 MT B = $237,144 C = 647.7 MT D = $2,143,078 E = 724.3 MT F = $2,380,222	A = 97.6 MT B = $265,493 C = 743.2 MT D = $2,498,939 E = 840.8 MT F = $2,764,432	A = 114.7 MT B = $308,355 C = 884.0 MT D = $2,974,908 E = 998.7 MT F = $3,283,263	A = 189.2 MT B = $488,949 C = 1,503.6 MT D = $5,137,934 E = 1,692.8 MT F = $5,626,883
	200	A = 200.1 MT B = $544,832 C = 1,399.6 MT D = $4,545,624 E = 1,599.7 MT F = $5,090,456	A = 211.1 MT B = $573,181 C = 1,505.1 MT D = $4,901,485 E = 1,716.2 MT F = $5,474,666	A = 228.2 MT B = $616,043 C = 1,645.9 MT D = $5,377,454 E = 1,874.1 MT F = $5,993,497	A = 302.7 MT B = $796,637 C = 2,265.5 MT D = $7,540,480 E = 2,568.2 MT F = $8,337,117

A = Catch of billfish.
B = Ex-vessel value of billfish catch.
C = Catch of tunas.
D = Ex-vessel value of tuna catch.
E = Total catch of billfish and tunas.
F = Ex-vessel value of billfish and tuna catch.

TABLE 7.4

AVERAGE CATCH (1973-1977) AND EX-VESSEL VALUE (1980 PRICES) OF BILLFISH AND TUNA TAKEN BY FOREIGN LONGLINERS IN THE VARIOUS SUBZONES OF THE U.S. FCZ AROUND THE MAIN HAWAIIAN ISLANDS AND THE NORTHWESTERN HAWAIIAN ISLANDS DURING OCTOBER THROUGH MARCH: FOREIGN STRIPED MARLIN SEASON*

	MAIN HAWAIIAN ISLANDS				
	Miles	0	50	100	200
NORTHWESTERN HAWAIIAN ISLANDS	0	A = 0 B = 0 C = 0 D = 0 E = 0 F = 0	A = 5.4 MT B = $14,194 C = 64.5 MT D = $195,997 E = 69.9 MT F = $210,191	A = 13.9 MT B = $35,765 C = 145.3 MT D = $436,056 E = 159.2 MT F = $471,821	A = 43.4 MT B = $109,150 C = 450.3 MT D = $1,335,697 E = 493.7 MT F = $1,444,847
	50	A = 23.5 MT B = $64,294 C = 255.0 MT D = $854,100 E = 278.5 MT F = $918,394	A = 28.9 MT B = $78,488 C = 319.5 MT D = $1,050,097 E = 348.4 MT F = $1,128,585	A = 37.4 MT B = $100,059 C = 400.3 MT D = $1,290,156 E = 437.7 MT F = $1,390,215	A = 66.9 MT B = $173,444 C = 705.3 MT D = $2,189,797 E = 772.2 MT F = $2,363,241
	100	A = 59.3 MT B = $162,419 C = 587.3 MT D = $1,964,505 E = 646.6 MT F = $2,126,924	A = 64.7 MT B = $176,613 C = 651.8 MT D = $2,160,502 E = 716.5 MT F = $2,337,115	A = 73.2 MT B = $198,184 C = 732.6 MT D = $2,400,561 E = 805.8 MT F = $2,598,745	A = 102.7 MT B = $271,569 C = 1,037.6 MT D = $3,300,202 E = 1,140.3 MT F = $3,571,771
	200	A = 125.0 MT B = $342,405 C = 1,263.8 MT D = $4,116,050 E = 1,388.8 MT F = $4,458,455	A = 130.4 MT B = $356,599 C = 1,328.3 MT D = $4,312,047 E = 1,458.7 MT F = $4,668,646	A = 138.9 MT B = $378,170 C = 1,409.1 MT D = $4,552,106 E = 1,548.0 MT F = $4,930,276	A = 168.4 MT B = $451,555 C = 1,714.1 MT D = $5,451,747 E = 1,882.5 MT F = $5,903,302

A = Catch of billfish.
B = Ex-vessel value of billfish catch.
C = Catch of tunas.
D = Ex-vessel value of tuna catch.
E = Total catch of billfish and tunas.
F = Ex-vessel value of billfish and tuna catch.
* = Period of the year in which approximately 75% of the average annual catch of striped marlin is made by foreign longliners.

TABLE 7.5

AVERAGE CATCH (1973-1977) AND EX-VESSEL VALUE (1980 PRICES) OF BILLFISH AND TUNA TAKEN BY FOREIGN LONGLINERS IN THE VARIOUS SUBZONES OF THE U.S. FCZ AROUND THE MAIN HAWAIIAN ISLANDS AND THE NORTHWESTERN HAWAIIAN ISLANDS DURING MARCH THROUGH OCTOBER: FOREIGN BLUE MARLIN SEASON*

	MAIN HAWAIIAN ISLANDS				
	Miles	0	50	100	200
NORTHWESTERN HAWAIIAN ISLANDS	0	A = 0 B = 0 C = 0 D = 0 E = 0 F = 0	A = 6.5 MT B = $16,849 C = 52.0 MT D = $198,719 E = 58.6 MT F = $215,568	A = 16.8 MT B = $41,966 C = 125.1 MT D = $479,371 E = 141.9 MT F = $521,337	A = 66.2 MT B = $161,074 C = 476.3 MT D = $1,875,068 E = 524.5 MT F = $2,036,142
	50	A = 11.2 MT B = $30,730 C = 48.2 MT D = $171,563 E = 59.4 MT F = $202,294	A = 17.7 MT B = $47,579 C = 100.2 MT D = $370,282 E = 118.9 MT F = $417,861	A = 28.0 MT B = $72,696 C = 173.3 MT D = $650,934 E = 201.2 MT F = $723,631	A = 77.3 MT B = $191,804 C = 524.4 MT D = $2,046,631 E = 582.7 MT F = $2,238,435
	100	A = 30.4 MT B = $83,232 C = 100.3 MT D = $348,623 E = 130.7 MT F = $431,855	A = 37.0 MT B = $100,080 C = 152.3 MT D = $547,342 E = 189.3 MT F = $647,422	A = 47.2 MT B = $125,198 C = 225.4 MT D = $827,994 E = 272.6 MT F = $953,191	A = 96.6 MT B = $244,305 C = 576.6 MT D = $2,223,691 E = 673.2 MT F = $2,467,996
	200	A = 81.2 MT B = $218,446 C = 218.2 MT D = $730,713 E = 299.4 MT F = $950,158	A = 87.7 MT B = $236,294 C = 270.2 MT D = $929,432 E = 360.0 MT F = $1,165,726	A = 98.0 MT B = $261,412 C = 343.3 MT D = $1,210,084 E = 441.3 MT F = $1,471,495	A = 147.4 MT B = $380,520 C = 694.4 MT D = $2,605,780 E = 841.9 MT F = $2,986,300

A = Catch of billfish.
B = Ex-vessel value of billfish catch.
C = Catch of tunas.
D = Ex-vessel value of tuna catch.
E = Total catch of billfish and tunas.
F = Ex-vessel value of billfish and tuna catch.
* = Period of the year in which approximately 75% of the average annual catch of blue marlin is made by foreign longliners.

TABLE 7.6

AVERAGE CATCH (1973-1977) AND EX-VESSEL VALUE (1980 PRICES) OF BILLFISH AND TUNA TAKEN BY FOREIGN LONGLINERS IN THE VARIOUS SUBZONES OF THE U.S. FCZ AROUND THE MAIN HAWAIIAN ISLANDS AND THE NORTHWESTERN HAWAIIAN ISLANDS DURING MAY THROUGH NOVEMBER*: DOMESTIC BILLFISH SEASON

	MAIN HAWAIIAN ISLANDS				
	Miles	0	50	100	200
NORTHWESTERN HAWAIIAN ISLANDS	0	A = 0 B = 0 C = 0 D = 0 E = 0 F = 0	A = 6.0 MT B = $15,712 C = 48.4 MT D = $185,768 E = 54.4 MT F = $201,480	A = 15.7 MT B = $40,259 C = 117.2 MT D = $447,326 E = 132.9 MT F = $487,585	A = 63.9 MT B = $157,532 C = 441.0 MT D = $1,720,039 E = 504.9 MT F = $1,877,571
	50	A = 3.9 MT B = $12,180 C = 73.6 MT D = $267,404 E = 77.5 MT F = $279,584	A = 9.9 MT B = $27,892 C = 122.0 MT D = $453,172 E = 131.9 MT F = $481,064	A = 19.6 MT B = $52,439 C = 190.8 MT D = $714,730 E = 210.4 MT F = $767,169	A = 67.8 MT B = $169,712 C = 514.6 MT D = $1,987,443 E = 582.4 MT F = $2,157,155
	100	A = 13.4 MT B = $35,387 C = 148.7 MT D = $530,264 E = 162.1 MT F = $565,591	A = 19.4 MT B = $51,099 C = 197.1 MT D = $715,972 E = 216.5 MT F = $767,071	A = 29.1 MT B = $75,646 C = 265.9 MT D = $977,530 E = 295.0 MT F = $1,053,176	A = 77.3 MT B = $192,919 C = 589.7 MT D = $2,250,243 E = 667.0 MT F = $2,443,162
	200	A = 46.5 MT B = $119,775 C = 301.7 MT D = $1,036,460 E = 348.2 MT F = $1,156,235	A = 52.5 MT B = $135,487 C = 350.1 MT D = $1,222,228 E = 438.6 MT F = $1,357.715	A = 62.2 MT B = $160,034 C = 418.9 MT D = $1,483,786 E = 481.1 MT F = $1,643,820	A = 110.4 MT B = $277,307 C = 742.7 MT D = $2,756,499 E = 853.1 MT F = $3,033,806

A = Catch of billfish.
B = Ex-vessel value of billfish catch.
C = Catch of tunas.
D = Ex-vessel value of tuna catch.
E = Total catch of billfish and tunas.
F = Ex-vessel value of billfish and tuna catch.
* = Period of the year in which approximately 75% of the average annual catch of billfish (all species combined) is made by fishermen in Hawaii.

TABLE 7.7

AVERAGE CATCH (1971-75) AND EX-VESSEL VALUE (1980) OF BILLFISH AND TUNA TAKEN BY FOREIGN LONGLINERS IN THE VARIOUS SUBZONES OF THE U.S. FCZ OF GUAM DURING VARIOUS TIMES (SEASONS) OF THE YEAR

FCZ Sub Area (Miles)	Seasons of Year	Average (1971-75) Billfish Catch (MT)	Ex-Vessel Value of Average Billfish Catch $	Average (1971-75) Tuna Catch (MT)	Ex-Vessel Value of Average Tuna Catch $
200	Entire Year	17.2	$40,486	100.0	$263,955
100	Entire Year	5.9	14,040	34.4	91,764
50	Entire Year	1.4	3,413	8.9	23,284
200	Sept/March	13.1	30,769	80.8	213,276
100	Sept/March	3.7	8,929	24.5	62.421
50	Sept/March	0.9	2,124	5.4	13,151
200	April/Aug	4.1	9,717	19.2	50,679
100	April/Aug	2.1	5,111	9.9	29,343
50	April/Aug	0.5	1,289	3.5	10,133

should emphasize the potential for large gains to domestic fisheries by ensuring that domestic fishermen have priority in those areas at those times of the year. Conversely, the Council should also be sensitive to the potential for larger tuna "losses" for foreign longliners if areas are closed at times when their tuna catch rates are especially high. Therefore, the Council evaluated a large number of alternative combinations of area/season closures to foreign longline fishing to qualitatively assess the potential gains to domestic fishermen and losses to foreign longline fishermen. Tables 7.8 and 7.9 illustrate the results of these evaluations for the FCZ around Hawaii (considering both the main Hawaiian islands and NWHI) and Guam respectively.

TABLE 7.8 - AREA AND SEASON CLOSURE ALTERNATIVES TO FOREIGN LONGLINE FISHING WITHIN VARIOUS SUBZONES OF THE U.S. FCZ OF THE MAIN AND NORTHWESTERN HAWAIIAN ISLANDS (NWHI)

*Rank Order	% of Total Annual Value of Billfish & Tuna ($8,337,117)	Size of Area Closure Between Main	NWHI	Season	Average (1973-77) Billfish Catch (MT)	Average (1973-77) Tuna Catch (MT)	Billfish Catch / Tuna Catch	% of Average Annual (1973-77) Foreign Pacific Ocean Billfish Catch (56,500 MT)	% of Average Annual (1973-77) Foreign Pacific Ocean Tuna Catch (245,300 MT)
1	100.0	200	200	Entire Year	302.7	2,265.5	.13	.53	.92
		200	200	May/Dec					
2	78.8	100	100	Jan/Apr	225.9	1,959.7	.12	.39	.79
3	71.9	100	200	Entire Year	228.2	1,645.9	.14	.40	.67
4	70.8	200	200	Oct/Feb	168.4	1,714.1	.10	.29	.69
5	67.5	200	100	Entire Year	189.2	1,503.6	.13	.33	.61
		200	200	March/Oct					
6	63.7	100	100	Entire Year	214.9	1,353.0	.16	.08	.55
7	59.1	100	200	Oct/Feb	138.9	1,409.1	.10	.24	.57
8	51.0	200	50	Entire Year	135.8	1,138.9	.12	.24	.46
		200	-	Entire Year					
9	45.7	-	100	May/Nov	116.0	1,014.6	.11	.20	.41
10	42.8	200	100	Oct/Feb	102.7	1,037.6	.10	.18	.42
11	39.4	100	100	Entire Year	114.7	884.0	.13	.20	.36
12	38.9	200	-	Entire Year	102.6	865.9	.12	.18	.35
13	36.4	200	200	May/Nov	110.4	742.7	.15	.19	.30
14	35.8	200	200	March/Oct	147.4	694.4	.21	.26	.28
15	31.2	100	100	Oct/Feb	73.2	732.6	.10	.12	.29
16	29.6	200	100	March/Oct	96.6	576.6	.17	.17	.23
17	29.3	200	100	May/Nov	77.3	589.7	.13	.13	.24
18	28.3	200	50	Oct/Feb	66.9	705.3	.09	.11	.28
19	26.8	200	50	March/Oct	77.3	524.4	.15	.13	.21
20	25.9	200	50	May/Nov	67.8	514.6	.13	.12	.20
21	24.4	200	-	March/Oct	66.2	476.3	.14	.11	.19
22	22.9	100	50	Entire Year	61.3	519.3	.12	.10	.21
23	22.5	200	-	May/Nov	63.9	441.0	.14	.11	.17
24	19.7	100	200	May/Nov	62.2	418.9	.15	.11	.17
25	17.6	100	200	March/Oct	98.0	343.3	.29	.17	.13
26	17.3	200	-	Oct/Feb	43.4	450.3	.10	.07	.18
27	16.7	100	50	Oct/Feb	37.4	400.3	.09	.06	.16
28	12.6	100	100	May/Nov	29.1	265.4	.11	.05	.10
29	11.4	100	100	March/Oct	47.2	225.4	.21	.08	.09
30	10.8	100	-	Entire Year	28.1	246.3	.11	.03	.10
31	9.2	100	50	May/Nov	19.6	190.8	.10	.03	.07
32	8.7	100	50	March/Oct	28.0	173.3	.16	.04	.07
33	6.3	100	-	March/Oct	16.8	125.1	.13	.02	.05
34	5.8	100	-	May/Nov	15.7	117.2	.13	.02	.04
35	5.7	100	-	Oct/Feb	13.9	145.3	.10	.02	.05

* = Ranked according to the percentage of the value of the average annual catch of billfish and tuna made by foreign longliners in the FCZ of the Hawaiian archipelago that would be "displaced" by each area/season closure option.

TABLE 7.9 - AREA AND SEASON CLOSURE ALTERNATIVES TO FOREIGN LONGLINE FISHING WITHIN VARIOUS SUBZONES OF THE U.S. FCZ OF GUAM

*Rank Order	% of Total Annual Value of Billfish & Tuna ($304,441)	Size of Area Closure	Season	Average (1971-75) Billfish Catch (MT)	Average (1971-75) Tuna Catch (MT)	Billfish Catch / Tuna Catch	% of Average Annual (1973-77) Foreign Catch of Billfish Made in the U.S. FCZ of the Western Pacific Region (779 MT)	% of Average Annual (1973-77) Catch of Tunas Made by Foreign Longliners in the U.S. FCZ of the Western Pacific Region (5,430 MT)
1	100.0	200	Entire Year	17.2	100.0	.17	2.21	1.84
2	91.5	200 100	April/Aug Entire Year	15.3	90.7	.17	1.96	1.67
3	80.3	200	Sept/March	13.1	80.0	.16	1.68	1.48
4				5.9	34.4	.17	.76	.63
5	23.4	100	Sept/March	3.7	24.5	.15	.47	.45
6	19.8	200	April/Aug	4.1	19.2	.21	.53	.35
7	11.3	100	April/Aug	2.1	9.9	.23	.27	.18
8	8.8	50	Entire Year	1.4	8.9	.16	.18	.16
9	5.0	50	Sept/March	0.9	5.4	.17	.12	.10
10	3.8	50	April/Aug	0.5	3.5	.14	.06	.06

* = Ranked according to the percentage of the value of the average annual catch of billfish and tuna made by foreign longliners in the FCZ of Guam that would be "displaced" by each area/season closure option.

The dilemma in applying a seasonal approach to area closures for foreign longline fishing in the FCZ of the Western Pacific Region stems from the fact that the abundance of each of the principal species in the management unit (blue marlin, striped marlin, mahimahi and wahoo) peaks during different times of the year. Choosing the summer months for closures to foreign longline fishing, for example, would benefit recreational fishermen in Hawaii and Guam who target on blue marlin but would do very little to enhance the catches and catch rates of striped marlin which are a major target species for domestic commercial fishermen in Hawaii. A summer closure would also not be beneficial with respect to domestic catches of mahimahi since the abundance of mahimahi peaks during the spring and fall months of each year in Hawaii and during the winter months in Guam. Conversely, choosing a winter-month closure for foreign longline fishing could be expected to increase domestic catches of striped marlin, but it would ignore the interests of fishermen in Hawaii and in American Samoa who seek blue marlin, mahimahi and wahoo. Since there really is no "off-season" for the domestic fisheries for the major species in the management unit, the Council decided to reject the seasonal approach for restricting foreign longline fishing and focused on year-round area closure options instead.

7.3.1.8 Voluntary Controls

The Magnuson Act prescribes certain minimum requirements which must be met for foreign fishing in the FCZ, including fishing permits and fees and coverage by U.S. observers. Except for these statutory requirements, other management measures could be pursued through a voluntary approach as opposed to casting a management program in the form of Federal regulations. For example, foreign longline operators could voluntarily abstain from fishing in certain areas, or could agree to limit the number of vessels or other measures to limit fishing effort in certain areas.

While it is the intent of Congress to achieve 100% observer coverage, the Magnuson Act does, however, allow the exercise of some discretion to exempt some foreign fishing vessels from having to have an observer on board provided that:

1. the facilities of the foreign fishing vessel for quartering of a U.S. observer, or for carrying out observer functions are so inadequate or unsafe that the health or safety of an observer could be jeopardized, or

2. the time during which a foreign fishing vessel engages in fishing in the U.S. FCZ is of such short duration that the placing of a U.S. observer aboard the vessel would be impractical or uneconomical, or

3. in a situation where a fleet of catcher vessels fishing in the U.S. FCZ transfer their catch to a mothership aboard on which is a U.S. observer; in this situation, only a portion (representative sample) of the catcher vessels need to have an observer on board, or

4. when an observer is not available "for reasons beyond the controls of the Secretary", exclusive of a lack of funds.

These legally defined observer waiver conditions (Sec. 201(i)(2)) provide flexibility for achieving something less than 100% observer coverage. With the consent of the Council, the NMFS could develop a mutually agreed upon observer program in cooperation with the management of fleets of foreign longliners. It might not be necessary to place observers on all longline vessels from nations which voluntarily limit their fishing effort or provide timely data on catch and effort regarding their fishing activities in the FCZ of the Western Pacific Region.

The principal advantages of voluntary agreements is that they are in harmony with U.S. tuna policy, and can provide flexibility in negotiating arrangements for international management of highly migratory species. Voluntary approaches to problem resolution can help foster mutual understanding of problems, objectives, and priorities of managing <u>all</u> highly migratory species. Voluntary agreements initially pertaining to fishing for the management unit species in the FCZ can be a step towards international agreements dealing with all highly migratory species, inclusive of tunas, throughout the central and western Pacific. A substantial portion of the compliance burden can be placed on the fishery participants themselves rather than on the Federal Government. An agreement could provide that a pattern of willful violations of the terms of a voluntary agreement would trigger the imposition of mandatory measures with U.S. enforcement and penalties for violations backed up by U.S. law.

On the other hand, voluntary agreements would be of limited value if they were not entered into by vessels of all nations participating in a fishery in a particular region. This is a difficult problem in the Western Pacific Region since vessels from various tuna fishing associations of Japan, Korea and Taiwan are active in different areas of the central, south, and western Pacific (with some overlap). A second problem is that there must be assurance that individual vessels caught violating

a voluntary agreement would, in fact, have sanctions imposed on them by their representative organizations. Mandatory provisions in a FMP are backed by a reasonable certainty of prosecution if violations are discovered. This certainty decreases considerably with voluntary agreements. A third general problem is that any voluntary agreement would, by definition, be less stable or predictable than mandatory provisions having the force of U.S. law. Finally, the entry of new nations or new fishing federations into a fishery governed by voluntary agreements would further complicate an already complicated situation.

It is uncertain whether meaningful voluntary agreements governing foreign fishing in the FCZ can be developed with the fishing fleets of Japan, Korea, and Taiwan presently involved in longline fishing in waters abutting the Council's areas of jurisdiction. Over the years in developing this plan, the Council has had a series of discussions with both Korean and Japanese tuna fishing interests and government officials, but no discussions have yet been conducted with Taiwanese fishing industry representatives or government officials. Voluntary agreements are possible mechanisms for effectuating some of the measures desired under this plan. If it were possible to have voluntary agreements successfully negotiated and implemented, depending on their scope, there would not be as much of an immediate need to implement the measures recommended by this FMP in the form of regulations.

7.3.1.9 Summary of Alternative Management Strategies for Foreign Fishing

The general alternative strategies narratively described in Section 7.3.2 for managing the various foreign fisheries are compared in Table 7.10 in terms of achieving the objectives of the FMP. A plus sign indicates that an objective is being met to some degree. A zero indicates that there is no effect on a particular objective. A minus sign indicates that a management alternative would work against achieving a particular objective of the FMP. The net effect on all of the objectives of the FMP for a given management strategy is simply a summarization of pluses and minuses.

This exercise is interesting and is highly subjective. The bottom line or "net effect" would tend to vary depending on the value judgement of the individual doing the exercise. Not only is assigning a positive or negative sign a subjective decision, but a magnitude or weight could also be attached to each plus or minus sign as well, thus complicating the situation. Table 7.10 simply illustrates that the FMP

TABLE 7.10

ALTERNATIVE MANAGEMENT STRATEGIES FOR FOREIGN FISHING IN TERMS OF ACHIEVING THE OBJECTIVES OF THE FMP

Objectives of the FMP (Section 4.2)	Alternative Management Strategies For Foreign Fishing							
	Monitor Only Longline Fisheries	Monitor Only Pole-and-Line Fisheries	Monitor Only Purse Seine Fisheries	Control Fishing Effort: Longline Fisheries	Control Fishing Effort: Drift-Gillnet Fisheries	Control Catch: Longline Catch	Control Fishing Effort: Longline Fisheries But Only Seasonally	Voluntary Controls: Longline Fisheries
	7.3.1.1	7.3.1.2	7.3.1.3	7.3.1.4	7.3.1.5	7.3.1.6	7.3.1.7	7.3.1.8
1. To promote the growth of domestic harvests of the management unit species and domestic fishery values associated with these species.	-	0	0	+	+	+,0	0	-
2. To enhance the opportunity for successful recreational fishing experiences for the management unit species by domestic fishermen.	-	0	0	+	+	+	0	-
3. To improve the opportunity for domestic commercial fishermen to engage in profitable fishing operations for pelagic species.	-	-	-	+	+	+,0	0	-
4. To enhance the marketability of sportfishing charter-boat services.	-	0	0	+	+	+	0	-
5. To promote domestic marketing of the management unit species in lieu of marketing of some of these species in Guam and American Samoa by purse seine fishermen and foreign longline fishermen.	-	0	-	+	0	+	0	+
6. To eliminate waste of billfish and other management unit species which are taken along with tuna on foreign longline gear, and by purse seine and drift-gillnet vessels.	+	0	+	+	+	0	+	+
7. To diminish the risk of domestic/foreign gear conflicts in the FCZ, and to preclude the possibilities of its occurrence in areas of concentrated domestic fishing.	-	-	-	+	+	0	0	+
8. To the extent consistent with the above objectives, to minimize interference with foreign tuna fishing in the U.S. FCZ, with special regard for the need to maintain deliveries of tuna to American Samoa canneries.	+	+	+	0	-	-	+	+
9. To improve the statistical base for better stock assessment and for better future decisions to conserve and manage pelagic fish resources throughout their range.	+	+	+	-	-	-	0	+
10. To promote international/regional management of highly migratory species throughout their range as long as domestic fishery benefits under this plan are maintained or enhanced.	0	+	0	+	+	-	+	+
11. To conserve billfish and associated species to the extent practicable in the FCZ while international agreements are being developed.	0	0	0	-	0	-	+	0
NET EFFECT# on All Objectives	-3 ==	+1 ==	0 =	+6 ==	+5 ==	≈0 ==	+4 ==	+2 ==

+ = Positive impact; - = negative impact; 0 = no impact.
# Minuses cancel out pluses; 0 is neutral.

objectives are best met by regulating foreign longline fishing effort and by disallowing foreign drift-gillnet fishing in the FCZ of the Western Pacific Region.

7.3.2 Alternatives for Further Analysis to Control Foreign Longline Fishing

On the basis of information presented in previous sections of this chapter, the Council has concluded that:

(1) Foreign drift-gillnet fishing should not to be allowed in the FCZ of the Western Pacific Region, and domestic drift-gillnet fishing may not be conducted unless first specifically authorized by an experimental fishing permit;

(2) For the time being, foreign pole-and-line (live bait) fishing and purse seine fishing for tuna by foreign and domestic vessels should be allowed in the FCZ of the Western Pacific Region subject to voluntary submission of data on catches of the management unit species and tuna;

(3) Regarding foreign longline fishing, the Council has decided that area closures of parts of the FCZ of the Western Pacific Region warrant further analyses and comparisons of impacts.

It is acknowledged at the outset that biological, ecological and stock conservation facets regarding the migratory species in the management unit are not among the factors that the Council can hope to control. The Council has noted several times previously that biological and ecological factors are certainly important. However, conservation and management measures for fisheries for billfish and the other species in the management unit solely in the FCZ cannot be expected to result in significant biological or ecological effects. Controlling fishing mortality only in the FCZ will not have a perceptible impact on highly migratory billfish stocks or on stocks of related pelagic species throughout their range in the Pacific. Elimination of the non-retention approach should, however, have some positive effects by eliminating the potential for waste. All area/seasonal closure options to foreign longline fishing will probably have essentially the same biological and ecological effects. The major impacts of area/seasonal closure alternatives will be in the amount and distribution of benefits and costs to different sectors of the domestic and foreign fisheries, and in the degree of administrative difficulty and enforceability of the closure alternatives.

The previous discussions provided a backdrop for considering the effects of a variety of closure alternatives in relation to the Council's objectives. Obviously, the effects vary not only with respect to the size of the closures considered but also to the extent which foreign longliners would either fish in the open areas of the FCZ or relocate to areas beyond the boundaries of the FCZ. The following examples will indicate, in qualitative and in quantitative terms, where possible, the range of possible impacts of selected alternatives depending on the degree of transfer of the management unit species from foreign to domestic fishermen and on the response of foreign fishermen to the alternative considered.

7.3.2.1 Preferred Area Closure Alternative: The Proposed Action

Under this alternative, it is assumed that the foreign longline effort previously applied in the FCZ areas recommended to be closed would relocate beyond the FCZ; that the fishing effort applied in the open areas of the FCZ would continue at the 1973-77 average level; that the catch rates for billfish and tuna would remain at 1973-77 average levels; and that the proportion of catches of mahimahi and wahoo relative to total catches of billfish and tuna would be the same as for Hawaii longline vessels (1978-83 average).

Range of Impacts:

a) Domestic Fisheries. There would be a near maximum potential for transfers of catches of the management unit species from the foreign longline fisheries to the domestic fisheries. Foreign interception of blue marlin in the FCZ which are headed for fishing grounds used by domestic fishermen near the main Hawaiian Islands and Guam would be nearly precluded. The interception of striped marlin migrating along the NWHI chain would be lessened considerably; and there would be near maximum availability of mahimahi, wahoo and oceanic sharks in areas of importance to domestic vessels including vessels which troll and longline in the waters of the NWHI. The amounts of actual catch gains to U.S. fishermen cannot be quantified.

b) Foreign Fisheries. Foreign longline vessels fishing in the FCZ surrounding the Hawaiian archipelago would apply 873 vessel days of fishing effort, down from 1,898 vessel days per year which is the average for the 1973-77 period (Yong and Wetherall, 1980). The estimated catch of tuna would be 1,079 MT (all species combined). The estimated catches of

billfish (150 MT), mahimahi (12 MT), and wahoo (9 MT) would be about 50-60% lower than the average annual catches of these species in 1973-77. Around Guam, foreign longline effort would decrease to 127 vessel days, and catches of billfish, mahimahi, wahoo and tuna would decrease by about 75% to an estimated 183 MT of total catch of all species combined. There would be almost no change in foreign longline effort or catches in the FCZ around American Samoa or U.S. Possessions. The total foreign longline effort in the entire FCZ of the Western Pacific Region would decrease by about 1,406 vessel days, a drop of about 26% for the average of the 1973-77 period. The total foreign longline catch of billfish in the FCZ of the Western Pacific Region would be about 568 MT (down about 26%) and 3,685 MT of tuna would be caught (down about 30%). All catches of the management unit species would be retained, and compliance with the area closures would be simple in comparison to the non-retention provisions of the PMP.

c) Enforcement Requirements. Aerial surveillance and a limited observer program based on effort plans should be sufficient to monitor foreign fishing activity. At-sea vessel patrols by the U.S. Coast Guard and vessel inspections would be kept at a minimum level as they are at present.

d) "Waste" of Fish. There would be no waste since all species hooked on longline gear would be retained.

e) Flow of Data. Foreign longline catch and effort data would be collected as fishing occurs.

f) Potential for Gear Conflicts. There would be a very low risk of gear conflicts between the foreign and the domestic fisheries under the preferred alternative.

7.3.2.2 PMP Non-Retention Zones Converted to Area Closure Zones

It is assumed that the effort previously applied by foreign longliners in the PMP's non-retention zones (Table 5.1) would shift outside of the FCZ; that the effort in the open areas of the FCZ (previously the retention zones) would continue as before, and that catch rates for billfish and tuna would be maintained at 1973-77 levels; and the ratio of foreign longline catches of mahimahi and wahoo relative to total catches would be the same as for Hawaii longline vessels (1978-83 average).

Range of Impacts:

a) Domestic Fisheries. There could be a modest potential for increased domestic catches of the management unit species resulting from transfers from foreign longline catches. Foreign longline interception of blue marlin headed for primary fishing grounds in the main Hawaiian islands and Guam would be increased significantly compared to the preferred alternative. Interception of striped marlin in the waters of the NWHI on foreign longline gear would be increased compared to the preferred alternative, thus reducing their availability to domestic fishermen. There would be much less of a potential of transfers of the management unit species in general from foreign to domestic fishermen than under the preferred closures; and domestic catches of mahimahi and wahoo would be less likely to increase than under the proposed action.

b) Foreign Fisheries. There would be a smaller "loss" of billfish, mahimahi, wahoo, sharks and tuna to foreign longliners than under the preferred alternative. In the FCZ around Hawaii, the estimated catch of billfish would be 269 MT, down from 302.7 MT in 1973-77. The estimated catch of tuna would be 1,756 MT, down from 2,276 MT for the 1973-77 annual average. The estimated catch of mahimahi and wahoo would be around 35 MT, about 25% less than what was made in the full FCZ during 1973-77. Total foreign longline effort would be about 1,449 days, down from the 1973-77 annual average by about 449 vessel days. There would be no loss of hooks and lines due to releasing of fish since all fish could be retained. Around Guam, the estimated billfish catch would be 15.8 MT, only 1.4 MT less than in 1971-75; and the tuna catch would be 91.1 MT, only 8.9 MT less than what was caught previously. The estimated catch of mahimahi and wahoo would be about 2 MT, down about 25% from 1971-75. Total foreign longline effort in the FCZ surrounding Guam would be down about 25% from 1971-75 levels. There would be no loss of fishing gear since all species caught would be retained. There would be a very slight change in foreign longline catch or effort in the FCZ of American Samoa and no change in the FCZ of U.S. possessions.

c) Enforcement Requirements. Aerial patrols and observers would be sufficient. Vessel inspections should not be needed. Vessel patrols would only be needed to seize vessels which are spotted for fishing without a permit on routine air surveillance missions.

d) "Waste" of Fish. There would be no waste since all fish caught would be retained.

e) Flow of Data. Foreign longline data would be collected as fishing occurs.

f) Potential for Gear Conflicts. There would be a much higher risk of gear conflicts than under the preferred alternative as domestic fishing vessels, especially longliners in Hawaii, fish much beyond the PMP's non-retention zones. Domestic longline vessels now fish as far as 600 miles from Honolulu (P. Bartram, pers. communication).

7.3.2.3 Preferred Area Closures with some Relocation of Foreign Longline Vessels in the Open Areas of the FCZ

The assumption under this alternative is that as the proposed closures go into effect, the foreign effort in the open areas would remain as in the 1973-77 period, and that the foreign effort expended previously in the closed areas around the main Hawaiian islands and the NWHI would relocate in the open area of the FCZ around the NWHI. It is also assumed that the foreign fishing effort previously applied in the closed area around Guam would relocate beyond the FCZ. Catch rates in the open areas are asssumed to be maintained as for the average of the 1973-77 period.

Range of Impacts:

a) Domestic Fisheries. The potential for transfers of catches from the foreign longline fisheries to the domestic fisheries would be partially realized, but at a lower level compared to the first alternative. The interception of blue marlin by foreign longliners would be nearly precluded. Foreign interception of migrating striped marlin would be at a relatively low level but at a level which is higher than under the preferred alternative. There would be a good likelihood that the other species in the management unit would become increasingly available in FCZ areas fished by domestic fishermen, but at slightly lesser levels than under the preferred alternative. The actual amount of gain to domestic fishermen cannot be predicted.

b) Foreign Fisheries. Annual catches would be reduced slightly from historical levels. Total annual foreign longline effort under this alternative in the FCZ of the Western Pacific Region would be 4,851 vessel days, down from 5,452 vessel days per year in 1973-77. The estimated catch of billfish would be 703 MT, but there could be a change in species composition of the catch, with less blue

marlin taken, but higher catches of striped marlin and swordfish compared to the preferred alternative. Catches of tuna would drop slightly to about 4,674 MT, and there would be a shift to more bigeye and albacore tuna and less yellowfin tuna taken. The catch of mahimahi, wahoo and sharks would drop slightly in relation to the decrease in effort. Since all catches would be retained, there would be no losses of hooks and lines associated with cutting fish free as required by the PMP. Compliance with the area closures would be relatively simple.

c) Enforcement Requirements. Aerial patrols and occassional observers could be sufficient to enforce the plan and to monitor foreign fishing activity. No budget increases would be required for enforcement purposes.

d) "Waste" of Fish. There would be no waste under this alternative.

e) Flow of Data. Data would be collected as fishing occurs.

f) Gear Conflicts. The potential of gear conflicts would be minor, although the risk would be somewhat higher than under the proposed action since there would be a higher density of foreign longline fishing in the open areas of the FCZ than under the preferred alternative.

7.3.2.4 Retain the PMP (Section 5.2)

The assumption made here is that foreign longline fishing would resume at historic (1973-77) levels within both the retention and non-retention zones.

Range of Impacts:

a) Domestic Fisheries. The possible shift of billfish, mahimahi, wahoo and shark catches to domestic fisheries would be very slight. Relatively small numbers of billfish would be released by longliners, and survival rates are low. There would be slight increases possible, but not probable, in the catch of blue marlin (up to 14 MT in Hawaii, 12 MT in Guam, and 11 MT in American Samoa), and lesser increases likely for other billfish species, including a slight increase (up to 13 MT) possible for swordfish around Hawaii and possible increases of 8 MT for striped marlin and 3 MT of black marlin to American Samoa vessels. The likelihood

of meaningful increases in domestic fishing values is very low under this alternative since many billfish die upon release and only some of those which survive are caught again.

b) Foreign Longline Fisheries. Large catches of billfish (total TALFF is 618 MT), tuna (5,403 MT), and other species (total TALFF is 1,779 MT) would be made and retained (Table 5.2). Releases of billfish would total about 161 MT, with consequent losses (unquantifiable) of hooks, line and time. Foreign effort would be 5,452 vessel days (1973-77 average) for the FCZ of the Western Pacific Region as a whole.

c) Enforcement Requirements. U.S. Coast Guard and NMFS would be unable to enforce the PMP under these conditions with current resources. At-sea vessel patrols, observers, and inspections would be required. A 10% observer coverage alone would cost about $54,500 (5,452 vessel days x .10 coverage x $100/day observer cost), not including the time and cost of hiring and training observers.

d) "Waste" of Fish. About 161 MT of billfish would be released at sea, much of which would be blue marlin with a 70.9% mortality rate. Thus, approximately 113 MT of billfish would be wasted. Unknown amounts of mahimahi, wahoo, and sharks would also be wasted.

e) Flows of Data. Detailed data on foreign catch and effort in the FCZ would be collected on a relatively timely basis.

f) Potential for Gear Conflicts. The chances for gear conflicts would be very high, since foreign longlining would occur throughout the FCZ, including in non-retention zones which come very close to shore.

7.3.2.5 PMP Remains in Effect But Fishing Does Not Occur in the Non-Retention Zones

It is assumed that 700 foreign longline vessels would obtain permits to fish in the FCZ with allocations for the management unit species. Fishing, however, would occur only beyond the non-retention zones established by the PMP. Foreign longliners would relocate to areas where billfish can be retained subject to TALFF limitations.

Range of Impacts:

a) Domestic Fisheries. The potential increase in billfish catch and in domestic fishery values would be quite low. Very small numbers of billfish and other non-tuna species would be released, and most of the released fish would be blue marlin. Up to 14 MT of blue marlin and 13 MT of swordfish would be subject to capture by domestic vessels in Hawaii; up to 12 MT of blue marlin could be transferred to Guam vessels; and up to 11 MT of blue marlin, 8 MT of striped marlin, and 3 MT of black marlin could be transferred to American Samoa vessels.

b) Foreign Longline Fisheries. Longline fisheries would increase their tuna catches slightly (5,436 MT), would retain the billfish TALFF (618 MT), and would retain the TALFFs for other non-tuna species (1,779 MT). The actual gross billfish catch (821 MT) would be somewhat larger than the 1973-77 average (779 MT) since catch rates in retention zones are higher than in non-retention zones around Hawaii (unknown for other areas). Thus, a larger total amount of billfish would be released with losses of hooks, line and time. Foreign longline effort would remain at 5,452 vessel days.

c) Enforcement Requirements. U.S. Coast Guard and NMFS would be unable to actively enforce the PMP under these conditions with current resources. At-sea vessel patrols, observers and vessel inspection would be needed. Hiring and training observers would be costly.

d) "Waste" of Fish. Approximately 120 MT of billfish would be wasted [(821 MT total catch - 618 MT TALFF) x 60% average mortality rate = 120 MT]. Unknown amounts of other non-tuna species would also be wasted.

e) Flow of Data. Foreign longline catch and effort data would be collected on a timely basis.

f) Potential for Gear Conflicts. the risk of gear conflicts would initially be moderately high and would increase as domestic fishing vessels continue expanding their range of operations as is expected.

7.3.2.6 Summary Comparison of Impacts Under Alternatives Considered to Control Foreign Longline Fishing

Table 7.11 provides a qualitative comparison of the effects of the considered alternatives to control foreign long-

line fishing in the FCZ of the Western Pacific Region. The table compares the alternatives narratively described in Section 7.3.2 under several different assumptions of fishing behavior of foreign longliners for each alternative considered, and the expected resultant impacts on the catches of the management unit species and tuna for domestic fishermen and foreign longline fishermen alike. The larger the extent of the area closures to foreign longliners and the greater the degree of relocation of "displaced" foreign longline fishing effort to beyond the FCZ, the greater the domestic catches of the management unit species and tuna can be expected to be. Conversely, small area closures would provide more reasonable opportunity for foreign longline fishing for tuna in the FCZ, but with small expected benefits to domestic fishermen as well. The preferred area closure to foreign longline fishing would only affect about one quarter of the past pattern of foreign longline fishing in the FCZ of the Western Pacific Region, yet it would nearly maximize expected catch gains to domestic fishermen.

7.3.3 Domestic Fishing

The Council has considered the possibility that regulatory measures regarding the managment unit species might eventually be needed for the domestic fishery sectors. Briefly, the domestic fishery alternatives examined by the Council are as follows:

7.3.3.1 Rely on Existing State and Territorial Measures

Under this option, existing State and Territorial regulations and data collection programs would stay in effect. There are currently no State or Territorial restrictions on domestic fishing for or landing of billfish and the other species in the management unit taken in the FCZ or in State and Territorial waters around Hawaii, Guam and American Samoa. However, certain administrative requirements must be met in Hawaii. Fishermen in Hawaii must possess a Commercial Marine License if they sell their catch. Once licensed, fishermen are also required to file monthly reports on all fish caught, whether or not they are actually sold. There are no restrictions on gear types, seasons, areas, or size of fish for fishing for any of the species in the management unit by domestic vessels in Hawaii, Guam or American Samoa.

This approach would be neutral in effect with regard to Objectives 1-5. Recreational and commercial fishermen would continue to be free to fish for billfish, mahimahi, wahoo and

TABLE 7.11 - COMPARISON OF IMPACTS UNDER ALTERNATIVES CONSIDERED TO CONTROL FOREIGN LONGLINE FISHING IN THE FCZ OF THE WESTERN PACIFIC REGION

	Alternative				
	Preferred Area Closure Alternative*	PMP's Non-Retention Zones Converted to Closures*	Preferred Area Closure Alternative**	Retain the PMP, Fishing Takes Place In Retention and Non-Retention Zones	PMP Stays In Effect But Fishing Does Not Occur In Non-Retention Zones
Impact On:	7.3.2.1	7.3.2.2	7.3.2.3	7.3.2.4	7.3.2.5
Domestic Catch of:					
Management Unit Species	Max. Gain	Slight	Near Max. Gain	Very Slight	Slight
Tuna	Max. Gain	Very Slight	Near Max. Gain	None	Very Slight
Foreign Longline Catch of:					
Management Unit Species	Approx. 25% less than historical average	Large	Approx. 25-35% less+ than historical average	Very Large	Large
Tuna		Large		Maximum	Very Large
Enforcement:					
Mode	Air	Air	Air	Air, Sea, Observers	Air, Sea, Observers
Feasibility	Adequate	Adequate	Adequate	Not w/Current Resources	Not w/Current Resources
"Waste" of Management Unit Species	None	None	None	Very Large	Very Large
Data Flow	Good	Good	Good	Moderate	Good
Gear Conflicts	Very Low	Moderate	Low	Highest	Moderate

* Assumes that historical (1973-77) foreign longline effort in closed areas of the FCZ would relocate beyond the FCZ.

** Assumes that historical (1973-77) foreign longline effort in closed areas of the FCZ would relocate to the open areas of the FCZ.

\+ Assumes catch rates fall because of higher effort in open areas.

oceanic sharks just as they are now under the PMP, which applies only to foreign vessels. There is, however, an important exception. Domestic fishing with drift-gillnets in the FCZ qould be prohibited by the FMP, except when authorized by an experimental fishing permit issued by the Regional Director of the NMFS. This approach would also have no impact with respect to waste of fish taken on foreign longline gear (Objective 6). Continuing existing State and Territorial measures would have no impact on the potential risk of gear conflicts (Objective 7); it would not add to or detract from interference with foreign tuna fishing in the FCZ (Objective 8); it would add to the statistical base for future management decisions (Objective 9); and this option would be largely neutral with respect to promoting international cooperation. The "no action" alternative regarding domestic fisheries, other than for drift-gillnet fishing in the FCZ, provides maximum freedom for domestic vessels to fish for billfish and associated species in the FCZ and in State and Territorial waters (Objective 10). There would be no change in State, Territorial, or Federal government expenses associated with the domestic billfish fisheries under this approach. In short, the "no action" alternative would essentially maintain the status quo. Domestic drift-gillnet fisheries would be free to operate without any restriction in the U.S. FCZ of the Western Pacific Region.

7.3.3.2 Monitor Only

It is important to differentiate between the term "data reporting requirements" and "data collection programs". "Data reporting" is generally used to describe reports or data which fishermen or processors would be required to submit under a FMP. The MFCMA provides that a FMP can require such data reports from participants in a fishery. "Data Collection" programs generally refer to agency efforts to collect data through means such as household or mail surveys, creel census surveys and port sampling. "Data Reporting" is a mandatory burden imposed on the fishery. "Data Collection", on the other hand, is an attempt to obtain data by voluntary cooperation with the fishery participants. A monitoring program for pelagic fisheries as large and complex as those for billfish and associated species and tuna would have elements of both.

Time series of catch, effort and catch rate (CPUE) are needed for better determination of the status of stocks in local waters, as indicators of the economic health of the domestic fisheries for the management unit species, and the extent to which the objectives of the FMP are being achieved. Information from Pacific Ocean fisheries will be needed to further assess and refine conclusions on stock conditions,

assuming that the stock structures of the management unit species are as broad and pervasive as they are believed to be. Information on the domestic fisheries and on the FMPs effectiveness will be generated from monitoring domestic fishing activities. The options before the Council include adding the weight of Federal authority to current State and Territorial reporting requirements; establishing comprehensive data reporting requirements for all domestic fishermen who fish for the management unit species; and a variety of in-between alternatives.

The practicability and costs of data collection in relation to the importance of securing accurate data are significant considerations. The Council recognizes that commercial enterprises which have long submitted accurate and complete data covering their fishing trips and catches will continue to keep doing so. The Council also recognizes that the many part-time commercial or subsistence fishermen or sports fishermen in the island areas served by the Council, some of whom only occasionally sell their catch, are less likely to submit detailed, accurate catch reports covering all of their fishing trips. Indeed, complete reporting by all classes of fishermen would overwhelm the existing data reporting systems in Hawaii and Guam with a flood of logbook forms or catch reports. Further, the cost of enforcing universal catch and effort data submission requirements could be prohibitive. The Council is also sensitive to the possible resentment or resistance of fishermen toward any Federal data submission requirements that they may perceive as being unnecessary detailed or "privileged" information (notwithstanding Federal prohibitions on and penalties for unauthorized release of confidential information).

The Council endorses the regional Fishery Information Network (FIN) developed by the Honolulu Laboratory of the NMFS. FIN covers each of the Council's island areas, including the CNMI. Data on catch, effort and sales of the management unit species made in Hawaii, Guam, American Samoa and the CMNI are now being incorporated as data files in the Network. At the same time, the Council, the Hawaii Division of Aquatic Resources and the Honolulu Laboratory of the NMFS are working together in establishing a sample design so that repeated periodic sample surveys can be conducted to collect specific sets of data for estimating fishing effort for and catches of the management unit species made by non licensed fishermen in Hawaii and to evaluate the effectiveness of this FMP.

The Council has concluded that it is premature to propose major adjustments in current State and Territorial data reporting requirements under this FMP. Section 10 describes the data collection programs to be incorporated under this FMP. These will be reviewed annually as more porgress is made in the FIN program.

7.3.3.3 Restrictions on Domestic Fishing

Figure 7.2 displays, in a decision tree format, the types of controls that could be placed on the domestic fisheries for the management unit species to address problems of overfishing, user conflicts, waste, inefficiency, or other concerns.

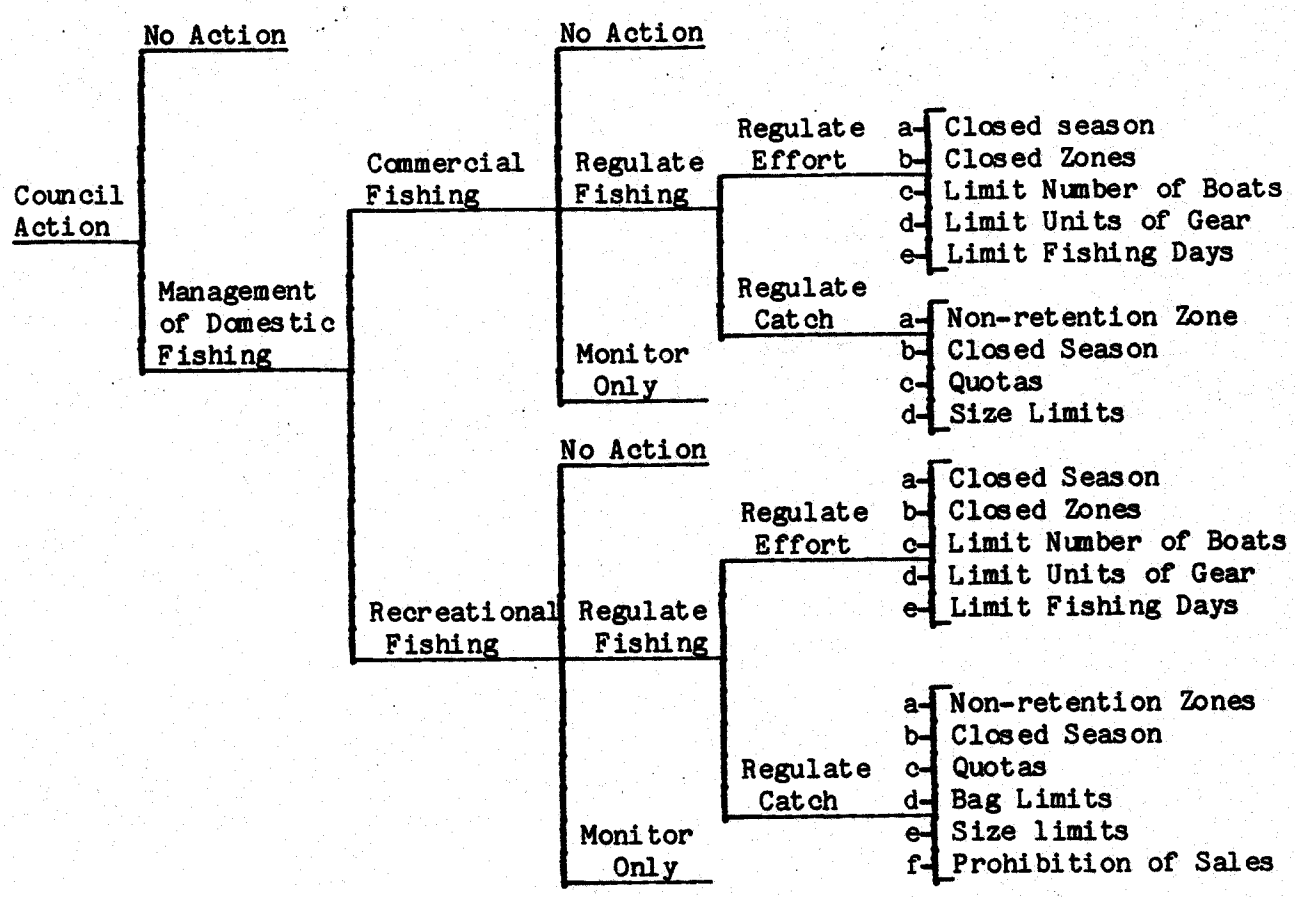
Two general categories of direct restrictions on domestic fishing for the management unit species are regulation of fishing effort and regulation of catches, either singularly or in combination. Either catch or effort restrictions, or both, could be applied to commercial or recreational fishing for the management unit species in the island areas served by the Council. However, it must be noted that in Hawaii, Guam, American Samoa and the CMNI, the distinctions between commercial and recreational fishing for pelagic species are highly blurred. It is a pervasive practice of recreational fishermen in the islands to sell portions of their catches of the management unit species and tuna to help defray out-of-pocket costs of their fishing trips. When fishing is good, recreational fishermen can even make a small profit from their leisure pursuit. Thus, any catch constraints on recreational fishing for pelagic species in the island areas served by the Council could affect the volume of fish entering local markets for fresh fish and, in turn, affect the prices of fresh fish to consumers.

7.3.3.3a Control Effort

Among the effort restrictions briefly considered by the Council are area closures, seasons, and license limitations. Depending on the extent of each of these measures, catches of the management unit species made by domestic fishermen could be sharply reduced, with corresponding drops in fishermen's incomes and increased consumer prices for the management unit species. Area closures would affect landings of tuna as well since domestic fishermen who catch billfish, mahimahi and wahoo are likely to catch much more tuna than the management unit species. Prohibiting landings of the management unit species during a season would result in discards and waste of dead fish in a mixed species fishery. Controlling the number of vessels in a fishery through license limitations would result in a reduction of total effort, but the impacts on catches of the management unit spcies would depend on which class or classes of vessels were being restricted. Vessels which participate in the domestic fisheries which catch the management unit species have widely different effot and capacity levels and success rates. It might be possible to eliminate, say, a half of the small boat

FIGURE 7.2

OPTIONS OPEN TO THE COUNCIL FOR REGULATING DOMESTIC FISHING



recreational trollers and yet not reduce the levels of billfish harvests by very much. Any such limitation would also be very difficult to enforce. Moreover, the extent to which any effort limits on the domestic fisheries could contribute to the conservation of the stocks of the management unit species is very unlikely. While the catches of the management unit species made by domestic fishermen have been increasing, they still make up a minute percentage of total catches of these species made in the Pacific Ocean. Therefore, even major reductions in domestic catches would be expected to have no measurable effects on the stocks of the management unit species assuming that their ranges and stock structures are as broad and pervasive as is commonly believed.

7.3.3.3b Control Catch

Catch restrictions can include quotas, bag limits per trip, size limits, tag-and-release requirements, and gear restrictions. These kinds of measures are applied in many fisheries to control catch in the interests of conservation and reducing conflicts. Quotas can be applied to the commercial or recreational segments of the domestic fisheries which catch the management unit species, or to both. However, there would be great difficulty at arriving at an equitable quota or bag limit by species for the different domestic fishery segments which catch billfish and the other species in the management unit in addition to tunas. Also, there would be great perplexity in a mixed species fishery regarding what to do when a quota for one species was reached while established quotas for the other species in the management unit were not close to being approached. Also, as in the case of the foreign longline fishery, an application of the non-retention approach in the domestic fisheries for the management unit species would result in a waste of fish with no apparent conservation benefits stemming from catch-and-release requirements. Enforcement of quotas or bag limit requirements is usually very costly because high quality data are normally needed on a timely basis, and landings must be carefully and systematically monitored to check on compliance with the quotas or bag limits. Size limits would pose similar problems in determination of appropriate sizes, what to do with inadvertent catches of undersized fish, and in enforcing the chosen size limits. Tag-and-release programs might eventually lead to an improved understanding on growth rate and migratory patterns of the management unit species, but tag-and-release programs appear to be more suitable to voluntary efforts than for mandatory requirements. Gear restrictions, either in the type or amount of gear allowed, serve a useful purpose in some fisheries, and provides a means for distinguishing between commercial and recreational fishermen in other fisheries. However,

gear restrictions would probably serve no useful purpose in regulating the catches of the management unit species made by island fishermen since recreational and commercial fishermen use the same type and amount of gear, other than longline gear which is strictly commercial. It is unlikely that restrictions on domestic fishermen (other than on drift-gillnets) would serve useful purposes in terms of meeting the objectives of the plan. Finally, as with limits on effort, catch limits will have very little or no biological conservation effect for the stocks of the migratory pelagic species in the management unit. The range of the stocks is believed to be so great, and the portion of the catch of each species taken in the FCZ by domestic fishermen is so small relative to ocean-wide catches, that actions taken in the FCZ alone to conserve the stocks would be of marginal value, at best, in maintaining the productivity of the stocks involved.

To date, there is virtually no history in the use of floating drift-gillnets by domestic fishermen to catch pelagic species in any of the island areas served by the Council. A few fishermen in the islands have apparently experimented with drift-gillnets but abandoned the idea after failing to achieve much success through their experimentation. There have been rumors that some of the albacore troll vessels were poised to start using drift-gillnets for catching surface feeding albacore tuna schools found on the high seas northwest of Midway Island. Apparently, nothing has actually happened regarding these rumors since the albacore vessels still remaining in Hawaii continue to troll for albacore during the season and fish for bottomfish or longline for tuna during the off-season for albacore tuna. It is quite feasible, however, that some California-based drift-gillnetters might relocate to the island areas served by the Council.

The use of drift-gillnets in other parts of the world has created difficulties:

(1) Navigation problems and tangling of propellor shafts when vessels accidentally run into floating nets;

(2) Portions of nets get lost or are discarded and get carried into areas where they can do harm to sea turtles, seals, sea birds and other creatures valued by society;

(3) Gillnets are not very selective regarding the mix of pelagic fish species and marine mammals that inhabit the surface waters of tropical oceans;

(4) The quality of net-caught fish is generally lower compared to hook-caught fish, largely because of bruising of the flesh and longer exposure to warm waters after death compared to hook-caught fish; and

(5) The use of drift-gillnets can cause keen user group conflicts and resultant political problems which are best avoided when possible.

Therefore, the Council, acting upon advice received from fishermen serving on the Pelagic Species Advisory Panel, has decided to recommend a general prohibition on the use of drift-gillnet gear in the FCZ by domestic fishermen, except only when authorized by a special experimental fishing permit issued by the Regional Director of the NMFS.

7.3.3.4 Choice of Alternative Regarding the Domestic Fisheries

Other than the proposed general prohibition on the use of drift-gillnets, the Council has concluded from the available information that there are no conservation, economic or social gains which can be realized by Federal intervention in the domestic fisheries for billfish and the other species in the management unit in the FCZ at this time. Domestic catches of these species do not pose a risk of overfishing of any of the stocks. The level of fishing mortality in the FCZ is very low relative to the fishing mortality over the assumed range of the species involved. It would be irrational to establish domestic effort or catch limitations in the FCZ in the absence of demonstrable conservation effects so long as there are no international agreements establishing conservation measures throughout the range of the species in the management unit. At the same time, there are no known user conflicts in the FCZ that require a direct Federal response. Domestic fishermen have not expressed any concerns about the desire or need for domestic fishery restrictions, other than to recommend that the Council consider prohibiting purse seine fishing in the areas of the FCZ used regularly by domestic fishermen and to tightly control the use of drift-gillnets. Domestic fisheries are generally undeveloped relative to the catch potentials from the FCZ as a whole. Expansion of the existing domestic fisheries is desirable, and is more likely to happen without Federal regulation than with.

Consequently, the Council decided that continuation of established data acquisition programs in the State of Hawaii and the Territories of Guam and American Samoa regarding the management unit species is the best alternative to follow for the present domestic fisheries out of all of the alternatives examined. The FMP does, however, recommend improved monitoring programs, an annual report on the fisheries which take the management unit species, and a full review of the FMP in five years (Section 10).

7.4 Rationale for the Preferred Alternative

The proposed actions selected by the Council, out of all other alternatives considered, are itemized in Sections 3.1 and 7.1. The reasons for the Council's choice of the proposed combination of management measures rather than any of the other alternative measures considered are summarized, once again, in relation to the National Standards of the Magnuson Act and other applicable factors:

1. Prevent overfishing while achieving the optimum yield (OY) - Management measures of any kind applied solely to the FCZ cannot be expected to prevent overfishing of any of the migratory species in the management unit. The prevailing scientific hypothesis is that each of the species in the management unit residing in the FCZ at any one time are probably but a small part of much larger and far ranging population of these species in the Pacific Ocean. While the preferred alternative cannot prevent overfishing, it does prevent the potential waste of billfish, mahimahi and wahoo under the fish discard, non-retention approach of the PMP. Unlike the guiding philosophy of the PMP, the Council's preferred alternative nearly maximizes the potential for enhanced social and economic values associated with increased catches of the management unit species made by domestic fishermen. While foreign drift-gillnet vessels will be prohibited from fishing in the FCZ and foreign longline vessels will be restricted from using longline gear in areas of the FCZ which are important to domestic fishermen, nonetheless, all sub-areas of the U.S. FCZ of the Western Pacific Region (main Hawaiian islands, NWHI, Guam, American Samoa and U.S. Possessions) will be open to foreign longline fishing to at least some degree. Thus, a reasonable opportunity for foreign longline vessels to fish in the FCZ for tuna will be restored by the Council's preferred alternative, and no limits will be placed on their effort or catch in the open areas of the FCZ. Foreign pole-and-line and purse seine fishermen for tuna will not be affected directly by this FMP.

2. Best scientific information available - This revised FMP incorporates all relevant information that has become available since the Council's original Billfish FMP was completed in 1981. To the knowledge of the Council, this FMP contains the best scientific information available on which the choice of the preferred management measures was made. This has been certified by the Council's Scientific and Statistical Committee and by the scientists on the Planning Team. The FMP also contains measures to expand the information base in future years.

3. Inter-related stocks of fish managed as a unit - The proposed plan improves on the Council's original Billfish FMP by including mahimahi, wahoo, and oceanic sharks in the management unit. This has provided added justification for the need of the FMP because these

species, especially mahimahi and wahoo, are of great importance to the domestic fisheries in the island areas served by the Council. This revised FMP is also a major improvement on the Council's original Billfish FMP, as well as on the PMP, because it also encompasses drift-gillnet, baitboat, and purse seine fishing in addition to longlining. All of these gear types take the management unit species, as well as tuna, but in varying amounts and proportions.

4. Non-discrimination between residents of different States - The measures in this plan do not discriminate in any way, either directly or indirectly, between residents of different States.

5. Promote efficiency - Fishing by domestic fishermen for the management unit species should be more efficient and productive since the plan's management measures are intended to nearly maximize the availability of the management unit species in waters which are most heavily fished by domestic vessels and in adjacent waters as well. Also, foreign longline vessels will be much less restricted than under the PMP since the non-retention and manner of fish release requirements would be dropped, as well as the quotas. Thus, foreign longline fishing in the open areas of the FCZ can be pursued more efficiently under this FMP as all fish which are hooked can be retained without losses of fishing gear and time.

6. Allow for variations and contingencies - An inherent characteristic of each of the highly migratory species in the management unit is that their abundance and availability in any one place are of highly variable from year-to-year. The measures of the FMP are expected to increase the potential for large catches of the management unit species made by domestic fishermen during years of high abundance while reducing the risk of poor catches due to competition from foreign longlining in the FCZ in years of low abundance. The FMP provides for annual reviews of the status of the fisheries for the management unit species and a five-year review of the entire management program as initially set forth in this FMP.

7. Minimize costs and avoid unnecessary duplication - The area closure approach taken by this FMP is intended to make enforcement feasible in the face of shrinking enforcement budgets. Current budgets should be sufficient to administer and enforce the plan. The FMP's measures pertaining to foreign fishing should be enforceable by aerial surveillence and observer coverage of selected vessels, unlike the PMP which would require very expensive at-sea capability to enforce the non-retention and quota regulations if foreign longline fishing for tuna were to occur. Other than a general prohibition on the use of drift-gillnets, except where allowed through experimental fishing permits, the FMP does not propose Federal regulations governing the take of the management unit species by domestic fishermen. The Council proposes to rely on improved State and Territory data collection programs. No Federal reporting requirements are proposed for domestic vessels at this time except for drift-gillnet fishing under an experimental fishing permit.

8. Balancing of domestic and foreign interests - This is not one of the National Standards of the Magnuson Act. A balancing test (Appendix C), however, is required for a legal review of proposed management plans for billfish and associated species vis-a-vis the U.S.' open-access policy on tuna. The Council's initial Billfish FMP proposed closures of the entire FCZ surrounding the main Hawaiian islands and Guam to foreign longline fishing. The modification in the area closures in this plan means that all sub-areas of the U.S. FCZ will now be accessible to some degree to foreign longline fishing for tuna, and that whatever foreign longline fishing occurs will be less tightly controlled with respect to non-retention, fish release requirements, and quotas. Also foreign fishing for tuna by pole-and-line vessels and purse seine vessels will not be subject to any controls on effort or catches. The extent in the modifications of the area closures to foreign longline fishing, however, are not so substantial that adverse effects on domestic catches of the management unit species would be expected. The certainty of protection of important fishing areas for domestic fishermen realized through this FMP is a net benefit in contrast to the uncertainties associated with the PMP. In the Council's view, there is also a benefit to foreign longline fishing interests in the reduction of the overall regulatory burden. In short, both domestic and foreign interests would be better served under the FMP in the long run compared to the PMP.

7.5 Conclusion

In conclusion, this revised FMP is significant improvement over the PMP in several major respects. The measures proposed in the Council's preferred alternative are intended to increase the values of the domestic fisheries for the management unit species while providing a more reasonable opportunity for foreign vessels to fish for tuna in the FCZ of the Western Pacific Region than under the PMP. Domestic fishermen could expect to realize larger catches, higher catch rates, and better fishery development prospects with the FMP than under the PMP. The potential associated with the PMP's non-retention approach would be eliminated while the possibility of gear conflicts will be precluded in the areas closed to foreign longlining. Foreign vessels would no longer be subject to quotas or non-retention requirements. The NMFS can and should develop a mutually acceptable observer program with foreign nations to minimize the burden posed by having to pick up and disembark observers at U.S. ports for each and every foreign vessel wishing to fish in the 1.5 million square mile FCZ of the Western Pacific Region. The plan presents a straightforward and easily complied with management approach compared to the PMP. The cost-effectiveness of the FMP is much greater than that of the PMP. The alternatives considered (i.e., seasonal and smaller area closures) would not achieve as large a likelihood of increased domestic fishery benefits compared to the preferred alternative.

Finally, the draft FMP also recognizes the need for and promotes the establishment of an international program for managing all migratory species, as called for under Article 64 of the Convention of the Law of the Sea:

> "The coastal State and other States whose nationals fish in the region for highly migratory species... shall co-operate directly or through appropriate international organizations with a view to ensuring conservation and promoting the objective of optimum utilization of such species throughout the region, both within and beyond the exclusive economic zone. In regions where no appropriate international organization exists, the coastal State and other States whose nationals harvest these species in the region shall cooperate to establish such an organization and participate in its work."

This FMP is a step towards such co-operation in that the Council seeks to facilitate easier foreign access to tuna in the FCZ while simultaneously protecting domestic fishing interests for the management unit species. This is the balance being sought by the Council.

8.0 DETERMINATIONS

The Magnuson Act requires that certain determinations be made considering the condition and yield potentials of the stocks, the optimum yield (OY) from the fisheries, the extent to which domestic vessels and processors will harvest and process the OY, and the amount (if any) available for foreign fishing and joint venture processing. Determinations are also required for a FMP's consistency with "other applicable law" (Section 9).

8.1 Maximum Sustainable Yield (MSY)

The International Billfish Stock Assessment Workshop (Shomura, ed., 1980) made initial efforts to estimate MSY's and stock conditions for blue marlin, striped marlin, and swordfish on a Pacific-wide basis using the best data available to the scientists participating at the Workshop. The lack of accurate and sufficiently detailed date on catches, effort, and other principal determinants of population dynamics for black marlin, shortbill spearfish, and sailfish precluded the use of fishery production models for estimating the MSY for these species. The Council concludes that the MSY estimates for black marlin, and for shortbill spearfish and sailfish combined as presented in the PMP are the best scientific estimates of MSY available for these species (Table 8.1).

TABLE 8.1

PACIFIC-WIDE ESTIMATES OF MAXIMUM SUSTAINABLE YIELD (MSY) FOR THE MANAGEMENT UNIT SPECIES

Species	Maximum Sustainable Yield (MSY)	Probable Stock Condition
Blue Marlin	22,000 MT 1/	Substantially Overfished
Striped Marlin	24,000 MT 1/	Fished At Capacity
Black Marlin	1,700 MT 2/	Fished Near Capacity
Swordfish	20,000 MT 1/	Good
Shortbill Spearfish and Sailfish (combined)	8,200 MT 2/	Good
Oceanic Sharks	126,000 MT (all species) 2/	Unknown
Mahimahi	14,600 MT (two species) 2/	Unknown
Wahoo	No Information	Unknown

SOURCES: 1/ = Shomura, R.S., 1980.
2/ = PMP.

Total catches of sharks made in the Pacific Ocean were as high as 132,000 MT per year in the mid-1970's (FAO, 1976). Data from FAO Yearbooks of Fishery Statistics lumped together for both nearshore and oceanic species of sharks, thus only a portion of FAO catch statistics covering sharks is on the oceanic species of sharks included in this plan. The maximum sustainable yields of the many species of oceanic sharks are not known because species-specific records of shark catches have never been available in the past and are not available now from the distant water longline and purse seine fisheries. Most of the shark by-catch in these fisheries is discarded at sea, with the exception of the high-value shark fins which are usually kept by longliners.

Very little is known about the stock structure or the abundance of wahoo and the two species of mahimahi. Pacific Ocean-wide mahimahi catches averaged around 14,600 MT per during 1971-1975, but no estimates of wahoo catch are available (U.S. Department of Commerce, June 15, 1979, PMP). Pacific-wide guesses of MSY for oceanic sharks and mahimahi are given in Table 8.1. It is assumed that the catch levels for oceanic sharks and mahimahi given in the PMP are representative of the MSY. It is not possible to reliably estimate Pacific Ocean-wide maximum sustainable yields for wahoo and for the two species of mahimahi covered by this plan. There are, however, no indications that either wahoo or mahimahi are overfished on an oceanwide or a localized basis.

Attempting to finagle meaningful estimates of MYS for each of the management unit species which are specific to the 200-mile zone of each of the widely-scattered American Pacific islands (Figure 3.1) would serve no useful purpose. Doing so would be frustrating and frivolous because of several compelling reasons. While the management unit species are not considered to be highly migratory under the language of the Magnuson Act, billfish species, oceanic sharks, mahimahi, and even wahoo are indeed highly migratory in actuality. Because of this fact, the abundance of the management unit species within the 200-mile zones of American Pacific islands can vary greatly from year to year and does vary greatly from season to season. Annual catches (foreign and domestic) of the management unit species made in the 200-mile zones of American Pacific islands generally make up around 2 to 3% of the total catches of these species made in the Pacific Ocean as a whole. It is, therefore, concluded that the MSY for the management unit species for the U.S. FCZ of the Western Pacific Region is 2 to 3% of the Pacific-wide estimates of MSY given in Table 8.1. MSY will be somewhat higher during some years and lower during other years depending largely on the variations in the abundance of prey in the FCZ, oscillations of water masses, the re-emergence of the El Nino phenomenon, and the like.

8.2 Optimum Yield (OY)

The FCMA defines OY as:

> "the amount of fish (A) which will provide the greatest overall benefit to the nation with particular reference to food production and recreational opportunities; and

(B) which is prescribed as such on the basis of the maximum sustainable yield from such fishery, as modified by any relevant economic, social, or ecological factor." (Section 3(18)).

The MFCMA envisioned that the maximum sustainable yield (MSY), which, in concept, is the greatest average catch of a species that can be made periodically into the future, would serve as a benchmark for determining OY. This apparently reflects Congress' concerns that the Regional Councils should explicitly determine the biological limitations and the health of the stocks in making management decisions. In the context of this FMP, the Council notes this concern and has presented the best and most recent estimates of MSY for stocks of the management unit species throughout their range in the Pacific. The Council also notes that the level of fishing which has occurred and is likely to occur in the FCZ can not appreciably affect the overall condition of the management unit stocks and will not pose a threat of biological overfishing. Therefore, it would not be wise to specify a quantitative definition of OY, and there are good reasons to define OY in non-numeric terms:

a) A numeric OY could be construed as a quota. There is no reason to establish a quota for any of the management unit species in the FCZ since limiting catches will not affect stock conditions.

b) Numerical OYs, if construed as quotas, would have to be enforced, requiring a complex and near real-time data reporting and collection system. This would be very costly and could not be effectuated with existing enforcement resources.

c) The annual availability of management unit species in the FCZ is highly variable and unpredictable. Specifying a numerical OY based on annual averages would almost always be meaningless at best and misleading at worst.

d) At anyone time, an unknown but small fraction of the populations of the management unit species are in the FCZ of each American flag island in the Pacific. A numerical specification of OY under these circumstances would be foolhardy.

e) There are no economic or social objectives or compelling circumstances that warrant a direct allocation of any of the management unit species in a particular amount.

The Council has, therefore, concluded that OY should be defined for each management unit species in non-quantifiable terms as follows:

> OY is that amount of each species in the management unit that will be caught by domestic and foreign vessels fishing in the FCZ in accordance with the measures contained in this plan.

The Council recognizes that it might be useful to present estimates of future catch levels of the management unit species as bases for evaluating the effectiveness of the FMP. However, catches of the highly migratory management unit species made in the past are, at best, only fleeting indicators of the magnitude of catches which may occur in future years. The extent to which actual transfers of the management unit species from foreign to domestic vessels will occur is unknown, as is the extent to which foreign longline vessels will fish in the permitted areas of the FCZ under this plan. Further, there usually are large fluctuations in the abundance and availability of pelagic species in the FCZ. In addition, external factors such as changes in fuel costs may affect both domestic and foreign fishing practices significantly. Because of these factors, the Council cannot estimate with reliability the amounts of each species in the management unit which will be caught in the FCZ under this plan in future years. The Council has, however, provided fairly detailed descriptions of the domestic fisheries for the management unit species (Sections 6.13-6.21) and of the foreign fisheries (Section 6.9-6.12). These sections present information on the catches and effort levels of all of the various fisheries for pelagic species in the FCZ of the Wetern Pacific Region using the best and most recent data available. The information presented in these sections can be used as reference marks for evaluating the effectiveness of this FMP.

Although it is not possible to provide reliable estimates of the amounts of billfish species, oceanic sharks, mahimahi and wahoo which will be caught in the FCZ of the Western Pacific Region, the Council, nevertheless, has provided "benchmarks" of what the harvests of the management unit species (all species combined) might be in 1987 in the 200-mile FCZ of American Pacific islands. Table 8.2 provides OY estimates for the management unit species for each subarea of the FCZ of the Western Pacific Region. The OY for each subarea is defined as the average annual (1973-77) foreign catch added to an estimate of the annual domestic catch of the management unit species. These OY estimates are combined for the management unit species in order to "smooth or average out" the high variability expected in the availability of each management unit species in the FCZ from year to year. There is less variability from year to year in the availability of the management unit species taken together than there is for each individual species in the management unit.

TABLE 8.2

ESTIMATES OF OPTIMUM YIELD FOR THE MANAGEMENT UNIT SPECIES (COMBINED) FOR SUBAREAS OF THE U.S. FCZ OF THE WESTERN PACIFIC REGION

FCZ Area	(A) Foreign Catch (MT)	(B) Domestic Catch (MT)	(A)+(B) = Optimum Yield (OY)
Hawaii	250 1/	1,295 6/	1,545
Guam	15 2/	103 7/	118
CNMI	78 3/	9 8/	87
American Samoa	95 4/	5 9/	100
U.S. Possessions	268 5/	Marginal	268
WESTERN PACIFIC REGION	706	1,412	2,118

1/ Assumes that 75% of the 1973-77 average foreign longline catch of billfish in the entire FCZ of Hawaii (303 MT - Table 6.4) will be made in the open areas of the FCZ. An additional 10% of the billfish by-catch has been added in to account for catches of mahimahi, wahoo, and sharks.

2/ Assumes that 25% of the 1973-77 average foreign longline catch of billfish in the entire FCZ of Guam (54 MT - Table 6.4) will be made in the open area of the FCZ. An additional 10% has been added in to account for catches of mahimahi, wahoo, and sharks.

3/ Assumes that 100% of the 1973-77 average foreign longline catch of billfish in the FCZ of the CNMI (71 MT - Table 6.4) will be made, plus 10% for mahimahi, wahoo, and oceanic sharks.

4/ Assumes that 80% of the 1973-77 average foreign longline catch of billfish in the FCZ of American Samoa (108 MT - Table 6.4) will be made in the open area of the FCZ, plus 10% for mahimahi, wahoo, and sharks.

5/ Assumes that 100% of the 1973-77 average foreign longline catch of billfish in the FCZ of U.S. possessions (244 MT - Table 6.4) will be made, plus 10% for mahimahi, wahoo, and oceanic sharks.

6/ Assumes that twice as much management unit species are caught than were reported sold through major fish dealers in Hawaii. Average annual 1979-83 sales of the management unit species were 647.4 MT (Table 6.29) x 2 = 1,295 MT.

7/ Estimated average annual (FY 1980-85) landings of the management unit species in Guam (Table 6.25).

8/ Average annual (1979-84) landings of the management unit species in the CNMI (Source: Fishery Statistics of the Western Pacific, Vol. 2., NMFS Honolulu Laboratory Adm. Report H-86-4, March 1986).

9/ 1984 Catches + 10%.

8.3 Domestic Annual Harvest (DAH)

Domestic annual harvest capacity can be viewed in terms of fishermen's capability for satisfying the markets for the products which the management unit species provide, satisfying recreational fishing expectations, and in terms of fishing effort needed to achieve certain catches. There are no limits on local fresh fish markets that trade in the management unit species. All fish placed on the market are sold, but at prices that vary greatly from day-to-day in response to supply and demand conditions. The fish products from the management unit species reaching retail markets in each of the island areas in the Council's jurisdiction are supplied by both the commercial and recreational fisheries. Sizeable parts of "recreational" catches are sold in Hawaii, Guam, and American Samoa. Selling of fish is a long ingrained tradition with island fishermen.

Sections 6.13-6.21 describe the domestic fisheries which take the management unit species. It has been noted that certain components of existing data systems result in underreporting of commercial catches in some areas, and reliable estimates of recreational catches by species are few and far between. It is difficult to predict the actual levels of domestic harvests of the management unit species because the presently available statistical information bases are incomplete, especially in regards to fishing effort. Existing tabulations of reported catches and estimates of catches should be read with caution regarding their accuracy and implication of trends. The reasons given for defining OY in non-numeric terms also apply to the definition of the Domestic Annual Harvest (DAH). The Council has concluded that:

> DAH is the amount of each species in the management unit that will be caught by domestic vessels in the FCZ fishing in accordance with the measures contained in this plan.

Numerical estimates of DAH for the management unit species <u>combined</u> are given in column (B) of Table 8.2.

8.4 Domestic Annual Processing (DAP)

There is virtually no processing of the management unit species in the island areas in the industrial meaning of the term "processing". Almost all landings of the management unit species enter local markets in a fresh-fish form. A single fish cake manufacturer in Hawaii uses billfish for about 10% of its production of fishcake products. Other fish cake manufacturers have changed over to imported fish ever since the mercury scare in billfish got started in the 1970's. Several entreprenuers in Hawaii are smoking blue marlin for sale to local markets.

By far, the largest amounts of the management unit species sold in Hawaii are channeled through fish auctions in Honolulu and Hilo, Hawaii, or through regional fish wholesalers supplying island and export markets. Most of the mahimahi and wahoo which are sold by fishermen in Hawaii end up being served at up-scale restaurants catering to well-to-do tourists and island residents. Both Guam and American Samoa export some of their mahimahi catch to the Honolulu auction where it is purchased by wholesalers who supply the restaurant demand for fresh mahimahi. The selection of fresh mahimahi and wahoo in retail stores in Hawaii has become severely limited because of the keen restaurant demand for these two species.

As is the case in Hawaii, the catch of billfish, wahoo, and mahimahi in Guam and American Samoa is processed only to the extent of the normal preparation for fresh-fish markets, restuarants, or for home consumption. Overall, the estimate of DAP for the Western Pacific Region is negligible as almost all of the landings of the management unit species enter local markets in a fresh-fish product form. Although frozen products from the management unit species may become more acceptable in established local markets, there is no reason to believe that DAP will be other than zero (0).

8.5 Joint Venture Processing

A "joint venture" is typically an arrangement where fish harvested by U.S. fishermen are sold and delivered to foreign processing vessels operating within the U.S. FCZ. There is no evidence of any interest in joint venture processing operations with foreign processing vessels, and there is no excess harvest capacity available for joint ventures. The amount of management unit species available for joint venture processing is, therefore, zero (0).

8.6 Total Allowable Level of Foreign Fishing (TALFF)

The Council does not propose any limits on the effort or catch of foreign longliners so long as the areas of the FCZ recommended to be closed to foreign fishing are not fished by foreign fishing fleets. Thus, a non-numerical definition of TALFF is appropriate for this fishery:

> TALFF is the amount of the management unit species which will be taken by foreign longliners in the FCZ fishing in accordance with the measures in this plan.

Numerical estimates of the amounts of the management unit species that might be taken by foreign longliners in the FCZ of American Pacific islands are given in column (A) of Table 8.2. The foreign catch of the management unit species is estimated to be one half of the catch of domestic fishermen.

9.0 RELATIONSHIP OF THE PROPOSED ACTIONS TO OTHER APPLICABLE LAWS AND POLICIES

9.1 National Coastal Zone Management Act

Section 307(c)(1) of the National Coastal Zone Management Act of 1972 (CZMA) requires that all Federal activities which directly affect the coastal zone be conducted in a manner which is consistent with approved State coastal zone management (CZM) programs to the maximum extent practicable. The State of Hawaii and the Territories of Guam and American Samoa have Federally approved CZM programs. This revised fishery management plan, therefore, must be reviewed to determine if the proposed measures are likely to affect the coastal zone, and if so, whether the proposed measures are consistent with the CZM program of each island area.

9.1.1 Hawaii

Early versions of a draft and a final "Fishery Management Plan (FMP) for Billfish Fisheries of the Western Pacific Region" (May and August, 1981) were submitted to the Department of Planning and Economic Development (DPED), the lead agency for Hawaii's CZM Program, for a Determination of Consistency of the Billfish FMP with the State's CZM program. DPED noted that the May 1981 draft FMP "... does not conflict in any way with our Ocean Management planning project... [and] ... the description of consistency with Hawaii's CZM Program is adequate..." (letter of July 2, 1981 - Ref. No. 3337). In a review of the August 1981 FMP, DPED agreed with the determination "that the Pacific Billfish FMP is consistent with Hawaii's Coastal Zone Management (CZM) Program" (letter of October 14, 1981 - Ref. No. 3744). These early CZM consistency determinations are, however, moot since the NMFS disapproved the Council's initial Billfish FMP.

A revised draft FMP for Billfish and Associated Species (April 1985) was submitted to DPED for CZM consistency review. DPED agreed with the Council's determination that the revised draft plan is consistent with the maximum extent practicable with Hawaii's CZM Program (letter of May 20, 1985 - Ref. No. P-1693, Appendix B). The proposed actions and the alternatives considered in this revised final FMP, and the impacts of the alternatives, fall within the range of impacts considered in the revised draft of the FMP (April 1985). Therefore, the Council expects the proposed measures (Sections 3.1 and 7.1) will be found to be consistent with the CZM Program of Hawaii. An updated "Determination of

Consistency" will be prepared and sent to DPED for review and decision. DPED's response will be sent to the NMFS for inclusion in the record of decision on this plan.

A Federally-approved CZM program has been in effect in Hawaii since 1978. State CZM policies which relate the most to the proposed measures of this revised FMP are contained in Chapter 205A of the Hawaii Revised Statutes. Briefly, these policies are:

1) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area. Recreational fisheries for pelagic species in Hawaii (Sections 6.16 and 6.18) are conducted in both State and Federal waters, hence achievement of consistency is desirable in State and Federal actions affecting the fisheries for the management unit species. Other than a proposed controls on the use of drift-gillnets in the FCZ by domestic fishermen, the Council is not proposing any other Federal intervention in the domestic fisheries for the management unit species in Hawaii (Section 7.3.3.4). The second objective of this FMP (Section 4.2) is to enhance the opportunity for successful recreational fishing experiences. The proposed measures are fully supportive of Hawaii CZM policies in this regard.

2) Protect, preserve, and... restore those natural and... historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture. Ancient Hawaiians fished for tuna and the management unit species using deep-sea handlines (See Section 6.15-Palu Ahi fishing) and by trolling in swift, double-hull canoes (David Malo, 1898; Margaret Titcomb, 1972; Stell Newmam, 1972). The Council recognizes the imporance of the pelagic zone fishery resources in the culture and history of ancient Hawaii as well as the traditional association of the people of Hawaii with the sea. The objectives and measures of this FMP are supportive of the CZM policy regarding protection of historical and cultural resources.

3) Protect valuable coastal ecosystems from disruption and minimize impacts on all coastal ecosystems. The habitat of the management unit species is described in Section 6.8. The probable condition of the stocks of the species in the management unit is described in Section 6.6. The ecological relationships of the management unit species to other fish and to marine mammals and endangered and threatened species are discussed in Section 6.7. Habitat conditions

are not expected to be affected by this plan, nor the conditions of the stocks throughout the range of the species in the management unit. Prohibiting the use of drift-gillnets in the FCZ by foreign fishermen and strictly controlling their use by domestic fishermen are expected to be ecologically beneficial. Strengthening of ongoing data collection programs should improve the technical basis for managing the biomass of pelagic species in the longrun through an international framework.

4) Provide...improvements in the State's economy.... The fisheries for pelagic species (inclusive of tuna) are the largest of all the fisheries in Hawaii and they have the most potential for further development. The species in the managment unit are important components of the catch of the various fisheries for pelagic species in Hawaii (Section 6.21). Objectives 1-4 of this FMP (Section 4.2) have an economic growth orientation. The recent growth of commercial fishing and charter sportfishing in Hawaii has had economic inducement effects in the local economies of all of the islands in the State, and especially in Kona.

5) Improve the development review process, communication, and public participation in the management of coastal resources. The development of this draft FMP has benefited from extensive input received from fishermen on the Council's Pelagic Species Advisory Panel, from the Scientific and Statistical Committee, from government agencies and from the general public. The Council held nine (9) Public Hearings on this plan in Hawaii. The Council has included all interested parties in the plan development process.

The measures proposed in this plan are believed to be fully consistent with the Hawaii CZM program. No adverse direct or indirect impacts on the coastal zone are expected as a result of the proposed actions. There may, however, be some indirect effects if further expansion of the domestic fisheries occurs and requires additional moorage and infrastructure facilities on shore.

9.1.2 Guam

The 1981 draft and final Billfish FMP were reviewed by the Bureau of Planning, Government of Guam for CZM consistency. The Bureau concurred "that this (1981) Plan is consistent with policies of Guam's Coastal Zone Management Program" (letter of October 6, 1981). The April 1985 revised draft of the FMP was also submitted to the Bureau of

Planning. The Bureau found this draft to be consistent with the policies of the Guam Coastal Management Program and the proposed actions fully justified (Appendix B). An updated "Determination of Consistency" will be sent to the Bureau of Planning. The Bureau's response will be sent to NMFS for inclusion in the record of decision on this plan.

The Guam CZM program was approved in August 1979. The principal policy in the CZM program which is most relevent to the objectives of this revised FMP (Section 4.2) is to achieve economic development within the limits of Guam's natural resource base. The measures proposed in this FMP (Sections 3.1 and 7.1) are believed to be fully consistent with Guam's CZM policies and requirements. The plan proposes to allow harvests of the management unit species within the limitations of the fishery resources involved. The plan provides a framework for allowing some access to foreign vessels to fish for tuna in the U.S. Fishery Conservation Zone while protecting domestic fishing interests in Guam. Direct impact on Guam's coastal zone will be negligible as a result of this plan. The FMP is intended to generate further growth of the domestic fisheries for pelagic species in Guam.

9.1.3 American Samoa

The Development Planning Office, American Samoa Government, concurred with the 1981 and 1985 drafts of the FMP for consistency with reference to the American Samoa Coastal Zone Management Program policies and objectives (letter of January 1982 - ECD Serial: 0035 and Appendix B). The area closures to foreign longline fishing in the FCZ of American Samoa are the same as those which were proposed in the 1981 FMP. The measures proposed in this revised FMP are expected to be still consistent with the CZM policies and requirements of American Samoa. Continued growth of the domestic fisheries for pelagic species in American Samoa is an objective of this FMP (Section 4.2). Cannery supplies of tuna from Korean and Taiwanese longline vessels will not be affected as a result of this FMP. Incidental catches of billfish, mahimahi, wahoo, and oceanic sharks made by purse seiners will be monitored through requests for voluntary submission of catch records for the species taken incidentally to tuna fishing operations of purse seiners in the FCZ. An updated "Determination of CZM Consistency" will be sent to the Development Planning Office for CZM consistency review. The response of the Development Planning Office will be forwarded to NMFS for inclusion in the record of decision on the plan.

9.2 Marine Mammal Protection Act (MMPA)

With few exceptions, passage of the MMPA in 1972 placed a moratorium on taking or importing marine mammals or their products into the United States. In 1976, the MFCMA expanded U.S. control of marine mammals to include the 200-mile FCZ. The National Marine Fisheries Service (NMFS) issues rules and regulations to carry out its mission to protect marine mammals. It is the goal of the Marine Mammal Commission and the Office of Protected Species and Habitat Conservation of the NMFS that the incidental "take" or serious injury to marine mammals due to fishing operations be reduced to insignificant levels approaching zero. Marine mammals which reside in or have been observed in the FCZ of the Western Pacific Region have been listed in Table 6.1. These include the endangered Hawaiian monk seal, the endangered humpback, fin, and sperm whales as well as other whales and dolphins which are not classified as endangered species.

There have been no recorded cases of active interactions of Hawaiian monk seals and whales with the pelagic fisheries operating in the FCZ of the Western Pacific Region. While there are no records of entanglements of humpback whales in drift-gillnets in the central and western Pacific, humpback whales are regularly entangled in nearshore gillnets in the northwest Atlantic. Similarly, the potential of entanglement of Hawaiian monk seals certainly exist with respect to drift gillnets and possibly longlines. Monk seals may remain at sea for up to two weeks before returning to rest on land, and some have been sighted up to 420 nm away from their home islands where high seas drift-gillnet fisheries operate. Thus, the potential for entanglement of monk seals in active fishing gear (drift-gillnets and longlines) exists. More often monk seals have been found entangled in lost or discarded fishing gear, usually netting, but also line. A large percentage of seal entanglements have involved weaned pups, which are more likely to explore objects in their environment because of their curious nature. While Henderson (1984) has reported on Hawaiian monk seal entanglements in marine debris, it is not known how much ocean debris originates in the fisheries covered by this FMP, how much originates in other fisheries much beyond the boundary of the FCZ in the north Pacific, or how much of the debris is not related to fisheries at all such as cargo nets, plastic bands and strapping, plastic buckets, and other kinds of flotsam.

There are six species of dolphins recorded in the FCZ of the Western Pacific Region (Table 6.1). None of the dolphin species listed are endangered or depleted; nonetheless their take is still subject to the provisions of the MMPA. The 1981 amendments to the MMPA added a "small take" exception for marine mammals (which are not considered to be endangered or depleted) to the moratorium regarding the take of marine mammals in general. The amendments allow for the incidental, but not intentional, taking of small numbers of nondepleted marine mammals by U.S. citizens engaged in commercial fishing operations. Commercial fishermen may obtain a "Certificate of Inclusion" to take marine mammals that interfere with their catch. In the main Hawaiian Islands, there are frequent reports of dolphins removing bait or hooked fish from the lines of

trollers and handline fishermen. Some fishermen have obtained a "Certificate of Inclusion" from the NMFS allowing them to harass dolphins when they steal the bait or the catch of fishermen.

Instead of inflicting a hurt on fishermen, dolphins can also end up being the victims. It is well known that purse seine fishing for tuna, especially in the eastern Pacific, can result in an incidental take of dolphins. However, it is not so well known that ""passive" drift-gillnets can also take dolphins, apparently in fairly large numbers. In March of 1983, the Coast Guard apprehended a 140 foot Japanese gillnetter hauling in a net 20 miles inside the FCZ near Hancock Seamount. The vessel's catch mostly contained tuna and the management unit species, but the vessel's catch log also indicated that 69 dolphins were caught outside of the FCZ but they were not retained.

Implementation of the proposed actions in this FMP should further the interests of protecting marine mammals. Under this plan, the use of drift-gillnets would be prohibited in the FCZ by foreign fishermen. Domestic fishermen would be allowed to use drift-gillnets but only under experimental fishing permits issued by the NMFS. Foreign longline vessels would not be allowed to fish closer than 150 miles from the main Hawaiian islands and Guam, closer than 100 miles from the Northwestern Hawaiian Islands, and within areas enclosing principal banks of American Samoa. The PMP, in contrasts, allows foreign longline fishing as close as 12 miles from the shores of each of the U.S. Flag islands in the Pacific, subject to non retention of some of the management unit species.

9.3 Endangered Species Act (ESA)

The ESA requires Federal agencies to use their authorities to protect, restore and enhance threatened and endangered species and their habitats. Endangered or threatened species which have been recorded in the FCZ have been identified in Table 6.1.

A Federal agency (e.g., the Council) may not take actions which are likely to jeopardize the continued existence of a species listed as threatened or endangered, except under very limited circumstances. Before undertaking an action, a Federal agency must request consultations under Section 7 of the ESA with NMFS or U.S. Fish and Wildlife Service (FWS) if it is determined that such action(s) may affect a listed species. A Biological Opinion then will be issued indicating whether the action is likely to jeopardize the continued existence of a threatened or endangered species or will result in modification or destruction of "critical habitat" for such species and recommending adjustments to the proposed action to achieve greater protection of endangered or threatened species. The Council has received the formal Section 7 consultation from the NMFS. The Biological Opinion concluded that the actions proposed in this FMP are not

likely to jeopardize any threatened or endangered species within the FMP's geographic scope (Appendix F). The FWS similarly concluded that implementation of the plan will not affect any listed species under its jurisdiction such as sea turtles when they are on land (Appendix F).

As discussed in the previous section, neither the endangered Hawaiian monk seals or any of the endangered cetaceans listed in Table 6.1 are expected to be negatively affected by the measures proposed in this FMP. Instead, the proposed actions will provide additional protection to endangered marine mammals.

The green, hawksbill, leatherback, and olive ridley sea turtles are listed as threatened or endangered species under the jurisdication of the NMFS that occur within the activity area. Incidental capture of green, leatherback, and olive ridley sea turtles by foreign longliners is documented from the central and western Pacific (Balazs, 1982). Balazs (1984) has also noted entanglement of green, hawksbill and olive ridley sea turtles in the central Pacific in monofilament fragments or in intact gear being actively fished. The measures in this FMP are not expected to jeopardize the continued existence of any endangered or threatened species of sea turtle. The FMP proposes to prohibit the use of drift-gillnet gear anywhere in the FCZ by foreign vessels. Domestic vessels could use drift-gillnets only under experimental fishing permits issued by the NMFS. Also, fishing by foreign longliners would not be allowed within 100 miles of the NWHI. One of the NWHI, French Frigate Shoals, is a major habitat for green sea turtles where 90% of all green sea turtle nesting in the Hawaiian archipelago occurs. There are no reports available on sea turtle interactions with purse seine vessels in the FCZ of the Western Pacific Regional. However, a hawksbill turtle was reported to have been taken by a Japanese purse seiner operating in international waters between the Federated States of Micronesia and Indonesia (Balaz, G. 1980).

Under Section 7(b)(4) of ESA, the NMFS has developed a statement authorizing acceptable levels of incidental take for threatened and endangered species of sea turtles in the foreign and domestic longline fisheries and specified the terms and conditions under which an incidental take of sea turtles may occur (Appendix F). Fishermen will need to be advised of the potential for incidental capture of sea turtles and methods of returning them to the sea with as little harm as possible. There is no mechanism to authorize an incidental take of the endangered Hawaiian monk seals because they are protected under the MMPA as well as ESA.

The FMP authorizes the NMFS to require all domestic drift-gillnet vessels which are allowed to fish in the FCZ under an experimental fishing permit, and foreign fishing vessels which take any of the management unit species in the FCZ to report sea turtle and marine mammal/fishery interactions. The NMFS forms for domestic drift-gillnet and foreign fishing vessel catch reports will include information elements for interactions, including species, location of interaction, date, circumstance, and condition of the animal upon release. Permit conditions will include a statement that every effort must be made to return marine mammals and turtles to the sea alive, with as little harm as possible.

In order to define the degree of interaction between domestic fishing gears (in addition to drift-gillnets) and marine mammals and sea turtles, the Regional Director should consult with State and Territory fishery agencies in establishing procedures for voluntary submission of data on marine mammal and sea turtle interactions with domestic fishing gears, other than drift gillnets, -- longline, bait boat, purse seine, handline, and troll gear. If it becomes evident that such data are not sufficiently being made available on a voluntary basis, then the Regional Director shall request the Council to provide him with the authorization to require the submission of such reports under Federal authority.

A critical habitat was designated for the endangered Hawaiian monk seal. The critical habitat for monk seals designated by the National Oceanic and Atmospheric Administration includes the beaches, lagoons and ocean waters of the Northwestern Hawaiian Islands out to a depth of 10 fathoms. It became effective on May 30, 1986. Designation of critical habitat for this species will not require re-initiation of Section 7 consultations for this FMP. The Biological Opinion defined the conditions for a re-initiation of Section 7 Consultations (Appendix F).

9.4 Regulatory Flexibility Act (RFA)

The RFA requires agencies to prepare a "Regulatory Flexibility Analysis" for rules likely to have a significant economic impact on a substantial number of small American businesses and to consider adjustments to those regulations if necessary to avoid a significant adverse impact on a substantial number of small business entities. Virtually all of the domestic fishermen (Sections 6.13 - 6.20) and foreign fishermen (Sections 6.9-6.12) that would be affected by this plan would qualify as "small businesses."

Out of the actions proposed in this FMP (Sections 3.1 and 7.1), only one action affects domestic fishermen directly. Fishing in the FCZ with drift-gillnets would be prohibited unless specifically authorized by an experimental fishing permit issued by the Regional Director of the NMFS. This proposal would not have adverse effects on a substantial number of small businesses since there are no domestic drift-gillnet vessels operating in the FCZ of the Western Pacific Region at present.

The other actions proposed in the FMP deal exclusively with foreign fisheries, but they are, nevertheless, germane to the intent of the RFA. Regulation of foreign fisheries with the FCZ is bound to be beneficial to the

domestic fisheries for the management unit species presently operating in the FCZ. Domestic fishermen should achieve larger catches for a given level of effort as a result of reduced competition with foreign fisheries. Domestic fishermen will be assured that there will be no gear conflicts with foreign gillnet and longline vessels. No Federal regulations are being proposed for domestic fishermen other than requiring an experimental permit for drift-gillnet fishing.

The FMP will also have beneficial impacts on the foreign longline fisheries compared to the PMP presently in effect since foreign longline vessels will be more free to use their vessels and gear in areas of the FCZ which would be open to foreign longline fishing. Foreign longline fishermen will not have to release the management unit species caught in open areas of the FCZ and thus will not lose line or gear. Foreign purse seines and pole-and-line vessels would also be allowed to keep their incidental catches under the FMP. The present U.S. policy on incidental catches made by foreign purse seine and pole-and-line tuna vessels is that these vessels cannot retain non-tuna species caught in the FCZ (Appendix C). Finally, compliance with the area closures proposed in the FMP would be much easier than compliance with the quotas and non-retention provisions of the PMP.

For all of the reasons given, a formal Regulatory Analyses has not been prepared because the proposed actions will have positive rather than negative impacts on domestic fishermen. The Council believes that the office of the General Counsel of the Department of Commerce can certify to the Small Business Administration that the proposed FMP will not have a significant adverse economic impact on a substantial number of small business entities.

9.5 Paperwork Reduction Act (PRA)

The PRA requires agencies to minimize paperwork and reporting burdens whenever collecting information from the public. Any form of information collection required by proposed rules of a FMP must meet the approval of the Office of Management and Budget (OMB) before an agency can collect such information. This FMP does not propose any paperwork burdens for domestic fishing vessels presently engaged in the fisheries for the management unit species. The Council recommends that the NMFS should continue to work closely with State and Territorial agencies to further improve their voluntary fishing data collection programs and urges the State of Hawaii to continue its efforts towards ensuring full compliance with fisheries reporting requirements mandated by State law.

There is no known domestic drift-gillnet fishing in the FCZ of the Western Pacific Region at present. The FMP proposes to allow controlled use of drift-gillnets in the FCZ by domestic fishermen in order to determine catch

rates and volumes and the species composition of catches of the management species and tuna. Under the proposed action, no drift-gillnet fishing may be allowed in the FCZ of the Western Pacific Region unless first authorized by an experimental fishing permit (EFP) issued by the Regional Director of the NMFS under section 303 (b)(1) of the Magnuson Act. The regulations pertaining to experimental fishing are detailed in Section 11.0 (685.8) of this report. EFPs will be issued by the Regional Director on a case-by-case basis in full consultation with the Council and the Director of the affected State or Territory fishery management agency. Approval of the proposed regulations pertaining to data collection for authorizing experimental drift-gillnet fishing is required by the OMB.

9.6 Executive Order 12291

Under this order, a Regulatory Impact Analysis is required if a proposed Federal rule is major. A major Federal rule is defined as one that will result in:

a) An annual effect on the economy of $100 million or more;

b) A major increase in costs or prices for consumers, industries, Federal, State, or local government agencies, or geographical regions;

c) Significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States-based enterprises to compete in domestic or export markets.

The ex-vessel value of commercial fish landings of all species in Hawaii was estimated to be about $17.9 million in 1983 and $29.4 million in 1984 (NMFS, Fisheries of the United States, 1984). Since 1983, domestic tuna purse seiners have come to Honolulu to unload tuna caught in the western Pacific ocean. From July 1983 to June 1984, eight purse seine vessels made eleven visits to Honolulu, unloading nearly 20 million pounds of tuna at the local cannery. This activity accounts for the large increase in commercial fish landings in Hawaii between 1983 and 1984. Not counting the landings and transhipment of tuna made by foreign and domestic fishing vessels in American Samoa, the CMNI (Tinian island), and Guam, the ex-vessel value of commerical fish landings made by domestic commercial fishermen in all American flag islands in the Pacific is several million dollars larger than the ex-value of commercial landings made solely in Hawaii. The actions proposed in this FMP should result in increased fishing efficency for both the existing domestic fisheries operating in the FCZ and for foreign longline vessels. Purse seine landings and transhipment of tuna will not be affected. Since none of the actions proposed in this FMP fall within the above three criteria defining a major Federal rule. Therefore, there will be no major adverse impacts requiring preparation of a Regulatory Impact Analysis.

9.7 National Environmental Policy Act (NEPA)

The NEPA requires Federal agencies to assess the effects of their activities on the environment. Fishery management plans (FMPs) require preparation of either an environmental impact statement (EIS) or an environmental assessment (EA). An EIS must be prepared if actions proposed by a FMP may be reasonably expected to: (1) jeopardize the productive capability of the management unit species or any related stocks (e.g. tuna) that may be affected by the action; (2) allow substantial damage to the ocean and coastal habitats; (3) have substantial adverse impact on public health or safety; (4) adversely affect an endangered or threatened species or a marine mammal population; or (5) to result in comulative effects that could have substantial adverse effect on the management unit species or any related stocks that may be affected by the proposed actions.

An environmental assessment (EA) is prepared for determining if significant environmental impacts could result from the proposed actions. If the proposed actions are determined not to result in significant environmental impacts on the environment, the EA is the final environmental document required by NEPA. The information and analyses in the FMP are presented in a manner to satisfy the requirements of the Magnuson Act as well as NEPA. Sections 3.2 and 4.0 present the problems and issues addressed and the need for actions through the FMP. The actions proposed are listed in Sections 3.1 and 7.1. Section 6.0 describes the fisheries for billfish and associated species, including a description of the stocks and their habitat (the natural environment) and a description of domestic and foreign fishing for these stocks (the social and economic environment). Section 7.0 analyzes the relative advantages and disadvantages of alternative management strategies compared to the actions proposed by the Council for best meeting the objectives of the FMP (Section 4.2). Sections 9.2 and 9.3 discuss the impacts of the proposed actions on endangered or threatened species and marine mammals. The listing of preparers of this FMP is given in Section 2.6, and Appendix G is a summary of comments received on the revised draft FMP and responses to those comments. The revised draft FMP was sent to more than 500 individuals, businesses, non-profit organizations, and government agencies. Twelve public hearings were held on the revised draft FMP (Section 2.4).

9.7.1 Evaluation of "Significance" (NOAA Directives Manual 02-10 Section 13.b.)

a) The proposed actions are not expected to jeopardize the long-term productive capability of the management unit species or related stocks. Stocks of billfish and associated species and tuna range throughout the Pacific. The FMP will not have a measurable impact on the overall health and productivity of stocks of billfish and associated species throughout their assumed range in the Pacific Ocean because annual catches of the management unit species made in the 200-mile zones of Pacific islands only make up 2 to 3% of the annual catches of these species made in the Pacific Ocean. (Section 8.2).

b) The proposed actions will not allow substantial damage to result to the ocean and coastal habitats. The management unit species are distributed in the surface layer of the Pacific Ocean generally far removed from coastal habitats. Habitat conditions of the FCZ of the Western Pacific Region are of high quality (Section 6.8). The proposed actions will not effect the quality of this habitat.

c) The proposed actions are not germane to public health and safety in any way.

d) The proposed actions will not adversely effect endangered or threatened species or marine mammals. Implementation of the actions proposed should further the interests of protecting these species (Sections 9.2 and 9.3).

e) The proposed actions will not result in cumulative adverse effects that could have a substantial effect on the stocks of the management unit species or related stocks. The proposed action will establish a monitoring and reporting program to determine if the objectives of the FMP are being achieved and to identify corrective actions if resource problems are subsequently identified. The FMP requires annual reports and a five-year review to evaluate the need for changes in any of the management measures or in the objectives of the FMP.

9.7.2 Other Considerations

a) Socio-economic impacts -- The proposed actions are intended to increase the social and economic values of the domestic fisheries for the management unit species while providing a more reasonable opportunity for foreign longline vessels to fish for tuna in the FCZ of the Western Pacific Region than under the PMP. Domestic fishermen should expect to realize larger catches and higher catch rates of billfish and associated species and better fishery development prospects with the FMP than under the PMP. The cost-effectiveness of the FMP is much greater than the PMP in terms of plan administration and enforcement. The FMP embodies a straightforward and easily complied with management approach compared to the PMP.

b) Controversy -- The FMP would prohibit foreign longliners from fishing in only 25% of the FCZ of the Western Pacific Region. There would be much freer access to the management unit species and the highly migratory species of tuna for foreign longliners in the remaining 74% of the FCZ compared to the PMP. Since the PMP became effective on April of 1980, there has not been any legal foreign longline fishing in the entire FCZ of the Western Pacific Region. The

Magnuson Act establishes the basis for recognizing the priority which must be given to the domestic fisheries over the foreign fisheries while maintaining U.S. policy on highly migratory species of tuna. The Council believes that the proposed actions satisfy the balancing test (Sections 4.4.3, 4.5 and 7.4 and Appendix C), although not everyone will necessarily be expected to concur with the Council's judgement in this regard.

c) Uncertainty -- An inherent characteristic of highly migratory species in the management unit and tuna is that their abundance and availability in any one place are highly variable from season to season and from year to year. The actions proposed in the FMP cannot change this inherent uncertain variability. While there is uncertainty regarding the extent to which foreign longliners will fish in the FCZ of the Western Pacific Region and how the stocks of the management unit species in the FCZ will "respond" to foreign longline fishing under the proposed actions, the resultant long-term impacts of the FMP are expected to result in greater catches of the management unit species made by domestic fishermen. The FMP provides a mechanism to assess changes every year and to implement new measures every five years or more frequently if need be.

d) The proposed actions will not affect any scientific, cultural or historic resources or cultural practices of native Hawaiians, Samoans, and Chamorros. The measures proposed in the FMP are believed to be fully consistent with the Coastal Zone Management Programs of Hawaii, Guam, and American Samoa.

9.7.3 Conclusion

The actions proposed in this FMP will not have a significant effect on the quality of the human environment. Such impacts as will occur will be beneficial. A finding of no significant impact (FONSI) means that an EIS does not have to be prepared. The above EA reveals that no significant impacts will result from the actions proposed in this FMP.

9.8 Department of Interior

The U.S. Fish and Wildlife Service (FWS) administers the Hawaiian Islands National Wildlife Refuge in the Northwestern Hawaiian Islands (NWHI) under Executive Order 1019, which established the refuge, and the National Wildlife Refuge System Administration Act, which sets forth the management objectives for all units of the National Wildlife Refuge System. This FMP will have no direct

impact on management of the refuge resources since domestic fishing does not occur within the boundaries of the Refuge, and foreign longline fishing will be limited to the FCZ beyond 100 miles of the NWHI. Foreign drift-gillnet fishing will be prohibited in the entire FCZ of the Western Pacific Region and domestic drift-gillnet fishing will be strictly controlled through experimental fishing permits. These measures are expected to further protect threatened green sea turtles and endangered monk seals which reside in the NWHI. No FWS - managed resources are expected to be negatively affected in any way by this plan (Appendix F).

The FWS also administers Baker, Howland, and Jarvis islands. These islands are uninhabited and are located about 1,600 miles southwest of Hawaii (Figure 3.1). Palmyra island lies about 1,000 miles south of Hawaii. Palmyra is uninhabited and privately owned, and it falls under the jurisdiction of the Department of Interior. The FMP will not affect these islands or the jurisdiction of the Department of Interior in any way.

The Department of the Interior also has oversight responsibilities for administration of the Territories of Guam and American Samoa. The Department has vested increasing authority for management of local affairs in the territorial governments, and supports increased economic development and self-sufficiency of these Territories. This plan is intended to encourage growth of the domestic fisheries (commercial, recreational, and subsistence) without impairing or curtailing the economic benefits attributable to foreign vessels' deliveries of tuna to U.S. canneries in American Samoa and to tuna transshipment operations in Guam. This plan appears to be fully consistent with Department of Interior policies.

9.9 Department of Defense

The Defense Department administers Midway island and several U.S. possessions in the Pacific. Midway island is located about 1,200 miles northwest of Hawaii and is administered by the Department of the Navy. Midway is inhabited by a small number of military and civilian personnel. Kingman reef is uninhabited and located about 920 miles south of Hawaii. It is under the Department of the Navy's jurisdiction. At present, the Navy is not expending any money to maintain the 10-mile long island. Johnston Atoll is located about 700 miles southwest of Hawaii. Presently, the Defense Nuclear Agency administers the island. Approximately 325 military and civilian personnel are stationed on Johnston. Wake island is located about 2,300 miles west of Hawaii and 1,500 northeast of Guam. Wake island is administered by the Air Force, although the Department of Interior formally retains jurisdiction over Wake island. None of these 'Defense Department' islands have indigenous people living on them. This plan should not affect the affairs of the Department of Defense in any way.

9.10 Department of Transportation

The U.S. Coast Guard, Department of Transportation, shares enforcement responsibilities with NMFS under the MFCMA. Enforcement difficulty will vary depending on the management approches ultimately selected. The FMP proposes specific area closures, which should be much easier to enforce than the species-specific quotas and non-retention zone provisions of the PMP. Simplicity of enforcement is especially critical in the Western Pacific Region due to the large area of the FCZ (1.5 million square miles) and limited enforcement resources.

9.11 Department of State

Currently, the Department of State is involved in negotiations with 16 Pacific island states including Australia and New Zealand concerning a regional tuna treaty which would provide affordable access to U.S. tuna purse seiners to rich tuna grounds in the EEZ of Pacific island nations. The Council recognizes the State Department's concern that the control of foreign fishing for tuna should not go beyond controls necessary to achieve the Council's objectives for domestic fishing for billfish and associated species (Section 4.2). The proposals in this revised plan are sensitive and responsive to the Department's concerns (Appendix G).

9.12 State and Territorial Fishery Laws and Regulations

There are no provisions in current State and Territorial laws or regulations which control domestic fishing for or landings of the management unit species in the FCZ, although catch reports are required to be filed if fish are sold in Hawaii. Other than for drift-gillnet fishing, the plan imposes no restrictions on domestic fishing activities in the U.S. FCZ. No amendment of State and Territorial laws or regulations would be required to insure implementation of the plan, although the State of Hawaii and Territories of Guam and American Samoa might find it beneficial to prohibit drift-gillnet and purse seine fishing in their territorial waters. The plan endorses existing reporting requirements to improve the basis for future management decisions and the data base for fishery assessment. The NMFS is working with the State of Hawaii and the Territories of Guam and American Samoa to determine how current data collection programs can be adjusted so that their programs may furnish the data required to better monitor the domestic fisheries and to determine whether the objectives of the FMP are being met and to what degree.

9.13 City and County of Honolulu

The NWHI (except for Midway island) and Kaula rock are covered by a Development Plan of the City and County of Honolulu. The purpose of the Development Plan is to preserve and protect the environmental, marine, and wildlife assets of the NWHI by guiding City and County agencies in (1) formulating recommendations to be made on referrals of permit applications requesting approvals of development proposals from State and Federal agencies responsible for issuing permits, (2) taking action on matters affecting the NWHI for which City support is requested, and (3) carrying out jurisdictional responsibilities that may be delegated to the City in the future. This FMP will not affect the Development Plan or the City and County of Honolulu's Special Coastal Management Area ordinance in any way.

10.0 PLAN ADMINISTRATION AND ENFORCEMENT

10.1 Monitoring of the Fisheries

The central thesis of this FMP is that foreign fishing vessels can compete significantly with island vessels in catches of the management unit species and tuna on local grounds or, in the more distant reaches of the FCZ, intercept fish before they can migrate into local waters fished by island fishermen. Skillman and Kamer (1985) found that abundance estimates (CPUE's) for blue and striped marlin for both the domestic longline and troll fisheries and the Japanese longline fishery vary from year-to-year in a consistent fashion. This indicates that both local and Japanese fishermen fish common stocks of blue and striped marlin in the FCZ. Skillman and Kamer also examined whether mortality of blue and striped marlin on foreign longline gear in the FCZ is associated with the abundance (CPUE estimates) of blue and striped marlin i local waters. They found that increases in Japanese longline effort in the FCZ of Hawaii and in adjacent waters is associated with decreases in the abundance of blue and striped marlin available to the local fisheries. Likewise, decreases in the amount of foreign longline fishing in the FCZ are associated with increases in the abundance (CPUE) of blue and striped marlin available to domestic fishermen (Section 5.5). Therefore, it can be expected that local fishermen should benefit from the exclusion of foreign longline fishing from the particular areas proposed (Section 3.1).

The principal parameters for monitoring each of the fisheries for pelagic species, both foreign and domestic, described in Section 6.0 are catch, effort, and subsequent derivation of catch rates or CPUE for each of the management unit species. This will allow extending the initial study of Skillman and Kamer by including all of the other species in the management unit in addition to blue and striped marlin and adding other gear types which take the management unit species. It should also eventually allow testing for whether or not the purse seine and baitboat fisheries can alter the abundance of the management unit species and tuna fished by island fishermen in local waters. Monitoring of domestic fisheries should also allow testing for signs of catch competition effects between and among the different island fisheries for pelagic species such as trollers, handline fishermen, local longliners, and the commercial and recreational fisheries.

10.1.1 Foreign Longline Vessels

Under the FMP, foreign longline vessels would be required to file effort plans at least two months prior to fishing in the open areas of the FCZ. Foreign longline vessels permitted to fish in the FCZ must maintain a daily log of their fishing activities while in the FCZ. To the extent feasible, the logbook format should be as compatible as possible with logbooks presently in use by foreign longline vessels. The logbook format should record only the information which is essential for

monitoring the fishery for compliance with this plan. At the minimum, foreign longline vessels should log: (1) the day of fishing, (2) the position of the vessel (within 1° longitude and latitude) where the set is made, (3) the number of hooks per set, (4) the number and corresponding estimates of round weight (in Kg) of fish caught by species (whether retained or not), and (5) other information as may be judged necessary by the Regional Director of the NMFS for monitoring the fishery (Section 11.0, Foreign fisheries regulations).

10.1.2 Foreign Baitboat (Pole-and-Line) and Purse Seine Vessels

For the time being, the U.S. State Department, in cooperation with the National Marine Fisheries Service (NMFS), shall request voluntary submission of catch and effort data for the management unit species taken incidentally to tuna fishing in the FCZ by these classes of vessels. If information on incidental catches and effort is not obtained within one year of the effective date of this FMP, the Council shall consider requesting the Secretary of Commerce to promulgate mandatory reporting requirements covering fishing effort and incidental catches made by the FCZ by thsese classes of vessels. If the Council is unsuccessful in getting catch and effort data from these vessels through voluntary means, then the Council may wish to prohibit fishing by these classes of vessels unless they first obtain a permit agreeing to log and report information regarding (1) the character of the vessel and type quantity of the fishing gear used, (2) areas of the FCZ (within 1° longitude and latitude) in which fishing was engaged in, (3) catch by species in numbers of fish or total weight thereof, and (4) other information deemed essential by the Regional Director of the NMFS for gauging the significance of by-catches of the management unit species relative to tuna catches made by these classes of vessels.

10.1.3 Foreign Drift-Gillnet Fishing

The use of drift-gillnets in the FCZ by foreign fishing vessels is prohibited.

10.1.4 Domestic Baitboat (Pole-and-Line) Vessels

Reports maintained by the Hawaii Division of Aquatic Resources (HDAR) summarizing daily catches made by skipjack tuna (aku) pole-and-line vessels are well suited for monitoring their catches of tuna and by-catches of the management unit species. These are no domestic pole-and-line tuna vessels in the other island areas under the jurisdiction of the Council.

10.1.5 Domestic Purse Seine Vessels

The Council has agreed to seek information on incidental catches made by domestic tuna purse seiners in the FCZ through voluntary means. If adequate information on incidental catches (by species) and effort is not obtained within one year of the effective date of this FMP, then the Council shall consider ways for promulgating mandatory reporting of effort and catches made in the FCZ by domestic purse seine vessels.

10.1.6 Domestic Drift-Gillnet Fishing

Fishing with drift-gillnets in the FCZ by domestic vessels is prohibited unless first authorized by an experimental fishing permit issued by the Regional Director of the NMFS (Section 11.0, Domestic Fisheries-Experimental Fishing Permit). Experimental permits will be issued on a case-by-case basis to allow controlled use of drift-gillnets in the FCZ by domestic vessels with a sporting requirement to determine the effort level, volume of catches, catch rates, and species composition of catches.

10.1.7 Domestic Longline Fishing

The longstanding "Flagline Catch Report" (Appendix E), used by HDAR for monitoring catches made on longline gear, is on a fishing trip (day of landing) basis. This was adequate for the time when the length of fishing trips taken and the number of hooks (baskets) used by local longline vessels were fairly standard. At present, there is considerable variability in the number of hooks deployed by domestic longline vessels and in the number of days of actual fishing done. The Council, therefore, recommends that the HDAR discontinue using the "Flagline Catch Report" and instead substitute the "Fish Catch Report" for monitoring the catch of longline vessels. The "Fish Catch Report" (Appendix E) is on a per day of fishing basis. The Council also recommends that the HDAR require longline vessels to specify the number of hooks fished per set in the column of the "Fish Catch Report" which identifies the type of fishing gear used. Since many longline vessels now fish considerably further from Honolulu than in the past, the map which accompanies the "Fish Catch Report" form identifying the "statistical areas" fished around the Hawaiian islands can be expanded by the HDAR, with the assistance of the NMFS, to encompass the FCZ subdivided into a reasonable number of zones. An alternative to this would be to require vesels which fish beyond a certain boundary from shore to list the position of the vessel (within 1° longitude and latitude) where the sets are made.

The composition of the longine fleet in Hawaii is considerably different now from that of before 1980, when most of the vessels in the fleet were Hawaii-style sampans of wooden construction. Many boats from

Alaska and West Coast fisheries have relocated in Hawaii in recent years and some of them have entered the longline fishery on a part-time, seasonal basis. A discrepancy has been noted in the number of domestic vessels officially declared in the fishery (in State records) and those actually observed in the fishery (Section 6.13.1). In part, this is due to existing fishing license registration process. Many of the vessels which have entered the fishery on a part-time basis, declare themselves to be general purpose, or trolling, or handline vessels on the commerical fishing license forms. Longlining is a secondary occupation to these vessels, but their catches can be quite significant in the aggregate. Because of this problem, the official State tallies of catches made on longline gear probably underestimate actual catches by a considerable margin. Also, a considerable number of longline fishing trips taken are not reported at all, or are under reported, judging from the fairly large number of vessels which are engaged in the fishery at present and the substantial volume of tuna and billfish that are sold through major fish dealers and auctions in Hawaii (Western Pacific Regional Fishery Management Council, unpublished data). The Council recommends that the NMFS assist the HDAR to resolve these apparent problems.

There is a single domestic longliner operating in American Samoa. The number of fishing trips taken by this vessel and the vessels catch per trip are tracked by OMWR data collectors. There is no domestic longline fishing in Guam at present.

10.1.8 Domestic Handline Fishing

There were no categories in the "Commercial Marine License" form specifically covering the ika-shibi and palu-ahi handline fisheries in Hawaii prior to 1985. Catch and effort information for these two handline fisheries (Sections 6.14 and 6.15), therefore, had to be extractd from the "deepsea handline" and "inshore handline" gear-type categories. Because the deepsea and inshore handline categories also included catches by fishing trip for the bottomfish and mackerel scad handline fisheries, it was cumbersome to seperate out fishing trips and catches of large pelagic species made on handline gear. The Council, therefore, had recommended in the draft FMP (April 1985) that HDAR consider adding a seperate category for the ika-shibi and palu-ahi fisheries in the licensing of commercial fishermen in Hawaii. The HDAR agreed with the Council's recommendation and established a seperate category for these two tuna handline categories (Appendix E).

10.1.9 Charter Sportfishing Vessels

Prior to 1985, charter boat catches could not be differentiated in the commercial "Fish Catch Reports" because they were lumped together with all other troll-caught fish. The charter fishing fleet in Hawaii catches a very significant share of the management unit species and is

large enough and important enough to warrant a distinct catch category in the Commercial Marine License procedures. In the draft FMP, the Council recommended that HDAR add a special charter fishing category in the Commercial Marine Licenses in order to include charter boat catches under a distinct category. The HDAR has done this and tracking of charter boat fishing trips and catches should be much easier and much more accurate now as a result of this change in the licensing procedure (Appendix E).

Currently, there are six vessels in American Samoa which hire out for sportfishing. Ten vessels operate as sportfishing charter boats in Guam at present for full-day or half-day charters. Estimates of fishing trips taken and catches made by sportfishing charter vessels in Guam and American Samoa are not available under a seperate "charter vessel" category. Rather, they are lumped together with all troll caught fish. Charter fishing is not sufficiently large enough yet in Guam and American Samoa to warrant a distinct trolling category.

10.1.10 Non-Charter Trolling

Trolling accounts for most of the landings of the management unit species in Guam and American Samoa, and in Hawaii. Since there is very limited handline fishing and no longline fishing for pelagic species in Guam, virtually all of the catches of the management unit species there are made by trolling. Likewise, most of the catches of the management unit species made by domestic fishermen in American Samoa are made by trolling since there are only a few domestic handline vessels and only a single longliner in American Samoa which target on tuna. Trolling is also the most important gear type contributing to catches of the management unit species in Hawaii, although longline catches and handline catches are also substantial.

The Western Pacific Fishery Information Network (WesPac FIN) is providing sufficient information for adequately monitoring the troll fisheries for the management unit species in Guam and in American Samoa. The situation in Hawaii, however, is quite different. The amount of trolling done in Hawaii is much higher than in Guam and American Samoa, and, as is the case in Guam and American Samoa, there is every conceivable blend of commercial, quasi-commercial, recreational, and subsistence troll fishing done in Hawaii. This situation makes it difficult to meaningfully characterize that part of the total troll catch which is reported to the State of Hawaii in the commercial "Fish Catch Reports" as being recreational in nature, as opposed to the part which is truly commercial. All it takes is a puchase of a $25 "Commercial Marine License" for the right to sell fish in Hawaii. Hawaii's system of fish catch reporting also does not include catches made by non-licensed fishermen which probably exceed the catches made by licensed fishermen.

In order to establish a method for monitoring effort and catches made by non-licensed boat fishermen in Hawaii, the Council, the Honolulu

Laboratory of the NMFS, and the HDAR are jointly undertaking an investigation aimed at developing an appropriate sampling framework which would provide statistically reliable estimates of catches, effort, and catch rates (CPUE) for non-licensed boat fishermen in Hawaii. Present data collection procedures in Hawaii are insufficient for monitoring the fisheries for pelagic species because only fishermen who obtain a "Commercial Marine License" are required to submit monthly reports to HDAR that summarize each fishing day's activities for the month. However imperfect they may be, these data are the most comprehensive sources of information currently available on the fisheries in Hawaii which take the management unit species. Estimates of catches and effort derived from annual surveys of non-licensed fishermen in Hawaii, when added to the commercial catch reports, will make it possible to adequately monitor the fisheries for pelagic species in future years in Hawaii.

10.2 Annual Report

The Council shall establish and appoint members to a Pelagic Species Plan Monitoring Team (Team). The Team will have the responsibility for preparing an annual report to the Council on the various fisheries for pelagic species in each of the island areas served by the Council. The annual report will also gauge the effectiveness of the FMP in meeting its objectives. The composition of the Team will be decided by the Council. The Team will work closely with the NMFS, Coast Guard, State, and Territorial officials to ensure that data submission requirements and data collection programs are generating the data necessary for effectively monitoring the relevant fisheries and for determining whether different management measures might be necessary. The Honolulu Laboratory will be responsible for providing research and timely data analysis on the fisheries for pelagic species for use by the Monitoring Team. The Team will prepare an annual report on the fisheries for pelagic species by June 30th of each year on the status of the foreign and domestic fisheries covered by this FMP during the previous year. The Annual Report will be compared to reports for prior years to the extent data are available covering the FCZ and territorial waters around the main Hawaiian islands, the Northwestern Hawaiian Islands, Guam, and American Samoa. If the Monitoring Team determines that the data being provided through existing reports or surveys are not sufficient for the annual reports or for the five year review called for by the FMP, then the Plan Monitoring Team shall make a recommendation to the Council to require the submission of such reports under Federal or State or Territorial authority.

The annual report shall indicate:

1. Fishery Performance Data -

    a. Total catch, by species, made by foreign and domestic vessels stratified by gear type, for each FCZ area;

    b. Total landings and estimated ex-vessel revenues of landings, by species, and by fishery sector (gear type);

c. Effort: Number of vessels, number of days fished and units of gear deployed by each fishery sector for each area of the FCZ; and

d. Annual and quarterly catch rate or catch-per-unit-of-effort by species for each gear type, foreign and domestic, for each area of the FCZ.

2. Biological Data -

a. Assessment of changes in the apparent abundance of the management unit species and species of tuna, assessment of changes in species composition and size composition of catches for each fishery (gear type), foreign and domestic, for each area of the FCZ, and other catch characteristics which might reflect changes in the stocks of the management unit species or fishing practices;

b. Information regarding seasonal and area patterns of fishing by fishing sector, both foreign and domestic;

c. Summary of most recent statistical trends and analyses of catch, fishing effort, and estimates of relative abundance (catch rate or catch-per-unit-of-effort, CPUE) for the management unit species among the domestic fisheries and the foreign fisheries by gear type; and

d. The degree of the relationships among the different fisheries for pelagic species should be evaluated for each area of the FCZ to the extent that existing data sources allow.

3. Summary of Enforcement Activities and Problems -

a. Sightings of foreign fishing and domestic purse seine fishing activities; and

b. Record of violations of regulations.

4. Summary of Plan Administration -

a. Foreign fishing fees collected;

b. An appraisal of results of experimental fishing permits for domestic drift-gillnet fishing;

c. Degree of observer coverage on foreign and domestic vessels; and

d. Marine mammal and sea turtle interactions with fishing operations.

5. Summary of Research Results from the Past Year which are Relevant to the Management Unit Species and Species of Tuna.

6. Identification of Problems Requiring Council Consideration and Recommendation for Council Action -

   a. Biological conditions of the stocks and trends;

   b. Economic conditions of the fisheries and trends;

   c. Enforcement problems;

   d. Administrative problems; and

   e. Consistency problems between Federal regulations and State and Territorial regulations or lack thereof.

7. Assessment of the Progress Made and Problems Encountered Regarding Quality of Data and Estimation Procedures for Monitoring Fishing Effort, Catches, and Catch Rates (CPUE) by Fisheries Sector.

8. Recommended Actions -

9. Appraisal of Impacts of Recommended Actions.

10.3 Five-Year Review

The PMP has been in effect for over six years with no change in its basic structure (retention and non-retention zone) and content (TALFF's and reserve components, Section 5.2). The regulations of the PMP require the Regional Director of the NMFS, as soon as practicable after September 1 of each year, to determine the amount of the management unit species which have been harvested to date by U.S. vessels in each island area served by the Council. If the Regional Director determines that the amounts of the management unit species actually harvested by U.S. vessels in a particular FCZ area is less than 80% of the expected domestic harvest for that species, the Regional Director shall then apportion the entire amount of the reserve for the applicable species to the TALFF in the applicable regulatory area established by the PMP. If domestic vessels harvest 80% or more of the expected domestic harvest for a particular management unit species, no reserve amounts shall be apportioned to TALFF for that species. The PMP provides no guidelines or criteria for changing the TALFF levels or the extent of the retention and non-retention zones. Also, the Council has never beeen briefed on the required annual adjustments in the reserve components or the procedures used by the NMFS in assessing the levels of annual harvests of the management unit species made by domestic fishermen in each of the island areas served by the Council.

Fortunately, there has been no occassion for testing the workings of the PMP since there has been no legal foreign longline fishing in the entire FCZ of

the Western Pacific Region since the PMP became effective on April 1, 1980. There will, however, probably be a need to eventually adjust the measures of this FMP if foreign longliners actually start fishing in the open areas of the FCZ beginning to approach historical levels, and if foreign fishing with pole-and-line vessels and foreign and domestic purse seine fishing expand in the FCZ of the Western Pacific Region. There might also be a need to alter the FMP if and when a regional tuna agreement is negotiated and signed by the U.S. and is ratified by the Senate, and if the domestic fisheries expand to such an extent that catch competition and gear conflicts become bigger problems than they are at present.

The factors most likely to trigger changes in the measures of the FMP are indexes of relative abundance of the management unit species. The consistency among the various CPUE (catch-per-unit-of-effort) statistics derived by Wetherall and Yong (1983) and Skillman and Kamer (1985) suggest that CPUE data are probably fairly good indicators of the abundance of the management unit species. Skillman and Kamer assembled fishing effort and catch statistics from a data base provided by the Division of Aquatic Resources of the Hawaii Department of Natural Resources covering the period from 1962 through 1978. All catch records for longline and trolling gear were used because these gears are primarily directed at tuna and the management unit species. In the handline fisheries, those records showing the catches of any of the management unit species and tunas were extracted and used in deriving CPUE statistics. Japanese longline catch rates were derived from catch and effort data provided by the Japanese Fishery Agency covering the same time period. CPUE statistics seem to be fairly good indicators of the abundance of the management unit species, and trends in their annual relative abundance (as measured by CPUE for both foreign and domestic gear types) can indicate problem areas and serve as triggering devices for making changes in the FMP.

While Skillman and Kamer showed that the abundance of blue and striped marlin in Hawaiian waters is directly related to foreign longline fishing, they did not test the proposition that domestic catches and catch rates for blue and striped marlin have in fact increased since foreign longliners stopped fishing in the FCZ in April of 1980. The Council thereby strongly recommends that Skillman and Kamer extend their study covering the most recent years so that the Council's case for area closures would be on a better footing.

10.4 Costs of Monitoring

The costs involved in monitoring catch and effort in the fisheries for pelagic species and deriving CPUE for the management unit species are not large. Catch and effort data already exist which simply need to be manipulated. All of the necessary programming has already been done by Skillman and Kamer and their study simply has to be updated on an annual basis. The Pelagic Species Plan Monitoring Team will be responsible for preparing the Annual Reports and the Five-Year Review of the pelagic fisheries and the effectiveness of the FMP in meeting its objectives. The Team will need help in getting its assignments done on time. The Honolulu Laboratory of the NMFS and State and Territorial fisheries agencies have the type of resources which the Team would need to tap for its work. It is a matter of how much of the existing resources can and will

be made available to the Plan Monitoring Team by the Honolulu Laboratory and State and Territorial fisheries agencies. There will be no added costs involved in monitoring the fisheries for pelagic species. In-place mechanisms will be relied upon.

10.5 Enforcement

The U.S. Coast Guard and NMFS share primary enforcement responsibility under the MFCMA. Both agencies have multiple enforcement missions. The Coast Guard handles maritime law enforcement (including fisheries, pollution, maritime theft, smuggling, drugs), aids to navigation, merchant marine safety, and environmental protection. The NMFS responsibilities include enforcement of fisheries, marine mammals, and endangered species laws.

The principal surveillance effort for this FMP will be carried out by U.S. Coast Guard aircraft with occasional surface patrols in the waters around the Hawaiian Islands, American Samoa, Guam and the CNMI. Surface patrols will be concentrated in areas where there is anticipated high level of foreign fishing while aircraft patrols will cover the entire FCZ. At present, the Coast Guard conducts aircraft and vessel surveillance patrols of the FCZ for multiple missions (fisheries enforcement among them) according to the schedule shown in Table 10.1.

The schedule and budget shown in Table 10.1 will, by-and-large, remain fixed whether this draft FMP goes into effect or not. The emphasis of this plan, therefore, is not to find the "lowest enforcement cost" management program, but to find the "most enforcement cost-effective" program, given the objectives of the plan. As indicated previously, the PMP requires at-sea enforcement capability, including observers and vessel inspections. A Coast Guard high endurance cutter can travel 200-300 miles a day. In relatively clear weather with moderate seas, the vessel's radar will be reasonably certain to identify any fishing vessel within 15 miles of either side of the cutter. Thus, in a day, the cutter would provide good coverage of about 6,000-9,000 square miles per day at a cost of $41,064. An aircraft patrol covers about 200 miles per hour, or 1,600 miles per 8-hour day. On a clear day with moderate seas, radar and visual sightings will be quite reliable within 30 miles to either side. Thus, in a day, an aircraft patrol can cover about 48,000 square miles at a cost of $17,176. By example, the FCZ of Guam (about 48,000 square miles) can be effectively patrolled once by aircraft in about 8 hours at a cost of around $17,000 or by a cutter in 6½ to 10 days at a cost in excess of a quarter of a million dollars. Area closures with aerial surveillance are clearly more cost-effective than quotas and non-retention zones with aerial and vessel patrols and observers for enforcement purposes. With an effort plan requirement, the effectiveness of aerial patrols should be increased since patrols can be targetted. Occasional surveillance of the whole FCZ is appropriate to monitor foreign fishing in open areas of the FCZ. The cost-effectiveness of enforcing the FMP is far greater than the enforcement cost-effectiveness of the PMP.

TABLE 10.1

AIRCRAFT AND VESSEL SURVEILLANCE OF THE FCZ
OF THE WESTERN PACIFIC REGION

Aircraft Surveillance (C-130 at $2,147 Per Hour)				
Area of the FCZ	Frequency of Coverage	Hours Per Patrol	Patrol Hours Per Year	Annual Costs
Main Hawaiian Islands	Bi-weekly	6.5	169	$ 362,843
Northwestern Hawaiian Islands	Bi-weekly	14.5	377	809,419
Johnston Island	Monthly	9.5	114	244,758
Wake Island	Quarterly	19.5	78	167,466
Kingman/Palmyra Islands	Quarterly	11.0	44	94,468
Jarvis Island	Quarterly	11.0	44	94,468
Howland/Baker Islands	Quarterly	11.0	44	94,468
Guam/CMNI	Quarterly	43.5	174	373,578
American Samoa	Quarterly	33.5	134	287,698
TOTAL AIRCRAFT SURVEILLANCE			1,178	$2,529,166

Vessel Surveillance			
Vessel Type	Patrol Days	Cost Per Day	Annual Costs
High Endurance Cutter	60 days per year	$41,064	$2,463,840
Buoy Tender	98 days per year	17,136	1,679,328
Patrol Boat	108 days per year	4,752	513,216
TOTAL VESSEL SURVEILLANCE	266 days per year		$4,656,384
TOTAL SURVEILLANCE COSTS			$7,185,550

In summary, the FMP will not add to current costs incurred by NMFS and the U.S. Coast Guard for administering and enforcing the PMP. The FMP provides a basis for re-deployment of staff and facilities to focus on monitoring possible violations in areas recommended to be closed to foreign longlining, rather than monitoring all fishing and trying to control foreign catch. This should result in a much more effective and efficient enforcement program.

11.0 REGULATIONS

FOREIGN FISHERIES

611.81 PACIFIC BILLFISH, OCEANIC SHARKS, WAHOO AND MAHIMAHI FISHERY

(a) Purpose

(1) General -- This section regulates all foreign fishing conducted under a Governing International Fishery Agreement which involves the catching of any species of billfish, oceanic shark, wahoo, or mahimahi (dolphin) in the fishery conservation zone (FCZ) of the United States in the Pacific Ocean, excluding the portion of the FCZ seaward of Alaska.

(2) Definitions -- For the purposes of this section, the following terms have the following meanings:

(i) Billfish means broadbill swordfish (*Xiphias gladius*), blue marlin (*Makaira nigricans*), black marlin (*Makaira indica*), striped marlin (*Tetrapturus audax*), sailfish (*Istiophorus platypterus*), and shortbill spearfish (*Tetrapturus angustirostris*);

(ii) Closed area means that area of the FCZ in which foreign longline vessels subject to this section are prohibited from fishing;

(iii) Drift-gillnet means a floating rectangualr net with one or more layers of mesh which is set vertically in the water;

(iv) Mahimahi means "dolphin fish" (*Coryphaena hippurus* and *Coryphaena equiselis*);

(v) Non-retention zone means that area of the FCZ in which all billfish, oceanic sharks, wahoo, mahimahi and other fish caught by foreign longline vessels in the course of fishing under this section shall be returned to the sea in accordance with the requirements of paragraph (j)(5) of this section;

(vi) Oceanic sharks means sharks of the families *Carcharhinidae*, *Alopiidae*, *Sphyrnidae*, and *Lamnidae*;

(vii) Retention zone means that area of the FCZ in which foreign longline vessels subject to this section may retain

billfish, oceanic sharks, wahoo and mahimahi to the extent that retention is authorized by this section; and

(viii) Wahoo means fish of the species Acanthocybium solanderi.

(b) Permits

All foreign vessels which intend to fish or can reasonably be expected to take billfish, oceanic sharks, wahoo, mahimahi and other non-tuna species under this section must have a permit issued under Section 611.3.

(c) Vessels and Gear Identification

All permitted vessels subject to this section shall comply with the vessel and gear identification requirements of Section 611.5.

(d) Observers

Permitted vessels subject to this section shall comply with the observer requirements of Section 611.8.

(e) Prohibited Species

The retention of non-tuna catches by foreign vesesl is prohbitied in the absence of a permit to catch and retain them. Therefore, non-tuna species cannot be caught and retained in the FCZ by a vessel without a permit authorizing their catch and retention, and it is a rebuttable presumption that any prohibited species found on board these vessels within the FCZ were caught and retained in violation of the Magnuson Act.

(f) Vessel Reporting

(1) The vessel reports required by this paragraph (f) are in lieu of the vessel reporting requirements of 611.4 (c),(d), and (e). The owner or operator of each foreign longline vessel subject to this section shall report vessel activities as follows:

(i) Vessel reports are required for each vessel. The vessel reports required by this paragraph (f) shall be consolidated, if possible, and submitted for groups of vessels (on a vessel-by-vessel basis) by a designated representative for a foreign nation's longline vessels.

(ii) All reports must be received at least seven days prior to the entering and departing of the fishing area and the beginning and ceasing of the fishing activities. The report shall include the following:

(A) The vessel name; international radio call sign; the action code ENTER for a vessel entering the fishing area: the month, date, time and latitude and longitude of the vessel that will enter the fishing area.

(B) The action code DEPART for the vessel departing from the fishing area and the month, date, time and latitude and longitude of the vessel that will depart the fishing area.

(C) The date and time each vessel intends to Begin fishing in the fishing area (action code BEGIN), the fishing area and the latitude and longitude where the vessel intends to begin fishing.

(D) The date and time each vessel intends to Cease fishing in the fishing area (action code CEASE), the fishing area and the latitude and longitude where the vessel intends to cease fishing.

(E) The fishig areas are listed in Appendix C, Paragraph D, of Subpart A.

(2) The Vessel Reports need not be submitted on temporary departures from the fishing area for port calls inside the seaward boundary of one of the coastal states.

(3) The operator of a foreign fishing vessel will be in violation of Paragraph (f)(ii) of this section if the foreign fishing vessel does not pass within five nautical miles of the position given in the report within four hours of the time given in the report.

(4) The report required by this section shall use the message identifier "VESREP" to indicate it is a required vessel report in the Pacific billfish, oceanic sharks, wahoo, and mahimahi fishery.

(5) Example of foreign longline vessel activities are as follows:

(i) Able Steamship Company, designated representative for Bolivian Longliners, wishes to report the vessel CABLE (EXRC) will enter the fishing area of Hawaii and Midway (Area code 81) November 7 at 1700 (GMT) at position 2400N,, 17705W. The F/V CABLE (EXRC) will BEGIN fishing November 8

at 1500 (GMT) at position 2330N, 17535W. F?V CABLE (EXRC) will CEASE fishing November 21 at 1000 (FMT) at position 2832N, 17235W. F/V CABLE will DEPART the fishing area November 22 at 1600 (GMT) at position 2932N, 17225W.

F/V DABBLE (EQUP) will ENTER the fishing area of America Samoa (Area code 83) November 14 1600 (GMT) at position 1102S, 17344W. The F/V DABBLE (EQUP) will BEGIN fishing November 14 1800 (GMT) at position 1055N, 17320W. F/V DABBLE (EQUP) will CEASE fishing January 14, 1987 1400 (GMT) at position 1102S, 16826W. F/V DABBLE will DEPART from the fishing area January 18, 1987 1630 (GMT) at position 1001S, 16831W.

(ii) The required message must be delivered to the appropriate Coast Guard Commander in the following format:

FROM: Able Steamship Company

TO: Commander, 14th Coast Guard District, Honolulu, Hawaii (Telex 392-2401)

VESREP

FFV/CABLE/EXRC/

ENTER / 11/07/1700/2400N/17705W/81
BEGIN / 11/08/1500/2330N/17535W/
CEASE / 11/21/1000/2832N/17235W/
DEPART/ 11/22/1600/2932N/17225W/

FFV/DABBLE/EQUP/

ENTER / 11/14/1600/1102S/17344W/83
BEGIN / 11/14/1800/1055S/17320W/
CEASE / 1/14/87/1400/1102S/16826W/
DEPART/ 1/18/87/1630/1001S/16831W/

(g) Collection and Reporting of Data

In lieu of the requirement of Section 611.4, (f)(2) and (f)(4), and Section 611.9(d) and (e), the following data collection and reporting requirements shall apply:

(1) Daily Cumulative Catch Log. All permitted vessels fishing under this section shall maintain a daily cumulative catch log in English. This log shall contain on a daily and cumulative basis data on all billfish, oceanic shark, wahoo, mahimahi and other fish caught in the FCZ during the permit period. Logbooks will be provided by the National Marine Fisheries SErvice and shall be maintained aboard the vessel during the duration of the permit period. Logbooks shall be mailed to the Regional Director not later than 30 days following the completion of fishing or shall be hand delivered to the National Marine Fisheries Service observer on board the vessel upon his request. Information for each fishing area shall be maintained on a separate page of the log. The log shall contain the following information:

(i) Name and international radio call sign of the vessel;

(ii) Permit number;

(iii) Fishing area and area code number where fishing is conducted (see paragraph D of Appendix C to Subpart A);

(iv) Date;

(v) Noon-day position of vessel, within one-tenth of 1° latitude and longitude;

(vi) Number and round weight (in kilograms) of each speices (by species codes found in Appendix D to Subpart A) of billfish, oceanic sharks, wahoo, and mahimahi caught and retained each day and cumulatively;

(vii) Number of each species (by species codes) of billfish, oceanic shak, wahoo, mahimahi and other fish cuaght and released each day and cumulatively;

(viii) Number of fish of each species released alive, each day and cumulative; and

(ix) Number of hooks set by type of bait or any other measure of fishing effort which may be specified by the Regional Director.

(2) Quarterly Catch Report. Each foreign nation whose permitted vessels fish under this section shall submit, through the designated representative, a report for each calendar quarter containing, on a vessel-by-vessel basis, the following information:

(1) Name and international radio call sign of the vessel;

(ii) Permit number;

(iii) Month and day of the last day of the period covered by the report;

(iv) For each fishing area where fishing occurred during the reporting period;

(A) Number and round weight of each allocated species caught and retained to the nearest tenth of a metric ton (0.1 m.t.);

(B) Number of each species of billfish, oceanic shark, wahoo, mahimahi, and other fish caught and released during the reporting period;

(C) Number of fish of each species released alive;

(D) Total number of hooks set, by type of bait or any other measure of fishing effort which may be specified by the Regional Director;

(E) Number of days fished in the FCZ during the reporting period; and

(F) Average number of hooks set per day fished, by type of bait or any other measure of fishing effort which may be specified by the Regional Director.

(3) Report of Marine Mammal and Sea Turtle Incidental Catch. Each foreign nation whose permitted vessels fish under this section shall submit, through the designated representative, a report of marine mammal and sea turtle incidental catch in a manner required by Section 611.4 (f)(4) within 60 days of leaving the FCZ in lieu of weekly reports. (Permits issued under this section do not authorize the take and retention of marine mammals and sea turtles in the FCZ).

(4) Submission of Reports. The quarterly reports required by this paragraph (f)(2) shall be submitted within 60 days of the end of each calendar quarter to:

Regional Director, Southwest Region
National Marine Fisheries Service
300 South Ferry Street
Terminal Island, California 90731

Telephone: (213) 514-6196.

(5) Reporting of Incidental Catch by Non-permitted Tuna Harvesting Vessels. The U.S. State Department, in cooperation with the National marine Fisheries Service, shall request voluntary submission of catch data for billfish, oceanic sharks, wahoo, and mahimahi taken incidentally to tuna fishing in the FCZ by these classes of vessels. If information on incidental catches is not obtained within one year of the effective date of this section, the National Marine Fisheries Service, in cooperation with the State Department, shall consider the promulgation of mandatory reporting requirements for incidental catches in the FCZ by these classes of vessels.

(h) Management Area Groups

For the purposes of this section, the FCZ of the Pacific Ocean (excluding the FCZ seaward of Alaska) is divided into two management area groups comprised as follows:

(1) FMP Management Area Group. The areas of the FCZ off the coast of the Hawaiian and Midway Islands, Guam, American Samoa and U.S. possessions are governed by the provisions of the Fishery Management Plan for Billfish and Associated Species of the Western Pacific Region (FMP) and are designated the FMP Management Area Group.

(2) PMP Management Area Group. The areas of the FCZ off the coast of the U.S. West Coast and the Commonwealth of the Northern Mariana Islands are governed by the provisions of the Preliminary Fishery Management Plan for Billfish, Oceanic Sharks, Wahoo and Mahimahi in the Pacific Ocean (PMP) and are designed the PMP Management Area Group.

(i) Authorized Fishery - FMP Management Area Group (Hawaii and Midway Islands, Guam, American Samoa, U.S. Possessions)

(A) General. Foreign vessels subject to this section are authorized to fish in the FCZ of Hawaii and Midway Islands, Guam, American Samoa and the U.S. possessions subject to the requirements of this paragraph (i).

(B) Zones. The FMP Management Area Group is comprised of the following closed areas and retention zones (each of which is measured form the baselines used to measure the U.S. territorial sea) as described in Table 1:

TABLE 1

Management Area	Closed Area	Retention Zone
Hawaiian Islands	1) within 150 nautical miles miles of the Main Hawaiian Islands (islands east of 161°W longitude); and 2) within 100 nautical miles of the Northwestern Hawaiian Islands including Midway (islands west of 161°W longitude).	1) between 150 and 200 nautical miles of the Main Hawaiian Islands; and 2) between 100 and 200 nautical miles of the Northwestern Hawaiian Islands.
Guam[1]	within 150 nautical miles	between 150 and 200 nautical miles.
American Samoa	1) within a rectangle around around the Tutuila and Manua islands of American Samoa bounded by 14° to 15°S latitude and 168° to 171°W longitude; and 2) within a one degree (1°) square surrounding Swain's Island bounded by 10°33' to 11°33'S latitude and 170°35' to 171°35'W longitude.	1) areas of the FCZ outside the rectangle bounded by 14° to 15°S latitude and 168° to 171°W longitude; and 2) areas of the FCZ outside the one degree (1°) square surrounding Swain's Island.
U.S. Possessions (except Midway Islands)	within 12 nautical miles	between 12 and 200 nautical miles.

[1] The northern boundary of the FCZ off the coast of Guam shall extend to those points which are equidistant between Guam and the island of Rota in the Commonwealth of the Northern Mariana Islands.

(3) Effort Plans. Foreign longline vessels which desire to fish in the FMP Management Area Group are required to file effort plans two (2) months prior to entering the retention zones of the FCZ for fishing purposes. Effort plans shall indicate the dates when fishing is expected to begin and cease and shall specify the areas of the FCZ where the vessels intend to operate. Effort plans shall be submitted to:

National Marine Fisheries Service, Administrator
Western Pacific Program Office
2570 Dole Street
Honolulu, Hawaii, USA 96822

Telephone: (808) 955-8831.

(4) Catch and Effort. There shall be no limit on the amount of fishing effort or the catch of billfish, oceanic sharks, mahimahi and wahoo made by foreign longline vessesl in the retention zones described in Table 1 of paragraph (i) of this section.

(5) Closed Areas. Foreign longline vessesl subject to this section are prohibited from fishing within the closed areas descirbed in Table 1 of paragraph (i) of this section.

(6) Drift-gillnets. The use of drift-gillnets in the FMP Management Area Group is prohibited.

(j) Authorized Fishery - PMP Management Area Group (Northern Mariana Islands, U.S. West Coast)

(i) General. Foreign longline vessels subject to this section are authorized to fish in the FCZ of the Northern Mariana Islands and the West Coast beyond 12 miles from the baseline used to measure the U.S. territorial sea, subject to the requirements of this paragraph (j). Only foreign longline vesesl are eligible for permits to fish in the PMP Management Area Group.

(2) Zones. The PMP Management Area Group is comprised of the following closed areas, retention and non-retention zones (each of which is measured from the baselines used to measure the U.S. territorial sea) as described in Table 2:

(3) Total Allowable Level of Foreign Fishing (TALFF), Joint Venture Processing (JVP), National Allocations, and Reserves.

(i) TALFF, Reserve, and JVP Amounts. The TALFFs, amounts of fish held in reserve, and amounts of JVP are published in the Federal Register. Current TALFFs, reserves, and JVPs are also available from the Regional Director.

TABLE 2

Management Area	Non-retention Zone	Retention Zone
West Coast	Between 12 and 100 nautical miles	Beyond 100 nautical miles
Northern[1] Mariana Islands	Between 12 and 50 nautical miles from Rota, Tinian, Aguijan, and Saipan	Beyond 50 nautical miles from Rota, Tinian, Aguijan, and Saipan; and Beyond 12 nautical miles of the remaining islands of the Northern Mariana Islands.
Closed areas	Foreign longline vessels subject to this paragraph (j) are prohibited from fishing within 12 nautical miles of the U.S. West Coast and the Northern Mariana Islands.	

[1] The southern boundary of the FCZ off the coast of the Northern Mariana Islands shall extend to those points which are equidistant between Guam and the island of Rota.

(ii) <u>TALFF and National Allocations</u>.

(A) The total amount of each species of billfish, oceanic sharks, wahoo, and mahimahi which may be caught and retained in each area of the PMP Management Area Group by foreign vessels subject to this paragraph (j) is limited to the TALFF for each applicable area, and to the amount of the applicable national allocation.

(B) No foreign vessels subject to this paragraph (j) may catch and retain billfish, oceanic sharks, wahoo and mahimahi within the non-retention zones set out in Table 2 of paragraph (j) of this section.

(iii) (A) Determination.

(1) As soon as practicable after September 1 of each year, and upon receipt of a written request from a foreign nation, the Regional Director, Southwest Region, shall determine, for each species for which a reserve has been established, the amount of fish which has been harvested to date by U.S. vessels in each applicable area.

(2) If the Regional Director determines that the amount of fish of a species harvested by vessels of the United States in an area is less than 80% of the expected domestic harvest for that species in that area, the Regional Director shall apportion to TALFF the entire amount of the reserve for the applicable species in the applicable area. No reserve amounts shall be apportioned to TALFF if domestic vessels have harvested 80% or more of the expected domestic harvest for that species in the applicable area by the date of this determination.

(B) Notice. The Assistant Administrator for Fisheries, NOAA, shall publish in the Federal Register a notice of each determination made under paragraph (j)(3)(iii)(A)(1) of this section.

(4) Cancellation of Authority to Retain.

(i) The Authority of a foreign longline vessel to retain an applicable species is cancelled:

(A) When the national allocation for the applicable species is reached; or

(B) At the date and time specified in the notification issued by the Assistant Administrator under paragraph (j)(4)(ii) of this section.

(ii) The Assistant Administrator shall determine, on the basis of the information specified in Section 611.13, when the TALFF or optimum yield (OY) of a billfish species, oceanic sharks, wahoo, or mahimahi in an area of the PMP Management Area Group will be reached. At least forty-eight hours before the applicable TALFF or OY will be reached, the Assistant Administrator shall notify both the affected foreign nation(s) and the designated representative for any affected fishing vessel that authority to retain the applicable species is cancelled.

(iii) Any cancellation under this paragraph (j)(4) shall remain in effect until a new or increased allocation becomes available.

(iv) The closure provisions of Section 611.13 do not apply to foreign longline vessels fishing subject to this paragraph (j).

(5) Prohibited Species.

(i) General. The following are prohibited species under this paragraph (j):

(A) All species of fish over which the United States exercises exclusive fishery management authority and for which there is no national allocation;

(B) All billfish, oceanic sharks, wahoo and mahimahi caught in excess of an applicable OY, TALFF, or national allocation; and

(C) All billfish, oceanic sharks, wahoo, and mahimahi caught in a non-retention zone. (See Table 2 of paragraph (j) of this section).

(ii) Treatment. All prohibited species shall b treated in accordance with Section 611.11.

(iii) Additional Requirements for Billfish and Oceanic Sharks. Unless otherwise specifically instructed by a U.S. observer or authorized officer, all prohibited billfish and oceanic sharks must be released by cutting the line (or by other appropriate means) without removing the fish from the water.

(iv) Rebuttal of Presumption. Foreign vessels fishing subject to this paragraph (j) may rebut the presumption of Section 611.11(d) by:

(A) Storing all prohibited species caught outside the FCZ in a separate part of the vessel hold which can be sealed, and arranging inspection and sealing of the vessel hold by U.S. authorities before commencing fishing in the FCZ or in non-retention zones; or

(B) Other reasonable means which may be authorized by the Regional Director if, in consultation with the U.S. Coast Guard, the Regional Director, determines that special circumstances warrant alternative arrangements.

(v) Procedures for Hold Sealing.

(A) Inspection and sealing of a foreign vessel's hold may be arranged by contacing the Regional Director (Southwest Region, National Marine Fisheries Service, 2570 Dole Street, Honolulu, Hawaii 96822, telephone: (808) 955-8831) at least 48 hours in advance of the date for which inspection is requested.

(B) Ports at which such inspections may be made are Honolulu and Kahului, Hawaii; Agana, Guam; and San Diego, California.

(C) Additional ports for hold inspections may be arranged with the Regional Director.

(vi) Other Requirements. The designatin of ports for hold inspection and sealing does not modify any port entry arrangements or requirements (if any) of Governing International Fishery Agreements or the notification requirements of any other laws or regulations of the United States.

Part 685 WESTERN PACIFIC FISHERY FOR BILLFISH AND ASSOCIATED SPECIES

DOMESTIC FISHERIES

SUBPART A - GENERAL PROVISIONS

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SUBPART A - GENERAL PROVISIONS

685.1 Purpose and Scope

(a) The regulations in this part govern fishing for billfish and associated species by fishing vessels of the United States in the fishery conservation zone (FCZ) off the coasts of Hawaii, American Samoa, Guam, and the U.S. possessions.

(b) Regulations governing fishing for billfish and associated species by fishing vessels other than vessels of the United States are published at 50 CFR Part 611.

(c) These regulations implement the Fishery Management Plan for the Fisheries for Billfish and Associated Species in the U.S. Fishery Conservation Zone of the Western Pacific Region (FMP) developed by the Western Pacific Regional Fishery Management Council under the Magnuson Fishery Conservation and Management Act (Magnuson Act).

685.2 Definitions

In addition to the definitions in the Magnuson Act, the terms used in this part have the following meanings (some definitions in the Magnuson Act have been repeated here to aid understanding of the regulations):

Administrator means the Administrator of the National Oceanic and Atmospheric Administration (NOAA), or a designee.

Associated species refers to the following species managed by the FMP:

(a) "mahimahi" means "dolphin fish" (*Coryphaena hippurus* and *Coryphaena equiselis*)

(b) "oceanic sharks" means sharks of the families *Caracharhinidae*, *Alopiidae*, *Sphyrnidae*, and *Lamnidae*;

(c) "wahoo" means fish of the species *Acanthocybium solanderi*.

Authorized officer means:

(a) Any commissioned, warrant, or petty officer of the U.S. Coast Guard.

(b) Any special agent of the National Marine Fisheries Service.

(c) Any officer designated by the head of any Federal or State agency which has entered into an agreement with the Secretary and the Commandant of the U.S. Coast Guard to enforce the provisions of the Magnuson Act; or

(d) Any U.S. Coast Guard personnel accompanying and acting under the direction of any person described in paragraph (a) of this definition.

Billfish means broadbill swordfish (Xiphias gladius), blue marlin (Makaira nigricans), black marlin (Makaira indica), striped marlin (Tetrapturus audax), sailfish (Istiophorus platypterus), and shortbill spearfish (Tetrapturus angustirostris).

Drift-gillnet means a floating rectangular net with one or more layers of mesh which is set vertically in the water.

Fishery Conservation Zone (FCZ) means 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 each point of which is 200 nautical miles form the baseline from which the territorial sea of the United States is measured.

Fishery Management Area means the fishery conservation zone off the coasts of Hawaii, American Samoa, Guam, and U.S. possessions in the western Pacific. The outer boundary of the fishery management area north of Guam shall extend to those points which are equidistant between Guam and the island of Rota in the Commonwealth of the Northern Mariana Islands.

Fishing means:

(a) The catching, taking, or harvesting of fish;

(b) The attempted catching, taking or harvesting of fish;

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

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

This term does not include any scientific research activity which is conducted by a scientific research vessel.

Fishing vessel means any vessel, boat, ship, or other craft which is used for, equipped to be used for, or of a type which is normally used for: (a) fishing; or (b) aiding or assisting one or more vessels at sea in the performance of any activity relating to fishing, including, but not limited to, preparation, supply, storage, refrigeration, transportation, or processing.

Land or landing means to begin offloading any fish, to arrive in port with the intention of offloading any fish, or to cause any fish to be offloaded.

Magnuson Act means the Magnuson Fishery Conservation and Management Act, 16 US.C. Section 1801 et seq., as amended.

Maximum Sustainable Yield (MSY) means an average over a reasonable length of time of the largest catch which can be taken continuously from a stock.

Official number means the documentation number issued by the U.S. Coast Guard or the certificate number issued by a State or by the U.S. Coast Guard for undocumented vessels.

Operator, with respect to any vessel, means the master or other individual on board and in charge of that vessel.

Owner, with respect to any vessel, means:

(a) Any person who owns that vessel in whole or in part;

(b) Any charterer of the vessel, whether bareboat, time, or voyage;

(c) Any person who acts in the capacity of a charterer including but not limited to parties to a management agreement, operating agreement, or any similar agreement that bestows control over the destination, function, or operation of the vessel; or

(d) Any agent designated as such by a person described in paragraph (a), (b), or (c) of this definition.

Person means any individual (whether or not a citizen or national of the United States), any corporation, partnership, association, or other entity (whether or not organized or existing under the laws of any State), and any Federal, State, local or foreign government or any entity of any such government.

Regional Director means the Southwest Regional Director, National Marine Fisheries Service, 300 South Ferry Street, Terminal Island, California 90731, or a designee.

Secretary means the Secretary of Commerce or the person(s) to whom appropriate authority has been delegated.

State means the State of Hawaii, the Territory of American Samoa and the Territory of Guam.

Vessel of the United States means (a) a vessel documented or numbered by the U.S. Coast Guard under U.S. law; or (b) a vessel, under five net tons, which is registered under the laws of any State.

685.3 Relation To State Laws

This part recognizes that any State law which pertains to vessels registered under the laws of that State while in the fishery management area, and which is consistent with the FMP including any State landing law, shall continue in effect with respect to fishing activities regulated under this part.

685.4 Reporting

This part recognizes that catch and effort data necessary for implementing the FMPa re collected by the State of Hawaii, American Samoa, and Guam under existing State data collection programs. No additional Federal reports are required of fishermen or processors as long as the data collection and reporting systems operated by the State agencies continue to provide the Secretary with Statistical information adequate for management.

685.5 General Prohibitions

It is unlawful for any person:

(a) To possess, have custody or control of, ship or transport, offer for sale, sell, purchase, import or export any billfish or associated species taken, retained, or landed in violation of the Magnuson Act, this part, or any other regulation promulgated under the Magnuson Act;

(b) To refuse to allow an authorized officer to board a fishing vessel subject to such person's control for purposes of conducting any search or inspection in connection with the enforcement of the Magnuson Act, this part, or any other regulation promulgated under the Magnuson Act;

(c) To forcibly assault, resist, oppose, impede, intimidate, or interfere with any authorized officer in the conduct of any inspection or search described in paragraph (b) of this section;

(d) To resist a lawful arrest for any act prohibited by this part;

(e) To interfere with, delay, or prevent, by any means, the apprehension or arrest of another person, with the knowledge that such other person has committed any act prohibited by this part;

(f) To interfere with, obstruct, delay, or prevent by any means a lawful investigation or search conducted in the process of enforcing the Magnuson Act;

(g) To transfer, or attempt to transfer, directly or indirectly, any U.S.-harvested billfish or associated species to any foreign fishing vessel within the FCZ, unless the foreign vessel has been issued a permit which authorizes the receipt of U.S.-harvested fish of the species being transferred;

(h) To fail to comply immediately with enforcement and boarding procedures specified in Section 685.6;

(i) To fish for billfish or associated species in violation of any terms or conditions attached to an experimental fishing permit (EFP) issued under Section 685.8;

(j) To fish for billfish or associated species using gear prohibited under Section 685.21 or under an EFP issued under Section 685.8;

(k) To violate any other provision of this part, the Magnuson Act, or any other regulation or permit promulgated under the Magnuson Act.

685.6 Enforcement

(a) General. The operator of, or any other person aboard, any fishing vessel subject to this part must immediately comply with instructions and signals issued by an authorized officer to stop the vessel and with instructions to facilitate safe boarding and inspection of the vessel, its gear, equipment, fishing record (where applicable), and catch for purposes of enforcing the Magnuson Act and this part.

(b) Communications

(i) Upon being approached by a U.S. Coast Guard vessel or aircraft, or other vessel or aircraft with an authorized officer aboard, the operator of a fishing vessel must be alert for communications conveying enforcement instructions.

(ii) If the size of the vessel and the wind, sea, and visibility conditions allow, loudhailer is the preferred method for communicating between vessels. If use of a loudhailer is not practicable, and for communications with an aircraft, VHF-FM or high frequency radio-telephone will be employed. Hand signals, placards, or voice may be employed by an authorized officer and message blocks may be dropped from an aircraft.

(iii) If other communications are not practicable, visual signals may be transmitted by flashing light directed at the vessel signaled. Coast Guard units will normally use the flashing light signal "L" as the signal to stop.

(iv) Failure of a vessel's operator to stop his vessel when directed to do so by an authorized officer using loudhailer, radio-telephone, flashing light signal, or other means constitutes primafacie evidence of the offense of refusal to permit an authorized officer to board.

(v) The operator of a vessel who does not understand a signal from an enforcement unit and who is unable to obtain clarification by loudhailer or radio-telephone must consider the signal to be a command to stop the vesel instantly.

(c) Boarding. The operator of a vessel directed to stop must:

(i) Guard Channel 16, VHF-FM if so equipped;

(ii) Stop immediately and lay to or maneuver in such a way as to allow the authorized officer and his party to come aboard;

(iii) Except for those vessels with a freeboard of four feet or less, provide a safe ladder, if needed, for the authorized officer and his party to come aboard;

(iv) When necessary to facilitate the boarding or when requested by an authorized officer, provide a manrope or safety line, and illumination for the ladder; and

(v) Take such other actions as necessary to facilitate boarding and to ensure the safety of the authorized officer and the boarding party.

(d) Signals. The following singals, extracted from the International Code of Signals, may be sent by flashing light by an enforcement unit when conditions do not alow communications by loudhailer or radio-telephone. Knowledge of these signals by vessel operators is not required. However, knowledge of these signals and appropriate action by a vessel operator may preclude the necessity of sending the signal "L" and the necessity for the vessel to stop instantly.

(i) "AA" repeated (.-/.-)* is the call to an unknown station. The operator fo the signaled vessel should respond by identifying the vessel by radio-telephone or by illuminating the vessel's identification.

(ii) "RY-CY" (.-./-.--/-.-./-.--) means "you should proceed at slow speed, a boat is coming to you". This signal is normally employed when conditions allow an enforcement boarding without the necessity of the vessel being boarded coming to a complete stop, or, in some cases, without retrieval of fishing gear which may be in water.

(iii) "SQ3" (.../--.-/...--) means "you should stop or heave to; I am going to board you".

(iv) "L" (.-..) means "you should stop your vessel instantly".

* Period (.) means a short flash of light.
Dash (-) means a long flash of light.

685.7 Penalties

Any person or fishing vessel found to be in violation of this part will be subject to the civil and criminal penalty provisions and forfeiture provisions prescribed in the Magnuson Act, and 50 CFR Part 620 (Citations), 50 CFR Part 621 and 15 CFR Part 904 (Civil Procedures) and other applicable laws.

685.8 Experimental Fishing Permit

(a) General. The Secretary may authorize, for limitd experimental purposes, the direct or incidental harvest of billfish or associated species managed by the FMP which would otherwise be prohibited by this part. No experimental fishing may be conducted unless authorized by an experimental fishing permit (EFP) issued by the Secretary in accordance with the criteria and procedures specified in this section. EFP's will be issued without charge.

(b) Application. An applicant for an EFP shall submit to the Regional Director at least 60 days before the desired effective date of the EFP a written application including, but not limited to, the following information:

(i) The date of the application;

(ii) The applicant's name, mailing address, and telephone number;

(iii) A statement of the purposes and goals of the experiment for which an EFP is needed, including a general description of the arrangements for disposition of all species harvested under the EFP;

(iv) A statement of whether the proposed experimental fishing has broader significance than the applicant's individual goals;

(v) For each vessel to be covered by the EFP:

(A) Vessel name;

(B) Name, address, and telephone number of owner and master;

(C) U.S. Coast Guard documentation, State license, or registration number;

(D) Home port;

(E) Length of vessel;

(F) Net tonnage; and

(G) Gross tonnage.

(vi) A description of the species (directed and incidental) to be harvested under the EFP and the amount(s) of such harvest necessary to conduct the experiment;

(vii) For each vesel covered by the EFP, the approximate time(s) and place(s) fishing will take place, and the type, size, and amount of gear to be used; and

(viii) The signature of the applicant.

The Secretary may request from an applicant additional information necessary to make the determinations required under this section. An applicant wil be notified of an incomplete application within 10 working days of receipt of the application. An incomplete application will not be considered until corrected in writing.

(c) Issuance

(i) If an application contains all of the required information, the Secretary will publish a notice of receipt of the application in the FEDERAL REGISTER with a brief description of the proposal, and will give interested persons an opportunity to comment. The Secretary will also foraward copies of the application to the Western Pacific Regional Fishery Management Council, the U.S. Coast Guard, and the fishery management agency of the affected State, accompanied by the following information:

(A) The current utilization of domestic annual harvesting and processing capacity (including existing experimental harvesting, if any) of the directed and incidental species for which an EFP is being requested;

(B) A citation of the regulation or regulatins which, without the EFP, would prohibit the proposed activity; and

(C) Biological information relevant to the proposal.

(ii) At a Western Pacific Regional Fishery Management Council meeting following receipt of a complete application, the Secretary will consult with the Western Pacific Regional Fishery Management Council and the Director of the affected State fishery management agency concerning the permit application. The applicant will be notified in advance of the meeting at which the application will be considered, and invited to appear in support of the application if the applicant desires.

(iii) Within 5 working days after the consultation in paragraph (c)(ii) of this section, or as soon as practicable thereafter, the Secretary shall notify the applicant in writing of the decision to grant or deny the EFP, and, if denied, the reasons for the denial. Grounds for denial of an EFP include, but are not limited to, the following:

(A) The applicant has failed to disclose material information requred, or has made false statements as to any material fact, in connection with his or her application; or

(B) According to the best scientific information available, the harvest to be conducted under the permit woud detrimentally affect any species of fish in a significant way; or

(C) Issuance of the EFP would inequitably allocate fishing privileges among domestic fishermen or would have economic alocatin as its sole purpose; or

(D) Activities to be conducted under the EFP would be inconsistent with the intent of this section or the management objectives of the FMP; or

(E) The applicant has failed to demonstrate a valid justification for the permit; or

(F) The acitivity proposed under the EFP would create a significant enforcement problem.

(iv) The decision of the Secretary to grant or deny an EFP is final and unappealable. If the permit is granted, the Secretary will publish a notice in the FEDERAL REGISTER describing the experimental fishing to be conducted under

the EFP. The Secretary may attach terms and conditions to the EFP consistent with the purpose of the experiment including, but not limited to:

(A) The maximum amount of each species which can be harvested and landed druing the term of the EFP, including trip limits, where appropriate;

(B) The number, sizes, names, and identification numbers of the vessel authorized to conduct fishing activities under the EFP;

(C) The time(s) and place(s) where experimental fishing may be conducted;

(D) The type, size, and amount of gear which may be used by each vessel operated under the EFP;

(E) The condition that observers be carried aboard vessels operated under an EFP;

(F) Data reporting requirements; and

(G) Such other conditions as may be necessary to assure compliance with the purposes of the EFP consistent with the objectives of the FMP.

(d) Duration. Unless otherwise specified in the EFP or a superseding notice or regulatin, an EFP is effective for no longer than one year unless revoked, suspended, or modified. EFP's may be renewed following the application procedures in this section.

(e) Alteration. Any permit that has been altered, erased, or mutilated is invaldi.

(f) Transfer. EFP's issued under this part are not transferable or assignable. An EFP is valid only for the vessel(s) for which it is issued.

(g) Inspection. Any EFP issued under this part must be carried aboard the vessel(s) for which it was issued. The EFP must be presented for inspection upon request of any authorized officer.

(h) Sanctions. Failure of the holder of an EFP to comply with the terms and conditions of an EFP, the provisions of Subpart B of this part, any other applicable provision of this part, the Magnuson Act, or any other regulation promulgated thereunder, shall be grounds for revocation, suspension, or modification of the EFP with respect to all

persons and vessels conducting activities under the EFP. Any action taken to revoke, suspend, or modify an EFP will be governed by 15 CFR Part 904 Subpart D, or 50 CFR Part 621. Other sanctions available under the statute will be applicable.

(i) Protected Species. Vessels fishing under an EFP are required to report any incidental take or fisheries interaction with protected species on a form provided for that purpose. Reports shall be submitted to the Regional Director within 3 days of arriving in port.

SUBPART B - MANAGEMENT MEASURES

685.21 Prohibition on Drift-Gillnetting

Fishing with drift-gillnets in the management area is prohibited, except where authorized by an experimental fishing permit issued under section 685.8 of this part.

685.22 Annual Report

By June 30 of each year the Plan Monitoring Team shall prepare an annual report for the Council on the domestic and foreign fisheries for billfish and associated species in the management area.

685.23 Five-Year Review

Within five years of the effective date of this FMP, the Council in cooperation with the National Marine Fisheries Service and State and Territorial agencies shall conduct a full review of the FMP. The review will assess the effectiveness of the FMP in meeting the Council's objectives, the need to revise the objectives, and the need for changes in any management measures including adjustments in area closure to foreign longline fishing and adding data collection or reporting requirements for the domestic fisheries which take the management unit species and the tunas.

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13.0 APPENDICES

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APPENDIX A

Correspondence Between the Council and the National Marine Fisheries Service Regarding the Approvability of the Council's Original Billfish FMP

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Washington, D.C. 20235

JUL 28 1981 F/SWR31:JG

Mr. Wadsworth Y.H. Yee, Chairman
Western Pacific Fishery Management Council
1164 Bishop Street, Suite 1608
Honolulu, Hawaii 96813

Dear Mr. Yee:

Enclosed are comments of the National Marine Fisheries Service (NMFS) on the Draft Fishery Management Plan for the Billfish of the Western Pacific Region (the plan) submitted by the Western Pacific Fishery Management Council (Council) May 11, 1981. These comments are organized in two categories. Critical comments focus on the plan's conformance with the national standards (Magnuson Fishery Conservation and Management Act, Section 301), other applicable laws and national policies. These issues might preclude Secretarial approval of the plan. The second category is substantive comments which are less serious but, if taken into consideration, would improve and strengthen the plan.

These comments are designed to give the Council an insight into the basic concerns of NMFS if the plan were to be submitted to the Secretary of Commerce for approval in its present form. As such, these comments should be viewed as preliminary. They should not be construed as anticipating or guaranteeing approval by the Secretary of any final plan.

Overall, we commend the Council and its staff for the plan. All available information appears to be included in a well organized presentation. We fully appreciate the difficulties of designing a management regime for billfish vis-a-vis our national policy on highly migratory species. Officials of NMFS, the Department of State and other Federal agencies have enunciated this policy many times, formally and informally, while the plan was in preparation. Our views at this time remain essentially unchanged. In short, we cannot endorse sweeping closures of the U.S. fishery conservation zone (FCZ) to foreign longline fishing for tuna without more substantial benefits to the conservation and management of billfish than are identified in the plan.

We have similar critical concerns about the need for this plan and the specified management unit. Without a conservation purpose, the plan bears much greater burden in demonstrating social and economic benefit. The predicted benefits are based on theoretical assumptions only and appear to be small when viewed against to costs of plan implementation and policy considerations. The Council must realize that the costs of implementing any new regulations are of primary concern to the Administration. Ultimately, the marginal benefits of changing any Federal fishery regulations or adding to them must be sufficiently large to justify the change.

Some features of the plan appear to make improvements over the existing preliminary fishery management plan, however. We would not like to see any potential improvements lost due to an inability to compromise in other areas. Therefore, we offer what we believe are reasonable alternatives to the proposed management regime.

Sincerely yours,

Mary H Thompson

for Roland F. Smith
Acting Director, Office of Resource
Conservation and Management

Enclosure

CRITICAL AND SUBSTANTIVE COMMENTS ON THE DRAFT FISHERY MANAGEMENT PLAN FOR BILLFISH OF THE WESTERN PACIFIC REGION

Critical Comment 1

Need for the plan:

The marginal benefits to be expected by adopting and implementing the plan do not appear warranted in light of their costs.

Essentially, the plan appears to be designed to achieve a transfer of billfish catches from foreign tuna fishermen using longline gear to domestic fishermen. The term "domestic fishermen" includes commercial and recreational fishermen. The conservation and management problem that the plan attempts to alleviate is the incidental catch of billfish by foreign longliners. Theoretically, prohibiting foreign longliners from certain areas of the U.S. fishery conservation zone (FCZ) would result in a greater abundance of billfish in the FCZ and, therefore, greater availability to, and higher catch rates for, domestic fishermen. Ultimately, this would result in desirable development of the domestic billfish fishery, particularly off Hawaii and Guam. As it is currently understood, this is the purpose for which the Council recommends Federal intervention in the form of regulations and restrictions to be imposed on foreign longline fishermen.

This rationale for Federal intervention is considered weak for the following reasons:

A. Although there is an expressed concern for the conservation of billfish, particularly blue marlin, the plan does not consider any conservation measures as alternative management options. This is considered a weakness also in meeting the National Environmental Policy Act (NEPA) and regulatory requirements (see substantive comment 1 below).

B. The projected marginal benefits from implementing the plan are small. Increased catches due to plan implementation probably would be statistically imperceptable when compared to all other sources of variability affecting annual landings. It is doubtful that benefits to domestic fishermen by implementing the plan would be measurable.

C. It is not clear that development of the domestic billfish fishery is necessary and, if it is, that implementing the plan would be the best way to achieve this desired development.

Each of these reasons are discussed in more detail below.

Conservation:

The two points are made on this aspect of the plan's need.

First, no biological conservation is considered by the plan although conservation is considered desirable, particularly for blue marlin and in the FCZ around Guam. Biological conservation, though, is clearly one of the central purposes of the Magnuson Fishery Conservation and Management Act (Magnuson Act). Section 2(b)(3) of the Magnuson Act states one purpose of the Act, "to promote domestic commercial and recreational fishing under sound conservation and management principles" (emphasis added). "conservation and management" is defined in Section 3(2) as measures". . . which are required to rebuild, restore, or maintain, and which are useful in rebuilding, restoring, or maintaining any fishery resource. . ." Since the plan eschews biological conservation measures, apparently there is no perceived need to "rebuild, restore or maintain" the fishery resource. In fact, the reverse could happen. If relocated foreign fishing continues to catch billfish at or above the same rate they were caught inside the would-be closed areas of the FCZ, and if domestic fishing effort and catch grows to replace or possibly exceed previous foreign catches in the closed areas, then the ocean-wide billfish stocks will suffer greater fishing mortality then they do at present and their overall abundance will continue to decline. This decrease in abundance would probably be evident within the FCZ around Hawaii and Guam as it would elsewhere in the species' wide oceanic distribution. If this happens, little would be achieved by the plan since its short-term gains could not be sustained. Overfishing would not be prevented while achieving optimum yield on a continuing basis (Section 301(a)(1)). The supply of food and other products, including recreational benefits, would not be obtained on a continuing basis (Section 3(2)(B)(i)). Irreversible or long-term adverse effects on the fishery would not be avoided (Section 3(2)(B)(ii)). There would not be a multiplicity of options available with respect to future uses of these resources (Section 3(2)(b)(iii)).

This does not mean that fishery management plans can be approved only for biological conservation purposes. The Atlantic butterfish plan, for example, has fishery development as a key purpose. (More on the development aspect of the plan's need is presented below). However, fishery management plans should not contribute to any existing biological conservation problems of a fishery. This is what this plan appears to suggest, since none of the Magnuson Act's conservation principles seem to be upheld.

Second, the plan's usefulness as a first step toward international cooperation in managing billfish stocks is questionable. The difficulty of effecting meaningful conservation for wide ranging oceanic species such as

billfish is appreciated, nevertheless. The need for rational, international cooperation in managing billfish harvests ocean wide is indisputable. We disagree, however, that the approach recommended in the plan is a good first and necessary step in this direction. It is difficult to understand how refusing to impose conservation controls on domestic fishermen while excluding foreign competition within wide areas of our jurisdiction can encourage other nations to act conservatively either alone or in concert. Unilateral action designed purely to further self interests is not likely to cause others to sacrifice some benefits in the spirit of community rewards. Moreover, the plan's failure to address conservation and management principles would suggest to other users of the Pacific billfish resource that the documented decline in the population of at least some billfish species is not perceived as a problem by the United States. To a certain extent, the non-retention policy of the PMP provides some measure of conservation, albeit small, since at least some of the released fish survive.

We understand the apparent irrationality of imposing conservation regulations on domestic fishermen when the only benefit of doing so may go to foreign fishermen outside our control. This problem is inherent to common property resources, especially those like billfish with a wide distribution that makes them available to so many other fishermen. Obviously, conservation measures that are more symbolic than effective could easily backfire with public discontent, if other nations are not inspired also to be conservative or to begin international cooperation on this matter. Therefore, we suggest that the plan include a more complete explanation of how it will encourage international billfish conservation efforts in the absence of any conservation measures on domestic fishermen.

Marginal benefits:

Without a clear conservation purpose, the plan carries a much greater burden in demonstrating economic and social benefits. To this end, the forecasted benefits from implementing the management recommendations of the plan are based entirely on a theoretical model (Lovejoy model) and historical data. A major difficulty with this approach is its hypothetical assumption that domestic fishermen can and will catch billfish not caught by foreign longliners if the plan was implemented. If this hypothesis is correct, then we should see an increase in domestic billfish landings, and associated economic benefits, in proportion to decreased foreign longline effort. Although little is known about annual foreign longline catches in the FCZ more recent than 1977, there has been no foreign longline fishing in the FCZ from April 1, 1980, to the present. If foreign longline fishing effort in the FCZ decreased to zero during the three-year period 1978 through 1980, then the hypothesis predicts increased domestic catches with decreased foreign longline effort in the FCZ. Do recent data on domestic catches, particularly those for 1979 and 1980, show evidence of such an increase? Another benefit that would presumably be seen if the hypothesis is correct is an increase in domestic catch per unit effort (CPUE). Has there been such an increase in CPUE?

Probably, the data are not yet available to answer these questions. As long as foreign longline fishermen continue their voluntary abstention from the FCZ, the predicted marginal benefits to domestic fishermen should be

gradually revealed. Such benefits could be demonstrated, however, only if increases in domestic catch can be identified as probably resulting from cessation of foreign longline fishing in the FCZ and can be distinguished from other sources of catch increases. A close look at these predicted benefits reveals that they are so small that this would probably not be possible.

For blue and striped marlin, for example, the most that could be expected if all foreign longlining was prohibited all year in the entire FCZ, would be a two and seven percent increase respectively in domestic catches. Presumably, other species would show a similar response to relief from the hazard of being hooked on foreign longline gear. Two percent of 644 mt of blue marlin (Table 5.9, page 92) is 12.9 mt of blue marlin. Seven percent of 62 mt of striped marlin is 4.3 mt. At best, the model predicts that an extra 17.2 mt (12.9 + 4.3) of these two species would have been caught by domestic fishermen in 1976 if they didn't have to compete with foreign longliners for the resource throughout the FCZ around the main and northwestern Hawaiian Islands. Since 58.7 percent of the Hawaiian FCZ would be closed to foreign longliners under the recommended management regime, had it been implemented in 1976, the plan would have added only 10.1 mt of blue and striped marlin to the 1976 domestic catch (17.2 x .587 = 10.09). This amount is equivalent to about 1.4 percent of the total blue and striped marlin catch in 1976 by domestic trolling and longlining fleets combined (Table 5.11, page 97). Expressed differently, the extra 10 mt that could have been caught by Hawaiian fishermen in 1976 amounts to about 50 fish, assuming the typical marlin weighs about 2 mt. Assuming the model's predictions are accurate, this demonstrates that the gains in blue and striped marlin harvests alone (the premium billfish species) would be so small as to be imperceptible due to natural fluctuations in abundance, environmental vagaries, possible reporting error, and other sources of statistical variability. For example, from 1976 to 1977, the reported commercial catches in Hawaii of blue marlin increased 79 mt (about 395 fish by the above assumption) and striped marlin decreased 54 mt (about 270 fish) (figured from Table 5.10, page 96). This suggests that the greatest increase in catches predicted by the model may not be statistically significant.

Therefore, we disagree with the statement in the plan (page 184) claiming that the relative gains to domestic fishermen from prohibiting foreign longline fishing in the FCZ around Hawaii would be "measurable" gains. Such gains may be measurable when viewed in the isolation of theoretical analysis, but it is highly doubtful they would be measurable in reality. We do not agree that the plan is needed to provide such marginally small and questionable benefits to the nation.

Fishery promotion and development:

The promotion and development of domestic fisheries to replace foreign fishing in the FCZ is certainly a desirable goal. Among the purposes of the Magnuson Act are (a) promotion of domestic commercial and recreational fishing under sound conservation and management principles, and (b) encouragement of U.S. fishing industry development of fisheries which are currently underused or not used by U.S. fishermen (Section 2(b)(3) and (b)). Clearly, the plan's theme is promotion of the domestic billfish fishery in Hawaii and Guam, but it is not clear that billfish resources within the FCZ of these islands are

underused by U.S. fishermen. The plan indicates a steady increase in domestic commercial landings throughout the 1970s, and the number of domestic longline vessels operating in Hawaii also shows a recent increase (Tables 5.10 and 5.3). Recreational catches are four to five times greater than commercial catches of billfish and have probably increased at a faster rate (Section 5.4.2). Results of the 1979 billfish angler survey indicate an increase in CPUE from 1978 to 1979 of 0.20 to 0.22 billfish per angler day (1981 Billfish Newsletter, J. Squire, NOAA/NMFS, Southwest Fisheries Center). Hence, the domestic billfish fishery, in Hawaii at least, seems to be developing well without the plan. If we assume that ocean-wide foreign longlining effort and billfish catches have remained constant or increased during the time domestic catches also increased, then it seems that developing the domestic fishery any more would put us on a collision course with a serious billfish conservation problem. We do not believe that this is the kind of fishery development contemplated by the Magnuson Act.

For these reasons, on the basis of need only, the plan is vulnerable to disapproval.

Critical Comment 2

Impacts on domestic policy regarding highly migratory species:

The plan would not provide a reasonable opportunity for foreign longline vessels to fish for tuna in the FCZ and would not impose the least burden on such vessels that would achieve conservation and management of billfish covered by the plan. Domestic gains would not balance equitably with foreign losses.

While area closures may be used as management measures in the billfish fishery, closing 30 percent of the FCZ to foreign longline fishing for tuna does not appear to be supported by a demonstrable need to protect a U.S. fishery. The potential loss of tuna to foreign longline fishermen in the proposed closed areas around Hawaii alone is substantial--about 1,500 mt, based on average historical catches (Table 8.2, page 189)--compared to the predicted gains to domestic fishermen. Foreign losses would be real and measurable while domestic gains probably would not be measurable.

The argument (for example on pages 200-202) that foreign longline fishermen could compensate losses from closed areas by shifting their effort to open areas of FCZ or areas beyond the FCZ has only tangential relevence. Even if it could be proved that foreign longliners could make up all their FCZ catches outside the FCZ, we could not use this as a reason to prohibit foreign tuna fishing in the FCZ. The issue is not whether foreign longliners need to fish for tuna in the proposed closed areas of the FCZ (obviously they don't since they haven't since early 1980), but that they have a right to do so. Foreign tuna fishermen may exercise that right, limited only by the extent to which domestic fisheries for other species affected by such foreign fishing require protection.

It follows that the likelihood of increased domestic catches of tuna in the FCZ cannot be used in balancing domestic gains with foreign losses as

required by the NOAA legal opinion (Appendix H). Tuna fishing benefits to domestic fishermen may be accounted for, however, in analyzing the effect of the proposed regulations as required by Executive Order 12291.

Critical Comment 3

The management unit:

The omission of wahoo, oceanic sharks, mahimahi, and any other important species caught incidentally to longline fishing is viewed as a violation of National Standard 3, which requires interrelated stocks of fish to be managed as a unit or in close coordination. Since the plan recommends a major change in the existing PMP for billfish and associated species, billfish management under the plan and separate management of associated species under the PMP would not result in coordinated management of these interrelated stocks as a unit.

The plan claims that mahimahi, wahoo, and some oceanic sharks are very important to domestic fishermen in the Council's area (page 41). It is further illustrated in the plan (e.g., Table 5.11, page 97) that wahoo and mahimahi are a substantial part of the total catch and revenues of domestic fishermen. Therefore, it is difficult to understand why the Council chose to exclude the concerns and interests of fishermen in wahoo and mahimahi (page 41). Also, including these associated species in the plan would increase the marginal benefits expected from plan approval and implementation. It seems likely that a legally defensible and policy supportable statement on optimum yield could be made that would recognize the difficulty of deriving quantitative yield estimates for these species while allowing their inclusion in the management unit.

Substantive Comment 1

Alternative to the proposed action:

The NEPA implementation regulations require that alternatives including the proposed action be considered in environmental impact statements (Section 1502.14 FR 43: 55996).

Since the plan expresses concern and presents evidence indicating that blue marlin and possibly some other species may be overharvested, it seems surprising that the plan does not consider some conservation measures for blue marlin among the alternatives it considers. All of the plan's management alternatives are designed to maximize economic gains to domestic fishermen. To achieve this, the plan intends to maximize the probability of domestic fishermen catching billfish that would have been caught by foreign tuna fishermen. A one-to-one transfer of foreign-caught billfish to domestic-caught billfish is the ideal the plan apparently seeks.

Although the plan more or less recognizes that this ideal cannot be achieved in reality, the fact that the plan seems oriented in this direction belies the fundamental conservation purpose and environmental mitigation aspect any fishery management plan/environmental impact statement should have.

This basic conservation purpose would seem to be a principal reason for "rigorously exploring and objectively evaluating all reasonable alternatives" as required by NEPA (1502.14(a)). Some kind of conservation measures for blue marlin, especially around Guam, would be reasonable alternatives to evaluate (and perhaps eliminate), even if their only advantage was to demonstrate U.S. leadership in this area and form the basis for international cooperation on billfish conservation. By omitting conservation measures for blue marlin, the plan may be considered weak or inadequate as an environmental impact statement.

Substantive Comment 2

Catch data reporting procedures:

The plan's rationale for continuation of State and territorial reporting procedures for domestic fishermen (Section 13.2.2) is contradicted by the proposed additional reporting requirements for the Hawaiian charter boat sector. The proposed logbook system for this sector would be costly to the operators and the NMFS and would result in duplicate reporting of catch data. This is inconsistent with the plan's position on domestic reporting (pages 163; 290-296). The duplication of data collection results from the sale of charter boat catches. Charter boat operators generally sell all or most of the catch not kept by their customers (Section 6.0). Therefore, they are required to submit a monthly catch report of all fish caught under existing State commercial license regulations, whether or not all the catch was sold. The proposed logbook would only duplicate the collection of these data.

Furthermore, it is unclear whether the mandatory reporting of charter boat operations is intended to be a State or NMFS responsibility, and if the latter, whether the proposal is for immediate or future consideration and promulgation by the Secretary of Commerce.

The comments in the previous section exemplify the inadequate specification and documentation of the data needs of the FMP. Substantiation of each data reporting requirement is necessary to allocate scarce data collection resources and satisfy requirements of the Paperwork Reduction Act (P.L. 95-511). The analysis of each reporting requirement should include the need for collecting each type of information and how it will be used to enhance management of the fishery. Throughout Section 13.2.2 the reporting requirements are ambiguous and are not substantiated by specific enforcement impact analysis or research needs.

A related problem in the plan concerns proposed data collection in the future under the Fishery Information Network and through survey samples of the "universe" of fishing vessel owners being established by the Council and the NMFS Honolulu Lab. (page 163). The plan's discussion of these potential data collection methods is inadequate because it fails to consider fully the available alternatives. However, of greater concern is the role the Council has assumed in the area of statistical reporting. The Council is not in the position to select the most statistically reliable and cost-effective data collection methodology. This function is the responsibility of the NMFS with input from the Council and other users. The primary objective of the Council

should be to state specifically the data needed and why they are required for management of the fishery. This distribution of tasks permits a more efficient use of limited data collection resources and helps to minimize the burden of data reporting on fishery participants.

Substantive Comment 3

Lovejoy model:

The Lovejoy model is obviously a keystone in the logical framework of the plan and the recommended management regime. Therefore, the model should be made available as a source document. Clear reference should be made in the plan as to how an interested reader could obtain a copy of the Lovejoy paper. Apparently this paper was not published in the regular scientific literature. Therefore, it is assumed that this paper has not been scrutinized by peer review. Such a review will be performed and/or arranged by NMFS. We will reserve comment on the scientific adequacy of the model and its interpretation in the plan until this review is complete.

Substantive Comment 4

Enforcement cost:

The enforcement costs presented in Section 13.2.1 are not particularly relevant because they were developed three years ago and do not reflect recent changes in costs. More significantly, they do not represent any differences between enforcing the plan and the PMP. It may be that eliminating the non-retention provisions of the PMP would save some incremental enforcement costs, however, surveillance of large closed areas of the FCZ would add expense. Extra surveillance flights would be required to enforce fully a complete closure of the FCZ around the main Hawaiian Islands and Guam. Such incrementally increased (or decreased) costs should be presented. The discussion in Section 13.3 should consider these factors more carefully than is indicated in the plan.

Suggested Alternative:

For the reasons discussed above, there would be some major difficulties with the NMFS recommending approval of the plan as it is now. The problem of rationalizing the need for the plan is especially difficult as long as foreign longline fishermen continue their apparent voluntary abstention from the FCZ. However, the potential problems in trying to enforce the PMP if all permitted foreign longline vessels decided to use their permits within the FCZ could be large and costly. We suggest that a good argument could be made for approving and implementing the plan or amending the PMP if either were designed better to treat these potential problems. These include problems related to the nonretention provision of the PMP, data and fee collection from foreign longliners in the FCZ, potential gear conflict between foreign and domestic fishermen, and conservation.

In general, we commend the plan as an improvement over the PMP in this respect. If permitted foreign longline vessels were to begin using their

permits, the basic idea of open and closed areas of the FCZ would be administratively simpler and more realistic to enforce. The plan would be much more rationally supportable from our perspective if it focused on these kinds of potential benefits rather than on the theoretical assumption that domestic catches will be measurably improved by forcing foreign longline effort further offshore. While this assumption may be correct, at this time there is no substantive evidence on which it can be supported. Hence, we suggest that the plan could be revised by recommending management measures in the following areas:

Retention: Eliminate the non-retention zones in the PMP and require recording of all incidentally caught non-tuna species on foreign longline gear. This plus changing the prohibited species definition, should force foreign longline fishermen to accept an allocation of non-tuna species. Taking an allocation would oblige such foreign fishermen to submit effort plans, catch and effort data, and payment of poundage fees--all of which they can easily avoid under our current non-retention provisions in the PMP. In addition, this would reduce the waste of non-tuna species unlikely to survive being hooked on longline gear and released. It seems conceivable that quotas could be established for such incidentally caught species that would allow foreign fishermen a reasonable opportunity to catch tuna in the FCZ. The only technical problem here is verification of the foreign data reports on non-tuna catches.

Closed areas: We agree that dividing the FCZ into open and closed areas of foreign longline fishing could be more cost effective than the PMP. Meaningful saving could be achieved, however, only if the closed areas were smaller than those proposed in the plan. For example, it would seem reasonable to prohibit foreign longline tuna from areas actually used for domestic fishing. We can envisage the difficulties that would occur for domestic fishermen if the historic foreign longline effort of about 2,300 days per year (page 107) were to resume in the FCZ around Hawaii. Assuming each foreign longline is about 50 miles in length, this effort represents about 115,000 miles of gear each year. If even a small part of this effort was concentrated in favored domestic fishing areas it would probably preempt space and access to non-tuna species by domestic fishermen. A large concentration of foreign fishing effort could impede surface transport, prevent normal trolling and other domestic fishing practices and frustrate legitimate domestic conservation and management programs for non-tuna species. Hence, a reasonable buffer zone could possibly be established beyond normal fishing grounds to insure no interference with domestic fishermen or with any current or proposed conservation and management program.

To use this rationale, the plan should include a more detailed description of actual domestic fishing areas. The following three references may be of use in this regard:

1. Hawaii Fisheries Development Plan, 1979. Note page 13, which states as follows: "Almost all fishing is still done within 20 miles of the main island, where resident resources and migratory stocks are quite limited." This document also provides information on recent fisheries development activities and areas considered for future fisheries development.

2. NOAA Technical Report, NMFS, SSRF-675, 1975. See Yoshida's paper, where he refers to a typical Hawaiian longline boat and states, "The length of a fishing trip averages 8 or 9 days for a Honolulu-based vessel and the majority of the trips are made within sight of the main Hawaiian Islands (Shomura, 1959)." (page 197).

3. Angler's Guide to the United States Pacific Coast, 1977. Particularly note charts 34 (Hawaii), 39 (American Samoa), and 40 (Guam). From a brief overview, it appears most recreational fishing is within 45 miles of Hawaii, 30 miles or less around Guam and American Samoa.

Associated species. The significance to the domestic fishery of other non-tuna species caught in association with billfish is obvious in the plan. Table 5.11 (page 97) demonstrates that the total wahoo and mahimahi catch in 1976 in Hawaii was over half as much as the total billfish catch by weight and over three times the average unit value of the billfish catch. Although to recreational fishermen, these other non-tuna species of wahoo, mahimahi, and shark may not be as desirable to catch as billfish, this is no reason to exclude them from the management unit. Indeed, including these other non-tuna species would substantially add to a supportable rationale for the plan.

Conservation. Conservation measures may be more symbolic than actually effective, but that is no reason to disregard them; it is even conceivable that long-term conservation benefits could be achieved which would benefit domestic fishermen also. Specific conservation measures must be considered carefully. We suggest that, as a start in this direction, the Council consider size limits (perhaps controlled by establishing minimum sized hooks), bag limits, season and/or area closures. Reasons why such measures would be unacceptable or biologically irrational should be clearly stated. Any other conservation measures should be similarly explored in the plan.

F/CM6:NMFS:CBribitzer:7/23/81:plj(d)
Revised:Bribitzer:7/24/81:plj (d)
Revised:CBribitzer:7/27/81:sp (f) (ca DFMP/CB)

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

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September 4, 1981

Mr. William M. Stevenson
Acting Assistant Administrator for Fisheries
National Marine Fisheries Service
3300 Whitehaven Street, N. W.
Washington, D. C. 20235

Dear Bill:

The Western Pacific Fishery Management Council is submitting for approval and implementation its final Fishery Management Plan (FMP) for the Billfish Fisheries of the Western Pacific Region.

The FMP is the product of more than four years of work by the Council's plan development team (which includes several scientists from NMFS' Honolulu Laboratory) and Council staff, with substantial input by the Scientific and Statistical Committee and Billfish Advisory Subpanel. The FMP incorporates the best information available on the fishery and is widely and strongly supported by domestic fishery representatives in Hawaii, Guam and American Samoa.

We appreciate that NMFS found the draft FMP comprehensive and well-organized and we have taken steps to improve the final FMP in response to many of the comments raised in the public review. We are disappointed, however, that NMFS did not endorse the proposed area closures which in our view are shown by the analyses in the FMP to be necessary to meet the Council's objectives for the fisheries. The extensive NMFS comments provided the Council with an insight into NMFS' basic concerns; however, they did not to provide a substantive alternative means to meet the Council's objectives and they failed to address the problems with maintaining the PMP approach. Therefore, following extensive discussion at the last Council meeting, including active participation from the Advisory Subpanel, the Council decided to submit the final FMP with the same management measures proposed in the draft FMP. We continue to believe this is the best management approach for this fishery and we would like to respond to the "critical" comments in the NMFS review.

1. Critical Comment 1. NMFS indicated that the "marginal" benefits to be derived from the FMP do not appear warranted in light of their costs, i.e., that the FMP does not establish clearly the need for the FMP.

Response: We believe the draft FMP amply demonstrated the need for the FMP. Nonetheless, we have improved the discussion on this point in the "Introduction" and "Executive Summary" sections of the final FMP. The Council believes the FMP is needed to achieve optimum utilization of billfish in the FCZ

by domestic vessels. The FMP will promote enhanced recreational billfish fishing experiences and assist the development of domestic commercial billfish fisheries. The FMP also will provide easier access to the FCZ for foreign longliners by eliminating the quotas and non-retention requirements and reducing other burdens of the PMP. This easing of restrictions on foreign longlining should provide a better basis than the PMP for international negotiations for management and conservation of billfish and highly migratory species throughout their range. Finally, the cost-effectiveness of the FMP is far greater than that of the PMP. In summary, the FMP will provide substantial benefits to all sectors of the fishery with a much higher probability of effective administration and enforcement than the PMP provides.

Critical Comment 1-A: NMFS expressed concern that the draft FMP did not consider billfish conservation measures as alternative management options.

Response: The Council did consider conservation measures but concluded that any measures applied solely in the FCZ would not have a substantial impact on the condition of the stocks. Billfish are distributed and migrate over vast areas of the Pacific. Migratory patterns have not been established, spawning areas have not been identified, and stock structure, life history, and population dynamics are basically unknown. Most important, only small portions of the stocks and of the fishing pressure occur in the FCZ at any point in time. The result is that protection of long-term stock productivity is an unachievable objective through the FMP, whether considering restrictions on foreign fishing, or on domestic fishing, or on both. This was emphasized repeatedly in the draft FMP.

This is not to say that the Council is not concerned about the need to "rebuild, restore, or maintain" billfish stocks throughout their range. We urge that the Department of State and NMFS take steps to initiate the development of appropriate international agreements toward this end. In the meantime, however, we all must recognize the irrationality of imposing restrictions on domestic fisheries for billfish when (a) there would be no measurable stock improvement; (b) there would be no subsequent enhancement of domestic fisheries; and (c) there would be no corresponding action by foreign interests who catch most of the billfish in the Pacific Ocean.

Critical Comment 1-B: NMFS indicated that the benefits to domestic fisheries under the FMP will be small.

Response: The Council believes this comment reflects serious misconceptions about the billfish fishery in this Region and the impacts of the FMP. First, we believe the benefits to U.S. fisheries will be large. The NMFS implication that the size of the gain is measurable in terms of tons of blue or striped marlin transferred to domestic fisheries misses the mark. The value of these fisheries cannot be measured in terms of gross tonnage or ex-vessel value of the catch. The critical issue is, what values would expanded catches generate for domestic fishing sectors, both in enhancing the recreational fishing experience (contributing to tourism, Hawaii's major industry, as well as to resident fishery values in this region) and in providing an essential boost

to commercial trolling longline and ika shibi fisheries development in the region? We believe there would be very substantial domestic benefits.

Second, while the Lovejoy model is the only comprehensive analysis of the interaction between the domestic and foreign fisheries, it is an extremely limited model. The final FMP includes an analytical synopsis of the Lovejoy model (Appendix U) which indicates some of these limitations. The Council believes it is equally valid to conclude there is a range of possible transfer effects which will take place because of area closures. The upper limit of this range is the amount that would have been caught by foreign longliners.

Third, we anticipate there would be gains in all sectors of domestic fisheries. Recreational trollers would gain from increased catches of mahimahi, wahoo, and tuna as well as of blue and striped marlins. Domestic longliners and commercial trollers also should experience increased catches of blue marlin, swordfish, striped marlin, mahimahi, wahoo and tuna. Increased catches also should occur in Guam and American Samoa fisheries.

Fourth, the NMFS comments focus on anticipated benefits only for one sector of domestic fisheries and ignore the benefits that will accrue to foreign longline fisheries under the FMP. Although foreign longlining would be prohibited in 30% of the FCZ, the longliners would gain by elimination of billfish quotas; elimination of the requirement to cut fish loose with losses of hooks, line, and time; and reduced concern that observers would be required on all vessels or that vessel inspections would be required at U.S. ports before or after fishing in the FCZ. These are substanial benefits and amount to a greater opportunity to fish for tuna in the FCZ than longliners get under the PMP.

In addition, the government benefits through reduced costs of administration and enforcement of foreign fishing regulations if foreign fishing occurs. This is more accurately described, perhaps, as a greatly improved likelihood of effective enforcement and monitoring of foreign fishing regulations with current budgets and manpower, which are unlikely to change substantially regardless of the provisions of the FMP.

Critical Comment 1-C: NMFS indicates that development of domestic fisheries may not be necessary, and that if the fisheries develop substantially, there could be a conservation problem.

Response: In the Council's view, billfish in the FCZ are relatively underutilized by domestic fisheries. That is, domestic fisheries should have maximum freedom to expand their efforts and catches, and the probability of foreign interceptions of billfish in or headed for domestic fishing areas should be reduced. Developing the domestic fisheries will not pose a risk of overfishing because the level of fishing in the FCZ will not have a substantial impact on the stocks.

2. Critical Comment 2: NMFS indicates that the FMP does not provide a "reasonable" opportunity for foreign longliners to fish for tuna in the FCZ and suggests that foreign "losses" will considerably exceed domestic benefits.

Response: These comments reflect a narrow view of the likely impacts of the FMP and ignore the practical effect of the current PMP. The fact is that the PMP is apparently not providing a reasonable opportunity for foreign vessels to longline for tuna in the FCZ. The provisions for quotas, non-retention zones, method of release of billfish, observers, and reporting or inspection burdens impose such high compliance costs that longliners have abstained from fishing in the FCZ. Under the PMP, the losses to foreign longliners may indeed be "real and measurable". The Council's FMP, however, proposes to restore a reasonable opportunity for longlining in the FCZ. There would be no quotas, no non-retention areas, and lower risk of high observer and inspection costs. The longline data available indicate that relocation in the FCZ will not significantly affect catch rates or total gross value of catch (see Appendix T). It must also be noted that the "losses" from not fishing in the FCZ are gross catch losses, not net catch values, and obviously overstate the possible losses.

The Council does not argue with the NMFS comment that foreign longliners have a right under the FCMA to fish for tuna in the FCZ. In the Council's view, the right is limited by the extent to which such fishing may prevent the achievement of the optimum yield (OY) from the billfish fishery by U.S. fishermen. If foreign longliners in the FCZ catch billfish in or migrating toward domestic fishing areas, optimum use of billfish by domestic vessels will be precluded. Therefore, the Council proposes that foreign longliners exercise their right to fish for tuna in the areas specified in the plan. Any lesser closure will not achieve the benefits which are desired.

With respect to the impacts of the FMP on U.S. policy regarding highly migratory species, the Council maintains that the plan achieves the balance called for in NOAA's legal opinion. We are not aware of any international negotiations underway or planned that will be affected by our proposals. The Council is not proposing allocation of shares of billfish or highly migratory species of tuna in the FCZ. The Council is proposing simply that a non-selective form of fishing gear not be employed by foreign vessels in parts of the FCZ so that billfish which are so important to domestic interests will not be taken by those foreign vessels. We believe this is consistent with U.S. policies under the FCMA.

3. Critical Comment 3: NMFS indicates that the management unit should include wahoo, oceanic sharks, and mahimahi.

Response: The final FMP addresses this point in detail (Sections 2.3 and 5). Briefly, the Council believes that there is insufficient information to satisfy basic FCMA requirements for these species. It will take time to obtain the missing information. However, a delay in implementing the Billfish FMP is not warranted. We note that NMFS has agreed that separate billfish, swordfish, and shark fishery management units are appropriate for the Gulf of Mexico and Atlantic, nothwithstanding that these species are all covered together in the PMP for those areas. We believe this flexible view of National Standard 3 is equally appropriate for our region.

4. Suggested Alternative: NMFS suggests that the Council revise its FMP to include smaller area closures, with the emphasis on preventing gear

conflicts; to require retention of all fish caught, with catch reports and fees based on catch; to include mahimahi, wahoo, and other non-tuna species; and to consider establishing conservation measures (e.g., size limits) for domestic fisheries.

Response: This alternative was unacceptable to the Council. Earlier responses have addressed the comments about including mahimahi and wahoo (Response 3) and establishing conservation measures for domestic fisheries (Response 1-A). The Council did not explore in depth the possibility of requiring retention; however, the cost of enforcing such a requirement would be inordinately high. In any event, we anticipate foreign longliners will keep most if not all the fish they catch.

The central issue, however, is the extent of area closures which are necessary to achieve the objectives of the FMP, and it is on this issue that the NMFS alternative misses the key point of the proposed measures. That is, the problem is not that foreign and domestic fishing fleets compete directly for space in which to apply their effort (i.e., gear conflicts are not critical). The problem is that foreign longline fishing in the FCZ is intercepting billfish in the U.S. FCZ which may be subject to domestic fishing, thus foreclosing the domestic fishery in large parts of the region. NMFS' proposed compromise does little or nothing to address this problem. Smaller area closures are unlikely to enhance recreational fishing experiences or to promote the development of domestic commercial trolling, longline and ika shibi fisheries in the region. From the Council's point of view, the area closures proposed in the final FMP are the "buffer zone" discussed by NMFS. Therefore, the Council concluded that this compromise alternative would not be effective and chose to retain the management measures proposed in the draft FMP.

We believe that this letter and the changes made in the FMP respond to the concerns expressed by NMFS and other reviewers. The Council believes the FMP satisfies all FCMA requirements, is consistent with the national standards and other applicable law, and should be approved and implemented for the benefit of domestic and foreign fishing interests in the Council's area. The enclosed article from the September 1981 Hawaii Fishing News is indicative of the strong support which the FMP has among the region's fishery interests. We hope that NMFS understands the rationale for the Council's decisions and will move quickly to adopt this plan.

With aloha and warm personal regards,

Sincerely,

Wadsworth Y. H. Yee
Chairman

Enclosures

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Washington, D.C. 20235

JAN 21 1982

F/SER31:JG

JAN 21 1982

Mr. Wadsworth Y.H. Yee
Chairman, Western Pacific Fishery
Management Council
1164 Bishop Street, Room 1608
Honolulu, Hawaii 96813

Dear Wads,

The Final Fishery Management Plan for Pacific Billfish Fisheries of the Western Pacific Region (FMP) submitted by the Western Pacific Fishery Management Council (Council) for Secretarial action has been reviewed for consistency with the national standards, other provisions of the Magnuson Fishery Conservation and Management Act of 1976 (Magnuson Act), and other applicable law. This review has resulted in a decision to disapprove the FMP in its present form.

There are three reasons for this decision. First, the size of the proposed area closures for foreign longline fishermen is in conflict with Section 303(a)(1)(A) of the Magnuson Act. This part of the Magnuson Act specifies that any fishery management plan shall contain measures applicable to foreign and domestic vessels which are necessary and appropriate for the conservation and management of the fishery. The proposed closures are neither necessary nor appropriate management measures. The closures are not necessary for conservation purposes because the billfish stocks are distributed broadly throughout the Pacific Ocean where U.S. jurisdiction does not extend. Neither are the closures justified as necessary to increase domestic catches since the evidence presented in the FMP does not indicate that the closed areas would produce measurable benefits in this regard. Thus, even if the proposed closed areas for longlining were determined not to interfere in any way with foreign fishing for tuna (for example, because baitboat catches replace lost longline catches), the proposed closed areas would have to be disapproved because they were not necessary and appropriate management measures. To the extent that the proposed area closures exceed necessary and appropriate measures for management of the billfish fishery, the closures appear inconsistent with Section 103 of the Magnuson Act. This section exempts highly migratory species of fish (i.e., tuna under Section 3(14)) from the exclusive fishery management authority of the United States. Management measures that are not necessary for the billfish fishery but have the effect of restricting high seas tuna fishing may conflict with Section 103.

The second reason for disapproving the FMP is that other non-tuna species associated with billfish fishing are omitted from the management unit. This

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omission is inconsistent with national standard 3 (Section 301(a)(3) of the Magnuson Act). One of the critical comments on the draft FMP last July specifically dealt with this management unit issue. To reiterate, a management unit, by definition, includes groups of species or stocks of fish that are geographically or ecologically interrelated, or are affected as a group by fishing practices (Section 602.2(a)(2)(ii) of Title 50, Code of Federal Regulations). Other issues notwithstanding, if the FMP were implemented with its present management unit, there would be separate management regimes for billfish and other non-tuna species caught on the same gear. This would not avoid duplication as required by national standard 7. In addition, future management options for these other associated species could be constrained by managing them separately from billfish. Moreover, given the economic importance of mahimahi, wahoo, and oceanic sharks to domestic fishermen, the inclusion of these species in the management unit would improve the justification for the FMP. Without them, the management unit is impractical. The difficulty of specifying yield determinations for these species when only limited data are available is appreciated. However, several FMPs containing non-numerical optimum yields (OYs) or OYs based on limited information have been approved where circumstances warranted. This practice is recognized in the draft revised guidelines for national standard 3.

Finally, the need for the FMP is not clearly demonstrated. Significant benefits to the national and regional economies or to the condition of the stocks are not identified in the FMP. We view this as an inconsistency with national standard 7 (Section 301(a)(7) of the Magnuson Act). The principle that not every fishery needs regulation is implicit in national standard 7. This principle is given special consideration now when the cost of government is receiving critical review. Closely linked to this principle, although not as a national standard issue, is the requirement that fishery management regulations must satisfy the 'cost-benefit' test of Executive Order 12291. Since the Preliminary Fishery Management Plan for Billfish, Oceanic Sharks, Wahoo, and Mahimahi in the Pacific Ocean (PMP) has been in effect, the apparent voluntary abstention of foreign longline fishermen from the fishery conservation zone (FCZ) seem to be achieving the same overall purpose of the FMP. Given this situation, we fail to see how a change in that management regime, of the kind proposed by the FMP, would benefit domestic fishermen enough to justify the cost.

For these reasons, the FMP cannot be approved as submitted. However, the FMP could be approved if the Council revises the closed area measures and the management unit, and improves the justification for the FMP. The following are some suggestions on how this can be done.

If foreign longline fishing resumed in the FCZ around Hawaii and Guam at its former levels, dividing the FCZ into open and closed areas might be more cost effective than the PMP, and perhaps might be required to avoid gear conflict. On this basis, the FMP should include a detailed description of actual domestic billfish fishing areas, seasons, and instances of adverse effects on domestic fishermen caused by foreign vessels in the FCZ. Closed-

area measures should be limited to areas and times which would correct the problems identified. For example, it is our understanding that virtually all domestic billfish fishing in Hawaii occurs within 50 miles of the main Hawaiian Islands in the summer and fall months. Using this information, a closure to foreign longline fishing during these months and in this area of the FCZ could be viewed as appropriate and approvable. A similar approach should be used to determine the size of area closures around the Northwestern Hawaiian Islands and Guam. The point emphasized here is that approvable area/season closures must be based on documented domestic billfish fishing effort and the need to avoid foreign-domestic gear conflict.

It should be possible to generate non-quantitative determinations of yield for non-tuna species associated with the billfish fishery that would satisfy Magnuson Act requirements. Copies of the pertinent pages of these plans where OYs are based on limited information are enclosed for your convenience. Inclusion of all the species covered by the PMP would also be consistent with, and aid, consolidating fishery management plans whenever possible to reduce costs and administrative burdens.

A fundamental aspect of FMP approval is a demonstrated need for Federal intervention. To achieve this, the FMP should include a clear description of how the benefits of Federal regulations implementing the FMP would relate to their costs; this description need not be lengthy. In preparing this description we suggest that the Council follow the draft revised guidelines for national standard 7 (a copy which is enclosed). Attention to the guidelines should ensure that the FMP also will satisfy the requirements of Executive Order 12291.

Support for the FMP also would be enhanced by including additional conservation measures. Although the FMP expresses a concern for the conservation of billfish, particularly blue marlin, it does not contain any measures that would contribute to conservation. Obviously, the effectiveness of conservation measures would be limited since the blue marlin stock is widely distributed. However, if the blue marlin stock is being overfished as indicated in the FMP, then the FMP cannot ignore this problem and the FMP certainly should not posit as its principal benefit increased catches of a species which the plan itself suggests is overfished. While recognizing the difficulty of developing even marginally effective conservation measures, I would urge the Council to reconsider the problem and examine, for example, the possible benefits of gear limitations, bag limits, size limits (to avoid the taking of fish under spawning age), non-retention of live fish, season and/or area closures, etc.

Finally, the extent of benefits to domestic fishermen under the FMP or the PMP raises another issue. It is clear that if a significant amount of foreign longline fishing were occurring in the FCZ, then the FMP might be an improvement over the current PMP. However, it cannot be ignored that there has been no documented foreign longline effort in the FCZ since the PMP went

into effect on April 1, 1980. It is possible that implementing a revised FMP or an amended PMP could result in renewed foreign longline effort in the FCZ. If this occurred, domestic fishermen would seem to be worse off than they are now.

With this condition in mind, two alternative courses are available to the Council. First, the Council could choose to revise and resubmit the FMP for approval but request that implementation be held in abeyance until needed. To do this, some triggering mechanism, such as a substantial increase in foreign longline effort in the FCZ, should be specified in the FMP. The necessary implementing documentation could be prepared so that if foreign fishing effort resumed, the FMP could be implemented relatively quickly. Alternatively, the Council could choose to revise and resubmit the FMP for regular Secretarial review and implementation if approved.

I am aware that this disapproval gives the Council new work. I and my staff, here and in the Southwest Region, are prepared to assist the Council to the maximum extent possible in making the necessary changes in the FMP to achieve approval.

Sincerely yours,

William G. Gordon

William G. Gordon
Assistant Administrator
for Fisheries

Enclosures

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

1164 BISHOP STREET - ROOM 1608
HONOLULU, HAWAII 96813
TELEPHONE (808) 523-1368

March 31, 1982

Mr. William G. Gordon
Assistant Administrator for Fisheries
National Marine Fisheries Service
3300 Whitehaven Street, N. W.
Washington, D. C. 20235

Dear Bill:

An important topic for the next Council meeting will be a decision on how the Council should proceed with the Billfish FMP following NMFS rejection of the plan.

The Council's Scientific and Statistical Committee and Billfish Advisory Panel have met on this topic and their respective reports to the Council are attached for your information. I especially urge a careful reading of the advisors' recommendations and the summary of their meeting. The latter goes into considerable detail on the reasons for their recommendations, and I think it is representative of many Council members' views as well. We are concerned about the apparently inconsistent positions in NMFS when it comes to issues on billfish and tuna fishery management. It looks to us like decisions being made on one issue in one area are contradictory to decisions on similar issues in other areas. It also seems to us that NMFS imposes different sets of standards in different areas or for different Councils. There do not appear to be any basic ground rules or policy positions to which we can all subscribe. This makes it extremely difficult for the Council and advisors to understand the rationale for NMFS' conclusions on the Billfish.

For example, we are told our FMP <u>must</u> include wahoo, mahimahi and oceanic sharks in the management unit; however, the other Councils are proceeding (apparently with NMFS support) with separate FMPs for billfish (marlins, sailfish, and spearfish), swordfish, and sharks. NMFS indicates that our Billfish FMP may not be needed or justifiable, even though the PMP is not achieving its intended objectives and would be unenforceable at anticipated levels of foreign fishing. We wonder, when NMFS is done with the Atlantic Billfish PMP amendments, will NMFS tell the Gulf and Atlantic Councils their FMPs are not needed? Further, we are told the closures in our FMP would be too "broad and sweeping". In contrast to the NMFS proposed amendments to the Atlantic PMP, however, our closures appear relatively mild. After all, the amendments would close the Caribbean FCZ all year, the Gulf of Mexico FCZ eight months of the year, and more than half the Atlantic FCZ six months out of the year. On top of that, there would be quotas, effort limits, and a "compensatory payment" system. This set of management measures appears inordinately

restrictive compared to those in our FMP, when foreign longliners, in NMFS' view, have a "right" to fish for tuna in the FCZ. Finally, as our advisors and the SSC note, NMFS claims our plan would have costs in excess of benefits, but there is no documentation for that claim. It would be helpful if NMFS gave us an accounting of the benefits and costs with a clear definition of appropriate criteria.

These are among the issues we would like to take up with you at the Council meeting. I realize your schedule is tight, but I also hope we can arrange an informal session in Honolulu with some of our advisors on April 12, 1982, the day before our flight to American Samoa. I understand Kitty is trying to work out the schedule with Shirley in your office.

Finally, due to the change in South Pacific Island Airways' flight schedules, the "Program Review" session, originally scheduled April 14 in Honolulu, will be convened in American Samoa.

We all look forward to seeing you next month.

With aloha and warm personal regards,

Sincerely,

Wadsworth Y. H. Yee
Chairman

Enclosures
Copies: Council Members
Executive Directors (w/enclosures)
Richard S. Shomura
Doyle E. Gates
Izadore Barrett
Martin Hochman

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

1164 BISHOP STREET - ROOM 1608
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August 31, 1982

Mr. William G. Gordon
Assistant Administrator for Fisheries
Office of Fisheries, NOAA
Page Building #2, Room 400
3300 Whitehaven Street, N. W.
Washington, D. C. 20235

Dear Bill:

The Western Pacific Fishery Management Council, its Scientific and Statistical Committee and Billfish Advisory Subpanel met separately (August 16-18, 1982) in Kailua-Kona, Hawaii. A principal topic of discussion in each of these meetings was the Council's staff report entitled: Assessment of Changes in the Domestic Fisheries for Selected Pelagic Species Based on a Survey of Major Fish Dealers and Auction Houses for 1979, 1980, and 1981. The report indicates that Hawaii's fresh fish trade in billfish, mahimahi, and wahoo (and by extension domestic catches of each of these species) has increased substantially especially since the PMP went into effect. The Council deferred taking action on its Billfish FMP pending receipt and consideration of your views on the dealer survey report which was rushed to you on July 29, 1982.

A week prior to our Kona meeting, we received a copy of the Honolulu Laboratory's review of the Council's staff dealer report (enclosed), based on Dr. Izadore Barrett's authorization to distribute the review. Our staff, in turn, prepared comments on the Laboratory's review (enclosed). We have no quarrel with most of the Laboratory's technical comments on our dealer survey report. Indeed, our staff report itself acknowledges the limitations of the quick survey of dealer purchases and transshipments of the management unit species. We believe, however, that our staff's response to the Laboratory's critique is quite appropos, and are of the opinion that the "best available information" (scientific or otherwise) supports the findings of the dealer survey that domestic catches and, most likely, catch per unit effort have increased since foreign longliners have abstained from fishing in the FCZ of Hawaii.

Differences in perception arose at the Kailua-Kona meetings between NMFS representatives on one side and the Council, the SSC, and the Advisory Subpanel on the other side on what was expected from the survey of fish dealers that our staff undertook after we met with you last April in American Samoa. The Council and our billfish advisors believe that we, in good faith, then offered and subsequently provided confirmation of anecdotal reports that catches

of billfish had increased significantly since the advent of the PMP. You will recall Jerry Kinney, Alika Cooper, Jim Sutherland, and other advisors saying that judging from their personal observations, billfish catches were much larger than in the years before the PMP went into effect. We believe that the dealer survey certainly substantiates those affirmations.

There was rather lengthy and spirited discussion at our meetings on the convictions of NMFS representatives that our dealer survey failed to demonstrate beyond doubt that the elimination of foreign longlining in the FCZ had resulted in increased billfish catch rates for domestic fishermen. NMFS representatives left the Council with the distinct impression that you expected to receive some sort of statistical substantiation or scientific proof that domestic catch rates of the management unit species had increased as a direct result of foreign longliners' withdrawal from fishing in the FCZ around Hawaii. However, I'm certain you would agree with most everyone involved in the tortuous process of developing "approvable" billfish FMPs, that statistically irrefutable demonstrations or scientific proofs of direct relationships between domestic catch rates and foreign longline catch rates of highly migratory fish might never be produced. We simply don't want to get ensnarled in a never-ending numbers game. We initially wanted to get a handle on effort levels in order to derive approximations of changes in catch per unit effort in each of the three years of the dealer survey. But doing so was not feasible from the survey of fish dealer records for reasons clearly stated in the staff's report. Certainly, a 2½-month survey of fish dealer records could not be expected to provide a demonstration of "cause and effect" in showing that the observed increases in domestic catches are a direct and irrefutable result of no foreign longline fishing for billfish and other species in the FCZ. Coming up with a statistical demonstration could take years of data gathering and analysis, if any sort of "proof" could ever be discovered.

Notwithstandng the lack of effort data, we have no evidence to support a hypothesis of substantially increased domestic effort since the PMP went into effect in April of 1980. We disagree with the Honolulu Laboratory's contention that tournament fishing participation levels "probably increased dramatically" in recent years, and that an increased price of fish would be a strong incentive to increase domestic commercial and recreational fishing effort for billfish and other management unit species. There have been no significant escalations in real ex-vessel prices for billfish over the survey period, nor does it seem likely that the price of billfish flesh is the motivating factor for domestic fishermen to go out in pursuit of billfish. Furthermore, while tournament fishing in Hawaii has increased significantly since 1976, participation in jackpot tournaments peaked in 1980 and remained at approximately the same level and perhaps a little less in 1981. Therefore, we to take issue with the Laboratory's speculation that the 35% increase in blue marlin sales (catches) between 1980 and 1981 can simply be explained by assumed increases in the level of domestic effort and natural fluctuations in stock size and availability. There appears to be something else involved in explaining the increased fishing success of domestic fishermen for each of the management unit species between 1980 and 1981, and that something else could very well be the absence of foreign longline fishing since the advent of the PMP.

There is no disagreement that long-term trends in catch per unit of effort for the management unit species and for tuna would be the ideal measures for comparing foreign and domestic fisheries which capture these species and for firming up inferences on the relationships between foreign and domestic fisheries in FCZ waters. But given the present limitations in the data base for both fisheries, there is almost no limit on the possible implications on the relationships between the fisheries that could be drawn from the recent data collected on the domestic fisheries and the older data that is available on the foreign fishery. We have a situation here in which there is not now, and might never be, sufficient information to prove much of anything. We are in a position where we have to make policy judgements based on soft information and limited data.

But we are not alone in that regard. We noted that the full FCZ closure for the Gulf of Mexico for eight months of the year under the proposed Atlantic PMP amendments was based on the Gulf Council's assessment of changes in hooking rates over a very short period (enclosed). Notwithstanding the softness of the data base used by the Gulf Council's in its assessment of increases in billfish availability as a result(?) of diminished foreign longlining, you concurred with their findings and approved the area closure for the Gulf of Mexico. While direct gear conflicts are referenced as one of the principal rationales for area closures under the proposed Atlantic and Gulf PMP amendments, the PMP document states that "...productive marlin waters may be as much as 60 to 100 miles from shore, and sea conditions are frequently too rough for small vessels"; yet the entire 200 mile Gulf of Mexico FCZ is being proposed for closure to foreign longlining for eight months (i.e., two-thirds) of the year. The recommendation in our FMP, by comparison, would allow foreign longline fishing in 40% of the Hawaii FCZ year round.

The proposed Atlantic PMP amendments and supporting documentation clearly indicate that the proposed restrictions of foreign longlining will lead to reduced billfish mortality in the FCZ which, in turn, will lead to increased availability of billfish to domestic fishermen. The proposed PMP amendments for the Atlantic and Gulf of Mexico go much further than our Billfish FMP in that the Atlantic amendments also propose a payment schedule to compensate the U.S. for foregone billfish values which would be "lost" to U.S. fishermen as a result of foreign longline catches. I would suggest that the recommendations in our Billfish FMP are more modest by comparison and they are based on the same kind of logic that you accepted for the Atlantic PMP. Our analysis, like that of the Gulf Council's, strongly suggests, though it does not statistically prove, increases in domestic catch rates resulting from restrictions of foreign longlining. We believe that the logic in our FMP, coupled with the findings of the dealer survey report, provide sufficient basis for your agreement to our area closure recommendations.

We all believe that the size of the area closures recommended in our Billfish FMP is the principal outstanding issue that needs resolution. We have much difficulty with your suggestion in American Samoa that the closures should initially be limited to only to those times and in those areas where domestic fishermen are most active. You recommended that the area/season closures could be expanded if "evidence" from monitoring the fisheries warranted doing so. But

it would be virtually impossible to demonstrate measurable gains in domestic catches and catch rates with modest closures to foreign longlining if foreign longliners resumed fishing at historical levels. Nor do we think that the PMP's non-retention approach (dumping of dead fish and release of injured fish) can in any way result in the improvement of domestic catch rates should foreign fishermen choose to exercise their tuna fishing option under the PMP.

The Council might be amenable to some accomodation on the area closures issue provided that the NMFS showed a willingness to accomodate the Council's position. I have certainly not seen any signs of NMFS accomodation to date, and voting members of the Council and most of our billfish advisors are predisposed to harden their positions. That is an unfortunate state of affairs that has been bred out of past statements made by the NMFS, and formerly by the State Department, not only on our Billfish FMP but on the other regional councils' billfish plans as well. It is not too late to begin changing this state of being.

I would like to make some comments on an ancillary issue that you flagged during our meeting in American Samoa, specifically "mandatory reporting". We all agree that better information is needed and we have given much thought as to the best way to get reliable information on what is happening in the domestic fishing sectors that take the management unit species. Our Billfish FMP embodies a reasonable premise that before embarking on a universal system of mandatory reporting for domestic fishermen under federal rulemaking, we must consider the benefits and costs of mandatory reporting, its logistical feasiblity, and above all the likelihood of public compliance. I'm not convinced that a system of mandatory reporting under federal directive will result in anything better than what we get now or may soon get under State and Territorial reporting procedures. Therefore, our FMP proposes a voluntary system for monitoring the domestic fisheries that take the management unit species.

We were able to get a high degree of cooperation from the State's major fish dealers. We are thinking about surveying the catches and effort levels of the major jackpot tournaments that have the longest, albeit brief, history in Hawaii. The Honolulu Laboratory has contracts out to survey the domestic commercial handline and longline fisheries in the State of Hawaii, and it plans to survey the charterboat industry and possibly the private recreational boating interests. The FMP stands behind the Honolulu Laboratory's vessel inventory and classification projects which, when completed, should provide sound population units from which survey efforts can be undertaken to provide <u>reliable</u> estimates of catches, effort, and other timely descriptors for periodically monitoring the pelagic fisheries in our areas. All of these endeavors, coupled with in-place State and Territorial reporting procedures, however imperfect, appear to provide a very reasonable base for monitoring the relevant domestic fisheries for billfish and associated species. This is why members of the Council find it difficult to understand, in practical terms, your urging for a mandatory reporting system in the FMP. We would very much appreciate your views on this aspect before taking any sort of action on writing in any federally mandated reporting requirements in our FMP. As an alternative, I would recommend earmarking a portion of the programmed National Recreational Fisheries Survey

funds to the Council in order to allow us, in cooperation with the Honolulu Laboratory, to systematically evaluate alternative methods to acquire needed data before trying to force all domestic fishers to submit catch and effort data under federal regulations.

As an aside, I am disappointed to say that the National Recreational Fishing Survey 1979 results which we received last week do not appear to provide estimates of billfish catches that come close to what most of us believe really happened. The preliminary estimates seem to be much overblown.

In ending this rather lengthy letter, I would like to provide the following arguments in support of the Council's FMP. Our FMP for billfish and associated species is needed to:

1. strike a balance between the priority which must be given to domestic fishermen under the Congressional findings and policies embodied in the FCMA and current U.S. tuna policy;

2. provide a means for achieving an equitable balance between the desires and needs of local fishermen who fish for billfish, mahimahi, and ono (wahoo) and the needs of foreign nationals to fish for highly migratory species of tuna in the FCZ of the Western Pacific Region and who provide a significant share of tuna to U.S. packers;

3. allow the possibility for achieving real (as opposed to symbolic) gains to domestic fishermen in the Council's areas with minimum limitations placed on the opportunities of foreign fishermen to fish for tuna in the FCZ of the Western Pacific Region.

4. provide continued flexibility for negotiating arrangements for regional/international management of all highly migratory species throughout their ranges in the absence of formal international agreements covering these species in the central and western Pacific;

5. allow the realization of larger U.S. shares in the billfish fisheries of the central and western Pacific by not precluding reasonable future national allocations of billfish to the U.S. under international agreement;

6. conserve billfish, mahimahi and ono by eliminating the non-retention approach because of the high potential for waste through the discard of dead fish and release of injured fish;

7. provide a workable and time-responsive framework for monitoring foreign and domestic fishing for billfish and associated species in the FCZ of the Western Pacific Region with minimum of red-tape and reporting burdens; and

8. establish a simple and cost-effective enforcement program in an area of the Pacific Ocean that encompasses over 1.5 million square miles.

Both the PMP and our FMP, out of legal necessity, are based on an artificial distinction between one set of migratory fish (species in the management unit) and a second set of "highly" migratory species (all tunas). We realize that this puts the U.S. in an awkward and precarious position when participating in international negotiations with nations in the eastern Pacific and elsewhere. But we believe that the NMFS has now developed a balanced position on this issue through the Atlantic PMP amendments and is now able to address our FMP with integrity and consistency.

We would very much appreciate your careful and timely consideration of the ideas and arguments provided in this letter. We are quite certain that you were sincere in our meeting in American Samoa when you said that you saw room for compromise on the issue of area closures. We eagerly look forward to hearing from you about the limits of an acceptable compromise -- but one that does not short-change the interests of island fishermen in the sole name of the national interest in tuna.

With aloha and warm personal regards,

Sincerely,

Wadsworth Y. H. Yee
Chairman

Enclosures
Copies: Council Members
SSC Members
Billfish Advisory Subpanel Members
Doyle E. Gates
Izadore Barrett
Martin Hochman
Gary Smith

UNITED STATES DEPARTMENT OF COM
National Oceanic and Atmospheric Admini
NATIONAL MARINE FISHERIES SERVICE
Washington, D.C. 20235

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OCT 5 1982

OCT 11 1982

Mr. Wadsworth Y.H. Yee
Chairman, Western Pacific
Fishery Management Council
1164 Bishop Street, Suite 1608
Honolulu, Hawaii 96813

Dear Wads,

This letter has three purposes: (1) to respond to your letter to me dated August 31, (2) to clarify my statements regarding billfish area closures at your meeting in American Samoa, and (3) to comment on the Council staff's report of 1979-81 dealer sales data.

I have read your August 31 letter which summarizes the difficulty of arriving at an agreement on reasonable area closures in the billfish fishery management plan (FMP). I am pleased with your expressed desire to reach a compromise resolution of this issue. I assure you that the National Marine Fisheries Service is amenable to some accommodation of the Council's views and I suggest that you work closely with the Southwest Region to achieve an agreement on the closures within the broad guidelines in my letter to you of January 21, 1982. Much has happened since that time and more management alternatives may be available today. For example, the compensatory payment system proposed for the amendment to the preliminary fishery management plan for Atlantic Billfish and Sharks is one you may wish to consider. I will be pleased to receive a joint recommendation on this issue from the Council and Southwest Region.

Your letter compared actions taken in relation to the Atlantic billfish PMP with the decisions on the Pacific billfish FMP. You were apparently using only the PMP and not the regulations. The proposed regulations which are still, in part, undergoing public review, propose a closure in one area of the Atlantic which is based on documented gear conflicts and preemptions of fishing grounds. No closed areas in the Gulf of Mexico are included in the regulations. Enclosed for your information is the PMP made available to the public and the final regulations on the area closure.

Your letter also indicated that a great deal of frustration within the Council has resulted from an apparent misunderstanding of my responses to questions at your meeting in American Somoa. To avoid further confusion, I want to make my position clear. My intention in Samoa was to inform the Council that I was willing to accept additional information from the Council that might support the proposed closures presented in the FMP. Disapproval of the FMP did not mean that the Council could not, at any time, demonstrate that measurable benefits could be achieved by the proposed closures. Since there was no discussion of exactly what data were to be presented to support the Council's argument, it is unfortunate that my meaning apparently was misunderstood.

I have reviewed the report of the 1979-81 sales data of billfish and other pelagic species in Hawaii prepared by the Council's staff as a response to the Council's perception of what I said in Samoa. The reasons why the staff's report on dealer sales does not give convincing support to the proposed area closures are mentioned in the report itself. Specifically, the report enumerates only the volumes of fish transactions handled by the cooperating dealers from 1979 through 1981, but provide no indication of trends in fishing effort. Although the data show an increase in sales volumes, the relationship of that increase to the elimination of foreign longlining is not adequately established in the report. Basically, the increase in dealer sales of billfish may be due to many factors not related to foreign longlining. For instance, natural variability in stock size and availability cannot be discounted as reasons for the year-to-year variations.

In regard to mandatory reporting, I was looking for the Council to commit itself to developing some type of data collection requirements for effective monitoring of the billfish resource. While the Honolulu Laboratory is developing the basis for an improved data collection system in the western Pacific, there must be an organized approach among the states and territories to acquire the necessary information to put into the system. From our experience in other areas, obtaining the specific information necessary for management of the fisheries in the area does not seem possible without requiring the mandatory submission of catch and effort statistics.

I did not specify the method of data collection to be used in the western Pacific because the Council is best suited to deal with the difficulties of the problem and develop the most cost effective system. Mandatory log books is one way to obtain the desired information but it may not be the best method for the multispecies fisheries in the western Pacific. If the Council is able to propose a non-mandatory system that is as effective as a mandatory system in providing quality and timely data, I would certainly consider the system during the plan review process.

In conclusion, I do not believe that the report by the Council's staff presents convincing evidence that the proposed area closures will produce measurable benefits to domestic fishermen; therefore, the changes suggested for improving the FMP mentioned in my letter of January 21, 1982, are still applicable. In regard to data collection, I, the Southwest Region, and the Honolulu Laboratory are prepared to assist the Council in developing an effective fishery monitoring system to support the management of Pacific billfish.

Sincerely yours,

Roland Finch

for William G. Gordon
Assistant Administrator
for Fisheries

Enclosure

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

1164 BISHOP STREET - ROOM 1608
HONOLULU, HAWAII 96813
TELEPHONE (808) 523-1368

October 22, 1982

Alan W. Ford, Regional Director
Southwest Region
National Marine Fisheries Service
300 South Ferry Street
Terminal Island, California 90731

Dear Alan:

It's been several days now since I've read Bill Gordon's letter to me of October 5. In his letter, Bill clarified his statements made in American Samoa regarding billfish area closures, and advised me to work closely with the Southwest Region to achieve agreement on area closures and management measures that would be acceptable to the NMFS. He suggested that the Council may wish to consider a "compensatory payment system" (CPS) proposal as an alternative to the Council's area closure proposals which were rejected by the NMFS, and that he would be amenable to a joint recommendation from the Council and the Southwest Region on using a CPS approach for managing billfish in our FMP.

The idea of "compensatory payment" has a certain inherent appeal to it as it implies additional revenue to the federal government at a time of spiraling deficit federal spending. The CPS concept is not new to our Council. It was seriously discussed several years ago by the Council under the name of "value transfer fee." The idea of having foreign fishermen pay for billfish taken by them in the FCZ didn't get very far along because we were never successful in getting a definite opinion from the NMFS on whether a "value transfer fee" was legally defensible and compatible with the FCMA, and under what circumstances and to what extent could a "value transfer fee" be charged for billfish caught incidentally by foreign longline fishermen while fishing for tuna. Before reviving either the "value transfer fee" approach or some kind of a compensatory payment scheme, our Council needs to do some homework. Has CPS ever been applied successfully in any FMP that regulates the foreign incidental catch of species that are very important to American fishermen, and what are the chances of CPS being adopted in the amendments to the Atlantic and Gulf of Mexico Billfish PMP? The Council needs to find this out, and I would appreciate you sharing your views and expertise on the matter with me.

Mandatory reporting is another issue which was emphasized in Bill's letter. From NMFS experience in other areas, Bill doesn't seem to believe that obtaining specific information necessary for management of fisheries is possible without requiring the mandatory submission of catch and effort statistics. If the Council was able to propose a non-mandatory system of reporting or monitoring the domestic fishery that is as effective as a mandatory system, Bill said that he would certainly consider the system during the plan review process.

I certainly agree with Bill Gordon that a better system of managing billfish, mahimahi, and ono is needed compared to what we have now, and I am not certain how having a complete and completely reliable record of domestic catches and effort would result in better achieving the Council's objectives for the management unit species. Specifically how would the data on domestic catch and effort be used for management purposes and what would be the purposes of management. I simply cannot accept mandatory reporting for domestic fishermen until I can see how that would result in better management compared with what is proposed in the Billfish FMP.

Before the Council can make joint recommendations with you to Bill Gordon on CPS and on mandatory reporting, we need to have your advice and counde l on these matters. Please have your staff think about my questions and concerns and respond with advice and timely suggestions. With your help, we will have something substantive to talk about at the next Council Meeting now scheduled for December 6 and 7.

Sincerely,

Wadsworth Y. H. Yee
Chairman

APPENDIX B

Coastal Zone Management Program Consistency Determinations for Hawaii, Guam for American Samoa

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

KAMAMALU BUILDING, 250 SOUTH KING ST., HONOLULU, HAWAII
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GEORGE R. ARIYOSHI
GOVERNOR
KENT M. KEITH
DIRECTOR
MURRAY E. TOWILL
DEPUTY DIRECTOR
LINDA KAPUNIAI ROSEHILL
DEPUTY DIRECTOR

DIVISIONS
BUSINESS AND INDUSTRY DEVELOPMENT DIVISION
ENERGY DIVISION
335 Merchant St. Room 110 Honolulu, Hawaii 96813
FOREIGN-TRADE ZONE DIVISION
Pier 2, Honolulu, Hawaii 96813
LAND USE DIVISION
PLANNING DIVISION
RESEARCH AND ECONOMIC ANALYSIS DIVISION

OFFICES
DIRECTOR'S OFFICE
ADMINISTRATIVE SERVICES OFFICE
INFORMATION OFFICE

Ref. No. P-1693

May 20, 1985

Ms. Kitty M. Simonds
Executive Director
Western Pacific Fishery
Management Council
1164 Bishop Street, Room 1405
Honolulu, Hawaii 96813

Dear Ms. Simonds:

Subject: Revised Draft Fishery Management Plan for the Fisheries for Billfish and Associated Species in the U.S. Fishery Conservation Zone of the Western Pacific Region (FC/85-027)

We have reviewed the revised plan and agree with the Council's determination that it is consistent with the maximum extent practicable with Hawaii's CZM Program. Your continued cooperation in assuring compliance with the CZM consistency review process is greatly appreciated.

Very truly yours,

Murray E. Towill
for Kent M. Keith

cc: Mr. Doyle Gates, Director
Western Program Office
National Marine Fisheries Service

JUN - 3 1985

BUREAU OF PLANNING
GOVERNMENT OF GUAM
AGANA, GUAM 96910

MAY 30 1985

Ms. Kitty M. Simonds
Executive Director
Western Pacific Regional
Fishery Management Council
1164 Bishop Street, Room 1405
Honolulu, Hawaii 96813

Dear Ms. Simonds:

The Bureau of Planning has reviewed the Council's revised draft Fishery Management Plan (FMP) for the Fisheries for Billfish and Associated Species in the U.S. Fishery Conservation Zone of the Western Pacific Region and has found the document to be a comprehensive effort to provide a workable management tool for a most difficult fishery problem (i.e., providing tuna fishing access to foreign vessels while protecting domestic billfish, mahi mahi, and oceanic sharks fishing). The Bureau is in agreement with and supports the closure of 150 miles from shore of Guam's fishery conservation zone to foreign longline fishing as proposed by the Plan. This action is justified, as the Plan aptly states, because of the "clear need to improve the prospects of fishery development and self-sufficiency for the territory." Guam is not, at this time, in a position to be competitive with leading fishing nations; and our small resource base which is composed to a large extent of our surrounding waters must receive this type of consideration.

We find that this Plan is consistent with the policies of the Guam Coastal Management Program.

Thank you for the opportunity to comment on this Plan.

Sincerely,

Paul B. Souder

PAUL B. SOUDER

AMERICAN SAMOA GOVERNMENT
PAGO PAGO, AMERICAN SAMOA 96799
DEVELOPMENT PLANNING OFFICE

ECD
SERIAL: 0431

June 06, 1985

Ms. Kitty M. Simonds
Excutive Director
Western Pacific Regional
Fishery Management Council
1164 Bishop St., Rm 1405
Honolulu, HI 96813

Re: Revised Draft Fishery Plan

Dear Ms. Simonds:

We have looked at your revised plan and have found it to be consistant with the American Samoa Coastal Management Program policies and objectives. We feel the additional changes will, in the long run improve local fisheries development and management.

Thank you for the opportunity to comment on the plan and will look forward to receiving the final report in the near future.

Sincerely,

ALFONSO P. GALEA'I
Director

APG/TLY/ls

APPENDIX C

Legal Opinions and Advice

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Washington, D.C. 20230

THE ADMINISTRATOR

OCT 15 1979

Honorable John B. Breaux
Chairman, Subcommittee on Fisheries
and Wildlife Conservation
and the Environment
Committee on Merchant Marine and Fisheries
House of Representatives
Washington, D.C. 20515

Dear John,

Thank you for your letter in which you asked NOAA to provide the Merchant Marine and Fisheries Committee and the Regional Fishery Management Councils with legal advice concerning the authority, under the Fishery Conservation and Management Act of 1976 (FCMA), to regulate the incidental catch of billfish by Japanese longline tuna vessels in the U.S. 200-mile zone.

I have enclosed a legal analysis which provides guidance on factors to be considered when imposing regulations which may affect foreign longline vessels fishing for tuna.

In summary, the analysis concludes a billfish management plan may contain management measures which affect foreign longline fishing for tuna in the FCZ, including area closures and season or gear restrictions, if the measures will (1) provide a reasonable opportunity for foreign longline vessels to fish for tuna in the FCZ and (2) impose the least burden on such vessels that will achieve conservation and management of the billfish covered by the plan. A careful, case-by-case analysis of the purposes, scope, and effects of each management measure will be necessary to ensure consistency with the FCMA and the U.S. legal position concerning international management of tuna fisheries.

In our view a balancing test is appropriate for reviewing the legality of measures proposed for a management plan as a basis for regulating the incidental take of billfish by foreign longline vessels fishing for tuna.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, Maryland 20852

OCT 3 ..3

TO: GC - Eldon V.C. Greenberg

FROM: GCF - Jay S. Johnson

SUBJECT: Billfish Management under the Fishery Conservation and Management Act

ISSUE

Does the Fishery Conservation and Management Act of 1976, as amended (FCMA), authorize the use, in billfish fishery management plans, of conservation and management measures which affect foreign longline fishing for tuna in the fishery conservation zone (FCZ)?

CONCLUSION

Yes. A billfish management plan may contain management measures which affect foreign longline fishing for tuna in the FCZ, including area closures and season or gear restrictions, if the measures will (1) provide a reasonable opportunity for foreign longline vessels to fish for tuna in the FCZ and (2) impose the least burden on such vessels that will achieve conservation and management of the billfish covered by the plan. A careful, case-by-case analysis of the purposes, scope, and effects of each management measure will be necessary to ensure consistency with the FCMA and the U.S. legal position concerning international management of tuna fisheries.

BACKGROUND

Billfishes are taken by foreign tuna longliners in the FCZ as incidental catch (but not as target species of their directed fishery) and by domestic commercial and recreational fishermen both in incidental and in directed fisheries.

We have been asked by several of the Regional Fishery Management Councils and members of Congress to clarify the NOAA position concerning the management of billfish resources under the FCMA. Preliminary fishery management plans (FMP's) for Atlantic and Pacific billfish and sharks prepared by NMFS contain management measures that require foreign longline vessels to release billfish, alive or dead,

United States shall not include, nor shall it be construed to extend to, highly migratory species of fish. [Emphasis added.]

Fishing in the FCZ by foreign vessels is controlled under the FCMA by the requirement that such fishing be conducted pursuant to and in accordance with a valid permit. See sections 201(a) and 204(a). "Fishing" is defined in section 3(10) to mean -

(A) the catching, taking, or harvesting of fish;
(B) the attempted catching, taking, or harvesting of fish;
(C) any other activity which can reasonably be expected to result in the catching, taking, or harvesting of fish; or
(D) any operations at sea in support of, or in preparation for, any activity described in subparagraphs (A) through (C).

In view of this definition, the catching, taking, or harvesting of tuna in the FCZ is not "fishing" subject to FCMA regulation because tuna are not "fish." Nevertheless, when a vessel fishes for tuna in a way that can reasonably be expected to result in the catching, taking, or harvesting of billfish, it is engaged in "fishing" and is subject to FCMA regulation in order to achieve billfish conservation and management. The longline method of fishing for tuna, which unavoidably involves catching of billfish, presents such a case. To reconcile these FCMA provisions, regulation of the foreign longline take of billfish must be carried out so that it does not constitute the exercise of exclusive jurisdiction over tuna fishing.[2]

---

[2] The legislative history of the FCMA indicates that billfish were included in the FCMA's management authority because of a strong concern that the billfish stocks would be seriously affected if conservation measures could not be imposed. The legislative history also acknowledges the economic value which billfish may have to the United States. (See, e.g., House floor debate on H.R. 200, October 9, 1975, remarks of Congressmen Conte and Hughes, in Legislative History at pages 945-947 and 949 respectively; and Supplemental Views on H.R. 200, by Congressman Ginn in the Report from the Committee on Merchant Marine and Fisheries, H. R. Rpt. 94-445, in Legislative History at page 1135.)

> to maintain without change the existing territorial or other ocean jurisdiction of the United States for all purposes other than the conservation and management of fishery resources, as provided for in this Act [.]

This policy declaration signals other nations that they are not to interpret the FCMA as a manifestation of a change in the U.S. view on the international legality of extended territorial sea claims nor of coastal nation jurisdiction over tuna fishing, navigation scientific research and other activities in adjacent marine areas. With respect to tuna fishing, the United States has rejected exclusive coastal state jurisdiction and has supported management by international agreement. In fact, the United States participates with Japan, Canada and various other nations on international bodies established for the conservation of tuna pursuant to the International Convention for the Conservation of Atlantic Tunas (20 UST 2887; TIAS 6767) and the Convention for the Establishment of an Inter-American Tropical Tuna Convention (1 UST 230; TIAS 2044).

Of special significance concerning the billfish-tuna question is section 2(c)(2) of the FCMA, which states that it is the policy of the U.S. Congress -

> to authorize no impediment to, or interference with, recognized legitimate uses of the high seas, except as <u>necessary</u> for the conservation and management of fishery resources, as provided for in this Act [.] [Emphasis added.]

One of the traditionally recognized legitimate uses of the high seas is the freedom of fishing.[3] The 1958 Geneva Convention on the High Seas (13 UST 2312; TIAS 5200), to which the United States is a Party and whose provisions were adopted by the 1958 United Nations Conference on the Law of the Sea as "generally declaratory of established principles of international law," addresses such legitimate uses in

---

[3] The concept of freedom of fishing has been modified somewhat as a result of numerous recent claims by coastal nations to extended jurisdiction over various types of fishery resources. The United States takes the position that tuna is not subject to exclusive coastal nation jurisdiction.

Balancing of Tuna Exclusion and Billfish Conservation and Management

The ICJ opinion suggests the wisdom of a balancing test for assessing international legality where two international interests clash. Indeed balancing tests are customary in the U.S. domestic law wherever the enforcement of one legal interest seemingly conflicts with the enforcement of another, notably in cases involving constitutional rights. See, e.g., Landmark Communications v. Virginia, 98 S. Ct. 1535 (1978). In our view, given the importance of existing and potential international management regimes for tuna, a balancing test is particularly appropriate for reviewing the legality of billfish management plan measures which have the effect of regulating the incidental take of billfish by foreign longline tuna vessels. In the policies stated in sections 2(c)(1) and 2(c)(2), it appears that Congress intended that regulation which affects recognized legitimate uses of the high seas such as fishing for tuna may be undertaken only upon a showing of necessity for conservation and management of fishery resources over which the U.S. exercises exclusive fishery management authority.

In our opinion a billfish management plan may contain management measures which affect foreign longline tuna fishing in the FCZ, including area closures and season or gear restrictions. However, to be legal such measures must provide a reasonable opportunity for foreign longline vessels to fish for tuna in the FCZ, and must impose the least burden on foreign longline vessels fishing for tuna that will achieve conservation and management of the billfish covered by the plan.

The FCMA defines the term "conservation and management" as follows:

> The term "conservation and management" refers to all of the rules, regulations, conditions, methods, and other measures (A) which are required to rebuild, restore, or maintain, and which are useful in rebuilding, restoring, or maintaining, any fishery resource and the marine environment; and (B) which are designed to assure that -
>
> (i) a supply of food and other products may be taken, and that recreational benefits may be obtained, on a continuing basis;
> (ii) irreversible or long-term adverse effects on

- the expected effect of the measure,
- the factual basis for the expectation that the measure will achieve its intended purpose, and
- any alternative methods of achieving the same objective, explaining why the measure adopted is preferable to each alternative method.

Prepared by: James S.W. Drewry
Frances Liu

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

1164 BISHOP STREET - ROOM 1608
HONOLULU, HAWAII 96813
TELEPHONE (808) 523-1368

August 10, 1983

Martin B. Hochman
Office of General Counsel
NOAA, S.W. Regional Office
300 South Ferry Street, Room 2020
Terminal Island, California 90731

Dear Marty:

During the past several meetings, the Council has heard reports of increased purse seine and gillnet fishing in the western Pacific in the vicinity of the U.S. FCZ. The time has come for the Council to understand the legal limits of regulating foreign and domestic gillnet and purse seine fishing in the U.S. FCZ should the need to regulate these fisheries arise in the immediate future.

At our meeting in American Samoa I asked the Council's staff to put together a background report that would help your office clarify the degree and manner of regulation that can be legally applied through a FMP or a PMP to cover gillnet and purse seine fishing in the U.S. FCZ of the Western Pacific Region. The staff's report is attached for your use.

The Council would like to receive an opinion defining the legal status (standing) of both foreign gillnet and purse seine fishing in the U.S. FCZ. Is foreign purse seine fishing allowed in the U.S. FCZ because of the exemption of tuna from the MFCMA? Or is it an unauthorized (prohibited) activity in the absence of presently established TALFFs for the management unit species for purse seine gear?

With regards to domestic gillnet fishing, is there sufficient flexibility in the language of the MFCMA to allow making a case for restricting domestic gillnet fishing in the FCZ on the basis that gillnetting, if allowed, would likely be detrimental to U.S. interests in marine mammals and endangered and threatened species and to the presently established fishing interests in the management unit species? This seemingly was the rationale for prohibiting gillnet fishing for spiny lobsters in the NWHI. What is the U.S. Government's legal position on whether incidental catches made in the FCZ by domestic purse seiners can be regulated under the MFCMA through a permit system? Finally, does the Bolelo Decision affect the question of whether domestic purse seine fishing in the U.S. FCZ can be monitoried for incidental catches and catches of marine mammals by placing observers upon the vessels?

A COUNCIL AUTHORIZED BY THE FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976 (P.L. 94-265)

SEP 24 1983

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of General Counsel
Southwest Regional Office
300 S. Ferry St. - Rm. 2013
Terminal Island, CA 90731
Telephone: (213) 548-2756

September 22, 1983

Wadsworth Y. H. Yee, Chairman
Western Pacific Fishery Management
Council
1164 Bishop Street
Room 1608
Honolulu, Hawaii 96813

Dear Wads:

You have requested further guidance on the legal limits of regulating foreign and domestic gillnet and purse seine fishing in the United States Fishery Conservation Zone.

In one sense the guidance is simple and straightforward. The catching, taking, or harvesting of any fish other than tuna, or the use of any fishing gear which can reasonably be expected to catch, take, or harvest any fish other than tuna, is fishing under the Magnuson Act. The attempted catching, taking, or harvesting is also fishing under the Act. The Magnuson Act does not distinguish between direct and incidental catches in defining what constitutes fishing. Therefore, fish, other than tuna, caught by gillnets and purse seines are covered by the Magnuson Act, and the use of these gears is also covered if they can reasonably be expected to catch fish other than tuna. As you know, the Act explicitly states that "the exclusive fishery management authority of the United States shall not include, nor shall it be construed to extend to, highly migratory species of fish" (i.e., defined in the Act as certain tunas).

In dealing with foreign fishing, which is prohibited by the Act unless authorized by permit, the United States Government has consistently taken the position that both tuna longliners and tuna gillnetters can reasonably be expected to catch fish other than tuna, and therefore are required to obtain a permit from the United States under the Magnuson Act

under the Magnuson Act assuming a challenge. However, the Balelo decision, if unchanged, does raise some concerns over compelled observer placement under the Magnuson Act. Until Balelo is resolved, I recommend against making the compulsory taking of an observer aboard a domestic fishing vessel a key or indispensable element of an FMP.

Finally, you asked to what extent the need to protect marine mammals or endangered species could justify an FMP regulating domestic gillnetting. As in the Spiny Lobster FMP, the MMPA and the ESA are other applicable laws that an FMP must take into consideration. However, the FMP must be justified in Magnuson Act terms on the need to regulate a fishery. Only after the FMP satisfies the requirements of the Magnuson Act justifying a plan do the MMPA and ESA become relevant.

I think that I have responded to all of the questions raised in your letter. If further explanation is necessary, please let me know or advise Eileen Cooney who will be attending the upcoming Council meeting.

Dealing with tuna-related issues under the Magnuson Act can be very complicated and trying at times. With creativity and perseverance we should be able to solve the fishery management needs identified by the Council while still honoring the tuna "exclusion" in the Magnuson Act.

Sincerely,

Martin B. Hochman

Martin B. Hochman
Southwest Regional Counsel

cc: F/M - Carmen J. Blondin
F/SWR - J. Gary Smith
F/SWR1 - Doyle Gates
GC - Robert J. McManus
GCF - Jay Johnson

U.S. Department of Transportation
United States Coast Guard

Commander (oil)
Fourteenth Coast Guard District

Prince Kalanianaole
Federal Building
300 Ala Moana Blvd.
Honolulu, Hawaii 96850
Phone: (808) 546-7597

OCT 30 1985

16214
Serial 34147
30 OCT 1985

Mr. Wadsworth Y. H. Yee, Chairman
Western Pacific Regional
Fishery Management Council
1164 Bishop Street
Honolulu, HI 96813

Dear Mr. Yee:

During the months of August through October 1985, Coast Guard aircraft patrolled the Guam, Commonwealth of the Northern Mariana Islands (CNMI), Main and Northwest Hawaiian Islands Fishery Conservation Zones (FCZ). Coast Guard Cutters MUNRO and SASSAFRAS conducted extensive patrols of the Northwest Hawaiian Islands FCZ while BASSWOOD and CAPE GEORGE patrolled the Guam and CNMI FCZ. Eighteen foreign fishing vessels were observed compared with twenty-two during the same period last year. I regret that no patrols could be conducted in American Samoa this period; however, the cutter SASSAFRAS will visit that area in early 1986.

MUNRO and SASSAFRAS were able to board several vessels engaged in the Spiny Lobster Fishery. Generally, compliance with the minimum tail width requirement seems quite good, although some sub-legals were found on each vessel.

At the last council meeting I reported on the boarding of the KYOYO MARU NO. 12, a Japanese pole and line vessel which was retaining mahi mahi and wahoo within the FCZ. Since then we have worked with the Department of State to clarify our enforcement posture vis-a-vis pole and line vessels. It has been agreed that such vessels may only retain tuna. If the vessel has been operating within the U. S. FCZ and is retaining non-tuna, then seizure of all non-tuna is authorized. If the vessel is a previous offender or if the amount of non-tuna is unusually large, then additional sanctions may be imposed.

MUNRO was able to conduct an extensive boarding of a Japanese pole and line vessel in the Northwest Hawaiian Islands and found only tuna being retained. The vessel was averaging eight metric tons of tuna a day and planned to work inside the FCZ for 35-40 days. We continue to receive reports from domestic fishing vessels alleging that the Japanese pole and line vessels are bottom fishing on some of the banks in the NWHI. Although we have not been able to find any evidence of this type of activity, I welcome such reports and sightings from our domestic fishermen.

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

1164 BISHOP STREET - ROOM 1405
HONOLULU, HAWAII 96813
TELEPHONE (808) 523-1368
FTS 546-8923

March 21, 1986

Martin B. Hochman
Office of General Counsel
NOAA, SWR
300 South Ferry Street
Terminal Island, California 90731

Dear Marty:

Mel Makaiwi and I sat around in my office yesterday doing some reflecting on the past Council meeting. Mel seemed to think that he asked some rather specific questions but he got somewhat garbled answers on his questions. So I wrote down his questions yesterday and have incorporated them in this letter:

1. There are many American built purse seiners which frequent Pago Pago Harbor, many of which are registered under foreign flags. Are American-built but foreign-registered fishing boats considered to be foreign fishing vessels? And can they fish in the FCZ surrounding American Samoa without a permit? What is the U.S. policy on incidental catches made by foreign purse seiners in the U.S. FCZ? I know that the Coast Guard has agreed with the Department of State that all non-tuna species may not be retained on foreign pole-and-line vessels while fishing in the FCZ. Can I assume that the same policy holds true for foreign purse seiners, and that the Coast Guard can board foreign purse seiners for inspections? I would like to have something in writing on this point from the proper authorities.

2. Mel says that he frequently witnesses both foreign and American purse seiners offloading their catch directly onto foreign flag reefer ships for transshipping the catch probably to Puerto Rico or to Thailand when the Samoan freezers are jammed full and cannot handle any more fish.

It is Mel's understanding that the initial relaxation of the Nicholson Act was just to allow tuna to be delivered from foreign vessels to the tuna canneries. Mel's question is; was the initial relaxation of sufficient scope as to also authorize transshipping activities by foreign flag and foreign bottom vessels within the internal waters of the Territory of American Samoa?

A COUNCIL AUTHORIZED BY THE FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976 (P L 94-265)

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of General Counsel
Southwest Regional Office
300 S. Ferry Street - Room 2013
Terminal Island, CA 90731
Telephone: (213) 514-6180
FTS 795-6180

April 18, 1986

APR

Western Pacific Fishery Management Council

MEMORANDUM TO: WPFMC - Kitty Simonds

FROM: GCSW - Martin B. Hochman

SUBJECT: Mel Makaiwi's Questions

These are the answers to the questions you forwarded to me:

1. Are American-built but foreign-registered fishing boats considered to be foreign fishing vessels?

Answer - Yes.

2. Can they fish in the FCZ surrounding American Samoa without a permit?

Answer - No, unless they are catching tuna with pole and line or purse seine gear.

3. What is the U.S. policy on incidental catches made by foreign purse seiners in the U.S. FCZ?

Answer - They cannot retain non-tuna species which they catch in the FCZ.

4. Can the Coast Guard board foreign purse seiners for inspections?

Answer - Yes, in the FCZ and territorial sea of the U.S. By copy I am informing the Coast Guard of my response and they may choose to elaborate.

5. Can foreign flag, foreign bottom, and U.S. flag vessels transship fish onto foreign flag vessels within the internal waters of American Samoa?

Answer - Yes to my knowledge. Customs, and to some extent the Coast Guard because of its involvement with documentation and coastwise trade laws, are the agencies of the Federal Government responsible for the application of the Federal laws controlling this type of activity within

APPENDIX D

Foreign Longline Catches of Billfish and Tuna in the U.S. FCZ of Hawaii, Commonwealth of the Northern Mariana Islands, Guam, American Samoa and U.S. Possessions in the Pacific, 1973-1977

1973: FOREIGN LONGLINE CATCHES (METRIC TONS) OF BILLFISH AND TUNA IN THE U.S. FCZ OF HAWAII, COMMONWEALTH OF THE NORTHERN MARIANAS, GUAM, AMERICAN SAMOA AND U.S. POSSESSIONS

FCZ Surrounding:	Blue Marlin	Black Marlin	Striped Marlin	Sword-fish	Spearfish & Sailfish	Total Billfish	Total Tuna	Total Catch
Main Hawaiian Islands								
within 50 miles	1	0	3	2	6	6	24	30
within 100 miles	3	<1	7	3	1	14	84	98
within 200 miles	15	<1	38	14	13	80	748	828
Northwestern Hawaiian Islands								
within 50 miles	1	<1	8	5	<1	14	121	135
within 100 miles	4	<1	24	16	2	46	326	372
within 200 miles	18	1	78	89	10	196	980	11,762
TOTAL HAWAIIAN ARCHIPELAGO within 200 miles	33	1	116	103	23	276	1,728	2,004
Commonwealth of Northern Marianas								
within 50 miles	1	<1	1	1	<1	3	28	31
within 200 miles	7	<1	11	9	<1	27	145	172
Guam								
within 50 miles	<1	0	<1	<1	<1	<1	3	3
within 200 miles	7	0	1	1	<1	9	44	53
American Samoa								
within 50 miles	12	1	1	1	1	16	41	57
within 200 miles	106	10	21	12	6	155	496	651
U.S. Possessions within 200 miles	107	6	46	45	17	221	1,108	1,329
TOTAL WESTERN PACIFIC REGION within 200 miles	260	17	195	170	47	688	3,521	4,209

SOURCE: Data from Yong and Wetherall (1980). Catches of < 1 MT are not included in the totals.

1975: FOREIGN LONGLINE CATCHES (METRIC TONS) OF BILLFISH AND TUNA IN THE U.S. FCZ OF HAWAII, COMMONWEALTH OF THE NORTHERN MARIANAS, GUAM, AMERICAN SAMOA AND U.S. POSSESSIONS

FCZ Surrounding:	Blue Marlin	Black Marlin	Striped Marlin	Sword-fish	Spearfish & Sailfish	Total Billfish	Total Tuna	Total Catch
Main Hawaiian Islands								
within 50 miles	<1	<1	1	0	<1	1	17	18
within 100 miles	1	<1	3	<1	<1	4	39	43
within 200 miles	6	<1	23	7	7	43	306	349
Northwestern Hawaiian Islands								
within 50 miles	4	<1	18	4	2	28	346	374
within 100 miles	6	1	46	9	4	66	574	640
within 200 miles	14	1	70	27	7	119	856	975
TOTAL HAWAIIAN ARCHIPELAGO within 200 miles	20	1	93	34	14	162	1,162	1,324
Commonwealth of Northern Marianas								
within 50 miles	3	<1	3	5	<1	11	24	35
within 200 miles	14	<1	21	36	1	72	169	241
Guam								
within 50 miles	3	0	<1	<1	0	3	14	17
within 200 miles	36	<1	<1	1	<1	37	202	239
American Samoa								
within 50 miles	10	8	10	2	1	31	144	175
within 200 miles	38	28	31	7	6	110	562	672
U.S. Possessions within 200 miles	74	4	36	30	16	160	1,526	1,686
TOTAL WESTERN PACIFIC REGION within 200 miles	182	33	181	108	37	541	3,657	4,162

SOURCE: Data from Yong and Wetherall (1980). Catches of < 1 MT are not included in the totals.

1977: FOREIGN LONGLINE CATCHES (METRIC TONS) OF BILLFISH AND TUNA IN THE U.S. FCZ OF HAWAII, COMMONWEALTH OF THE NORTHERN MARIANAS, GUAM, AMERICAN SAMOA AND U.S. POSSESSIONS

FCZ Surrounding:	Blue Marlin	Black Marlin	Striped Marlin	Sword-fish	Spearfish & Sailfish	Total Billfish	Total Tuna	Total Catch
Main Hawaiian Islands								
within 50 miles	7	<1	8	4	1	20	228	248
within 100 miles	15	1	15	9	3	43	460	503
within 200 miles	37	1	31	25	8	102	1,070	1,172
Northwestern Hawaiian Islands								
within 50 miles	5	<1	23	11	1	40	384	424
within 100 miles	13	1	61	27	2	104	1,038	1,142
within 200 miles	26	2	113	57	5	203	2,304	2,507
TOTAL HAWAIIAN ARCHIPELAGO within 200 miles	63	3	144	82	13	305	3,374	3,679
Commonwealth of Northern Marianas								
within 50 miles	15	1	<1	2	<1	18	314	332
within 200 miles	63	4	2	13	1	83	1,377	1,460
Guam								
within 50 miles	14	1	<1	1	<1	16	314	330
within 200 miles	87	5	1	9	2	104	1,989	2,093
American Samoa								
within 50 miles	3	1	1	0	0	5	17	22
within 200 miles	23	7	5	1	3	39	230	269
U.S. Possessions within 200 miles	128	3	44	38	11	224	2,277	2,501
TOTAL WESTERN PACIFIC REGION within 200 miles	364	22	196	143	30	755	9,247	10,002

SOURCE: Data from Yong and Wetherall (1980). Catches of < 1 MT are not included in the totals.

APPENDIX E

Hawaii Commercial Marine License and Catch Report Forms

FG-1 (Rev. 7/85)

State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES

COMMERCIAL MARINE LICENSE
1985-1986

Effective: Date of Issue to June 30, 1986

LICENSE NO. 86- 0001

LICENSE FEE

RESIDENT _____ x $25 = _____

NON-RESIDENT _____ x $50 = _____

GRAND TOTAL _____

☐ RENEWAL ☐ INDIVIDUAL
☐ NEW ☐ VESSEL
☐ MAIL ☐ VESSEL AMENDMENT

Name (Last, First, Middle Initial)	Sex M ☐ F ☐	Birth Date	Weight	Height	Color of Hair	Color of Eye

Mailing Address	City	County/State	Zip

Residence	Street No. & Name	City	County/State	Zip

Birth Place	Length of Residence in Hawaii	U.S. Citizen? ☐ Yes ☐ No	Business Phone	Home Phone	☐ PART-TIME COMMERCIAL ☐ FULL-TIME COMMERCIAL**

CHECK:

☐ CREW MEMBER — Name of Boat

☐ BOAT CAPTAIN — Name of Boat _____
HA. No. _____
Documented No.: _____
Number of Crew: _____
Port of Anchorage: _____

☐ CHARTER

☐ SHORELINE FISHERMAN

Monthly Fish Catch Report Required?

☐ Yes ☐ No

METHOD OF FISHING (Rank in order of Usage. No more than 3)

____ Deepsea HL (opakapaka, onaga, ehu)
____ Trolling
____ Nets _____ Specify (gill, throw, trawl, purse, surround, etc.)
____ Traps (pot)
____ Ika-shibu/Palu-ahi
____ Inshore HL (akule, opelu, moana)
____ Spear
____ Hand-pick (limu, opihi, etc.)
____ Other (specify) _____
____ Aquarium (C-6)
____ Fish Pond (Pond)
____ Pole & Line (Aku boats) (C-4)
____ Longline (flagline, ahi boats) (C-5)
____ Other Longline (kaka line, set line)

AREA FISHED
☐ HI ☐ NWHI ☐ Other Specify _____

X _____
SIGNATURE OF LICENSEE

If Minor below age 18 _____
PARENT OR GUARDIAN

VALIDATION (LAND AND NATURAL RESOURCES USE ONLY)

AGENT _____

DATE _____ ISLAND _____

*ANY PERSON WHO HAS RESIDED IN THE STATE FOR ONE YEAR OR LONGER (HAWAII REVISED STATUTES § 189-2)
**ANY PERSON WHO DERIVES MORE THAN ONE-HALF OF HIS GROSS ANNUAL INCOME FROM FISHING.

"ORIGINAL TO LICENSEE"

DEPARTMENT OF LAND AND NATURAL RESOURCES

FISH CATCH REPORT

DIVISION OF AQUATIC RESOURCES
STATE OF HAWAII

1. Name of Licensee ..... 2. Commercial Marine License No. ..... 8 [ ] - [ ][ ][ ][ ]

3. Name of Boat ..... 4. HA No. H A - [ ][ ][ ][ ] - [ ][ ] 5. Federal No. [ ][ ][ ][ ][ ][ ]

6. Month Fished ..... 7. Year Fished —19 [ ][ ]

[ ] Place an "X" in the box if you did not fish

8. Day Fished	9. Area Fished	9a. Buoy Fished	10. Type of Fishing Gear Used	11. Species Caught	12. No. Caught	13. Lbs. Caught	14. Lbs. Sold	15. Value of Lbs Sold	16. Port of Landing

See Instructions on Page 1

C-3 (Rev. 3/1/84)

FOR OFFICE USE

LOGGED _____
EDITED _____
CODED _____
SUBMIT _____

The above report is true, correct, and complete to the best of my knowledge and belief.

17. Signature .....
Licensee or Authorized Agent

DEPARTMENT OF LAND AND NATURAL RESOURCES

FLAGLINE CATCH REPORT

DIVISION OF FISH AND GAME
STATE OF HAWAII

C-8

Name of Permittee .....

Fisherman's License No. .....

Month 19

Name of Boat .....

F.G. No. .....

No. of Baskets Used

Day of Landing	No. of Days at Sea	Area of Catch	Port of Landing	AHI (Yellowfin) 003			BIG EYE (Bluefin) 006			AHIPALAHA (Albacore Tombo) 004			STRIPED MARLIN 009			BLACK MARLIN 010			SHORT-NOSE MARLIN 107		
				No. Caught	Lbs. Caught	Value	No. Caught	Lbs. Caught	Value	No. Caught	Lbs. Caught	Value	No. Caught	Lbs. Caught	Value	No. Caught	Lbs. Caught	Value	No. Caught	Lbs. Caught	Value

Day of Landing	No. of Days at Sea	Area of Catch	Port of Landing	SILVER MARLIN 100			BROADBILL SWORDFISH 011			AU LEPE (Sailfish) 012			MAHIMAHI 013			ONO 014			OTHER (Give Name)*		
				No. Caught	Lbs. Caught	Value	No. Caught	Lbs. Caught	Value	No. Caught	Lbs. Caught	Value	No. Caught	Lbs. Caught	Value	No. Caught	Lbs. Caught	Value	Species Caught	Lbs. Caught	Value

NN-K-70

BAIT REPORT

LOCAL BAIT								IMPORTED BAIT									
OPELU**			OTHERS					MACKEREL (Scad) 96		SMELT 97		SARDINE 94		HERRING 95		OTHER 92	
Date Caught	Pounds Caught	Locality Caught	Species Bought	Date	Lbs. Bought			Date	Lbs. Bought	Date	Lbs. Bought	Date	Lbs. Bought	Date	Lbs. Bought	Date	Lbs. Bought

The reports contained hereon are true, correct, and complete to the best of my knowledge and belief.

Signature .....
Permittee or Authorized Agent

* If several species are taken on a trip, which are listed under "other," skip that number of lines when entering catch report for next trip.

** If opelu purchased from other fisherman write in "bought" under locality caught.

APPENDIX F

Biological Opinion Issued Under Section 7 of the Endangered Species Act

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Washington, D.C. 20235

F/SWR1:LDC

SEP 17 1985

SEP 23

Ms. Kitty M. Simonds
Executive Director
Western Pacific Regional Fishery
Management Council
1164 Bishop Street, Room 1405
Honolulu, Hawaii 96813

Dear Ms. Simonds:

Enclosed is the Biological Opinion prepared by the National Marine Fisheries Service (NMFS) pursuant to Section 7(b) of the Endangered Species Act concerning the potential impacts to endangered and threatened species associated with the implementation of the Western Pacific Regional Fishery Management Council's (WPRFMC) 1985 Revised Draft Fishery Management Plan for the Fisheries for Billfish and Associated Species in the U.S. Fishery Conservation Zone of the Western Pacific Region. Humpback, fin, and sperm whales, Hawaiian monk seals, and green, hawksbill, leatherback, and olive ridley turtles are the listed species under the jurisdiction of NMFS that occur within the activity area.

Based on the available information, we conclude that implementation of the plan is not likely to jeopardize the continued existence of any of the above species. Conservation recommendations are included to assist NMFS in obtaining data on sea turtle and marine mammal-fishery interactions.

Consultation must be reinitiated if (1) the amount or extent of taking specified in the incidental take statement is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (4) a new species is listed or critical habitat designated that may be affected by the identified

action. Critical habitat for the Hawaiian monk seal is presently under consideration by NMFS. Designation of critical habitat for this species will not require reinitiation of consultation.

Sincerely,

James E. Douglas, Jr.

for William G. Gordon
Assistant Administrator
for Fisheries

Enclosures

Endangered Species Act

Section 7 Consultation

Biological Opinion

AGENCY: Western Pacific Regional Fishery Management Council

Activities Considered During Consultation: Implementation of a Fishery Management Plan for Billfish and Associated Species in the Western Pacific.

Consultation Conducted by: National Marine Fisheries Service (NMFS), Southwest Region.

Date of Issuance: SEP 17 1985

Background:

By letter dated May 1, 1985, the Western Pacific Regional Fishery Management Council (WPRFMC) requested formal consultation under Section 7 of the Endangered Species Act (ESA) of 1973, as amended, to determine possible impacts on threatened and endangered species from its revised draft Fishery Management Plan (FMP) for Billfish and Associated Species in the Western Pacific. The request was made at the suggestion of the Southwest Region, NMFS, by letter dated April 22, 1985.

Proposed Activities

The draft FMP for Billfish and Associated Species proposes a conservation and management program for harvesting billfish, mahimahi, wahoo and oceanic sharks in the U.S. Fishery Conservation Zone (FCZ) of the central and western Pacific Ocean. The draft FMP presents management measures and reporting requirements to regulate the take of billfish, mahimahi, wahoo and oceanic sharks by foreign fishing vessels in the FCZ surrounding Hawaii, Guam, American Samoa and U.S. island possessions in the Pacific Ocean. The FMP proposes to prohibit the use of drift-gillnet gear except under experimental fishing permits issued by the NMFS. The revised draft FMP does not propose any other controls on the catches of billfish and associated species by domestic fishing vessels, but proposes strengthening of State and Territorial reporting requirements and data collection and sampling activities to better monitor domestic participation in the domestic fisheries for billfish and associated species. The proposed conservation and management program is intended to achieve optimum yield (OY) for the non-

tuna pelagic fisheries conducted in the FCZ of the Western Pacific Region.

Eleven management measures are proposed:

1. Area closures: The Council proposes that foreign longlining be prohibited in specific subareas of the U.S. FCZ of the Western Pacific Region to prevent incidental catches of billfish, mahimahi, wahoo and oceanic sharks on foreign longline gear. The specific FCZ areas to be closed to foreign longline fishing are as follows:

   a. Within 150 miles of the main Hawaiian Islands and Guam;

   b. Within 100 miles of the Northwestern Hawaiian Islands (NWHI) bounded by two parallel lines drawn north and south of the chain so that no point is closer than 100 miles from the shores of NWHI;

   c. Within a rectangle around the principal islands of American Samoa bounded by 14°S and 15°S latitude and 168°W and 171°W longitude and within a one degree (1°) square surrounding Swain's Island.

   d. Within 12 miles of any U.S. possession in the Pacific, excluding Midway Islands, which are considered part of the NWHI.

2. Permits: Foreign longline vessels would be required to obtain permits prior to fishing in the open areas of the FCZ.

3. Observers: Foreign longline vessels would be required to carry observers when so directed by the Regional Director, Southwest Region, NMFS, in accordance with the Magnuson Act.

4. Effort plans: Foreign longline vessels would be required to file effort plans two months prior to entering the open areas of the FCZ for fishing purposes.

5. Catch and effort limits: There would be no limit on the amount of fishing or the amount of catch which may be made by foreign vessels in the open areas of the FCZ.

6. Reporting: Foreign longline vessels would be required

to collect catch and effort data on forms provided by NMFS and to submit those data to NMFS within two months of leaving the FCZ. The Regional Director would have authority to require foreign longline vessels to submit data on interactions with marine mammals and sea turtles.

7. Gear restrictions: It would be prohibited for foreign and domestic vessels to use drift-gillnet gear to take any management unit species in the FCZ, except under an experimental fishing permit issued by the NMFS.

8. Data collection procedures: The NMFS would institute voluntary data collection procedures for establishing the magnitude of incidental catches of the management unit species made in the FCZ by foreign pole-and-line tuna vessels and by foreign and domestic purse seine vessels.

9. Annual reports: The Regional Director will prepare an annual report for the Council by March 31 of each year on the domestic and foreign fisheries under this plan in the previous year, including a summary of catches (by species), effort, areas of fishing and significant changes in the fisheries.

10. Domestic fishery restrictions: Existing State and Territory licensing and data reporting requirements would be retained and strengthened. No Federal reporting requirements would be added at this time.

11. Five-year review: The Council, in cooperation with the NMFS and State and Territory agencies, will conduct a full review of the FMP in 5 years. The review will assess the effectiveness of the plan in meeting the Council's objectives, the need to revise objectives, and the need for changes in any management measures, possibly including adjustments of the area closures.

LIST OF PROTECTED SPECIES THAT MAY OCCUR IN THE ACTIVITY AREA

Hawaiian monk seal (*Monachus schauinslandi*) - endangered

Green sea turtle (*Chelonia mydas*) - threatened

Hawksbill turtle (*Eretmochelys imbricata*) - endangered

Leatherback turtle (*Dermochelys coriacea*) - endangered

Olive ridley turtle (*Lepidochelys olivacea*) - threatened

Humpback whale (Megaptera novaeangliae) - endangered

Sperm whale (Physeter macrocephalus) - endangered

Fin whale (Balaenoptera physalus) - endangered

BIOLOGY AND DISTRIBUTION OF SPECIES

Hawaiian monk seal

The Hawaiian monk seal population was greatly depleted due to sealing and harassment in the nineteenth century. Historical records indicate that monk seals were utilized for oil and pelts during that time. Only the cessation of sealing and the monk seal's isolated habitat in the NWHI allowed the species to survive.

The breeding range of the monk seal is restricted to eight NWHI. They have been observed in waters around the main Hawaiian Islands and as far away as Johnston Atoll (420 nm SW of French Frigate Shoals). There is no evidence to indicate that the range has historically been significantly different from this, although Kenyon (1972) postulated that prior to the arrival of the Polynesians, monk seals bred on favorable beaches of the main Hawaiian Islands. Gerrodette (1985) presented a preliminary estimate for the total population of Hawaiian monk seals of 1,488 animals for 1983. Half of the total population was at French Frigate Shoals, and over half the births occurred there.

Humpback whale

The North Pacific humpback whale is the second most depleted whale in the Pacific. The entire population is estimated at less than 1,200 animals (Johnson and Wolman, 1984). An estimated 550-790 North Pacific humpback whales spend the winter and early spring months (December-May) in the nearshore waters of the main Hawaiian Islands (Rice and Wolman, 1979). An unknown number of North Pacific humpback whales were reported in the Northern Mariana Islands by Nishiwaki (1959). No current information on local population size or distribution in that area is available.

A small, unknown segment of the South Pacific population of humpback whales visits the nearshore waters of American Samoa during the austral winter (Kaufman, 1983). These whales are thought to be reproductively isolated from those visiting Hawaii and the Marianas.

Fin and sperm whale

Fin whale and sperm whale sightings are rare in the Hawaiian Islands (Shallenberger, 1981). The normal range of fin whales is north of the activity area, whereas sperm whales occur throughout the tropical Pacific (Leatherwood and Reeves, 1983), with recent sightings or strandings from Hawaii and American Samoa. The North Pacific sperm whale population is reported at 198,000 whales (Braham, 1984).

Sea turtles

Four species of sea turtles are known to occur within the activity area: green, hawksbill, olive ridley, and leatherback.

Green turtles are found throughout the Hawaiian Archipelago, though 90 percent of all nesting occurs at French Frigate Shoals. The number of females nesting there fluctuates annually, the mean being estimated as high as 300 from 1973 - 1982 (Balazs, 1980; Wetherall, 1983). The total mature female population at French Frigate Shoals is estimated at 750 animals.

The Hawaiian hawksbill turtle population is small and limited to the eight main islands. Nesting has been documented on the Big Island (Hawaii) and Molokai (Balazs, 1981). Sightings of leatherback turtles are common in offshore waters of the main islands, while the olive ridley is a rare visitor to Hawaii.

Green turtles have been observed feeding, but not nesting, at Johnston, Wake, and Palmyra. Sea Turtles (presumably green) were reported as abundant on Howland in a 1935 report (Balazs, 1981). At Jarvis, low level nesting was recorded in 1935 (again, presumably green). Both green and hawksbill turtles nest and feed at American Samoa (Tutuila, Swains, and Rose Atoll) and Guam (Balazs, 1981; Pritchard, 1981). Pritchard reported little, if any, nesting of sea turtles in the Marianas, though green, hawksbill and olive ridley are found there.

No sea turtle population estimates are available for any of the island groups within the activity area.

Potential impacts on species

Neither the fin whale nor sperm whale has any history of interactions with any of the proposed allowable gear in the central or western Pacific. In the North Pacific, there is one account of a sperm whale systematically robbing bottomfish from a foreign longliner - but this is undoubtedly a very rare behavior. While humpback whales are regularly entangled in nearshore gillnets in the northwest Atlantic, there are no

records of entanglements or any other fishery interactions in the activity area.

Monk seals may remain at sea for up to two weeks before returning to rest on land for several days. How far they range from shore is not known, but as previously noted, they have been sighted up to 420 nm away from the NWHI. The potential for entanglement in fishing gear exists and has been reported by Henderson (1984) in the NWHI. A large percentage of the incidents of seal entanglements observed since 1974 have involved weaned pups, who are more likely to explore objects in their environment than older animals. One of the objectives of the Hawaiian Monk Seal Recovery Plan (U.S. Department of Commerce, 1983) is to document and, where possible, mitigate the direct and indirect effects of human activities on monk seals. The FMP's provisions are consistent with this goal. Under the FMP, the use of drift-gillnets would be allowed only under an experimental fishing permit issued by the NMFS, thus reducing the risk of entanglement of marine mammals and sea turtles in the FCZ of the western Pacific, both during active fishing and (possibly) from discarded or lost gear.

Incidental capture by longliners of green, leatherback, and olive ridley turtles is documented from the central and western Pacific (Balazs, 1982). In a later paper, Balazs (1984) noted fishing related debris (monofilament net and line) entanglement of green, hawksbill, and olive ridley turtles in the central Pacific.

Witzell (1984) estimated incidental capture of sea turtles by the Japanese tuna longline fleet in the Atlantic U.S. FCZ for 1978-81. A total of 330 turtles (leatherback, green, Kemp's ridley, and loggerhead) were estimated taken on 28,360,191 hooks over this four year period. Of interest was the difference in number of turtles taken per 10,000 hooks - 0.07288 for the Atlantic, 0.18047 for the Gulf of Mexico. Survivorship (percentage of turtles released alive) was good in both areas - 70.44 percent in the Atlantic, 93.3 percent in the Gulf of Mexico.

Because reporting of incidental capture of turtles and marine mammals in the fishery presently occurs only occasionally, the FMP authorization for the Southwest Regional Director to require all foreign longline vessels to report such data as are necessary to monitor the fishery, including data on marine mammal and sea turtle interactions in the FCZ, could benefit all listed species mentioned. Besides increasing the knowledge of the distribution of rare species such as the olive ridley turtle, reporting of interactions would allow a quantitative assessment of the incidental take for all turtle species - something not

presently possible. The NMFS forms for foreign longline catch reports will include information elements for interactions, including species, location of interaction, date, circumstances, and condition of animal on return to sea. Permit conditions will include a statement that every effort must be made to return turtles and marine mammals to the sea alive, with as little harm as possible.

Conclusions

Our evaluation of the available information indicates that the management elements proposed under the FMP are not likely to jeopardize the continued existence of any of the listed species in the activity area. Strengthening the reporting requirements may benefit listed sea turtles by documenting a currently unknown incidental take.

Reinitiation of Consultation

Reinitiation of formal consultation is required if (1) the amount or extent of taking specified in the incidental take statement is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the identified action. Critical habitat for the Hawaiian monk seal is presently under consideration by NMFS. Designation of critical habitat for this species will not require reinitiation of consultation.

CONSERVATION RECOMMENDATIONS

There is currently no information available on the level of incidental take of sea turtles in the domestic longline fishery. In order to help define the level of incidental take in the activity area, the FMP should provide authority for the Southwest Regional Director to require submission of reports of marine mammal and sea turtle interactions by domestic longline, baitboat, and other gear users and other foreign gear users taking management unit species in the FCZ if such data are not being made available on a voluntary basis.

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Statement Regarding Incidental Taking Pursuant to Section7(b)(4) of the Endangered Species Act of 1973, as Amended

Section 7(b)(4) of the Endangered Species Act requires that when a proposed agency action is found to be consistent with Section 7(a)(2) of the Act and the proposed action is likely to take individuals of some species incidental to the action, the NMFS will issue a statement that specifies the impact (amount or extent) of such incidental taking, and will provide reasonable and prudent measures that are necessary to minimize such impacts. Terms and conditions that must be complied with are set forth to implement those measures.

By definition, a marine mammal species or population stock which is listed as threatened or endangered under the ESA is also considered depleted under the Marine Mammal Protection Act of 1972 (MMPA). Under the MMPA, there is no allowable take other than for research for any species listed as depleted. Since the taking of Hawaiian monk seals and whales is thus prohibited, no Section 7(b)(4) statement for these species can be provided.

The available information indicates that incidental taking of listed sea turtles occurs in pelagic longline fisheries in the central and western Pacific. All turtle species affected by this proposed action have been reported either entangled in gear or hooked on deployed gear. However, there are no data on the level of take in these fisheries, the total numbers taken, total mortality, or projected fishing effort. Furthermore, population estimates for turtle species within the areas affected by the FMP are also unavailable. Thus, it is not possible to determine an expected level of take for sea turtles. However, acceptable levels of incidental take for green turtles (Chelonia mydas), Pacific ridley turtles (Lepidochelys olivacea), leatherback turtles (Dermochelys coriacea) and hawksbill turtles (Eretmochelys imbricata) have been determined. The acceptable levels of take are based upon the conservation measures of the FMP, the available data on sea turtle distribution, descriptions of the interactions with the fisheries involved, and reports of interactions in other fisheries.

An acceptable annual level of take in the foreign and domestic longline fisheries covered by the FMP in the western Pacific is 50 individuals of each species. Of these 50 takes, mortality shall not exceed 25 animals for each species. The terms and conditions that must be complied with are (1) the date of take and accounts of mortality must be provided to NMFS as described in the preceding Biological Opinion, and (2) every effort must be made to return the turtles to the sea alive, with as little harm as possible. The reports and other available

information will be evaluated annually by NMFS to determine whether or not the incidental take level should be modified or if other measures are necessary to minimize impacts.

Should the level of total take or morality be exceeded for any species in any year, then consultation must be reinitiated at that time.

JUN - 4 1985

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P. O. BOX 50167
HONOLULU, HAWAII 96850

IN REPLY REFER TO:

MAY 31 1985

Ms. Kitty M. Simonds
Executive Director
Western Pacific Regional Fisheries Council
1164 Bishop Street, Room 1405
Honolulu, Hawaii 96813

Dear Ms. Simonds:

This responds to your May 2, 1985 letter requesting initiation of formal Section 7 consultation with us relative to the Draft Fishery Management Plan For The Fisheries For Billfish And Associated Species In The U.S. Fishery Conservation Zone Of The Western Pacific Region of April, 1985. Formal Section 7 consultation was also initiated by you with the National Marine Fisheries Service (NMFS).

Sections 6.7.2 and 9.3 address both endangered and threatened species which may be found and/or impacted by the planned actions. Section 9.3, however, states that "Before undertaking an action, a Federal agency must request consultations under Section 7 of the ESA . . . as appropriate". This may be misleading; Federal agencies are required to consult with the NMFS or the FWS only if it is determined that such action(s) may affect a listed species. After reviewing the draft plan, it is our belief that implementation of the plan will not affect any listed species under our jurisdiction (this would include the sea turtles when they are on land, but not when they are in the water). As such, no further formal discussion vis-a-vis Section 7 with this Service is required unless new information becomes available which would indicate a "may affect" situation.

Thank you for letting us review this draft in light of Section 7. We will copy this letter to NMFS, and will assist them if needed in their review.

Sincerely yours,

Allan Marmelstein
Pacific Islands Administrator

cc: Administrator, NMFS, Western Pacific Program Office, Honolulu, H

CONSERVE AMERICA'S ENERGY

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APPENDIX G

Comments on the Revised Draft Fishery Management Plan (April 1985) for the Fisheries for Billfish and Associated Species in the U.S. FCZ of the Western Pacific Region

This appendix summarizes testimony received on the revised draft FMP (April 1985). The revised plan was reviewed at public hearings conducted in Hawaii, in Guam, and in American Samoa. In addition, letters were received from government agencies, environmental organizations, and private fishing interests. The section below responds to the comments received during the plan's review period.

Summary of Public Comments With Responses

1. **Comment**: Drift-gillnet fishing by domestic vessels in the FCZ should not be prohibited. Rather, domestic drift-gillnet fishing should be tightly controlled and monitored through an experimental fishing permit issued by the Regional Director of the Southwest Region, NMFS.

   Commenters: NMFS S.W. Region, NOAA General Counsel S.W., California Gillnetters Association and Guam Fisherman.

   Response: The Council agrees with the Commenters' suggestion although there is local opposition to drift-gillnet fishing in the FCZ of the Western Pacific Region in general.

2. **Comment**: Foreign and domestic purse seiners and foreign pole-and-line tuna vessels should not be required to get a permit for fishing in the FCZ or be required to report their incidental catches of the management unit species.

   Commenters: State Department, NMFS, NOAA General Counsel S.W.

   Response: The Council agrees and has asked the State Department to seek information on by-catches made by these classes of vessels through voluntary means. The Council will consider making reporting of incidental catches mandatory if suitable data on the nature and magnitude of incidental catches are not received within one year of the effective date of the FMP.

3. **Comment**: There is a continuing issue of whether or not the information presented in the FMP supports the conclusion that the proposed closed areas for foreign longline fishing will result in sufficient benefits to the domestic fisheries for billfish, mahimahi, wahoo, sharks and tuna to satisfy the "balancing test" in NOAA's legal opinion. There is an absence of "proof" in the FMP regarding the relationship between foreign (longline) fisheries and the domestic fisheries. The FMP does not identify precisely how a reduction in foreign longline fishing effort under these closures will be translated into increased availability of billfish to U.S. fishermen. A balancing test should be employed in the review of the legality of proposed measures which regulate the incidental catch of foreign tuna longliners.

Commenters: **NMFS, NOAA General Counsel S.W., State Department.**

Response: Skillman and Kamer (1985) examined whether there is a relationship between Japanese longline fishing effort in the FCZ and abundance (CPUE) estimates for blue and striped marlin derived from different domestic gear types. They found that increases in foreign longline fishing in the FCZ are associated with decreases in the abundance of blue and striped marlin available to the domestic fisheries and vice versa. Skillman and Kamer's correlation analyses indicate an apparent catch competition effect between the foreign longline and the domestic fisheries operating in the FCZ. This finding is incorporated in the FMP. The extent or size of the FCZ to be closed to foreign longline fishing is a judgement call. The Council does not feel that a closure of 25% of the U.S. FCZ of the Western Pacific Region to foreign longline fishing is excessive nor out of balance with the balancing test in NOAA's legal opinion.

4. **Comment:** The very vast and substantial area closures to foreign longline fishing are against the tuna exclusion provisions of the Manguson Act. Japanese tuna longliners operating in the U.S. FCZ of the Western Pacific Region should be exempted from observer boarding requirements in accordance with Sec. 201(i)(2) of the Magnuson Act.

Commenters: Federation of Japan Tuna Fisheries Co-Operative Associations.

Response: Three-quarters of the U.S. FCZ of the Western Pacific Region would be open to foreign longline fishing under the FMP. The Council is willing to exempt observer coverage on Japanese longline vessels to the extent which the Magnuson Act allows.

5. **Comment:** Many reviewers questioned the need for the FMP. There is a lack of a clear demonstration of the need for a plan, not withstanding that the PMP has not had the expected and intended effects. In view of the fact that no foreign tuna longline and purse seine vessels are operating in the FCZ of the Western Pacific Region at the present time, it is questionable whether the benefits of the FMP will outweigh the costs.

Commenters: **NMFS and the State Department.**

Response: Need is in the eye of the beholder. More than 6 years have passed since the PMP has been implemented and nothing has happened since then. The Council is trying to create some movement in place of the present intertia. The need for the FMP has been stated over again in many places of the document, and several new tables have been added to better illustrate the benefits and costs of alternative management measures. The Council feels that it has said as much as it is possible to say about the need for the FMP relative to the PMP and all other alternatives considered without violating the spirit of the Paper Work Reduction Act.

6. **Comment**: The FMP should explicitly state why the U.S. FCZ of the Commonwealth of the Northern Marianas Islands and the mainland West Coast are not covered by the FMP, and that the PMP would continue in effect in these areas. It should also be noted that while Midway Island is a possession of the U.S., it is being treated as if it is a part of the State of Hawaii for the purposes of the FMP.

Commenters: NMFS, NOAA General Counsel S.W.

Response: This has been done.

7. **Comment**: The FMP should grant the authority to the Regional Director S.W. Region, NMFS, after consultation with the Council and affected State or Territory Agencies to implement mandatory reporting requirements for domestic fishermen if he should determine that the data being collected and provided through existing reports or surveys are insufficient for the Annual Report or Five-Year Review called for by the FMP.

Commenters: NMFS and NOAA General Soursel S.W. Region.

Response: If the Plan Monitoring Team determines that the data being provided through existing channels and planned surveys are not sufficient for the Annual Reports or Five-Year Review required by the FMP, then the Plan Monitoring Team shall make a recommendation to the Council to require the submission of such reports under Federal or State or Territorial authority.

8. **Comment**: A separate subsection should be prepared to serve as an environmental assessment. A second subsection could be prepared summarizing benefits and costs of the proposed action in terms of E.O. 12291 requirements. Some analyses is necessary to satisfy the requirements of the Regulatory Flexibility Act. Numerical estimates of MSY, OY, and TALFF should be provided, if at all possible for the management unit species. The text of the FMP could be revised to show more clearly the present and social significance of the pelagic fishery resources used by the islanders. Draft regulations and CZM Consistency Determinations should be included with the proposed FMP.

Commenters: NMFS and NOAA General Counsel, S.W. Region.

Response: All of this has been done.

9. **Comment**: A description of the Five-Year Review called for by the FMP should be included indicating which factors are to be considered and how each factor is to be evaluated for making changes in the management measures such as area closures.

Commenters: NMFS.

Response: This has been done. Catch-per-unit of effort (CPUE) will be the factor of most importance in monitoring the performance of both the foreign and domestic fisheries which take the management unit species in addition to tuna. One cannot stipulate beforehand the magnitude of changes in CPUE for the management unit species and their duration which would "trigger" changes in the area closures to foreign longline fishing or other FMP changes. It's a bit like over-eating. One really can't define it precisely before hand, but you know it when you're there.

10. **Comment**: It could be made clear whether there will be additional Federal or State and Territory costs associated with FMP.

Commenters: NMFS.

Response: Coast Guard surveillance schedules and budgets (Table 10.1) will remain essentially the same whether this FMP goes into effect or not. The costs involved in monitoring catch and effort in the fisheries for pelagic species and deriving CPUE for the management unit species are not large. The Honolulu Laboratory of the NMFS and State and Territorial fisheries agencies have the resources on hand which are capable of monitoring the pelagic fisheries in each of the island areas served by the Council. There will be no additional costs involved in monitoring the fisheries for pelagic species. In-place mechanisms will be relied upon. The level of success that the Plan Monitoring Team will have in meeting the specifications of the Annual Reports and the Five-Year Review depends on how much of the existing resources of the Honolulu Laboratory of the NMFS and State and Territorial fisheries agencies will be committed and made available to the Plan Monitoring Team for its work.

Domestic fishermen who spoke up at the public hearings on the revised draft FMP were all supportive of the management measures being proposed. The Division of Aquatic Resources (DAR), State of Hawaii called the FMP "elegant" compared to the FMP. The Guam Division of Aquatic and Wildlife Resources provided the Council with information to better describe the local fisheries for pelagic species in Guam in greater detail than was described in the draft FMP. The Coastal Zone Management (CZM) agencies of Hawaii, Guam, and American Samoa agreed with the stated need of the FMP and that the FMP is consistent to their CZM program.

8.9.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
300 South Ferry Street
Terminal Island, California 90731

JUL 26

July 22, 1985 F/SWR31:SF

Mr. Wadsworth Y.H. Yee
Chairman
Western Pacific Fishery Management Council
1164 Bishop Street, Suite 1405
Honolulu, HI 96813

Dear Wads,

National Marine Fisheries Service (NMFS) and NOAA General Counsel staff have reviewed the Revised Draft Fishery Management Plan for the Fisheries for Billfish and Associated Species (Draft FMP). The Draft FMP is generally consistent with the approach to which I agreed in December 1984. With the modifications discussed in the attached comments, the FMP in my opinion would be approvable by NMFS, and I would support its implementation by Federal regulations.

I look forward to discussing the Draft FMP with the Council in August. Southwest Region and Center staff assistance will be available to help the Council complete the proposed FMP and associated documentation if necessary.

Sincerely yours,

for E.C. Fullerton
Regional Director

Enclosure

SWR and HQ Comments on Revised Draft FMP

Critical

1. Need for the FMP - The Region supports adoption of a FMP, but many reviewers questioned the need for the FMP, notwithstanding that the PMP has not had the expected and intended effects. The reviewers indicated that in their view the analyses of benefits and costs needs to be improved. To some extent this reflects the structure of the FMP; to some extent, the absence of data and of "proof" regarding the relationships between foreign and domestic fisheries. Sections 3.2, 3.4, and 7 provide most of the information necessary, but the presentation could be improved. For example, a summary table comparing the alternatives narratively described in Section 7.3.2 would be helpful in defining the benefits and costs of alternative foreign area closures. Another table comparing the more general alternatives described in 7.3.1 in terms of the Council's objectives would be useful.

Two other items which would help establish the need for the FMP and support the area closures are:

a) The FMP should indicate that 19 Korean tuna longliners have applied for permits to fish in the FCZ in 1985. Some of these vessels are large, (up to 494 gross tons). The applications demonstrate continuing interest in the FCZ, and fishing by these vessels in non-retention zones would result in a waste of billfish.

b) The FMP should contain as much information as possible to support the conclusion that the area closures will result in increased domestic catches. An expanded discussion (p. 69) of the work done by Skillman and Kamer (1985) would support the conclusion that domestic catches are expected to increase.

2. Data Collection

a) While mandatory submission of catch and effort data by foreign tuna longliners poses no problems, the collection of fishery data, including bycatch of management unit species, from foreign and domestic pole-and-line and purse seine tuna fishing vessels, can only occur on a voluntary basis unless it can be proven that their bycatches constitute "fishing" under the Magnuson Act. We can support the requirement that foreign longline vessels submit catch and effort data. Non-longline vessels, however, would not be required to submit data, nor would their fishing in the FCZ be conditioned on agreeing beforehand to submit such data. The FMP should identify the data needed and indicate the Council's expectation that the NMFS, in cooperation with foreign and domestic industries and the Department of State, will obtain the data for the Council's use to the extent possible.

b) The NMFS strongly supports the general concept of building upon State and Territory data systems to provide data to monitor the fisheries and evaluate conditions under the FMP. The measures proposed in the FMP (pp. 196-199), if adopted, are expected to result in improvements in both the quality and the quantity of data without adding Federal data reporting requirements.

Nonetheless, there may be a need for Federal data reporting requirements in the future. We propose that the Council's FMP include authority for the RD, after consultation with the Council and affected State or Territory agency, to implement data reporting requirements if he determines that the data being provided through existing reports or surveys are not sufficient for the annual reports or five year review called for by the plan. This would allow implementation of the necessary requirements without a plan amendment.

3. Prohibition of Gillnetting - The draft FMP identifies the problems associated with the domestic use of gillnets elsewhere (p. 176-177) and with the foreign use of gillnets (p. 147). The desire of the Council to prevent such problems in the FCZ is apparent and reasonable, and the prohibition of foreign gillnetting could be supported with an expansion of Section 611.1 to present data on the species caught by a Japanese drift gillnet vessels seized in March 1983. However, a total prohibition of domestic gillnet fishing may not be necessary. We propose that the FMP include a provision for the Regional Director to issue experimental fishing permits to allow controlled use of drift gillnets to determine catch and catch composition rates. A procedure to issue such permits is part of the Pacific Groundfish FMP and includes consultation with the Council and State agencies. This may be adaptable to the pelagics FMP.

4. Commonwealth of the Northern Mariana Islands (CNMI) - The Draft FMP notes that the FCZ includes waters around the CNMI, but no management measures are proposed. This is understandable given the political realities concerning the CNMI position on the FCZ, the fact that the CNMI has not been sitting as an

active member of the Council, and the absence of any NMFS guidance on this subject to date. We propose, however, that the FMP more clearly state at the beginning of the plan the U.S. position regarding the applicability of the MFCMA to the CNMI. The FMP also should describe the reasons for the Council not making any recommendations for management in this part of the FCZ and should point out that the PMP would continue in effect in this part of the FCZ. We recomemnd that the remarks by CNMI Covernor Pedro Tenorio to the Council at its meeting on Saipan May 6, 1985, be included as an Appendix to the FMP.

5. Documentation Requirements - We recommend two format changes to address documentation requirements. First, a separate subsection could be prepared to serve as an environmental assessment, much as the final Spiny Lobster FMP (April 1982) had a separate chapter (Section 15) dealing with the FEIS aspects. A second subsection could be prepared summarizing benefits and costs of the proposed action in terms of E.O. 12291 requirements. This could include references to other relevant sections of the FMP. These modifications should make it easier for headquarters staff to demonstrate to reviewers at higher levels that the FMP is needed and that the measures proposed are justified.

It also would be very helpful to include a fairly detailed description of the five-year review (item 7, page 23), which is to provide a basis for considering major changes in management measures such as area closures. This description should indicate the factors which are to be considered, the

relative importance of each factor, and how each factor will be evaluated and compared in the Council's decision-making process. This description would help reviewers understand the Council's intent to provide a high degree of protection to domestic fishery interests until it can be established with more certainty whether more or less such protection is justified. Also, this description would be helpful in determining additional research and data collection needs and establishing programs to satisfy such needs.

6. MSY Determinations - The FMP includes references to many sources of information on mahimahi, wahoo, and oceanic sharks. Nonetheless, no attempt is made to define the maximum sustainable yield (MSY) for those species/groups (page 184). In the absence of scientific determinations of MSY, we recommend that the FMP adapt the language of the PMP to provide at least qualitative definitions of MSY for mahimahi, wahoo, and oceanic sharks.

7. Draft Regulations and CZM Consistency Determinations - These should be included with the proposed FMP.

Substantive

1. Section 6.23 on "Economic, Social and Cultural Importance of the Domestic Fisheries" could be revised to show more clearly the present economic and social significance of the fisheries, e.g., employment in fishing in the insular areas, and to address the traditional uses of the fishery resources by islanders. A summary of the data presented in sections 6.13 through 6.20 would be very helpful in this regard. If there is little "traditional" use

for management unit species, as appears to be the case, this should be stated.

2. The FMP should state, probably in the introduction, and perhaps again on page 51 (end of paragraph one), that foreign longlining for billfish in the FCZ off the U.S. West Coast (as well as the CNMI) will continue to be regulated under provisions of the present PMP. A decision was made years ago to exclude the West Coast from the FMP.

3. In Section 3.1.d (page 22) and in Section 7.1.1.d. (page 138), it should be noted that while Midway Island is a possession of the United States, for the purpose of the FMP Midway Island is being treated as if it is part of the State of Hawaii.

4. The FMP states on page 24 that it is not necessary for foreign fishermen to avoid the FCZ entirely. The statement seems to contradict the argument (p.36) that keeping foreign fishermen away from domestic fishermen will increase the harvest of billfish by domestic fishermen and that maximum benefits are most likely with a complete closure. This argument probably should be limited to waters around populated areas because there is no apparent benefit to U.S. fisheries from keeping vessels out of the FCZ around possessions (except Midway Island).

5. The FMP discussion of enforcement and administrative costs could be improved in several ways. First, it could be made clear whether there will be additional Federal or State and Territory costs associated with the strengthening of State and Territory management (page 26). This would clarify

what is meant by saying that State and Territory management would be strengthened. Second, to the extent information is available, the FMP should identify present Federal, State and Territory costs of management and data collection and processing relative to the management unit species. This would provide a benchmark against which to compare the costs of changes in management approaches. Third, the FMP could present estimates of the data collection and processing workload (.e.g, number of data sheets processed per year) under different data reporting approaches (e.g., status quo, mandatory reporting for all fishermen, surveys for voluntary collection of data). This would help clarify what is meant by the statement that complete reporting could well "overwhelm" the existing data systems (page 171) and by the conclusion that it is "premature to propose major adjustments in current State and Territorial data reporting requirement" (page 172).

6. In the second paragraph on page 37, mention is made of areas of high blue marlin catches. The areas of concern should be identified and the reader should be directed to supporting information.

7. The Council should consider the potential for establishing area closure by coordinates rather than by distance from shore to simplify enforcement.

U.S. DEPARTMENT OF COMMERCE
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Office of General Counsel
Southwest Regional Office
300 S. Ferry St., Room 2013
Terminal Island, CA 90731
Telephone: FTS 796-2756

MEMO TO: Members of The Western Pacific Fishery Management Council

FROM: GCSW - Martin B. Hochman, NOAA Regional Counsel

SUBJECT: Legal Comments on the April 1985, Draft of the FMP For Billfish and Associated Species.

1. The single most significant legal issue in the FMP is one which was fully addressed in my January 22, 1982 legal opinion on the previous FMP submitted for approval, the justification for the size of the closed areas in view of the balancing test. Although the present draft may well say as much as it is possible to say about the subject, there is the continuing issue of whether or not the information in the FMP supports the conclusion that the proposed closed areas for foreign longline fishing will result in sufficient benefits to domestic fisheries for billfish, mahimahi, wahoo, and sharks to satisfy the balancing test.

2. The jurisdictional status of pole and line and of purse seine vessels is inconsistent within the plan. Either they are engaged in "fishing" in Magnuson Act terms as a consequence of bycatches of non tuna species and are therefore subject to permits and regulatory measures satisfying the balancing test, or they are not "fishing" and can not be required to have permits nor to submit data. (Under the foreign fishing regulations non-permitted vessels cannot legally catch and retain regulated species in the FCZ, and any regulated species aboard a non-permitted vessel fishing in the FCZ is rebuttally presumed to have been caught illegally in the FCZ).

3. If straight (i.e. - not necessarily "parallel") lines to delineate the boundary of the closed areas is more easily followed and enforced for the NWHI, what about the use of straight lines for the other closed areas?

4. The N.M.I. is not included in the FMP. Leaving only the N.M.I. and the mainland West Coast in the PMP may be awkward. This is something NMFS and the Council may want to discuss.

5. The definition of "charter boat," saying the boat may not sell the fish, isn't consistent with Hawaii practice I think, so this should be checked.

6. The justification for banning foreign and domestic gillnets should be consolidated and butressed with as many reports and support as possible to provide a sufficient basis for the complete ban. Conclusory assertions alone won't support a ban. Why ban gillnets and not longline gear?

7. Perhaps an experimental fishing permit mechanism would be useful in the FMP to allow trial use of drift gillnets under controlled conditions.

8. While non-numeric MSY, OY, and TALFF determinations are justified in my opinion in the unique situations presented in this FMP, numerical estimates should be provided if at all possible (they were in the previous FMP).

9. Some analysis is necessary to satisfy RFA requirements (p. 192).

10. Authorization for Federal data requirements should be provided in case the state/territorial systems can not provide what is necessary for the FMP.

11. A definition should be provided for Joint Venture Processing.

12. Some of pp. 8-9, is duplication.

13. TALFF should be defined better.

14. GCSW, (NOAA Office of General Counsel, Southwest Region), is a NOAA office, not an NMFS office (p. 42).

15. Point out on pages 74 and 147 that the 69 porpoises taken by the Japanese gillnet vessel seized in the FCZ were not taken in the FCZ.

16. Table 6.1 on page 73 doesn't list birds (from its title it should).

17. "Proposed Action" listing on pp.138-140, is confusing in its use of "foreign vessels" v. "foreign longline vessels."

18. Items 7.3.1.2 and 7.3.1.3 seem to duplicate proposed actions given earlier, as does item 7.3.1.5.

19. Observer requirements are mandated by the MFCMA, so some of the discussion on p. 159 is inaccurate.

20. On page 22 exclude Midway from the 12 mile closed areas for U. S. possessions and add Midway to the NWHI zone.

United States Department of State

Washington, D.C. 20520

BUREAU OF OCEANS AND INTERNATIONAL
ENVIRONMENTAL AND SCIENTIFIC AFFAIRS

June 11, 1985

Mr. Wadsworth Y.H. Yee
Chairman
Western Pacific Regional Fishery
Management Council
1164 Bishop Street, Suite 1405
Honolulu, Hawaii 96813

Dear Wads:

Thank you for your letter transmitting a copy of the revised draft Fishery Management Plan (FMP) for Billfish and Associated Species of the Western Pacific. The Department of State has reviewed this FMP - in particular those aspects which deal with the incidental catch of billfish and associated species by foreign tuna vessels - and offers the following views.

As you know, the Department has been concerned for many years about management measures which affect foreign tuna vessels in the U.S. Exclusive Economic Zone (EEZ). As the Magnuson Fishery Conservation and Management Act specifically excludes tuna from the exclusive management authority of the United States, any incidental regulation of foreign tuna vessels based upon their bycatch of billfish and associated species must be undertaken with great care. Moreover, any regulation which would affect foreign tuna vessels in the U.S. EEZ will compromise our international law position concerning tuna and is likely to cause serious difficulties for our negotiators in concluding agreements for the international conservation and management of highly migratory species, as envisioned by the Magnuson Act.

The difficulties for our international law position and our negotiators posed by regulations which affect foreign tuna fishermen in the U.S. EEZ are very practical concerns. Quite simply, the United States cannot have it both ways. We cannot impose restrictions on tuna fishing in our zone without being prepared to see similar types of restrictions imposed upon U.S. tuna vessels fishing in foreign 200 mile zones. Thus, unless the laws of the United States concerning tuna are changed, this Department must advise that such measures as are proposed in the FMP would make untenable our international posture regarding tuna.

The Department of State, with the cooperation of the Department of Commerce, is currently engaged in important negotiations with 15 countries for an agreement to establish terms and conditions by which U.S. fishermen would be able to fish for tuna stocks in the western Pacific. The successful conclusion of this agreement is a major goal of U.S. foreign policy in this region. In addition, we expect to begin negotiations in the near future with several Latin American nations on a comprehensive agreement to govern tuna fishing in the eastern Pacific.

These concerns, of course, must be balanced against the interest of the United States in conserving and managing the stocks of billfish and associated species which pass through the U.S. EEZ. In this regard, the Department agrees with the position expressed by NOAA in a memorandum of October 3, 1979 (Billfish Management under the Fishery Conservation and Management Act) that a management plan for billfish may contain measures which affect foreign tuna longliners provided these measures (1) provide a reasonable opportunity for foreign longline vessels to fish for tuna in the EEZ and (2) impose the least burden on such vessels while also achieving the necessary conservation and management objectives covered by the plan. The Department also agrees with NOAA that a balancing test should be employed in the review of the legality of proposed measures which regulate the incidential catch of foreign tuna longliners. Management measures which affect foreign tuna vessels using gear other than longlines are not addressed in this memorandum.

In our review of the Council's most recent version of the FMP, Bill Gordon's letter of January 21, 1982, which formally disapproved the FMP as it was then drafted, was an obvious starting point. In that letter, three reasons were given for the decision to disapprove the FMP: (1) the size of the proposed area closures for foreign tuna longliners, (2) the omission from the FMP of other non-tuna species associated with billfish and (3) the lack of a clear demonstration of the need for a plan. In our view, only the second reason for rejection has been dealt with adequately in the most recent revision.

In regard to the area closures on foreign longliners, we note that some closures (around the main Hawaiian Islands and Guam) have been reduced while others (around the five small island groups) have been expanded. Overall, the total

closed area is only slightly smaller under the current FMP ("less than 30%") than under the 1981 version (30.4%). More importantly, the current FMP does not identify precisely how the reduction in foreign fishing effort under these closures will be translated into increased availability of billfish to U.S. fishermen. Furthermore, no attempt has been made to demonstrate that the recommended closures impose the least burden on foreign vessels while achieving the conservation and management objectives of the plan. We believe that the FMP should include a detailed description of domestic billfish fishing areas and seasons, as well as likely locations of gear conflicts between U.S. and foreign fleets. This information should be used to justify the specific areas and seasons to be closed to foreign longliners. In this regard, we note the comment of Bill Gordon in his 1982 letter: "The point emphasized here is that approvable area/season closures must be based on documented domestic billfish fishing effort and the need to avoid foreign-domestic gear conflict."

Second, in regard to the need for the FMP, we agree that the existing PMP is not comprehensive since it deals only with foreign vessels. Moreover, the existing PMP is complicated and burdensome for both foreign vessel operators and U.S. enforcement agencies. An FMP which regulates the wide range of resource users on a cost-effective basis would seem to be a desirable goal. However, the FMP as currently drafted deals almost exclusively with the activities of foreign tuna vessels. In view of the fact that no foreign tuna vessels are operating at the present time in the western Pacific portion of the EEZ, we question whether the benefits of the FMP will outweigh the costs.

In addition to the two points raised above, the Department is greatly concerned about the provisions of the FMP which affect the operation of foreign purse seine and pole and line tuna fishing vessels. The United States never before has adopted regulations which affect the activity of these kinds of tuna vessels in the EEZ. Were this country to do so, the impact on our international law posture and negotiating position in the ongoing talks for a western Pacific regional tuna access agreement would be severly damaged. Such restrictions as mandatory observer coverage and data reporting establish the principle that these types of vessels can be regulated unilaterally by the coastal state. That position is fundamentally inconsistent with the international law position which the Department is supposed to promote. Futher, mandatory observer coverage could be quite burdensome in the

western Pacific context. Few foreign vessels would find it practical to fish for tuna around Jarvis Island, for example, if they were required to pick up and then return an observer to Honolulu.

As I noted in my letter to you of May 8, 1985, we recognize that foreign purse seine vessels fishing for tuna may take an incidental catch of managed species. This also may be true for pole and line vessels. However, any incidental catch in both cases would be quite small, as confirmed at various points in the FMP. Because it is so small, we believe that under a balancing test analysis, any regulation of these gear types would be unreasonable. Further, any attempt to regulate or curtail the tuna fishing activities of these vessels through their incidential catch would make meaningless the tuna exclusion in the Magnuson Act. For these reasons, I strongly urge you to remove all provisions from the FMP which affect foreign purse seine and pole and line vessels.

Finally, I would like to respond to your comments concerning the position taken by this office on the 1981 version of the FMP. As you know, the Department of State has an obligation to conduct the foreign policy of this country. Further, the Congress specifically has directed the Department to "initiate and conduct negotiations for the purpose of entering into international fisheries agreements which provide for the conservation and management of.... highly migratory species." Thus, while I have no intention of substituting "State's judgement for that of the Regional Councils," I certainly intend to express our concern when a Council contemplates actions which will undermine the efforts of this Department to discharge its responsibilities.

I hope the foregoing comments prove useful to the Council in further developing the FMP. As always, my staff and I would be prepared to discuss these issues with you and other members of the Council.

With best wishes.

Sincerely,

Edward E. Wolfe, Jr.
Deputy Assistant Secretary
for Oceans and Fisheries
Affairs

August 7, 1985

RESOLUTION ADOPTED BY THE PELAGICS ADVISORY PANEL AND THE ADVISORY PANEL AS A WHOLE

Whereas, much effort has been expended in developing a Fishery Management Plan for Pelagic species within the FCZ of the Western Pacific Regional Fishery Management Council, and....

Whereas such plan has been submitted to the required agencies for comments, and....

Whereas such agencies have recommended changes to the plan,

Now, be it resolved that the Pelagics Advisory Panel and the Advisory Panel as a whole recommends to the Council the following actions.....

1) The requirement for mandatory reporting of Pelagics by-catch by foreign and domestic purse seine and pole and line vessels be changed to read voluntary reporting, with the provision that mandatory reporting be reinstated if no voluntary reports within one year. (Sanctions to be applied on a country by country basis.)

2) Provisions be made in the Pelagics FMP to allow experimental Drift Gillnet fishing by domestic fishermen under the strict supervision of NMFS after full consultation with the Council

Be it further resolved that the Council be urged to make the above changes expeditiously so that the Plan may be adopted and sent to proper authorities for approval.

Kenji Ego

Kenji Ego, Chairman Advisory Panels

J. Sutherland

James W. Sutherland, Chairman
Pelagics Advisory Sub-Panel

REPORT ON THE JULY 29, 1985 MEETING OF THE PELAGIC SPECIES MANAGEMENT PLAN DEVELOPMENT TEAM

PRESENT: Richard W. Brill (Chairman)
Paul Kawamoto
Jerry A. Wetherall
Justin Rutka (Council Staff)
Robert Iversen (observer, NMFS, SW Region)

SUBJECT OF MEETING: Review of comments submitted by the NMFS, the Office of General Counsel SW Region, and the State Department on the revised draft Pelagic Species FMP.

Planning Team's Review of SWR and HQ Comments

Critical

Comment #1b -- "The FMP should contain as much information as possible to support the conclusion that the area closures will result in increased domestic catches."

Planning Team Response -- The FMP contains all available information relating to impacts of area closures on domestic catch rates of pelagic management unit species. Two exhaustive statistical studies on the subject have been completed by Jerry Wetherall and Marian Yong, and by Bob Skillman and Gary Kamer, and a comprehensive computer simulation model was explored by Bill Lovejoy to investigate area closure strategies in an earlier draft of the FMP. Unfortunately, these studies were unable to produce reliable quantitative predictions of area closure impacts. In any realistic model of billfish stock dynamics, there are simply too many unknowns for the meager data now available, necessitating numerous unverifiable assumptions, simplifications and approximations. Some analyses have supported the planning team's opinion that area closures will increase domestic catch rates of blue marlin and other pelagics locally. However, these results have not been statistically significant, and do not lend themselves to reliable numerical predictions of area closure impacts. No magic can be performed to extricate us from this predicament. It must simply be accepted that our best available scientific "conclusions" on the impacts of area closures are qualitative. A firmer understanding, and in particular an ability to predict quantitatively the effects of manipulating fishing effort in the FCZ, will require much more data and a knowledge of migration habits and other biological factors.

Comment #2 (re: data collection) -- "While mandatory submission of catch and effort data by foreign tuna longliners poses no problems, the collection of fishery data, including bycatch of management unit species, from foreign and domestic pole-and-line and purse seine tuna fishing vessels, can only occur on a voluntary basis unless it can be proven that their by catches constitute "fishing" under the Magnuson Act. .... We propose that the Council's FMP include authority for the RD, after consultation with the Council and affected State and Territory agencies, to implement data reporting requirements if he determines that the data being provided through existing reports or surveys are not sufficient for their annual reports or five year review called for the plan."

Planning Team Response -- The planning team re-emphasizes its position that data on "bycatch species" is absolutely essential from all fisheries landing significant numbers of management plan species. Although bycatch, for a species such as mahimahi, is likely to be small with respect to tuna landings, it could very well be large with respect to the maximum sustainable (or optimal) yield of mahimahi in the FCZ. Whether reporting of bycatch can be mandatory or voluntary is a legal problem that the Planning Team will leave to NOAA Counsel.

Comment #3 (re: prohibition of gillnetting) -- "However, a total prohibition of domestic gillnet fishing may not be necessary. We propose that the FMP include a provision for the Regional Director to issue experimental fishing permits to allow the controlled use of drift gill nets..."

Planning Team Response -- The planning team is still concerned about the threat gill nets pose to marine mammals and endangered species within the FCZ, and with potential gear conflicts with already established fisheries. The Planning Team felt it best to leave it up to the Council for their decision as to whether or not the NMFS Regional Director should have the authority to permit gillnet fishing.

Comment #4 (re: applicability of FCMA to CNMI) -- "We propose, however, that the FMP more clearly state at the beginning of the plan the U.S. position regarding the applicability of the MFCMA to CNMI."

Planning Team response -- The planning team has no objections.

Comment #5 (re: documentation requirements) -- "First, a separate subsection could be prepared to serve as an environmental assessment... A second subsection could be prepared summarizing benefits and costs of the proposed action in terms of E.O. 11291. ... "It would also be helpful to include a fairly detailed description of the five-year review..., which is to provide a basis for considering major changes in management measures such as closures."

Planning Team response -- The planning team has no objection to these

suggestions and feels that the Council and Council staff do what ever it takes in this area to get the FMP in place. The Planning Team however, recommends that after the FMP has been in place for 5 years, the NMFS and Council staff prepare for the Council's consideration a summary of the 5 annual reports (required by the FMP). This summary report should include information on domestic and foreign landings, effort and CPUE for all management unit species, as well as reports of serious gear conflicts. If no beneficial effects of area closures are apparent, the Council at that time can re-evaluate the extent of area closures.

Comment #6 (re: MSY determinations) -- "In the absence of scientific determinations of MSY, we recommend that the FMP adapt the language of the PMP to provide at least qualitative definitions of MSY for mahimahi, wahoo and oceanic sharks."

Planning team response -- The Planning Team agrees.

Comment #7 -- "Draft Regulations and CZM Consistency Determinations - These should be included with the proposed FMP."

Planing Team response -- The Planning Team agrees with the comment and recommends this information be placed in an appendix to the FMP.

Substantive

Comments #1-4 & 6 -- (see original document)

Planning Team response -- The Planning Team has no objections to these suggestions.

Comment #5 (re: costs of management and data collection) -- "First, it sould be made clear whether there will be additional Federal or State and Territory costs associated with the strengthening of State and Territory management... Second, to the extent information is available, the FMP should identify present Federal, State and Territory costs of management and data collection and processing relative to the management unit species... Third, the FMP could present estimates of the data collection and processing workload...under different data reporting approaches..."

Planning Team response -- The Planning Team agrees that information on the costs of data gathering etc. is available but not in the form requested. Currently all State, Territory and Federal data collection programs collect information on species both included and not included in the FMP. The Planning Team feels that it would be therefore very difficult to even estimate the costs of data collection for management unit species alone. The Planning Team recommends that the NMFS SW Region staff work with the appropriate state agencies and SWFC to put together this information.

The Council staff already has enough to do.

Comment #7 -- "The Council should consider...establishing area closures by coordinates rather than by distance from shore to simplify enforcement."

Planning Team response -- Jusin Rutka stated that the Coast Guard recommends circular boundaries which simplify navigation and enforcement. The Planning Team agrees.

Review of NOAA Regional Council Memo

The Planning Team reviewed the memo and decided that because the questions raised were all legal issues, our comments would serve no useful purpose at this time.

Review of State Department Comments

Objection #1 -- "... the current FMP does not identify precisely how the reduction in foreign fishing effort under these closures will be translated into increased availability of billfish to U.S.fishermen."

Planning Team response -- The Planning Team maintains its position that the best available information is presented in the reports by Lovejoy, Wetherall and Yong, and Skillman and Kamer and that these reports are adequately summarized in the FMP as written. Jerry Wetherall agreed to see if any more quantitative conclusions can be wrung out of the currently available data.

Objection #2 -- "An FMP which regulates the wide range of resource users on a cost-effective basis would seem to be a desirable goal. However, the FMP as currently drafted deals almost exclusively with the activities of foreign tuna vessels. ...we question whether the benefits of the FMP will outweigh the costs."

Planning Team response -- The Planning Team disagrees with the State Department's conclusions. The Planning Team stands by it recommendation to get the FMP in place, collect 5 years' worth of data and then review costs and benefits of the FMP.

Objection #3 -- "...the Department is greatly concerned about the provisions of the FMP which affect the operation of foreign purse seine and pole and line tuna fishing operations. ...such as mandatory observer coverage and data reporting..."

Planning Team response -- The Planning Team feels that data reporting requirements and observer coverage would not be significantly burdensome to either domestic or foreign purse seiners or pole-and-line boats. The Planning Team also felt that catch and effort data for management unit species taken by these boats is essential for meaningful evaluation of the effect of FMP after it is put in place. Whether data reporting is mandatory or voluntary is a legal/political decision that the Planning Team will defer to the Council and NOAA Counsel.

Respectfully submitted,

Richard W. Brill
Chairman, Pelagic Species Management Plan
Development Team

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

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REPORT OF THE SSC
ON THE DRAFT FISHERY MANAGEMENT PLAN
FOR BILLFISH AND ASSOCIATED SPECIES

August 5, 1985

The SSC reviewed certain issues compiled by the staff. These specific issues and the SSC's recommendations are set forth below.

1. Whether domestic gillnet fishing should be allowed under an experimental permit system.

The SSC recommends inclusion in the FMP of a provision allowing permit of experimental gillnet fishing subject to Council approval of experimental design.

2. Whether reporting by purse seiners and baitboats (pole and line vessels) of bycatches made in the FCZ should be voluntary or mandatory through a permit procedure.

The SSC very strongly reaffirms the immediate need for accurate data on bycatches taken by purse seiners and baitboats in order, at the very least, to assess the fishing impacts on the management species. The SSC recognizes that such data are not now kept and considers this lack to be a major problem.

The SSC believes that the required data includes catch and effort by management species by area, as well as a random sampling of size frequency by species by area. This data, on a time series (longitudinal) basis, is required for the effective management of billfish and other associated species.

3. Whether the rights of Native Hawaiians with respect to management unit species should be discussed in the FMP.

After considerable deliberation on the historical, cultural, and economic basis for inclusion of a section on rights of native Pacific islanders, the SSC determined that such matters should be pursued through legal channels by the affected parties.

4. Whether the Council should take a formal position on the applicability of the FCMA to the CNMI.

The SSC briefly considered this issue and concluded that, because of its uniquely political nature, this issue was beyond the competence of the SSC. Any resolution of this issue would more properly be accomplished by the Council.

5. Whether a separate Regulatory Impact Review Statement should be prepared pursuant to E.O. 12291 and additional analysis be done pursuant to the Regulatory Flexibility Act.

The Subcommittee, upon an initial analysis of the Regulatory Impact Review Statement requirements, concluded that such provisions appear to be inapplicable to the FMP, particularly since the FMP at most only requires the voluntary reporting of certain data.

6. Whether the FMP should present Federal, State and Territorial costs of management, data collection, and processing.

The SSC has concluded that attempting to disaggregate the costs of data collection and processing for each of the management unit species would be very difficult, and of questionable value. The need for such a time consuming task should be firmly established before efforts are undertaken in this direction.

7. Whether it is possible to demonstrate that increases in domestic catches and catch rates will in fact occur as a result of the area closures to foreign longliners.

The SSC noted that there has been no foreign longline fishing in the FCZ for almost 5½ years. Hence, domestic catch rates should have risen by the present time, and (such) catch increases have in fact occurred. If this evidence is not accepted then it is not possible to demonstrate, in light of the present circumstances, that such increases in domestic catches and catch rates will occur as a result of area closures.

In further considering this issue, the SSC noted that, as a matter of scientific reasoning, it is also impossible to demonstrate categorically that there will not be increases in such catches and catch rates as a result of area closures. The SSC therefore concluded that currently available evidence supports the presumption that domestic catch and catch rate increases will result (and have resulted) from area closures.

Attempts to further justify area closures should be ongoing as additional data becomes available.

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

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MEMORANDUM

July 30, 1985

TO: Council Members, SSC, Advisory Panel

FROM: Justin Rutka

SUBJECT: Major Issues to be Resolved Regarding the Revised Draft Fishery Management Plan (FMP) for Billfish and Associated Species

1. Should domestic drift gillnet fishing be allowed under an experimental permit system?

The California Gillnetters Association proposed a "limited number of special experimental permits" be issued so that American gillnetters can explore the FCZ. One individual in Guam said that he has purchased a pelagic gillnet and wanted to use it, and that he knew of several other individuals who had plans for investing in gillnets. Other than these cases, public sentiment during the public hearings was strongly in favor of prohibiting drift gillnet fishing outright.

Staff recommends that some "experimental" gillnetting could be allowed under strictly controlled conditions. Request the Staff of the SW Region and the Planning Team to specify limits on experimental gillnet fishing -- a ceiling on number of permits, length of net or other gear restrictions, areas where gillnets could not be fished, specify data to be recorded, and the like. Is it legally possible to require observers onboard domestic gillnetters and who pays for the costs of the observers? General Counsel should clarify these questions.

2. Should reporting by purse seiners of bycatches made in the FCZ be voluntary or through a mandatory permit procedure?

If purse seiners can be reasonably expected to catch fish other than tuna, then they are seemingly covered by the Magnuson Act. The Council's advisors and many fishermen have heard stories of large amounts of mahimahi, rainbow runner, blue marlin, among other species, being taken by purse seiners in the western Pacific. The Council seems to have legal authority to require permits and reporting of bycatches for purse seiners. It's a policy choice on whether data on bycatches is gotten

A COUNCIL AUTHORIZED BY THE FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976 (P.L. 94-265)

through mandatory or voluntary means. If the Council can be assured that the information that is available on bycatches "can be laid on the table", then the permitting and reporting requirements can be put aside for the time being.

3. Should reporting by baitboats (pole-and-line vessels) of bycatches made in the FCZ be voluntary or through a mandatory permit procedure?

The incidental catch of baitboats is much smaller than the incidental catch of purse seiners. Aku boats based in Honolulu have reported taking several thousand pounds of mahimahi each year compared to 2 to 5 million pounds of tuna. Catches of mahimahi during 1978-1983 averaged about 0.2% of their tuna catch. Domestic baitboats report all of their catches to the State of Hawaii. Foreign baitboats are presently not subject to any permitting requirements or catch report requirements. Foreign baitboats also are known to catch mahimahi (Coast Guard Report on inspection of recently boarded foreign baitboat).

Mandatory reporting of bycatches by foreign baitboats is of less importance than getting bycatch information from purse seiners. Baitboats probably don't catch much of anything else other than tuna and mahimahi, and the captain can always stay clear of mahimahi schools. Purse seine captains, however, frequently cannot see what they are surrounding. Staff believes that regualtions can be drafted to make it an offense to retain any mahimahi or other management unit species hooked in the FCZ with pole-and-line gear. A legal opinion on this issue seems advisable.

4. Should the Regional Director (RD) be granted the authority to mandate and implement data reporting requirements when data being provided through existing reports or surveys are not sufficient for the annual reports or five-year review called for in the FMP?

The Council staff has no recommendation to make regarding this issue without knowing the concerns of the NMFS reviewers regarding where existing data may not sufficient for the annual reports or the five-year review called for in the FMP. Deficiencies in data need to be identified and discussed.

5. Should the Rights of Native Hawaiians be discussed regarding the management unit species?

This issue was raised during the Hilo public hearing. Several speakers recommended that native rights should be discussed in the FMP. Staff agrees with this suggestion and will try to find experts who are knowledgable in the area to help out.

6. Should the Council take a formal position on the applicability of the Magnuson Act to the CNMI?

The Federal Government has arguments on why it feels that the Magnuson Act applies to the CNMI. The Government of the Northern Mariana Islands also has arguments on why it feels that the Magnuson Act does not apply to the CNMI. Staff is willing to present both sides of the issue if that would be helpful. The Council urged Congress to amend the Magnuson Act to give full membership rights to the CNMI on the Council. This action certainly implies that the Council believes that the Magnuson Act applies to the CNMI. But the Council has also honored the request of the CNMI Government to maintain its observer status on the Council until the issue of the applicability of the Magnuson Act is formally resolved.

7. Should a seperate Regulatory Impact Review (RIR) statement be prepared according to the terms of E.O. 12291, and should more analysis be done to satisfy Regulatory Flexibility Act (RFA) requirements?

Staff concluded that a RIR statement is not necessary because the proposed measures should not be considered to be a "major" federal action under the criteria of E.O. 12291. Likewise, staff concluded that the proposed measures would not have a substantial adverse economic impact on a substantial number of small business entities, therefore, a Regulatory Flexibility Analysis was not prepared.

8. To the extent information is available, should the FMP present Federal, State and Territory costs of management and data collection and processing relative to the management unit species? And should the FMP present estimates of the data collection and processing workload (number of data sheets processed per year) under different data reporting approaches (e.g., status quo, mandatory reporting of all fishermen, surveys for voluntary collection of data)?

Trying to split out the costs of data collection and processing just for billfish, mahimahi, wahoo, and oceanic sharks would be a dubious exercise at best. Mandatory reporting by all fishermen was not among the options considered. A budget has been prepared for a survey of recreational catches. This can be included in the Appendix. Staff should not be requested to explore "everything under the sun" unless it can be shown to be absolutely necessary.

9. Is is possible to demonstrate or to prove that increases in domestic catches and catch rates will in fact occur as a result of the area closures to foreign longliners?

Is this a reasonable requirement? There has been no foreign longline fishing in the FCZ for nearly 5½ years now so that domestic catch rates should have risen by now. Skillman and Kamer did not compute the CPUE for domestic gear types for the management unit species beyond 1980 since this data was not available to him at the time that his study was being done. Staff believes that this needs to be done with whatever data may be available, in order to establish a baseline of domestic catch rates in the absence of foreign longline fishing. The effect of allowing some foreign longline fishing in the FCZ could, thus, be compared to the "no fishing" alternative. See Report of the Planning Team on what can be expected regarding proofs that domestic catch rates will rise as a result of the area closures to foreign longliners.

10. The Council has not received a Biological Opinion regarding Section 7 consultations.

Assume that the Biological Opinion will not present any major problems requiring the Council's attention.