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Appendix 1. Text of preamble and proposed regulations.

Billing Code: 3510-22

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
50 CFR Part 685
[Docket No.]
RIN
Pelagic Fisheries of the Western Pacific Region

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

ACTION: Proposed rule.

SUMMARY: NOAA issues a proposed rule to implement a limited entry program for the Hawaii longline fishery through Amendment 7 to the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region (FMP). This rule would replace a moratorium on the issuance of new permits for the Hawaii-based longline fishery for Pacific pelagic management unit species. Permits would be issued to people meeting eligibility criteria concerning participation in the longline fishery during the moratorium, the length of the longline vessel covered by a permit in the moratorium, or ownership of a limited entry permit for the Northwestern Hawaiian Islands lobster fishery. Approximately 166 vessels are expected to qualify for permits under this program. Permits would be transferable. No vessel larger than the largest vessel active in the moratorium (about 93 feet to date) could be registered for use with a limited entry permit. Non-permitted U.S. longline vessels could enter the exclusive economic zone (EEZ) in the Council's area of concern and ports shoreward of the EEZ with longline-caught fish on board provided the longline gear is stowed or secured. These vessels would not be allowed to off-load management unit species shoreward of the outer boundary of

the EEZ. The rule also proposes broad framework procedures for subsequent adjustment of the conservation and management measures for the pelagics fisheries. The definition of the protected species zone would be revised to correct a drafting error in the final rule that established the protected species zone). The definition of Optimum Yield would be revised to encompass fishing in waters outside the EEZ; this change would respond to concerns that vessels based in the region could impact, in waters outside the EEZ, certain fish stocks, other fisheries that depend on those stocks, or protected species. The proposed action is necessary to manage the longline fishery based in Hawaii to achieve optimum yield from the fishery and prevent overfishing in accordance with the Magnuson Fishery Conservation and Management Act (Magnuson Act).

DATES: Comments on the proposed rule will be accepted until [insert date 45 days after date of publication in the Federal Register].

ADDRESSES: Comments on the proposed rule may be sent to Gary Matlock, Acting Director, Southwest Region, National Marine Fisheries Service, 501 West Ocean Boulevard, Suite 4200, Long Beach, CA 90802-4213. Copies of the amendment, final environmental impact statement, and initial regulatory impact review are available from Kitty M. Simonds, Executive Director, Western Pacific Fishery Management Council, 1164 Bishop Street, Suite 1405, Honolulu, HI 96813, (808) 541-1974. Send comments on the proposed collection-of-information to the Director, Southwest Region, NMFS, 501 W. Ocean Blvd., Long Beach, CA 90802-4213, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, ATTN: Paperwork Reduction Project 0648-0204, Washington, DC 20503.

FOR FURTHER INFORMATION CONTACT: Kitty M. Simonds, Western Pacific Fishery Management Council, at (808) 541-1974; Svein Fougner, Southwest Region, NMFS, at (310) 980-4034; or Alvin

Katekaru, Pacific Area Office, NMFS, at (808) 955-8831.

SUPPLEMENTARY INFORMATION: The FMP was prepared by the Council and approved and implemented by the Secretary of Commerce (Secretary) at a time when there were few problems in the domestic fisheries for management unit species (billfish and associated species). This is no longer the case. The longline fishery based in Hawaii targets swordfish, tuna, and other management unit species, often traveling up to 2000 miles from port. Due to rapid growth of this fishery, prior to imposition of the three-year moratorium on new participants, there was concern about the potential and actual impact of the expanded fishery on the status of some fish stocks, the impact of increased longline catches on other fisheries, and interactions between longline fishing and protected species such as Hawaiian monks seals and sea turtles.

The Council and Secretary have taken several actions to address these concerns. They established a control date for possible use in a limited entry program; adopted an FMP amendment establishing permit and logbook requirements for domestic longline and transshipping vessels using the fishery management area under the FMP; implemented an emergency rule and approved an FMP amendment to close certain waters around the Northwestern Hawaiian Islands (NWHI) to longline fishing to protect Hawaiian monk seals; implemented an emergency rule and approved an FMP amendment imposing a moratorium on new entry into the longline fishery based in Hawaii from April 1991 to April 1994; and implemented an emergency rule and approved an amendment to establish longline area closures around the main Hawaiian Islands to prevent gear conflicts. The reasons for these actions were described in considerable detail in the emergency rules published at 56 FR 14866 (April 12, 1991), 56 FR 15842 (April 18, 1991), 56 FR 28116 (June 19, 1991), 56 FR 28718 (June 24, 1991), and 56 FR 37300 (August 6, 1991), and in the proposed rules and final rules for Amendment 2 published at 55 FR 49285 (November 27, 1990) and 56 FR 24731 (May 31, 1991), respectively, in the proposed rules

and final rules for Amendment 3 published at 56 FR 37070 (August 2, 1991) and 56 FR 52214 (October 18, 1991), respectively, in the proposed and final rules for Amendment 4 published at 56 FR 41643 (August 22, 1991) and 56 FR 51849 (October 16, 1991), and in the proposed and final rules for Amendment 5 published at 56 FR 60961 (November 29, 1991) and 57 FR 7661 (March 4, 1992), respectively, and will not be repeated here. Amendment 7, which this rule would implement, replaces the moratorium on new entry into the Hawaii-based longline fishery. The moratorium expires on April 22, 1994.

This amendment addresses a number of concerns that are associated with the prospect of unregulated expansion of the longline fishery. A dramatically increased level of longline fishing catches from the portion of the EEZ around Hawaii and from adjacent high seas could result in a threat of overfishing of the stocks of Pacific pelagic management unit species throughout their range, most notably swordfish. Even if stocks were not affected on a stock-wide basis, dramatically increased catches by U.S. longline vessels could adversely affect established commercial and recreational handline and troll fisheries in the EEZ, as well as the longline fishery. Further, even if direct catch competition were not occurring, there could be considerable potential for market competition, both between the longline fleet and the troll and handline fleets and within the longline fishery itself. Unregulated expansion of the longline fishery could also increase the likelihood of adverse impacts on threatened and endangered species such as sea turtles which are known to be taken in the longline fishery.

On the other hand, the restrictions (e.g., limitations on permit transfers and on vessel upgrading) under the moratorium, in combination with area closures around the Northwestern and main Hawaiian Islands that were imposed after the moratorium went into effect, have been adversely affecting a number of people who had qualified for longline permits under the moratorium. More than a quarter of the eligible fleet was inactive in 1992, due in many cases to the main Hawaiian Island area closures that require

vessels to travel 50 to 75 or more miles from shore to set their longline gear. Some older and smaller vessels are unable to fish under these restrictions. Vessel owners have in some cases been unable to sell or otherwise transfer their vessels or obtain financing for their fishing activity due to the "one transfer" limit during the moratorium. In the Council's view, this has been an unintended negative effect of the management program. Further, restrictions on the longline fishery outside the EEZ could have mixed effects on the nation. The U.S.A. would benefit if the fishery could expand without adverse effects on fish stocks, other fisheries, or protected resources. In the absence of similar management of foreign fleets, restricting the U.S. fleet could disadvantage the U.S.A. in any future negotiations leading to international regulation of longline fisheries and allocations of fish from the high seas.

The FMP also could be improved administratively. Existing framework procedures for regulatory changes are limited in scope, and new framework procedures could expedite the implementation of new regulations without an FMP amendment. This is especially important for rapid response to new information indicating problems with respect to stock conservation or conservation of protected resources.

Under Amendment 7, Hawaii longline limited entry permits would be required for longline vessels to fish for or land or transship Pacific pelagic management unit species shoreward of the outer boundary of the EEZ around Hawaii. Longline general permits are required for longline fishing vessels to fish for or land or transship Pacific pelagic management unit species shoreward of the outer boundary of the EEZ around American Samoa, Guam, the Northern Mariana Islands, or other U.S. islands in the Pacific Ocean area. Vessels that are categorized as receiving vessels, i.e., do not have fishing gear on board but have management unit species on board, must have receiving vessel permits if they have longline-caught fish on board anywhere in the management area. A Hawaii longline limited entry permit holder may fish for or land Pacific pelagic management unit

species in all other areas in the western Pacific EEZ without obtaining a longline general permit.

The following people would be eligible for Hawaii longline limited entry permits: (i) the last holder of record for any longline vessel limited entry permit under the moratorium, provided the vessel was used to land longline-caught management unit species at least once during the moratorium period; (ii) the last holder of record of a limited entry permit under the moratorium for a vessel less than 40 feet in length; and (iii) the last holder of record of a limited entry permit obtained during the moratorium because that person also held a limited entry permit for the NWHI crustaceans (lobster) fishery.

Hawaii longline limited entry permits would be freely transferable among vessels, provided the new vessel is not longer than the longest vessel that had a longline permit and made landings during the moratorium period (about 93 feet to date). The vessel's length overall will be the measure of length used in making determinations of compliance with this restriction.

These measures are intended to relieve economic strains now faced by longline vessel owners in Hawaii due to present limitations on permit transfers and vessel upgrades. The measures are intended to allow vessel owners more freedom to either transfer their vessels or permits to other prospective fishery participants or invest in larger vessels (up to the size of the largest vessel active in the moratorium period) in order to resume operation in the fishery. Vessel owners will have more freedom to decide whether and how to use their vessels and other resources. This is expected to result in a decrease in the number of smaller vessels and an increase in the number of larger vessels. Overall effort is expected to increase, with more effort directed at swordfish on the high seas. Landings of swordfish and tuna are expected to increase, with the value of landings estimated to rise from about $44 million in 1992 to about $60 million per year after fleet adjustments have been made.

The amendment contains framework procedures to allow rapid

responses to changing conditions, including biological concerns for the stocks, economic problems in the fisheries, and potential harm to protected species such as sea turtles.

The rule also proposes to add three species to the management unit. This will ensure that collection of catch and effort data will be comprehensive.

In addition, the definition of protected species zone would be revised to correct a drafting error when the zone was created (56 FR 52214, October 18, 1991). The current definition leaves open to longline fishing a corridor between Laysan Island and Lisianski Island. The intent of the Council in establishing the protected species zone was to provide a continuous closed corridor around the northwestern Hawaiian Islands in which longline fishing would be prohibited to protect Hawaiian monk seals.

Classification

Section 304(a)(1)(D) of the Magnuson Act requires the Secretary to publish regulations proposed by a Council within 15 days of receipt of the amendment and regulations. At this time, the Secretary has not determined that Amendment 7 is consistent with the national standards, other provisions of the Magnuson Act, and other applicable law. In making that determination, the Secretary will take into account the data, views, and comments received during the comment period.

The Council prepared a combined final FMP amendment/Final Environmental Impact Statement (EIS) covering the impacts of the fishery as managed under this amendment and alternative approaches. The final amendment/final EIS is available from the Council (see "ADDRESSES").

This rule, if adopted, is expected to have a significant impact on a substantial number of small entities. Hawaii longline vessel operators will have more flexibility to buy and sell vessels and permits and to upgrade their fishing vessels to compete more effectively in the domestic longline fishery, as

well as with foreign fleets. It is estimated that total revenue from longline landings would increase to $60 million per year from about $43 million in 1992. The final amendment/FEIS includes a section with an Initial Regulatory Flexibility Analysis intended to satisfy the requirements of the Regulatory Flexibility Act.

This rule includes changes in an information collection previously approved by the Office of Management and Budget (OMB NO. 0648-0204). A request for approval of these modifications and extension of the collections is included in a request submitted by the Southwest Region, NMFS, for approval of modification and extension of that collection that covers all Southwest Region fishery permit programs. The proposed program would require prospective participants in the Hawaii longline fishery to submit permit application forms and supporting information, including a current Certificate of Documentation from the U.S. Coast Guard, to obtain a permit under the new limited entry program. Landings records from the existing Hawaii longline logbook reporting requirement will be used to determine whether an individual has met any landings requirement to qualify for a permit. The estimated burden on the applicants is 30 minutes per application. This is less than the average of one hour or more that had been required for applications for permits in the moratorium period because those applications often involved documentation demonstrating intent to enter the longline fishery at a time when investment decisions were made. The documentation requirements under the new permit program will be much simpler.

The Council assessed the potential impacts of the fishery, as it would operate under the proposed management program, on endangered and threatened species and concluded that the fishery is not likely to adversely affect any endangered or threatened species nor will it adversely affect any critical habitat of any listed species. A consultation under Section 7 of the ESA was conducted in 1993 and NMFS issued a Biological Opinion and Incidental Take Statement in June 1993 concerning the take of sea

turtles in the longline fishery. The Opinion concluded that the fishery, as managed by the FMP, is not likely to jeopardize the continued existence of the species during the one-year term of the Opinion. Several conservation recommendations and reasonable and prudent measures were included in the Opinion and Statement, which are in an Appendix to the amendment. Through complementary actions, the Council has also established a mandatory observer program and an electronic vessel monitoring system requirement for the longline fishery; these measures were also recommended in the Opinion and Statement). The Council has determined that the overall pelagic longline management program is consistent with the Endangered Species Act.

The proposed action does not contain policies with federalism implications sufficient to warrant a federalism assessment under E.O. 12612.

List of Subjects in 50 CFR Part 685

American Samoa, Fisheries, Fishing, Guam, Hawaiian Natives, Northern Mariana Islands.

Dated:

For the reasons set forth in the preamble, 50 CFR Part 685 is proposed to be amended as follows:

PART 685--PELAGIC FISHERIES OF THE WESTERN PACIFIC REGION

1. The authority citation for part 685 continues to read as follows:

Authority: 16 U.S.C. 1801 et seq.

2. In § 685.2, the definition of "Pacific pelagic management unit species" is revised by adding three species to the end of the list of species, the definition of "Protected Species Zone" is revised by revising the second sentence of the definition, the definition of "Substantial financial investment" is removed, and new definitions of "Council", "Fish dealer", "Fishery Management Division", "Hawaii longline limited entry permit", "Length overall", "Longline fishing vessel", "Longline general permit", "Moratorium", "Receiving vessel", and "Receiving vessel permit" are added in alphabetical order to read as follows:

§ 685.2 Definitions.

* * * * *

Council means the Western Pacific Regional Fishery Management Council that was established under section 302 of the Magnuson Act.

* * * * *

Fish dealer means any person who: (1) obtains, with the intention to resell, Pacific pelagic management unit species, or portions thereof, that were harvested or received by a vessel that holds a permit under this part or that is otherwise regulated under this part, or (2) provides recordkeeping, purchase, or sales assistance in obtaining or selling such management unit species (such as the services provided by a wholesale auction facility).

Fisheries Management Division (FMD) means the Chief, Fisheries Management Division, Southwest Regional Office, National Marine Fisheries Service, 501 W. Ocean Boulevard, Suite 4200, Long Beach, CA 90802, or a designee.

* * * * *

Hawaii longline limited entry permit means the permit required by § 685.9(a)(2) to use a vessel to fish for Pacific pelagic management unit species with longline gear in the EEZ or to land or transship longline-caught fish shoreward of the EEZ around Hawaii.

* * * * *

Length overall, or length, of a vessel means the length overall set forth in the Certificate of Documentation (CG-1270) issued by the U.S. Coast Guard for a documented vessel, or in a registration certificate issued by a state or the U.S. Coast Guard for an undocumented vessel. For vessels that do not have the length overall stated in an official document, or for a vessel for which NMFS requests confirmation of the length overall, the length overall is the horizontal distance, rounded to the nearest foot, between the foremost part of the stern and the aftermost part of the stern, excluding bowsprits, rudders, outboard motor brackets, and similar fittings or attachments (Figure 1).

* * * * *

Longline fishing vessel means a vessel that has longline gear on board the vessel.

* * * * *

Longline general permit means the permit required by § 685.9(a)(1) to use a vessel to fish for Pacific pelagic management unit species in the fishery management area excluding the EEZ around Hawaii, or to land or transship longline-caught fish shoreward of the outer boundary of the fishery management area excluding the waters shoreward of the EEZ around Hawaii.

* * * * *

Moratorium means the moratorium on new entry into the Hawaii longline fishery that was effective from April 23, 1991, through April 22, 1994, and was implemented by rules published at 56 FR 14866 (April 12, 1991), 56 FR 28116 (June 19, 1991), and 56 FR 51849 (October 16, 1991).

* * * * *

Pacific pelagic management unit species means the following fish:

Common name	Scientific name
* * *	
Moonfish (or opah)	Lampris spp.
Pomfret	Family Bramidae
Oilfish (or walu)	Family Gempylidae

* * * * *

Protected species zone means

* * *

Where the areas are not contiguous, parallel lines drawn tangent to and connecting those semicircles of the 50-nm areas that line between Nihoa Island and Necker Island, French Frigate Shoals and Gardner Pinnacles, Gardner Pinnacles and Maro Reef, Laysan Island and Lisianski Island, Lisianski Island and Pearl and Hermes Reef, shall delimit the remainder of the protected species zone.

Receiving vessel means a vessel of the United States of America that has on-board the vessel longline-caught Pacific pelagic management unit species but does not have longline fishing gear on board the vessel.

Receiving vessel permit means a permit required by § 685.9(a)(3) for a receiving vessel to transship or land Pacific pelagic management unit species in the fishery management area.

* * * * *

3. In § 685.4, paragraph (b) is revised to read as follows:

§ 685.4 Recordkeeping and reporting.

* * * * *

(b) The operator of any longline fishing vessel subject to § 685.9 must maintain on board the vessel an accurate and complete fishing logbook for each day of each fishing trip, which must include the following information:

* * * * *

4. In § 685.5, paragraphs (e), (f), (g) and (h) are revised and paragraphs (n), (o), (p), (q), and (y) are added to read as follows:

§685.5 Prohibitions.

* * * * *

(e) Use a longline vessel without a valid general longline permit or a Hawaii longline limited entry permit registered for use with that vessel, to fish for Pacific pelagic management unit species in the EEZ around American Samoa, Guam, the Northern Mariana Islands, or U.S. possessions in the Pacific Ocean area.

(f) Use a longline fishing vessel without a valid Hawaii longline limited entry permit registered for use with that vessel to fish for Pacific pelagic management unit species in the EEZ around Hawaii.

(g) Use a receiving vessel without a valid receiving vessel

permit registered for use with that vessel to land or transship, shoreward of the outer boundary of the EEZ around American Samoa, Guam, Hawaii, the Northern Mariana Islands, or U.S. possessions in the Pacific Ocean area, Pacific pelagic management unit species harvested with longline gear.

(h) Transfer a permit in violation of § 685.9(j).

* * * * *

(n) Refuse to make available to an authorized agent for inspection or copying any records that must be made available under § 685.17.

(o) To use a U.S. vessel that has longline gear on board and that does not have a valid Hawaii longline limited entry permit registered for use with that vessel or a valid longline general permit registered for use with that vessel to land or transship Pacific pelagic management unit species shoreward of the outer boundary of the EEZ around American Samoa, Guam, the Northern Mariana Islands, or U.S. possessions in the Pacific Ocean area.

(p) To use a U.S. vessel that has longline gear on board and that does not have a valid Hawaii longline limited entry permit registered for use with that vessel to land or transship Pacific pelagic management unit species shoreward of the outer boundary of the EEZ around Hawaii.

(q) For a U.S. vessel without a valid Hawaii longline limited entry permit registered for use with that vessel to enter the EEZ around Hawaii with longline gear that is not stowed or secured in accordance with § 685.26.

* * * * *

(y) For a U.S. vessel without a valid Hawaii longline limited entry permit registered for use with that vessel or a longline general permit registered for use with that vessel to enter the EEZ around American Samoa, Guam, the Northern Mariana

Islands, or U.S. possessions in the Pacific Ocean area with longline gear that is not stowed or secured in accordance with § 685.26.

5. Section 685.9 is removed and a new § 685.9 is added to read as follows:

§685.9 Permits.

(a) Permit requirements.

(1) A longline fishing vessel of the United States must be registered for use under a Hawaii limited entry permit or a longline general permit if that vessel:

(i) is used to fish for Pacific pelagic management unit species in the EEZ around American Samoa, Guam, the Northern Mariana Islands, or other U.S. island possessions in the Pacific Ocean; or

(ii) is used to land or transship Pacific pelagic management unit species, shoreward of the outer boundary of the EEZ around American Samoa, Guam, the Northern Mariana Islands, or other U.S. island possessions in the Pacific Ocean.

(2) A longline fishing vessel of the United States must be registered for use under a Hawaii limited entry permit if that vessel:

(i) is used to fish for Pacific pelagic management unit species in the EEZ around Hawaii; or

(ii) is used to land or transship Pacific pelagic management unit species shoreward of the outer boundary of the EEZ around Hawaii.

(3) A receiving vessel must be registered for use with a receiving vessel permit if that vessel is used to land or transship, shoreward of the outer boundary of the EEZ around American Samoa, Guam, Hawaii, the Northern Mariana Islands, or other U.S. possessions in the Pacific Ocean, Pacific pelagic management unit species that were harvested with longline gear.

(b) Eligibility for initial permits.

(1) Any person who is eligible to be the owner of a vessel

that is documented under U.S. law or is registered under the laws of a State is eligible for a longline general permit under paragraph (a)(1) of this section or for a receiving vessel permit under paragraph (a)(3) of this section.

(2) Any person who is eligible to be the owner of a vessel that is documented under U.S. law or is registered under the laws of a State is eligible for a Hawaii limited entry permit under paragraph (a)(2) of this section, provided that person on April 22, 1994:

(i) Holds a limited entry permit issued during the moratorium, and owns or owned a vessel that landed longline-caught management unit species at least once during the moratorium period, April 23, 1991 through April 22, 1994; or

(ii) Holds a limited entry permit issued during the 3-year moratorium for a vessel which is less than 40 feet in length; or

(iii) Holds a longline limited entry permit issued to that person because that person was the holder of a permit for the Northwestern Hawaiian Islands lobster fishery under 50 CFR 681.30.

(c) Application.

(1) An application for a permit under this section must be submitted on a Southwest Region Federal Fisheries Application form obtained from the Pacific Area Office containing all the necessary information, attachments, certification, signatures, and fees. In no case will oral or telephone applications be accepted.

(2) A vessel owner must submit an application for a permit to the Pacific Area Office at least 15 days before the desired effective date of the permit. If an incomplete or improperly completed application is filed, the applicant will be sent a notice of the deficiency. If the applicant fails to correct the deficiency within 30 days following the date of notification, the application will be considered abandoned.

(3) An application is complete when all required information, attachments, certifications, signatures, and fees have been received.

(d) Change in application information. Any change in information on the permit application form submitted under paragraph (c) of this section must be reported to the Pacific Area Office at least 10 days before the effective date of the change. Failure to report such changes may result in termination of the permit.

(e) Issuance. The FMD will issue a permit to any applicant who is determined to eligible for a permit under the appropriate paragraph of this section if the application is complete.

(f) Fees. A fee is charged for each permit application submitted under paragraph (a)(2) of this section. The amount of the fee is calculated in accordance with the procedures of the NOAA Finance Handbook for determining the administrative costs of each special product or service. The fee may not exceed such costs and is specified with each application form. The appropriate fee must accompany each application. Failure to pay the fee will preclude issuance of a limited entry permit.

(g) Expiration. Permits issued under this section remain valid for the period specified on the permit unless transferred, revoked, suspended, or modified under 15 CFR part 904.

(h) Renewal. An application for renewal of any permit issued under this section must be submitted to the Pacific Area Office in the same manner as described in paragraph (c) of this section.

(i) Replacement. Replacement permits may be issued, without charge, to replace lost or mutilated permits. An application for a replacement permit is not considered a new application.

(j) Transfer.

(1) A permit is valid only for the vessel for which it is registered. A permit not registered for use with a particular vessel may not be used.

(2) The owner of a Hawaii longline limited entry permit may apply to transfer (by sale, assignment, lease, bequest, barter, trade, gift, or other form of conveyance) the permit:

(i) to a different person for registration for use with the

same or another vessel; or

(ii) for registration for use with another U.S. vessel under the same ownership.

(3) An application for a permit transfer must be submitted to the Pacific Area Office in the same manner as described in paragraph (c) of this section.

(k) A permit will not be registered for use with a vessel that has a length overall that is greater than the length overall of the vessel with the greatest length overall that used longline gear to fish for or land Pacific pelagic management unit species under the moratorium.

6. Section 685.13 is revised to read as follows:

§ 685.13 Notification of landing and transshipment. The operator of a longline fishing vessel that is subject to the permit requirements § 685.9(a) or § 685.9(b) of this part shall contact the Pacific Area Office by telephone, at a number provided to permit holders, within 12 hours of the vessel's arrival at any port in Hawaii, Guam, American Samoa, the Northern Mariana Islands, or U.S. possessions in the Pacific Ocean area and report the name of the vessel, name of the vessel operator, and the date and time of each landing or transshipment of Pacific pelagic management unit species by the vessel since its previous report of landing and/or transshipment.

7. Section 685.15 is removed and a new § 685.15 is added to read as follows:

§ 685.15 Permit appeals.

(a) Except as provided in subpart D of 15 CFR part 904, any applicant for a permit or any permit owner may appeal the granting, denial, conditioning, suspension, or transfer of a permit or requested permit to the Regional Director. In order to be considered by the Regional Director, the appeal must be in

writing, must state the action(s) appealed, and the reasons therefor, and must be submitted within 30 days of the action(s) by the FMD. The appellant may request an informal hearing on the appeal.

(b) Upon receipt of an appeal authorized by this section, the Regional Director may request additional information as will allow action on the appeal. Upon receipt of sufficient information, the Regional Director will decide the appeal in accordance with the criteria set forth in this part and the Fishery Management Plan for Pelagic Fisheries of the Western Pacific Region, as appropriate, based upon information relative to the application on file at NMFS and the Council and any additional information available, the summary record kept of any hearing and the hearing officer's recommended decision, if any, as provided in paragraph (c) of this section, and such other considerations as deemed appropriate. The Regional Director will notify the appellant of the decision and the reasons therefor, in writing, normally within 30 days of the receipt of sufficient information, unless additional time is needed for a hearing.

(c) If a hearing is requested, or if the Regional Director determines that one is appropriate, the Regional Director may grant an informal hearing before a hearing officer designated for that purpose. Such a hearing normally shall be held no later than 30 days following receipt of the appeal unless the hearing officer extends the time for reasons deemed equitable. The appellant and, at the discretion of the hearing officer, other interested persons, may appear personally or be represented by counsel at the hearing and submit information and present arguments as determined appropriate by the hearing officer. Within 30 days of the last day of the hearing, the hearing officer shall recommend in writing a decision to the Regional Director.

(d) The Regional Director may adopt the hearing officer's recommended decision, in whole or in part, or may reject or modify it. In any event, the Regional Director will notify the appellant, and interested persons if any, of the decision, and

the reason(s) therefor, in writing, within 30 days of receipt of the hearing officer's recommended decision. The Regional Director's action shall constitute final Agency action for the purposes of the Administrative Procedure Act.

(e) Any time limit prescribed in this section may be extended for a period not to exceed 30 days by the Regional Director for good cause, either upon his or her own motion or upon written request from the appellant stating the reason(s) therefore.

8. A new §685.17 is added to read as follows:

§ 685.17 Availability of records for inspection. Any fish dealer shall provide an authorized officer access for inspecting and copying all records of fish purchases, sales, or other transactions involving fish taken or handled by vessels that have permits issued under this part or are otherwise subject to this part, including but not limited to information concerning:

(a) The name of the vessel involved in each transaction and the owner or operator of the vessel;

(b) The amount, number, and size of each species of fish involved in each transaction; and

(c) The price(s) paid by the buyer and proceeds to the seller in each transaction.

9. A new § 685.18 is added to subpart A to read as follows:

§ 685.18 Framework procedures.

(a) Introduction. New management measures may be added, through rulemaking, if new information demonstrates that there are biological, social, or economic concerns in the fishery. The following framework process allows for measures that may affect operation of the fisheries, gear restrictions, quotas, or reductions or increases in longline catch and/or effort if the information supports such a change. Additional information may

indicate the need for new management measures for other sectors of the fishery, such as harvest guidelines, permits for certain classes of vessels, or reporting requirements.

(b) Annual report. By June 30 of each year, the Council-appointed Pelagics Plan Team will prepare an annual report on fisheries in the fishery management area, containing the following:

(i) Fishery performance data;

(ii) Summary of recent research and survey results;

(iii) Habitat conditions and recent alterations;

(iv) Enforcement activities and problems;

(v) Administrative action (e.g., data collection and reporting, permits);

(vi) State and territorial management actions;

(vii) Assessment of need for Council action (including biological, economic, social, enforcement, administrative, and state/Federal needs, problems, and trends). Indications of potential problems warranting further investigation may be signaled by indicator criteria. These criteria could include, but are not limited to, important changes in: mean size of the catch of any species; estimated ratio of fishing mortality to natural mortality for any species; decline in catch per unit effort by any sector; ex-vessel revenue of any sector; relative proportions of gear in and around the EEZ; rate of entry/exit of fishermen in the fisheries; revenues for a significant percentage of any sector; total pelagic landings; species composition of the pelagic landings; research results; habitat or environmental conditions; or level of interactions between pelagic fishing operations and protected species in the EEZ or surrounding waters.

(vii) Recommendations for Council action; and

(viii) Estimated impacts of recommended action.

(2) Recommendations for management action. The annual report shall specify any recommendations made by the Pelagics Plan Team to the Council. Recommendations may cover actions suggested for Federal regulations, state/territorial action,

enforcement or administrative elements, and research and data collection. Recommendations will include an assessment of urgency and the effects of not taking action and will indicate whether changes involve existing measures, which may be changed under § 685.18(c), or new measures, which may be implemented under § 685.18(d).

(c) Procedure for changing established measures.

(1) Established measures are those that are or have been in place via rulemaking procedures for various sectors of the fisheries, including, but not limited to: general longline fishery permits; limited entry longline fishery permits; longline logbooks and other reporting requirements; longline area closures; longline gear marking requirements; and longline vessel size limits. The estimated and potential impacts of these measures have been evaluated in past FMP amendments and associated documents.

(2) The Council will identify problems that may warrant action. This may be through the annual report described in paragraph (b)(1) of this section, or a separate report from the Pelagics Plan Team, the Advisory Subpanel, Pelagics Review Board, Scientific and Statistical Committee, pelagic fishery sector, enforcement officials, NMFS or other sources. The Council will discuss at its next meeting whether changes to established conservation and management measures would resolve the problem. Notice to the public and news media preceding the meeting will indicate that the Council intends to discuss and possibly recommend regulatory adjustments through the framework process for established measures to address the issue or problem. The notice must summarize the issue(s) and the basis for recommending the measures being reviewed and would refer interested parties to the document(s) pertaining to the issue. Based on the discussions at the meeting, which could include participation by the Pelagics Plan Team, Advisory Subpanel, Pelagics Review Board, Scientific and Statistical Committee, or other Council organizations, the Council will decide whether to recommend action by the Regional Director. The Regional Director will be

asked to indicate any special concerns or objections to the possible actions being considered under the framework process and, if there are any concerns or objections, will be asked for ways to resolve them.

(3) If the Council decides to proceed, a document will be prepared describing the problem and the proposed regulatory adjustment to resolve it. The document will demonstrate how the adjustment is consistent with the purposes of the established measure and that the impacts had been addressed in the document supporting the original imposition of the measure. The document will be submitted to the Regional Director with a recommendation for action. The Council may indicate its intent that the recommendations are to be approved or disapproved as a single action.

(4) If the Regional Director approves the Council's recommendation, the Secretary, in accordance with the Administrative Procedure Act, may implement the change in an established measure by publishing a final rule, waiving advance notice and comment. This does not preclude the Secretary from deciding to provide additional opportunity for advance notice and comment, but contemplates that the Council process will satisfy the requirements of the Magnuson Act and Administrative Procedure Act. It is emphasized that established measures are measures that have been evaluated and applied in the past, and adjustments are meant to be consistent with the original intent of the measure and within the scope of analysis in previous documents supporting the existing measure.

(5) Nothing in this section limits the authority of the Secretary to take emergency action under section 305(e) of the Magnuson Act.

(d) Procedure for implementing new measures.

(1) New measures are those that have not been used before or measures that, while previously applied, would be applied to another fishing sector (e.g., non-longline pelagic fishery) or gear type for the first time. New measures may have been previously considered in a past FMP amendment or document, but

the specific impacts on the persons to whom the measures would newly apply have not been evaluated in the context of current conditions. Potential new measures include, but are not limited to: permit requirements for new fishery sectors; reporting requirements for a fishery sector other than longline fishing; effort limitations; quotas (for total catch or by species) including individual transferable quotas; fractional licensing; or bycatch limits.

(2) A Pelagics Plan Team report (annual report or an in-season report), input from advisors, or input from NMFS or other agencies will first bring attention to a problem or issue that needs to be addressed at the next Council meeting. In its notice announcing the meeting, the Council will summarize the concern or issue raised, the party that has raised the problem, and the extent to which it is a new problem or a problem that may require new management measures. The Council will seek to identify all interested persons and organizations and solicit their involvement in discussion and resolution of this problem through the Council process, and the Council meeting notice in the Federal Register will emphasize that this problem will be discussed and that proposed actions may result.

(3) The document presenting the problem to the attention of the Council will be distributed to all advisory bodies of the Council who have not yet received it, with a request for comments. The document also will be distributed to the Council's mailing list associated with the FMP to solicit inputs and to indicate the Council will take up action at the following meeting. The Council's chairperson may request the Council's Pelagics Standing Committee to discuss the issue and review the comments (if any) of the Pelagics Plan Team, Advisory Panel, Pelagics Review Board, or Scientific and Statistical Committee, and develop recommendations for Council action.

(4) At the meeting, the Council will consider the recommendations of its Pelagics Standing Committee, if any, and other Council organizations and will take comments from the public concerning the possible course of action. If the Council

agrees to proceed with further action under the framework process, the issue will be placed on the agenda for the following meeting. A document describing the issue, alternative ways to resolve the issue, the preferred action, and the anticipated impacts of the preferred action, will be prepared and distributed to the public with a request for comments. A notice will be published in the Federal Register summarizing the Council's deliberations and preferred action and indicating the time and place for the Council meeting to take final action.

(5) In its notice for the following meeting, the Council will indicate that the Council may take final action on the possible adjustment to regulations under this section. At the meeting, the Council will consider the comments received as a result of its solicitation of comments and take public comments during the meeting on the issue or problem. The Council will consider any new information presented or collected and analyzed during the comment period. The Regional Director will be provided a specific opportunity to indicate any objections or concerns about any or all components of the measures being considered. The Council then will decide whether to propose a new measure or measures under this section.

(6) If the Council decides to proceed, the Council will submit its proposal to the Regional Director for consideration with supporting rationale and an analysis of the estimated biological, economic and social impacts of the proposed actions. The Council may indicate its intent that all components of its recommendations be approved or disapproved as a single action.

(7) If the Regional Director concurs, the Secretary, in accordance with the Administrative Procedure Act, may implement the new measure by publishing a final rule, waiving advance notice and comment. Nothing in this procedure is intended to preclude the Secretary from deciding to provide additional opportunity for advance notice and comment in the Federal Register, but contemplates that the Council process (which includes two Council meetings with opportunity for public comment at each) will satisfy that requirement.

(8) If a new action is approved and implemented, future adjustments may be made under the procedure for established measures.

(9) Nothing in this section limits the authority of the Secretary to take emergency action under section 305(e) of the Magnuson Act.

10. In § 685.25, paragraphs (a)(1) and (f) are revised to read as follows:

§ 685.25 Exemptions for longline fishing prohibited area; procedures.

* * *

(1) Currently owns a Hawaii longline limited entry permit issued under this part and registered for use with his vessel;

* * *

(f) The Council will consider information provided by persons with Hawaii longline limited entry permits issued under this part who believe they have experienced extreme financial hardship resulting from the Hawaii longline area closure, and will consider recommendations of the Pelagic Advisory Review Board to assess whether exemptions under this section should continue to be allowed, and, if appropriate, revise the qualifying criteria in paragraph (a) of this section to permit additional exemptions.

* * * * *

11. Section 685.23 is removed and §§ 685.24, 685.25, and 685.26 are redesignated §§ 685.23, 685.24, and 685.25, respectively.

12. Redesignated § 685.25 is removed and a new § 685.25 is added to read as follows:

§ 685.25 Port privileges and transiting for unpermitted longline

vessels. A U.S. longline fishing vessel that does not have a permit under paragraph 685.9(a)(1) or 685.9(a)(2) may enter waters of the fishery management area with Pacific pelagic management unit species on board, but may not land or transship any management unit species on board the vessel. The vessel's longline gear must be stowed or secured so it is rendered unusable during the time the vessel is in those waters.

APPENDIX 2

RESEARCH NEEDS RELATED TO AMENDMENT 7 PROPOSED ACTIONS

A three year work plan for quantifying the effect of longline fishing effort on Hawaii's pelagic fisheries was drafted by the Pelagic Plan Monitoring Team (PMT) in November 1990. This plan was adopted by the Council in December 1990 when it decided to establish the current longline moratorium on additional entry of vessels in the Hawaii longline fishery. The goal of the planned work was to identify the level of fishing effort at which the net benefits to Hawaii's pelagic fisheries are maximized. The approach outlined was to quantify the relationship between local catches (production) and fishing effort, and to define the value of the production and the cost of the effort.

The plan was proposed as a logical approach to providing a rational, scientific basis for determining the optimal level of fishing effort in Hawaii's pelagic fisheries. A few activities included in the plan are part of National Marine Fisheries Service (NMFS) and the state of Hawaii Division of Aquatic Resources (HDAR) ongoing programs. However, this ongoing work is only a small proportion of the research specified in this work plan. Funds to complete the rest of the tasks require new funding. Some of this has recently become available through the 5 year Western Pacific Pelagic Research Program authorized by Congress in 1991.

In February 1992, the PMT re-examined the proposed plan and made modifications to address changes which have occurred in the fishery. Most of the research will require more time than originally estimated because the problems have grown more complex. For example, much of the longline fleet has changed operations to fish for swordfish, and the fleet has also been excluded from areas where most fishing used to occur. It is now estimated the work could be completed in 4 years. New elements have also been identified regarding assessment of the new fishery for swordfish, which cannot be addressed using historical data.

Description of the Approach

Although it may be true that locally caught pelagic fish constitute a small fraction of stocks that extend beyond the range of Hawaii's fisheries, the rate of replacement of fish within the local area is finite. A useful definition of local overfishing would be when the local rate of exploitation approaches the rate of fish replacement, and local yield approaches an asymptote (Sathiendrakumar and Tisdell 1987, Boggs 1991). Beyond this level, increases in effort may not result in an increase in catch. This becomes overfishing in the economic sense because the costs of increasing effort are not compensated for by the value of the yield. The relationships between yield (and its value) and fishing effort, together with the relationship between the cost of fishing

operations and effort, define an optimal level of fishing effort. This is the approach outlined in the plan. The simplest approach is to document whether or not catch has increased in proportion to effort, and if not, to use the decline in catch per unit effort to estimate the asymptotic level of yield.

The research plan was designed only to quantify the effect of local effort on yield in various Hawaii pelagic fisheries, and to define the economic value of the yield and the cost of effort in the Hawaii longline fishery. It is possible that other Hawaii pelagic fisheries will also require regulations to prevent economic overfishing. Defining optimal effort levels for other pelagic fisheries will require additional work.

Work Plan Outline

I. Develop local asymptotic yield models from catch and effort data

   A. Use historical data to make projections of catch

      1. Obtain area summaries of 1956-80 foreign longline data
      2. Summarize domestic catch and effort by gear type and area
      3. Standardize effort statistics from diverse gears/sources
      4. Incorporate seasonal effects on local CPUE dynamics
      5. Index catch against stock-wide CPUE, or other factors
      6. Project indexed catch versus standardized effort by area
         a. For each pelagic fishery (gear type)
         b. For all pelagic fisheries combined (if possible)

   B. Examine 1991-1993 (or later) data for evidence of asymptotic local yield (Relevant elements of A.2 and A.3 also apply to time data time series)

      1. Check if catches differ significantly from projections
      2. Check if CPUE by gear declines versus total effort (all gears)

   C. Fit local asymptotic yield model for use in determining whether adjustments in limited entry program needed

      1. Based on longline fishery alone
      2. Based on all gear types (dependent on A6b and B2)

II. Test alternative hypotheses for Changes in CPUE

   A. Check for stock-wide declines in abundance

      1. Obtain 1991-1993 (or later) catch and effort data for a wider area (requires cooperation with foreign scientists)

2. Obtain a substitute measure of stock-wide CPUE (long-term research to develop fishery-independent methods of stock assessment)

B. Check for environmental influences on local availability

1. Look for significant, fishery-independent factors (fishery oceanography)

C. Examine 1987-1993 (or later) data for economic factors

1. Check if trip activity is endogenous to CPUE and price
2. Estimate production substitution rates between gears,
3. Employ a search model to examine the economics of vessel movement and vessel interaction

D. Use revised model to predict optimal level of fishing effort

1. Incorporated new factors into local asymptotic model
2. Model bio-economic parameters to establish limited entry participation values
3. Examine trade-offs of possible adjustments in conjunction with participants

III. Develop simulation models of local overfishing

A. Synthesize information on fish growth, movement, and mortality

B. Model fish turnover and exploitation by each gear type

C. Estimate local asymptotic yields based on fishery simulations

IV. Develop stock assessment of swordfish fishery

The estimated costs for this research is approximately $3.5 million.

APPENDIX 3

BIOLOGICAL OPINION RESULTING FROM ENDANGERED SPECIES ACT SECTION 7 CONSULTATION ON THE TAKE OF SEA TURTLES IN THE HAWAII LONGLINE FISHERY

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213
TEL (310) 980-4000; FAX (310) 980-4018

JUN 15 1993 F/SW033:ETN

Ms. Kitty Simonds
Executive Director
Western Pacific Regional
Fishery Management Council
1164 Bishop Street, Suite 1405
Honolulu, Hawaii 96813

JUN 17

Dear Kitty,

Enclosed is a copy of the biological opinion completed by the National Marine Fisheries Service (NMFS) pursuant to an internal consultation in which the higher than anticipated levels of incidental take of listed sea turtles in the pelagics longline fishery is addressed. NMFS reinitiated consultation on this fishery because the number of sea turtles authorized for incidental take in the May 1991, biological opinion for Amendment No. 2 to the Pelagics FMP had been exceeded.

In this recent opinion, NMFS determined that the longline fishery adversely affects green, leatherback, loggerhead, olive ridely, and hawksbill turtles. However, there is a great deal of uncertainty about the actual levels of incidental take and an observer program is needed to document the incidental capture of sea turtles and verify logbook data. NMFS has concluded that allowing the longline fishery to continue for 12 months while observer data is collected and analyzed will not likely jeopardize the continued existence of listed species.

NMFS will reinitiate consultation 12 months from the date of this biological opinion to review information from the observer program, to assess the effect of the incidental take on the sea turtle populations, and to determine whether additional protective measures need to be implemented.

Sincerely,

Gary Matlock, Ph.D.
Acting Regional Director

Enclosure

cc: F/PR - W. Fox
F/SWO33 - E. Nitta

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1335 East-West Highway
Silver Spring, MD 20910
THE DIRECTOR

JUN 10 1993

MEMORANDUM FOR: The Record

FROM: Nancy Foster
(Acting)

SUBJECT: Reinitiation of Endangered Species Act Section 7 Consultation Concerning the Impacts on Sea Turtles by the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region.

The National Marine Fisheries Service (NMFS) reinitiated consultation under section 7 of the Endangered Species Act (ESA) for Hawaii longline fishing activities managed under the Fishery Management Plan for Pelagic Fisheries in the Western Pacific Region (Pelagics FMP), to address higher than anticipated levels of incidental take of listed sea turtles specified in the May 1991 biological opinion. Based on the attached biological opinion, NMFS has concluded that the activities of the Hawaii longline fishery are not likely to jeopardize the continued existence of listed species under the jurisdiction of NMFS for the 12 months the biological opinion is in effect.

However, NMFS concludes that the longline fishery adversely affects green, leatherback, loggerhead, olive ridley, and hawksbill turtles. Current estimates of incidental take, if accurate, may not be sustained by listed species on a continuing basis without the risk of jeopardizing their continued existence. In light of the uncertainties of the actual level of incidental take, NMFS finds that an observer program is required to document the incidental capture of sea turtles and to verify logbook data. NMFS may impose conservation measures in this fishery if the actual take of sea turtles is determined to be excessive.

NMFS will reinitiate ESA section 7 consultation no later than 12 months from the date of this biological opinion. At that time NMFS will assess the results of an observer program to measure the incidental capture of turtles in this fishery.

Attachment

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

Endangered Species Act

Section 7 Consultation

Biological Opinion

Agency: National Marine Fisheries Service (NMFS)

Activity: Impacts of the Hawaii longline fishery on listed sea turtles.

Consultation Conducted By: National Marine Fisheries Service

Date of Issuance: JUN 10 1993

Background

In late 1990 the Western Pacific Regional Fishery Management Council (WPRFMC) requested initiation of consultation regarding a proposed amendment to the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region (Pelagics FMP). This was to make permanent the emergency regulations promulgated for longline fishing under the Pelagics FMP in response to allegations of takings of endangered Hawaiian monk seals during longline fishing in proximity to certain islands and atolls of the NWHI and a rapid increase in the number of longline fishing vessels in Hawaii which relocated from unproductive fisheries on the east coast of the United States and the Gulf of Mexico. Consultation was completed and a Biological Opinion issued to the WPRFMC on May 15, 1991. NMFS found that operation of the pelagic longline fishery in proximity to the NWHI would likely jeopardize the continued existence of the endangered Hawaiian monk seal, and required a moratorium on longline fishing within 50 nautical miles of the islands and atolls of the NWHI. Adverse effects such as entanglement and mortality of green, leatherback, and olive ridley turtles were also identified but found not likely to jeopardize the continued existence of these populations.

In response to concerns regarding the rapid growth of the longline fishery, the absence of data on catch, effort, and the incidental takes of Hawaiian monk seals and other protected species in the pelagic longline fishery, the WPRFMC developed emergency regulations which were published by the NMFS in the Federal Register (55 FR 49285) on November 27, 1990, under the Pelagics FMP. These regulations implemented requirements for fishing logbooks, permits to fish with longline gear within the management area, and taking observers as requested when intending to fish within 50 nautical miles of French Frigate Shoals, Gardner Pinnacles, Laysan Island, Lisianski Island, Pearl and Hermes Reef, Midway Islands, and Kure Island. These emergency regulations expired on February 24, 1991, but were extended for an additional 90 days to May 25, 1991 (56 FR 5159, February 8, 1991).

The regulations implementing Amendment No. 2 to the Pelagics FMP became effective on May 26, 1991, and replaced the emergency regulations of November 27, 1990, with additional restrictions (56 FR 24731, May 31, 1991). The major change from the emergency regulations was codification of the authority of the Regional Director to modify the size of the study area around the islands and atolls from Kure to French Frigate Shoals.

The primary objective of the amendment was to increase the quality and quantity of data on the domestic longline fishery based in Hawaii. A second objective was to provide information on the incidence of interactions between listed species and the fishery and the level of impact to the affected populations.

The protected species study zone was closed to longline fishing through emergency rule (50 FR 15842, April 18, 1991) based on further reports of monk seals taken in the fishery. Regulations implementing a permanent closure under Amendment No. 3 were published on October 18, 1991 (56 FR 52214). Although the closure of the zone eliminated the observer requirement, Amendment No. 3 provided a mechanism for establishing observer programs as necessary for the fishery in other areas.

A review of 1991 longline logbook data and the Annual Report of the 1991 Western Pacific Longline Fishery (Southwest Fisheries Science Center, Honolulu Laboratory Administrative Report H-92-11) indicated an incidental take of listed sea turtles by the Hawaii-based longline fishery that exceeded the authorized annual take (25) provided in the May 1991 Biological Opinion. Analysis of the 1991 logbook data also indicated significant fishing effort outside of the U.S. EEZ around the Hawaiian Islands, a factor which was not considered in previous consultations for the Pelagics FMP.

Proposed Activities

NMFS is reinitiating consultation for Hawaii longline fishing activities managed under the Fishery Management Plan for Pelagic Fisheries in the Western Pacific Region (FMP), to address higher than anticipated level of incidental take of listed sea turtles specified in the May 1991 Biological Opinion.

Listed Species That May Occur in the Activity Area

Hawaiian monk seal (*Monachus schauinslandi*) - endangered
Green turtle (*Chelonia mydas*) - threatened
Leatherback turtle (*Dermochelys coriacea*) - endangered
Loggerhead turtle (*Caretta caretta*) - threatened
Hawksbill turtle (*Eretmochelys imbricata*) - endangered
Olive ridley turtle (*Lepidochelys olivacea*) - threatened

Sperm whale (Physeter macrocephalus) - endangered
Humpback whale (Megaptera novaeangliae) - endangered

Two additional species, the hawksbill turtle and loggerhead turtle, that are considered in this consultation were not covered in the May 1991 Biological Opinion. Summaries of the distribution and biology of these two species are provided below. The status of the other species has not changed since May 1991, and the information contained in the 1991 Biological Opinion is incorporated by reference.

Biology and Distribution of Species

Loggerhead Turtle

The loggerhead turtle is a cosmopolitan species found in temperate and subtropical waters. Nearly all nesting occurs north of 25° N or south of 25° S. Adult loggerheads undertake long reproductive migrations between their historical nesting sites and foraging areas. However, their dispersal patterns in foraging areas are not well known for any population.

In the North Pacific Ocean the only major nesting beaches are in the southern part of Japan (Dodd, 1988). Although reliable counts are not available, as many as 2,000-3,000 loggerhead turtles may nest annually on beaches throughout Japan. Immature loggerhead turtles encountered during driftnet fishing in the North Pacific Ocean may originate from nesting beaches in Japan, being transported to the north and east by the Kuroshio Current and its extension (Wetherall et al., in press). Loggerhead turtles reported taken in the Hawaii longline fishery may be of the same origin.

Hawksbill Turtle

The hawksbill turtle is commonly considered one of the most endangered species of marine turtles due to the long history of international commercial trade in tortoise shell. The hawksbill turtle occurs circum-globally and is the most tropical of all marine turtles. Hawksbill turtles are declining throughout their range and there are former nesting grounds in the North Pacific where the species once occurred but occurs no longer.

Nesting is widespread, but sparse, in tropical regions worldwide; large nesting colonies are atypical. Following a long developmental period of perhaps more than 30 years, adult turtles forage in coral reef systems of the tropical Pacific. Sexually mature females migrate every two or three years between foraging and nesting grounds. Adult males also display some degree of ability for long distance movement (Eckert, 1993). In the

Pacific Ocean, with the exception of Australia, nesting does not occur in abundance (Groombridge and Luxmoor 1989).

Hawksbill turtles encountered in the North Pacific high seas driftnet fisheries and Hawaii longline fishery may originate from the scattered nesting sites to the southwest in the Hawaiian Islands (see Balazs et al. 1990), or from southern Japan, including the Ryukyu Islands, where hawksbill turtle nesting occurs as a rare event (Uchida and Nishiwaki, 1982, Kamezaki 1987, Teruya and Uchida 1988).

Impacts on Species Other Than From Commercial Fishing

All species of sea turtles incidentally taken in the Hawaii longline fishery are also in decline due to continued exploitation of nesting females and their eggs on nesting beaches, destruction of nesting beaches by development projects and marine pollution. The status of these species and an assessment of overall impacts is extensively reviewed in Eckert, (1993), which is incorporated by reference. For example, in Malaysia and Mexico, the principal nesting areas for leatherback turtles, turtles that once arrived at nesting beaches in the tens of thousands annually, now arrive in tens or at most hundreds annually (Eckert, pers. comm, 1993). The collapse was precipitated by a tremendous overharvest of eggs coupled with the incidental killing at sea. In Mexico, much of the killing of turtles and taking of eggs has been reduced. However, little is being done to limit the killing of the turtles away from nesting grounds.

Potential Impacts on Species

The Endangered Species Act of 1973, as amended (ESA), prohibits the taking of endangered species except under limited circumstances. These include, but are not limited to scientific research under permit, actions taken by NMFS or U.S. Fish and Wildlife Service (FWS) personnel to salvage or rescue a stranded or distressed endangered animal, and take allowed under a Biological Opinion for a specific activity that has been reviewed under Section 7 of the ESA. Although annual levels of incidental take of listed sea turtles were specified in the original Biological Opinion for the Pelagics FMP, and in the Biological Opinion for Amendment No. 2 to the FMP, there was no allowable take for Hawaiian monk seals in either Opinion.

All fisheries in Hawaii are classified as Category III under the Marine Mammal Protection Act (57 FR 20328, May 12, 1992). These fisheries have been determined to have a remote likelihood of incidental takings of marine mammals. This does not mean that there are no interactions, only that marine mammals are not normally hooked, snagged, injured or killed during

fishing operations. Interaction incidents must be reported to the NMFS. Although incidental takes of Hawaiian monk seals occurred in the longline fishery in 1990 and 1991, closure of the protected species study zone in April 1991 appears to have eliminated interactions with the longline fleet, at least according to logbook data.

There are no confirmed incidents of sperm whale interactions with longline fishing gear in Hawaiian waters. One humpback whale was observed entangled in longline gear in 1991.

Incidental take of green, leatherback, and olive ridley turtles by longline vessels is documented from the central and western Pacific (Balazs 1982). Entanglement of green, hawksbill, and olive ridley turtles in lost and discarded fishing gear (monofilament net and line) in the central Pacific was also noted by Balazs (1984).

A leatherback turtle (Dermochelys coriacea) was found entangled in the main line of a lobster trap string near Kure Atoll in 1980. The turtle was released. Another leatherback turtle was hooked during experimental longline fishing for swordfish during a NMFS research cruise in the NWHI in 1991 and released alive, but with the hook ingested (Skillman and Balazs, 1992).

Nishemura and Nakahigashi (1990) estimated an incidental capture rate of 0.1 turtles/1,000 hooks for the Japanese tuna longline fishing fleet worldwide. Turtle mortality was estimated at 42% of turtles retrieved. Overall turtle take by the Japanese longline fleet in the Western Pacific and South China Sea was estimated at 21,200 with 12,296 retrieved dead annually. These estimates were based on commercial logbooks, research vessel data and a questionnaire distributed to research and training vessels which operate with longline and bottom trawl gear in locations which overlap with commercial fishing vessels.

Applying the rates of capture and mortality reported by Nishemura and Nakahigashi (1990), to the 1991 Hawaii longline fishing effort of 12,323,686 hooks, results in an estimated incidental take of approximately 1,232 turtles, with 517 mortalities.

Aguilar et al. (1992) estimated an annual incidental catch of more than 20,000 loggerhead turtles by the Spanish swordfish longline fleet (30-60 vessels) in the Mediterranean Sea based on two years of observer data and a survey of longline vessel skippers. The mean hook rate from observer data in July and August 1991 was nearly 4.5 turtles/1,000 hooks and corresponded to greatly increased fishing effort. Although there were no data presented on the number of turtles found dead, most of the turtles were released alive with the hook still lodged

internally. Mortality rates of 20 to 30 percent were calculated from observations of animals taken alive in the fishery and held in captivity. Bentivegna, et. al. (1993) reported that turtles that had ingested longline hooks and that were brought to the Naples Aquarium, rarely survived due to lodging of the hooks in the esophagus.

At the rate of 4.5 turtles captured/1,000 hooks, the Hawaii longline fleet is estimated to take approximately 55,457 turtles with up to 16,637 killed, based on reported 1991 effort of 12,323,686 hooks.

Witzell (1984) estimated the incidental take rate of sea turtles by the Japanese tuna longline fleet in the Atlantic U.S. and Gulf of Mexico EEZ for 1978-81 at 0.007 and 0.018 turtles/1,000 hooks respectively for the Japanese tuna longline fishing fleet. The estimates were based on tuna observers who collected turtle captures opportunistically and fishing logbooks. A total of 330 turtles (leatherback, green, Kemp's ridley, and loggerhead turtles) were estimated taken on 28,360,191 hooks over the four year period, a rate of one turtle per 86,000 hooks. The percentage of turtles released alive in both areas studied was 70.44% in the Atlantic and 93.3% in the Gulf of Mexico.

These wide ranges of incidental catch rates for these various fisheries are likely due to a number of factors. In the Spanish fishery seasonality and effort appear to influence catch rates greatly. The distribution and density of the various species of sea turtles are additional variables that will affect incidental catch rates for all fisheries. There is also likely a problem with species identification for green, loggerhead, olive ridley, and hawksbill turtles reported observed or taken in the logbooks for the Hawaii longline fishery. For example, position plots of green turtles taken in 1991 show only two within the Hawaii EEZ and most of the remainder (19) in the pelagic zone between 25° - 35°N and 160° - 170°W. Unless all of these reported green turtles were developmental juveniles ≤3 years old it would seem unlikely that all would have been green turtles, but more likely loggerhead turtles. For example, on one observer trip an olive ridley turtle was misidentified as a hawksbill by the skipper.

Post-release Mortality of Sea Turtles

The capture of sea turtles during longline fishing is of increasing concern worldwide. Many if not most of the turtles caught in this manner are still alive when brought on deck. However, evidence increasingly suggests that a large percentage of released turtles released in the longline fishery have received fatal injuries and will die within a short time.

Upon retrieval of turtles, captured incidentally, fishing line has often been reported extending well down the esophagus, with no hook visible. The usual practice is to cut the line as close to the mouth as possible and immediately release the turtle overboard. Although physically active when let go, the ultimate fate of these turtles, with the imbedded hook somewhere in the upper gastrointestinal (GI) tract, is questionable. The turtle upon release, will swim away and may live for days, weeks or months before dying.

Swallowing of the baited hook deep into the esophagus or stomach is the most probable manner of capture of turtles by the longline fishery. Unpublished studies on the esophageal pressure of sea turtles during the intake of food have shown that swallowing is facilitated by a powerful "hydraulic pump." When the esophagus relaxes, seawater along with the selected food is taken into the mouth and propelled down the esophagus. Once there, it is retained by esophageal papillae that are present in all species of sea turtles. Several forceful pumping cycles move the food along the esophagus into the stomach. Following each ingestion of seawater and food, a strong contraction of the esophagus expels the excess water. The result is separation of food from seawater. In the case of baited hooks, the "food" will usually be sucked in well past the horny structures of the mouth before the hook sets itself into soft tissue of the GI tract.

Perforation of the turtle's GI tract resulting from the hook's penetration could be expected to eventually result in both chemical and bacterial peritonitis and septicemia. However, another factor of potentially greater significance is that the turtle will struggle when reaching the limit of the attached line. The resulting stress on the GI tract would produce a damaging condition known as intussusception, or invagination (telescoping) of one segment of the GI tract into the other. Even greater stress would be expected to result when the fishing line is reeled in and any hooked turtle is dragged along through the water column and hoisted aboard. In addition to direct GI tract damage, all of the adjacent internal organs would be placed under stress that could result in hemorrhage.

At present there is sufficient cause for concern from a deductive logical appraisal of the situation, based on the limited information available. Without the benefit of comprehensive research to understand what happens to a sea turtle hooked by longline, the best available information suggests that 20-30 percent of turtles released will die as a result of their wounds (Aguilar et al., 1992).

Authorized Incidental Take - 1991

NMFS estimated the incidental take of sea turtles and associated mortality for projected Hawaii longline fishing effort in 1991 as part of the consultation under section 7 of the Endangered Species Act (NMFS, 1991). Incidental catch and mortality was calculated based on the capture rates reported by Witzell (1984) for the Gulf of Mexico (.018 turtles/1,000 hooks), observed mortality of 29.6 per cent for the Atlantic, and projected longline fishing effort within the NWHI study zones of 1,400,000 hooks/year. The level of incidental take authorized for the Hawaii longline fishery in 1991 was 25 sea turtles including one (1) mortality each of leatherback, olive ridley, and green turtles (NMFS, 1991). This authorized take assumed that all turtles released alive survived, an assumption that is no longer valid. Reports of logbooks and observers (discussed below) showed that incidental take levels were well in excess of those authorized.

The 1991 authorized incidental take level and calculation of estimated total mortality was determined to be too low primarily because longline fishing effort was 8.8 times greater than anticipated. The actual annual fishing effort was estimated at 12,323,686 hooks, while only 1,400,000 hooks/year were anticipated. Using the same capture and mortality rates used in the 1991 biological opinion (NMFS, 1991) yields an annual incidental take of 222 turtles with 44 turtles retrieved dead.

Reported Incidental Take - 1991

Total longline fishing effort for all areas (MHI, NWHI, inside Hawaii EEZ, and outside Hawaii EEZ) for the year as reported by logbooks was 1,681 trips by 140 vessels with total effort represented by 12,323,686 hooks. Of the 140 vessels that submitted logbooks only 24 vessels reported interactions with sea turtles. There were 61 total incidental takes including 3 mortalities and 1 injury of sea turtles reported in the longline logbooks for 1991.

Using this number of reported captures, one can estimate an incidental take rate of .005 turtles/1,000 hooks, and an observed mortality rate of .0002 turtles/1,000 hooks, based on reported 1991 effort of 12,323,686 hooks.

Under-reporting and non-reporting of incidental catches must be considered when assessing these reported incidental take and mortality rates. As an indicator of logbook accuracy, a sample of logs from 1991 were compared to landings data (market and auction receipts) and only 47% of the logbooks submitted to NMFS were considered acceptable. The inaccuracies included misidentification of fish species and underlogging or non-reporting of catch. In 1992, the percentage of acceptable

logbooks reporting fish landings had risen to near 80%. However, while the accuracy of reports of fish landed can be readily verified when vessels return to port, the take of protected species cannot be verified except by on-board observers.

NMFS made a limited effort to document the capture of protected species in 1992, when longline fishermen were permitted to fish within the NWHI Study Zone. Eleven trips on longline vessels were observed between July 1990 and March 1992. Total fishing effort for these 11 trips included 109 sets and 81,478 hooks. Incidental takes of sea turtles were observed on 3 of the 11 trips. Three leatherback turtles were entangled and released, and two olive ridley turtles were caught on baited hooks, one of which was released alive and the other retrieved dead. Although the sample size is small and the variance likely very high, the incidental take rate estimated from these trips is 0.061 turtles/1,000 hooks with an estimated mortality rate of 0.012 turtles/1,000 hooks.

Using these observed rates, the total projected incidental take of turtles in 1991 by the Hawaiian longline fishery is estimated to have been 752 turtles with 148 mortalities (turtles retrieved dead).

Critical Habitat

Critical habitat for humpback whales, sperm whales, green, leatherback, loggerhead, hawksbill and olive ridley turtles has not been designated or proposed within or near the FMP management area. The following areas have been designated as critical habitat for the Hawaiian monk seal in the NWHI (53 FR 18990, May 26, 1988): All beach areas, sand spits and islets, including all beach crest vegetation to its deepest extent inland, lagoon waters, inner reef waters, and ocean waters out to a depth of 20 fathoms around the islands and atolls of the NWHI including Nihoa, Necker, French Frigate Shoals, Gardner Pinnacles, Maro Reef, Laysan, Lisianski, Pearl and Hermes Reef, Midway (except for Sand Island and its harbor), and Kure.

Amending the incidental take statement for potential sea turtle take associated with pelagic longline fishing governed under the Pelagics FMP, or requiring turtle conservation measures in this fishery will not affect critical habitat for the Hawaiian monk seal.

Cumulative Effects

"Cumulative effects" are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Japanese tuna longline fishing effort overlaps the area fished by the Hawaii longline fishery. The cumulative effect of the Japanese fishery on sea turtles in this area is highly detrimental, if reported estimates of take and mortality are accurate. Estimated annual take of turtles taken by the Japanese longline fleet in 1978 in the Western Pacific and South China Sea was 21,200 with 12,296 killed (Nishemura and Nakahigashi, 1990). The estimated take of turtles in the Japanese fishery was much higher then that reported or estimated in the Hawaiian longline fishery.

Foreign driftnet fishing in the North Pacific Ocean for squid and salmon has been occurring for the past 12-14 years and ceased at the end of 1992. Except for recent observer data there is virtually no information on the extent of incidental take of listed species during the early years of these fisheries. The cessation of commercial driftnet fishing will reduce the total incidental take of listed species from all commercial fishing in the North Pacific Ocean. However, nations involved in driftnet fishing and others have increasingly shifted to longline fishing worldwide.

Conclusions

Based on the available information, NMFS concludes that the Hawaii longline fishing activities conducted under the Pelagics FMP are not likely to jeopardize the continued existence of any threatened or endangered species under its jurisdiction during the 12 months this biological opinion is in effect. However, NMFS concludes that this fishery adversely affects leatherback, hawksbill, green, olive ridley and loggerhead sea turtles and that the authorized level of take established by this biological opinion may not likely be sustained by these species on a continuing basis without the risk of jeopardizing their continued existence.

Estimated incidental catch and mortality rates from the Hawaii longline fishery from very limited observer coverage indicate an annual potential incidental take of approximately 752 turtles and 148 observed mortalities for 1991. These estimates are based on 11 trips observed wherein five turtles were captured. The estimate is subject to error because of the small sampling effort and the associated high statistical variance. The estimates of take from logbooks submitted by Hawaii longline

fishermen show much lower numbers of takes (61), injury (1), and mortalities (3) for all of 1991. However, estimates based on fishermen's logbooks are subject to inaccuracies unless the reports can be verified, which was not the case for these reports.

By comparison, authorized incidental take levels by injury or mortality of sea turtles by the longline and drift gillnet fishery for swordfish in the Atlantic and Gulf of Mexico have been set at 22 individuals (NMFS, 1991). This level was established based on both observer and logbook data. However. because of the absence of observer-based data on incidental capture for the Hawaii longline fishery, a relatively high incidental take rate is established for a 12-month period during which more comprehensive information of any incidental take will be gathered.

In addition, the estimates of take by the Hawaii longline fishery do not take into account mortality of turtles released alive. Based on limited information discussed in this opinion, NMFS estimates that 25 percent of all turtles released alive will die of their wounds. Thus, with an estimate of 752 total turtles captured annually, 148 would be retrieved dead, and an additional 151 turtles would die after being released alive.

In light of the uncertainties of the actual level of incidental take, a take of 752 turtles is established for one year during which NMFS-approved observers, on-board longline vessels will document actual levels of incidental take and verify logbook data.

NMFS may impose conservation measures in this fishery, either under regulations implementing the Pelagics FMP, or under the Endangered Species Act, if the take of sea turtles in this fishery is determined to be excessive.

Conservation Recommendations

The following conservation recommendations are provided pursuant to Section 7(a)(1) of the ESA for developing management policies and regulations through the Pelagics FMP which would help in reducing adverse impacts to listed species in the central North Pacific Ocean.

The recommendations provided in the section 7 ESA consultation concerning the issuing of exemptions for commercial fishing operations under Section 114 of the MMPA (NMFS, 1989) are reiterated below, as well as additional measures to minimize the incidental take.

(1) NMFS should undertake research to determine the fate of turtles released alive after being incidentally caught in the Hawaii longline fishery, and thus more accurately estimate the impact of this fishery on listed turtles.

(2) NMFS should propose to the Western Pacific Fishery Management Council that it develop a plan amendment that would preclude increases in fishing effort until NMFS has determined that incidental sea turtle mortality has been managed at a level that will not preclude recovery and that increased fishing effort will not result in increased sea turtle mortality.

(3) NMFS should initiate discussions with the Department of State to lead to the exchange of data with other nations whose vessels fish with longline gear in the Pacific to determine the incidental take and mortality of sea turtles by time and area so these data can be used to assess the need for additional conservation measures on an international scale.

Statement Regarding Incidental Taking Pursuant to Section 7(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 may incidentally take individuals of listed species, NMFS will issue a statement that specifies the impact (amount or extent) of such incidental taking. It also states that reasonable and prudent measures be provided that are necessary to minimize such impacts. Incidental taking by the Federal agency or applicant that complies with the reasonable and prudent measures of this statement is authorized and exempt from the taking prohibition of the ESA.

A marine mammal species or population stock which is listed as threatened or endangered under the ESA is, by definition, also considered depleted under the Marine Mammal Protection Act of 1972 (MMPA). The ESA allows takings of threatened and endangered marine mammals only if authorized by Section 101(a)(5) of the MMPA. However, Section 101(a)(5) does not apply to commercial fisheries and accordingly no takings of listed marine mammals by the longline fishery are authorized.

The available information indicates that incidental taking of listed sea turtles occurs in pelagic longline fisheries in the central north Pacific Ocean. All turtle species affected by fisheries governed under this amendment have been reported either entangled in gear or hooked on deployed gear. Data on the level of incidental take in these fisheries were generated by the reporting requirements of Amendment No. 2 to the Pelagics FMP.

On the basis of effort reported by logbook in the new domestic longline fishery in the central north Pacific Ocean, incidental take rates derived from very limited observer data, and the status and distribution of green, leatherback, olive ridley, loggerhead, and hawksbill turtles in the NWHI and central Pacific Ocean, the incidental take level of listed sea turtles for the Hawaii longline fishery throughout the activity area is authorized at 752 individuals. A take by injury or mortality (turtles retrieved dead) of 299 individuals is authorized. Injury is defined as turtles that are released still entangled with fishing gear and 25 percent of those turtles released alive where the swallowed hook was not retrieved and the fishing line was cut. NMFS assumes that 25 percent of turtles released in this manner will subsequently die as a result of swallowing the hook. This level includes any observed or estimated take by capture or injury or other manner; but no more than 150 leatherback turtles may be taken in a manner that is observed to result in mortality or serious injury.

If the authorized level of take is met or exceeded, if mortalities or serious injuries exceed the authorized levels, or if projections indicate excessive incidental taking, then consultation must be reinitiated, and turtle conservation measures may be imposed.

Reasonable and Prudent Measures

The following reasonable and prudent measures must be implemented to allow activities conducted under the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region, to continue. These measures are necessary to monitor and minimize impacts on endangered and threatened sea turtles:

(1) NMFS shall establish a voluntary observer program in the Hawaii longline fishery no later than 30 days from the date of this biological opinion. Observer coverage of the longline fishing effort shall be sufficient to produce statistically significant results and to evaluate the accuracy of logbook data submitted for this fishery. Observers shall also collect information to facilitate understanding the dynamics of the interaction with sea turtles and other protected species.

(2) NMFS shall establish a mandatory observer program in the Hawaii longline fishery as soon as practicable. An automated vessel monitoring system shall be implemented as part of this program to verify the location of "non-observed" vessels and to help verify the accuracy of logbook reports. NMFS shall prepare a plan for this program, for submission to the Director, Office of Protected Resources. no later than 60 days from the date of this biological opinion.

(3) NMFS must evaluate observer information quarterly and other available information when available to determine whether the incidental take level should be modified or if other management measures need to be implemented to reduce the take. NMFS will impose appropriate conservation measures, either under regulations implementing the Pelagics FMP, or under the authority of the Endangered Species Act. Such actions may include area or seasonal closures, gear restrictions, gear modification requirements, fishing quotas, or limited entry.

(4) NMFS shall evaluate methods and experimental designs that can be utilized to determine the fate of turtles released alive after being incidentally caught in the Hawaii longline fishery. A report evaluating these experimental methods must be submitted to the Director, Office of Protected Resources by January 1, 1994.

(5) Any sea turtle incidentally taken must be handled with due care to prevent injury to live animals, observed for activity, resuscitated if necessary, and returned to the water, as provided in 50 CFR 227.72(e)(1)(i).

(6) Unless reinitiated earlier, consultation must be reinitiated no later than 12 months from the date of this Biological Opinion.

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APPENDIX 4

SSC Discussion and Recommendations

NMFS Biological Opinion
Regarding Interactions between Longlines and Turtles

31 August 1993

(Note: This report and component recommendations were adopted by the Council at its 81st meeting on 16 September 1993.)

In June 1993, the NMFS issued a biological opinion and incidental take statement for the Pelagics Fishery Management Plan (FMP), regarding the interactions between Hawaii-based longline fishing operations and marine turtles. Because the opinion will guide the NMFS' management approach to this fishery, the Scientific & Statistical Committee (SSC) was asked to review the opinion and comment to the Council as to the scientific information and management recommendations contained in the biological opinion.

The SSC organized an *ad hoc* committee to review the opinion and develop recommendations for consideration by the full SSC. The committee was comprised of SSC members Paul Callaghan, Rick Deriso and John Hampton, as well as Jeffrey Miller of the Queensland Department of Environment and Heritage. The SSC invited Dr. Miller to attend because of his expertise in the field of marine turtle biology and ecology. The committee met in the Council office on 24 August 1993. The committee reviewed the literature cited in the biological opinion, as well as information from other sources. The SSC met at the NMFS Honolulu Laboratory from 25-27 August 1993. Paul Callaghan chaired both meetings.

Section 7 of the Endangered Species Act requires inter-agency consultation to ensure that federal activities will not threaten the continued existence of listed species. The Council requested Section 7 consultation at the time of Amendment 2 to the Pelagics FMP, which established permits, logbooks, and limited observer coverage for the Hawaii longline fishery. A biological opinion and its associated incidental take statement was issued in May 1991 that used turtle catch rates from the Atlantic and Gulf of Mexico longline fisheries, expanded to longline effort levels in the Northwestern Hawaiian Islands (NWHI) in 1991, to establish an allowable annual incidental capture of 25 turtles for the fishery, with an allowable mortality of one turtle per species. The original opinion noted that most fishing was, at that time, conducted near Hawaii, and made several management recommendations including: closing the area within 50 miles of the NWHI to protect monk seals, requiring vessel captains to attend seminars on protected species, investigating the effects of vessel lighting on green

A Council Authorized by the Magnuson Fishery Conservation and Management Act of 1976

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turtle hatchlings, and re-initiating the consultation process if the authorized incidental capture was exceeded.

The Council requested another consultation for Amendment 3 to the FMP, which established a NWHI protected species zone closed to longline fishing. The NMFS responded in June 1991 that the Council's actions were consistent with recommendations contained in the previous biological opinion.

The Hawaii longline fishery's incidental capture of marine turtles in 1992 exceeded the authorized level of 25, so the consultation process was re-initiated. In June 1993, the NMFS issued the latest biological opinion; this opinion stated that the longline fishery adversely affects turtles, but that continued fishing operations for 12 months would not threaten the continued existence of any species. The opinion noted that much of the longline fishing is now conducted far from the islands, that total 1992 fishing effort was greater than the NWHI effort level used in 1991 to calculate the original authorized incidental capture level, and that there is much uncertainty about actual rates of turtle interactions and fishing-induced mortality. The biological opinion also noted that marine turtles as a group are in decline due to many causes, including fishing. Information reported by fishermen in their federal logbooks appears to be adequate for fish catch and effort, but is of questionable value for assessing interactions with protected species. Based on limited data, the biological opinion estimated that the 1992 Hawaii longline fishery captured 752 turtles, that 148 were retrieved dead, and that another 151 died after being released alive. As a result, the biological opinion established an authorized incidental capture of 752 turtles (and associated mortality) for the next 12 months.

The SSC and its *ad hoc* committee reviewed the biological opinion and its supporting documents, and offer the following observations and recommendations for consideration by the Council.

There is little information on turtle interaction rates and resultant mortality, especially within the area fished by Hawaii longliners, and at the species level. There is little confidence in published capture rates and observations such as the relative occurrence of hook ingestion and resulting mortality. The impact of the Hawaii longline fishery on marine turtle populations is unclear. We do know that the fishery captures several species of turtles and that some turtles die as a result. There are many other sources of turtle mortality, including other fishing gear types (e.g., trawls and gillnets) that have a turtle bycatch, with potentially higher levels of mortality than pelagic longlines. In assessing the impact of the fishery, one must remember that there is no evidence of density-dependant changes in turtle populations (i.e., unlike the case with some fish species, there is no evidence that increased mortality on adult marine turtles has resulted in increased population growth).

The use of observers will provide the necessary information to estimate turtle captures and mortality which, in turn, will lead to better-informed management decisions. However, it is impossible to assess turtle populations or the impact of fishery interactions on those populations through observer programs alone. Additional information on growth rates, survivorship, longevity, fecundity, etc., is also required to complete these assessments.

Extrapolations from data collected elsewhere that are presented in the biological opinion must be viewed with caution. This includes extrapolations from observer data collected in the NWHI protected species study zone, a relatively nearshore area where turtle densities and interactions may be higher. Interaction rates and mortality estimates vary widely around the world, and it is tenuous to make management recommendations based on extrapolations. However, the fact that we do not have this critical information does not mean that the issue should be ignored. The use of data from other sources is warranted until locally-generated data provide management guidance. The Council is sensitive to the issue of protected species, and has demonstrated its desire to work with the NMFS and the fishing community to develop and maintain a viable fishery, while conserving protected resources. However, given the paucity of relevant data, it is extremely difficult to estimate an allowable turtle take with any confidence.

The SSC offers the following comments on the conservation recommendations contained in the biological opinion and the reasonable and prudent measures in the incidental take statement.

NMFS Conservation Recommendation 1: The biological opinion recommends research to determine the fate of turtles released alive after being incidentally caught.

The SSC believes that the NMFS should undertake broader research on turtles to get as much information as possible on those incidentally caught. Knowing their fate after release is only one aspect of the information needed to properly manage these interactions (see below).

- **The SSC recommends that the NMFS expand the scope of this recommendation. (See comments on NMFS Reasonable and Prudent Recommendation 4, below).**

NMFS Conservation Recommendation 2: The biological opinion wishes the Council to develop a plan amendment that precludes an increase in longline harvesting effort. The biological opinion states that this harvesting cap would remain in place until the NMFS determines that incidental turtle mortality has been managed at a level that will not preclude recovery.

The SSC believes that proving this negative is an impossible scientific endeavor. Even to determine that turtle population recovery is likely at any given level of incidental mortality by longliners would require much more detailed information on turtle population dynamics (including other sources of mortality); these data will not be available in the short term. The SSC understands that NMFS Recommendation 2 is contrary to the Council's desire to allow vessel owners in the limited entry program to upgrade their vessels without restriction. The SSC understands that the preferred alternative in Amendment 7 will cap the number of vessels at the current limit of 166. The preferred alternative in Amendment 7 might lead to some increase in the number of vessels actively fishing, and may also lead to an increase in harvesting effort by some vessels. However, the SSC believes that NMFS Recommendation 2 would be extremely difficult to administer and enforce, and that trying to cap effort (beyond the cap on vessels proposed in the preferred alternative of Amendment 7)

is not justified by the available data. The NMFS recommendation implies that capping effort at current levels is a solution to turtle mortality, but other factors such as natural and seasonal variations in catchability, distribution, etc., influence interactions to an unknown degree. A 12-month limit on harvesting effort is unlikely to have any significant impact on cumulative turtle captures or mortality.

- **The SSC recommends the Council to proceed with its preferred alternative as described in the 1 July 1993 version of proposed Amendment 7. This preferred alternative includes the current limit of 166 vessels, an allowance for vessel owners to transfer permits freely and upgrade vessel size and harvesting abilities, a provision for mandatory observers, and a framework mechanism that will allow the Council to adjust effort, harvest, or turtle take, if necessary.**

  (Note: After initially adopting the above recommendation, the Council subsequently overturned it when taking final action on Amendment 7.)

NMFS Conservation Recommendation 3: The NMFS proposes to work with other countries to exchange data on interactions between fisheries and turtles.

- **The SSC recommends that the Council request substantive information on incidental turtle captures by species. Species-specific data are critical to management decisions, but are lacking in many existing data sets.**

NMFS Reasonable and Prudent Measures 1 and 2: The NMFS proposes to establish an observer program, first voluntary, then mandatory.

The SSC believes that an observer program can provide essential information on turtle interactions. The observer program must be based on a sound experimental design, and should be integrated with the larger goal of characterizing the fisheries and interactions with protected species, as well as an improved assessment of turtle populations. In addition to well-trained observers operating under a good plan, educating all members of the fishing community is essential for resolving the turtle issue.

- **The SSC recommends that a NMFS observer program be established as soon as practicable, and urges the SSC and Council to assist the NMFS in ensuring that the observer program is successful. To be successful in obtaining essential information for reducing the negative impacts on turtles by longline fishing, it is imperative that the observers collect information on turtle species, size, sex, hook location on/in turtle's body, capture location (area, date, depth and time), bait used, and for turtles that are dead, collect stomach contents, tissue samples (muscle, fat, liver), tumors and blood, for examination of mtDNA, toxins and heavy metals. The genetic analyses will provide information on turtle population inter-relationships, which is essential for cooperative international management.**

- **The SSC also recommends that the Council and NMFS include the longline fishing community in the development of the observer program as early as**

possible to create a valuable partnership and ensure the program's success. This includes on-going training of both captains and crew members.

The biological opinion would also require an automated vessel monitoring system (VMS) on longline vessels, in addition to observers.

The SSC understands that a VMS would allow spatially-stratified expansion of observer information on turtle bycatch to the total fleet. However, such expansions can also be performed using federal logbook data, assuming that fishing location and effort are reported accurately in the logbooks. The SSC understands that the Council is moving forward with its initiative to require the use of a VMS on Hawaii longliners for the enforcement of area closures. The biological opinion proposal to immediately link VMS requirements to the observer program makes the assumption that fishermen do not accurately report their fishing position, but the SSC believes that enforcement of locations reported in logbooks appears to be a weak justification for mandating fishermen to use this new and expensive technology. Logbook information is sufficient to construct a scientifically-valid expansion of the observer data.

- **The SSC recommends that the proposed requirement for a VMS be removed from the NMFS management recommendations so that the Council, NMFS, and Coast Guard may continue to develop VMS requirements for the longline fishery in an orderly and deliberate manner.**

NMFS Reasonable and Prudent Measure 3: The NMFS intends to monitor observer information quarterly to determine the need to modify the authorized incidental capture, or to take other management action.

As worded, the recommendation appears to allow quarterly adjustment of the incidental take statement.

- **The SSC believes that, rather than quarterly modification of the authorized take, a more appropriate action would be to activate the framework management mechanism established by Amendment 7 to control fishing effort, harvest, or possibly use other means to reduce turtle mortality (e.g., changes in fishing activity or gear configuration).**

- **The SSC recommends that the NMFS, in assessing the impact of incidentally-caught turtles, also consider information on other sources of marine turtle mortality, including debris entanglement and ingestion, interactions with other gear types, directed fisheries for turtles and their eggs, habitat destruction, etc., in order to more fully understand the relative and cumulative impacts on turtle populations.**

NMFS Reasonable and Prudent Measure 4: The NMFS proposed to evaluate ways to determine the fate of released turtles.

The SSC suggests that 1 January 1994 appears to be an impossible deadline to develop and assess such methods.

- **The SSC recommends that, in addition to evaluating existing methods, the NMFS should also look into developing new methods reducing interactions and determining the fate of released turtles. This initiative should be closely linked to the observer program.**

- **The SSC further recommends that our understanding of the fate of released turtles would be expanded by training observers in tag and release methods, and other related techniques, so that all turtles released can potentially provide useful information.**

NMFS Reasonable and Prudent Measure 5: This recommendation reiterates the federal requirements to handle turtles carefully, and to resuscitate them if necessary.

Some of the existing requirements, however, appear to be contrary to rational methods for handling sea turtles.

- **The SSC recommends that the NMFS and Council review the federal regulations (in 50 CFR 227.72) on handling turtles and revise them, as needed.**

- **In addition, guidelines should be developed for observers who handle turtles that are seriously injured. Presently, federal regulations require the release of all living turtles, but injured animals might survive better if taken to shore and treated.**

NMFS Reasonable and Prudent Measure 6: The NMFS intends to re-initiate consultation on this issue within 12 months.

The SSC understands the legal basis for this, but stresses that the available data on turtle interactions should be reviewed on an ongoing basis so that potential problems can be dealt with in a prudent and appropriate manner.

- **The SSC stresses that the conservation of turtles is important, and recommends that the NMFS continually analyze the observer results, and provide quarterly reports to the SSC and Council so that potential interactions can be addressed appropriately.**

The SSC believes that the biological opinion would have been better written in a more complete and objective manner. In future documents of this nature, the SSC urges the NMFS to provide tables of relevant data to support the conclusions, which will facilitate review and comparison of the information.

APPENDIX 5
EXAMPLES OF "NEW MEASURES" UNDER THE FRAMEWORK PROCEDURES

A number of adjustment mechanisms could be established as "new measures", or possibly "controversial measures" to adjust the effective effort in the fisheries. These include but are not limited to the following:

Fractional licenses: This is a relatively new variation on the use of limited entry permits in a fishery such that market mechanisms determine who will participate in a fishery under different levels of effort. This approach involves setting an initial limit on the units to be allowed in a fishery or fishery sector and adjusting it over time in response to changing stock or economic conditions. For example, an initial limit of 100 "participation units" (e.g., vessel years) might be permitted in a fishery initially, with one unit assigned to each of the 100 vessels then in the fleet. Assume it is subsequently determined that, due to stock declines, catch competition or economic problems, the limit should be reduced to 75 units. Each holder of an original unit would then be established to be worth 0.75 of a participation unit, but it would take a full participation unit to participate in the fishery. It would then be anticipated that participants in the fishery would buy and sell (or lease) fractional participation units with the ultimate effect of reducing the fleet to 75 units. The holders of the original units would try to maximize their respective incomes from either participating in the fishery (buying shares of participation units) or from selling or leasing their shares to others. On the other hand, two years later, it might be found that the allowable number of units could increase to 125, or 1.25 times as many units as originally allowed. Each original unit would then become "worth" 1.25 units. Again, a market would likely develop in which persons would buy, sell, and lease participation unit shares in order to maximize their respective incomes. The advantages of this approach are that (a) it allows for adjusting effort up and down in response to changing fishery conditions and additional information and (b) it allows market forces to determine exactly who participates rather than government dictates and judgments. New entry can be accommodated in the same manner.

Specialized permits: Another adjustment mechanism could be through the use of different types of permits. If, for example, the Council wanted to allow some initial expansion of effort they might issue provisional permits, which might be restricted in their area of use or duration. Permit holders would be informed upon issuance that if effort reduction was needed in the future, these permits would be the first to be reduced. This reduction could be accomplished in a number of ways, such as not renewing these limited duration permits or limiting continued participation to permit holders with the most number of points based on specified performance criteria (e.g., length of participation, harvesting history, etc).

Consolidation of Permits: The Council could also develop a mechanism which would both allow increases in harvesting capacity and reduce the number of permits. A fisherman could be permitted to buy more than one permit and consolidate them into one permit to be used with a vessel with greater harvesting capacity.

Individual Transferable Quotas: Under an ITQ system, each participant is assigned an ownership "share" of a total allowable catch (TAC) for a fishery. This share could be based on historic participation and landings, or other criteria. Once a TAC is set for the entire fishery, each participant's share, would translate into a portion of the TAC. The participant would be free to determine when to fish for this share, or even whether to sell or lease that share for the year. This allows a market to be established in which prospective participants determine, based on individual circumstances, whether they are more likely to maximize their personal benefits by fishing or not fishing, and if they decide to fish, they can decide to fish at a specific time of the year. By making shares transferable, ownership should eventually rest with the most efficient harvesters, since they will be best able to pay the highest price to obtain TAC shares, thus economic efficiency is likely to result. This also should help reduce or eliminate the "derby fishery" that often arises when a quota is set for a year with all participants trying to maximize their share of the quota in a first-come, first-served race. Markets can be more stable and there is less likelihood of quality problems, waste, and fishing under unsafe or sub-optimal conditions.

APPENDIX 6

PREDICTED CHANGES IN LONGLINE HARVESTS FOR 25 DIFFERENT ALTERNATIVES

Before the Council made its selection of a preferred alternative in April 1993, the spreadsheet simulation model described in Section VI.A.1 was used to predict changes in harvests of major pelagic species under 25 different scenarios.

As discussed previously, the implications of any given limited entry program varies depending on what decisions are made vis-a-vis the number of permits issued, the types of permits issued, whether permits are transferable and what rules govern the replacement of vessels. There are 24 different possible combinations of these four variables plus the open access situation.

2.1 Predicting the Size of the Fleet

The estimates presented below relied on predictions of fleet size, where available, resulting from the Transferability Assessment Workshop held in November 1992 (alternatives 2, 5, 8, and 11). In these cases, industry members of the working group were interviewed and asked to predict changes in the fleet under four different combinations of transferability and vessel upgrade options. The average of the responses was then used in the assessment as the projected number of active vessels expected under each of the original transfer and upgrade scenarios.

The Working Group considered only situations involving different transferability and fishing capacity upgrade options with the maximum number of permits to be issued fixed at 166, as in the original moratorium. For the dual permit options and the variable options, the simulator was rerun with the maximum number of A permits allowed to increase within the EEZ and with a second B class of permits for fishing outside the EEZ or exclusively landing swordfish. For the alterable permit options where participation would be allowed to increase, a maximum of 100 vessels was added but in the same proportion of medium and large size vessels as the comparable fixed vessels alternatives (i.e., no additional small vessels). One hundred vessels equals the number of new entrants into the fishery in the 5-year (1987-1991) period prior to the moratorium. For the open access option, the number of vessels in the fishery was set arbitrarily at 3 times the total number of active vessels in 1992.

2.2 Note on generation of catch estimates

The catch estimates for the 24 different scenarios are generated by the longline permit transferability simulator. The simulator calculates the number of annual number of fish caught inside and outside the MHI EEZ by the following algorithm:

Sum of:

$$CPUE_{ijk} * 1000\ Hooks/set_{jk} * Sets/year_{jk} * Boats_{k}$$

where subscript **i** represents species group (tuna, billfish, swordfish, other pelagics)

where subscript **j** represents Inside or Outside the MHI EEZ

where subscript **k** represents size of vessels (Small, medium, large)

CPUE is number of fish per 1000 hooks.

Table 6-1a summarizes the computations for **swordfish** catch in the Continued moratorium case (Fixed number of permits, No permit transfers, No upgrading).

The catch estimates have three basic permutations: "general" permits (whether fixed or variable) and two classes of "dual" permits (swordfish only and outside MHI EEZ only). First the general permit catch results are generated. Then the dual permit catch **supplements** are calculated. These are **added** to the general permit base case.

For Swordfish dual permits, CPUE for all other species groups is zeroed, and the number of boats is adjusted to the dual permit number. (The total number of additional boats is allocated to Medium and Large size categories by their proportion in the base case: 60/40). The simulator then calculates an "alternative" catch figure which is added to the base case. In the Swordfish case, the swordfish CPUE and number and location of sets per vessel remains the same as in the base case.

Using the Swordfish catch example from Table 3-1a, the simulator adds 0 Small boats, 36 Medium boats, and 24 Large boats. This generates the following additional swordfish catches: 3,434 Inside the EEZ, and 33,984 Outside the EEZ. Total Swordfish catch for the Swordfish dual permit is 8,834 (Inside) and 91,005 (Outside).

Table 6-1a. Example of **Swordfish** catch estimates from simulator

Case: Fixed number of permits
No permit transfers
No vessel up-grading

		Boat Size Category			
		SMALL	MEDIUM	LARGE	Sub-Total
IN EEZ	CPUE	0.31	1.78	2.91	
	HOOKS	1262	1146	1118	
	SETS	67	34	12	
	BOATS	15	48	43	106
	FISH	393.16	3,329.12	1,678.75	5,401.03
OUT EEZ	CPUE	2.42	7.49	11.91	
	HOOKS	1229	921	875	
	SETS	40	50	87	
	BOATS	15	48	43	106
	FISH	1,784.52	16,555.92	38,986.08	57,326.52
TOTAL	FISH	2,177.68	19,885.04	40,664.83	62,727.55

For the Out of MHI dual permits, Sets per vessel Inside the MHI EEZ is zeroed, and the Sets per vessel Outside is set at the minimum of (double the number of Out Sets in the base case or the sum of the number of In Sets and Out Sets in the base case). This becomes:

80 Out sets for Small longliners
84 Out sets for Medium-sized longliners
99 Out sets for Large longliners.

Using the Swordfish example, the following additional swordfish catches are generated: 0 Inside the EEZ, and 48,117 Outside the EEZ. Total Swordfish catch for the Out of MHI dual permit is 5,400 (Inside) and 105,138 (Outside).

Table 6-1b presents the calculations for these two cases. Derivation of dual permits figures from Fixed permit, No transferability, No up-grading case:

Table 6-1b. Derivation of dual permits expected landings from Fixed permit, No transferability , No up-grading case:

Catch (Number of Fish)

		Tuna	Marlins	Swordfish	Other
Base case (Fixed, No - No)	In EEZ	19,375	10,894	5,400	19,574
	Out EEZ	36,322	9,501	57,021	95,444
Swordfish Dual Permit -- Supplemental Catch	In EEZ	0	0	3,434	0
	Out EEZ	0	0	33,984	0
Total Catch	In EEZ	19,375	10,894	8,834	19,574
	Out EEZ	36,322	9,501	91,005	95,444
Out of MHI Dual Permit -- Supplemental Catch	In EEZ	0	0	0	0
	Out EEZ	30,235	7,476	48,117	79,769
Total Catch	In EEZ	19,375	10,894	5,400	19,574
	Out EEZ	66,557	16,977	105,138	175,213

6.3 Estimated changes in harvests by area and relative risks

The percent change in catches for marlins, swordfish, and tuna were computed for each of the 25 management alternatives (Table 6-2).

The relative risks of under-development, catch competition, market competition, and over-utilization were projected proportional to catch for each of the 25 management options (Table 6-3). The absolute risks of none of these factors are known. The relative risk of under-development is defined as the risk that a given alternative would result in harvests smaller than necessary to prevent over-utilization or overfishing compared to the other 25 alternatives. The other definitions follow similar reasoning.

3.4 Alternative Fleet Compositions for Preferred Alterative

The active fleet configuration in 1992 was 23 small, 60 medium and 40 large vessels. The fleet composition used for the impact assessment presented in Section VI for the Council's preferred alternative was 23 small, 86 medium and 57 large vessels (alternative "b" described below). All 166 permits issued were assumed to be active. The simulation model was also run with 3 other possible fleet compositions, all assuming that there would be no inactive permits. Table 6-4 and 6-5 show the predicted change in effort and change in harvest (numbers of fish) from the current situation under the four following fleet configurations:

A) the number of vessels in each size category increases proportionally to the current (1992) size composition (31/81/54);

B) the number of small longliners remains fixed at the current baseline but the number of medium and large vessels rises proportionally (23/86/57)

C) the number of small longliners is reduced to zero and the number of medium and large vessels rises proportionally (0/100/66);

D) all active longline vessels are large (0/0/166).

The range of changes in projected fishing effort from increasing the number of active longliners from 123 to 166 (an increase of 35%) is from +23 to 35% in effort in all areas and -54% to +35% in the main Hawaiian islands. Catch changes are more difficult to summarize since they vary by species as well as by area; the range is from a 58% decline in tuna catch in the MHI to a 153% increase in swordfish catch outside the EEZ.

Table 6-2. Impact of management options as percent change from current landings.

MANAGEMENT OPTION	A PERMITS	TRANSFER-ABILITY	UP-GRADE	B PERMITS	ACTIVE PERMITS A/B S/M/L	CAPTURE LOCATION	MARLINS %	SWORD-FISH %	TUNA %
1 (Open Access)	None	Open	Open	No	369 (23/208/138)	Any-where	162 141/190	234 223/235	184 140/208
2	Fixed 166	None--limited	No	No	106/-- 15/48/43	Total In/Out	-19 -23/-13	-5 -15/-4	-15 -23/-10
3				Outside EEZ	106/60 0/36/24	Total In/Out	11 -23/56	68 -15/77	31 -23/65
4				Sword-fish	106/60 0/36/24	Total In/Out	-19 -23/-13	52 40/53	-15 -23/-10
5	Fixed 166	None--limited	Yes	No	128/-- 16/58/54	Total In/Out	-4 -11/5	17 4/19	2 -11/9
6				Outside EEZ	128/38 0/23/15	Total In/Out	15 -11/49	64 4/70	31 -11/57
7				Sword-fish	128/38 0/23/15	Total In/Out	-4 -11/5	53 38/55	2 -11/9
8	Fixed 166	Freely	No	No	129/-- 25/61/43	Total In/Out	5 5/6	5 4/6	5 5/5
9				Outside EEZ	129/37 0/22/15	Total In/Out	24 5/48	51 4/56	34 5/51
10				Sword-fish	129/37 0/22/15	Total In/Out	5 5/5	41 37/41	5 5/5
11	Fixed 166	Freely	Yes	No	136/-- 16/60/60	Total In/Out	1 -8/12	27 9/29	8 -8/17
12				Outside EEZ	136/30 0/18/12	Total In/Out	16 -8/47	64 9/70	31 -8/55
13				Sword-fish	136/30 0/18/12	Total In/Out	1 -8/12	55 37/58	8 -8/17

Table 6-2 (Continued).

MANAGEMENT OPTION	A PERMITS	TRANSFER -ABILITY	UP-GRADE	B PERMITS	ACTIVE PERMITS A/B S/M/L	CAPTURE LOCATION	MARLINS %	SWORD-FISH %	TUNA %
14	Variable	None--limited	No	No	170/-- 15/86/69	Total In/Out	24 14/37	56 43/57	33 14/44
15				Outside EEZ	170/64 0/38/26	Total In/Out	55 14/110	134 43/144	82 14/124
16				Sword-fish	170/64 0/38/26	Total In/Out	24 14/37	117 101/118	33 14/44
17	Variable	None--limited	Yes	No	205/-- 16/104/85	Total In/Out	47 34/65	90 73/92	59 34/75
18				Outside EEZ	205/77 0/46/31	Total In/Out	85 34/153	184 73/196	118 34/171
19				Sword-fish	205/77 0/46/31	Total In/Out	47 34/65	161 144/166	59 34/75
20	Variable	Freely	No	No	229/-- 25/121/83	Total In/Out	71 63/83	100 94/101	80 64/90
21				Outside EEZ	229/100 0/60/40	Total In/Out	121 63/197	222 94/236	157 64/215
22				Sword-fish	229/100 0/60/40	Total In/Out	71 63/83	195 185/196	80 64/90
23	Variable	Freely	Yes	No	236/-- 16/120/100	Total In/Out	67 50/89	122 100/124	83 51/102
24				Outside EEZ	236/100 0/60/40	Total In/Out	117 50/204	244 100/260	159 51/227
25				Sword-fish	236/100 0/60/40	Total In/Out	67 50/89	217 190/220	83 51/102

Table 6-3. Relative risk[1] of under-development, catch competition, market competition, and over-utilization caused by the 25 management alternatives.

Management Action	Under-Development	Catch Competition	Market Competition	Over-Utilization
1	1	5	5	5
2	5	1	1	1
3	4	2	2	2
4	4	1	1	2
5	5	1	1	1
6	4	2	2	2
7	4	1	1	2
8	5	2	2	1
9	4	2	2	2
10	4	2	2	2
11	4	1	1	2
12	4	2	2	2
13	4	1	1	2
14	4	2	2	2
15	3	3	3	3
16	3	2	2	3
17	3	2	3	3
18	2	3	3	4
19	3	2	3	3
20	3	3	3	3
21	1	4	4	5
22	2	3	3	4
23	3	3	3	3
24	1	4	2	5
25	2	3	3	4

[1] Calculation of risks (ranked 1 (low) to 5(high)) was as follows: under-development: % change in total tuna and swordfish catches; catch competition: 2 * % change in total tuna and marlin catches inside EEZ + % change in tuna and marlin catches outside EEZ; market competition: 2 * % change in tuna catches inside EEZ + % change in tuna catches outside the EEZ; and over-utilization: % changes in total swordfish and marlin catches.

Table 6-4. Percent Change in Predicted Effort (1,000 hooks) from current situation under four different fleet compositions of 166 active vessels

Alternative	Area of Catch	Percent Changes in Effort by Vessel Size Category			
		Small	Medium	Large	Total
A	In MHI EEZ	35	35	44	35
	Out MHI	35	35	35	35
	All Areas	35	35	35	35
B	In MHI EEZ	0	43	43	26
	Out MHI	0	43	43	36
	All Areas	0	43	43	32
C	In MHI EEZ	-100	66	65	-1
	Out MHI	-100	66	66	39
	All Areas	-100	66	66	23
D	In MHI EEZ	-100	-100	315	-54
	Out MHI	-100	-100	315	83
	All Areas	-100	-100	315	25

Table 6-5. Predicted Percent Change in Landings (Number of Fish) from current situation

Alternative	Area of Catch	Percent Change (Number of Fish)				
		Tuna	Marlin	Swordfish	Other	Total
A	In MHI	35	35	35	35	35
	Out MHI	35	35	35	35	35
	All Areas	35	35	35	35	35
B	In MHI	25	25	39	27	27
	Out MHI	37	33	41	40	40
	All Areas	32	28	41	38	36
C	In MHI	-3	-5	50	6	5
	Out MHI	41	28	58	56	52
	All Areas	24	10	58	46	40
D	In MHI	-58	-55	3	-20	-39
	Out MHI	82	58	153	148	132
	All Areas	28	-6	138	115	89