Marine Mammal Protection Act of 1972
Annual Report

January 1, 1996 to December 31, 1996

Breaching Humpback Whale, *Megaptera novaeangliae,* in Maui, Hawaii.
Photo by: Gregory Silber, NMFS/FPR

Prepared by
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Protected Resources

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

OCT 29 1997

The Honorable Larry Pressler
Chairman, Committee on Commerce,
Science, and Transportation
United States Senate
Washington, D.C. 20510-4102

The Honorable Don Young
Chairman, Committee on Resources
House of Representatives
Washington, D.C. 20515-0201

Dear Chairman Pressler and Chairman Young:

I am pleased to submit to you the National Marine Fisheries Service (NMFS) Annual Report regarding the administration of the Marine Mammal Protection Act (MMPA) from January 1, 1996, through December 31, 1996, as required by section 103(f) of the MMPA. The report addresses the conservation, management and research activities conducted by NMFS for the benefit of marine mammals, including whales, dolphins, and porpoises of the order Cetacea and seals and sea lions of the suborder Pinnipedia.

Sincerely,

Rolland A. Schmitten

Enclosure

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

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Table of Contents

Chapter I. Introduction . . . . . Page 1

Chapter II. Reducing Interactions Between Marine Mammals and Commercial Fisheries: MMPA Section 118 . . . . . Page 3

List of Fisheries . . . . . Page 3
Take Reduction Teams and Take Reduction Plans . . . . . Page 7
MMPA Sections 117 and 118: The Integrated Program . . . . Page 15
Outreach Program-MMPA Bulletin . . . . . Page 16

Chapter III. MMPA Section 117: Stock Assessment Program . . . . Page 17

Marine Mammal Stock Assessment Reports . . . . . Page 17
Scientific Review Groups—Summary . . . . . Page 18

Chapter IV. Ecosystem Activities . . . . . Page 29

Bering Sea Ecosystem Study . . . . . Page 29
Gulf of Maine Ecosystem Workshop . . . . . Page 29

Chapter V. Dolphin Interactions with Commercial Tuna Fisheries in the Eastern Tropical Pacific Ocean . . . . . Page 31

Background and Domestic Fleet . . . . . Page 31
International Fleet . . . . . Page 31

Chapter VI. Marine Mammal Interactions with Other Human Activities Page 35

Regionwide Pinniped-Fishery Interactions Study . . . . . Page 35
Interaction of California Sea Lions and Pacific Harbor Seals with Salmonid Stocks . . . . . Page 35
Gulf of Maine Pinniped-Fishery Interaction Task Force . . . . . Page 37
Small Take Authorizations . . . . . Page 38
Small Take Amendment-Incidental Harassment . . . . . Page 40

Chapter VII. Conservation and Recovery Programs . . . . . Page 43

Northern Right Whale, *Eubalaena glacialis* . . . . . Page 43
Steller Sea Lion, *Eumetopias jubatus* . . . . . Page 54
Northern Fur Seal, *Callorhinus ursinus* . . . . . Page 57
Gulf of Maine Harbor Porpoise, *Phocoena phocoena* . . . . . Page 59
Hawaiian Monk Seal, *Monachus schauinslandi* . . . . . Page 60
Humpback Whale, *Megaptera novaeangliae* . . . . . Page 65
Eastern North Pacific Stock of Gray Whales, *Eschrichtius robustus* . . . Page 69

Chapter VIII. Alaska Native Take of Marine Mammals . . . . . Page 71

Bowhead Whales . . . . . Page 71
Steller Sea Lions and Harbor Seals . . . . . Page 71
Northern Fur Seal Subsistence Harvest . . . . . Page 73
Beluga Whales . . . . . Page 74

Chapter IX. Permit Programs . . . . . Page 75

Photography Permits . . . . . Page 77
General Authorization . . . . . Page 77
Permit Program Information Management System (PPIMS) . Page 77
Marine Mammal Inventory . . . . . Page 77
Exports of Marine Mammals . . . . . Page 78
Acoustic Activities . . . . . Page 78
Release of Captive Dolphins to the Wild . . . . . Page 79
Public Interaction with Marine Mammals in the Wild . . . . . Page 80
Captive Care Standards for Marine Mammals . . . . . Page 81

Chapter X. Marine Mammal Health and Stranding Response Act . Page 83

Background . . . . . Page 83
Stranding Networks . . . . . Page 83
Regional Stranding Networks . . . . . Page 83
Unusual Mortality Events . . . . . Page 85
MMHSRP Monitoring Program . . . . . Page 85

Appendix A: 1995 List of Category I-II Fisheries

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Appendix B: MMAP Mortality/Injury Reports
Appendix C: Summary of Marine Mammal Stock Assessments for Stocks under NMFS Authority
Appendix D: ETP Dolphin Mortalities Incidental to Tuna Operations
Appendix E: Marine Mammal Strandings in 1996

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Chapter I. Introduction

This Annual Report to Congress regarding the administration of the Marine Mammal Protection Act (MMPA) has been prepared pursuant to sections 103(f), 104(h)(3)(C), 110(d) and 115(b)(3) of the MMPA.

The MMPA is the principal Federal legislation that guides marine mammal species protection and conservation policy. The MMPA vests responsibility for most marine mammals in the Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS). Under the MMPA, NMFS is responsible for the management and conservation of species of whales, dolphins and porpoise; and species of seals, sea lions and fur seals.

Species management is administered through NMFS' Regional Offices and Fisheries Science Centers in cooperation with states, conservation groups, the public, other Federal agencies, the Marine Mammal Commission, and constituents including scientific researchers, the fishing industry, and the public display community. NMFS Office of Protected Resources oversees the administration of these activities.

On April 30, 1994, the MMPA was reauthorized by the Amendments of 1994. These amendments introduced substantial changes to the provisions of the MMPA. Some of the most notable changes in the 1994 amendments, and the focus of the 1996 Annual Report, occurred in sections 117 and 118 which addressed the taking of marine mammals incidental to commercial fishing, the preparation of stock assessment reports for all marine mammal stocks in U.S. waters; the development of Take Reduction Teams and the implementation of Take Reduction Plans to reduce bycatch of selected "strategic" marine mammal stocks as defined in the MMPA.

This report focuses primarily on research and management activities conducted by NMFS is 1996 relative to these amendments and their significance to the dual goals of the MMPA, resource management and marine mammal protection. However, the report also reviews permits issued in 1996 for purposes pursuant to the MMPA.

Copies of the MMPA 1996 Annual Report are available from the Office of Protected Resources, NMFS, Building SSMC3, 1315 East-West Highway, Silver Spring, Maryland 20910; or from NMFS Regional Offices and Science Centers.

Chapter II. Reducing Interactions Between Marine Mammals and Commercial Fisheries: MMPA Section 118

The Marine Mammal Protection Act was amended by Congress on April 30, 1994 (Public Law 103-238) to establish a long-term regime for governing interactions between marine mammals and commercial fisheries (sections 117 and 118). Final regulations implementing this program were published in 1995, after considerable public involvement.

The following chapter outlines the major tenets of the long-term regime under Section 118 as addressed by NMFS in 1996: the categorization of commercial fisheries in the 1997 List of Fisheries, the marine mammal mortality and serious injury information used to classify fisheries and develop take reduction plans, registration and reporting requirements for commercial fishers, the development and implementation of take reduction plans, and the public outreach program. The stock assessment reports required by section 117 and revised in 1996 by NMFS staff provide a critical element of the long-term regime and are addressed in detail in Chapter III.

List of Fisheries

Definitions of Category I, II, and III Commercial Fisheries

Under section 118 of the MMPA, NMFS must classify all U.S. commercial fisheries into Category I, II and III based on whether the fishery has a frequent, occasional, or a remote likelihood of incidental mortality and serious injury of marine mammals, respectively. The regulations implementing section 118 (60 FR 45086) base the definition of Category I, II, and III fisheries on the annual level of incidental mortality and serious injury relative to the Potential Biological Removal (PBR) level published under section 117 of the MMPA. Thus, the definitions of Category I, II, and III fisheries focus on the impacts of commercial fisheries to marine mammal populations by comparing both the cumulative and individual fishery-related annual number of serious injuries and mortalities to the PBR level for each species of marine mammal impacted by that fishery.

The definitions of Category I, II, and III fisheries are provided on the following page. Essentially, the fishery classification criteria consist of a two-tiered, stock-specific approach that first addresses the total impact of all fisheries on each marine mammal stock and then addresses the impact of individual fisheries on each stock. Tier 1 considers the cumulative fishery mortality and serious injury for a particular stock, while Tier 2 considers fishery-specific mortality for a particular stock. NMFS goes through the following decision process when assessing each fishery for which data are available:

Tier 1: If the total annual mortality and serious injury across all fisheries that interact with a stock is less than or equal to 10 percent of the PBR of such a stock, then all fisheries interacting with this stock would be placed in Category III. Otherwise, these fisheries are subject to the next tier to determine their classification.

Tier 2:

Category I: Annual mortality and serious injury of a stock in a given fishery is greater than or equal to 50 percent of the PBR level.

Category II: Annual mortality and serious injury in a given fishery is greater than 1 percent and less than 50 percent of the PBR level.

Category III: Annual mortality and serious injury in a given fishery is less than or equal to 1 percent of the PBR level.

Definitions of Category I, II and III Fisheries*

Category I: a commercial fishery with frequent incidental mortality and serious injuries of marine mammals. A commercial fishery that frequently causes mortality and serious injury of marine mammals is one that is by itself responsible for the annual removal of 50 percent or more of any stock's PBR.

Category II: a commercial fishery with occasional incidental mortality ans serious injury of marine mammals. A commercial fishery that occasionally causes mortality or serious injury of marine mammals is one that, collectively with other fisheries, is responsible for the annual removal of more than 10 percent of any marine mammal stock's PBR and that is by itself responsible for the annual removal of between 1 and 50 percent, exclusive, of any stock's PBR. In the absence of reliable information indicating the frequency of incidental mortality and serious injury of marine mammals in a certain fishery, NMFS will determine whether there is "occasional" taking by evaluating other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area.

Category III: a commercial fishery that has a remote likelihood of, or no known incidental mortality and serious injury of marine mammals. A commercial fishery that has a remote likelihood of causing incidental mortality and serious injury of marine mammals in one that collectively with other fisheries is responsible for the annual removal of 10 percent or less of any marine mammal stock's PBR, or more than 10 percent of any marine mammal stock's PBR, yet that fishery is by itself responsible for the annual removal of 1 percent or less of that stock's PBR. In the absence of reliable information indicating the frequency of incidental mortality and serious injury of marine mammals in a certain fishery, NMFS will determine whether there is a "remote likelihood" of taking by evaluating other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area.

* *The regulatory text at CFR § 229.2 should be consulted for the full definitions for Category I, II, and III fisheries.*

Exceptions to this classification scheme can be made if the data on which the classification is based are scientifically questionable. For example, if the coefficient of variation is unreasonably large for either the mortality estimates from an observer program, NMFS may determine the level of serious injury and mortality by evaluating other factors, such as the fishing gear type used or whether the fishing season occurs during a time of high marine mammal abundance.

Information Used to Classify Commercial Fisheries

NMFS may base its classification of commercial fisheries on a variety of different types of information. The best source of information on the level of fishery-specific marine mammal incidental serious injury and mortality is a fishery observer program. Thus, if data from an observer program are available, NMFS will use this information to classify the fishery. However, because only a few commercial fisheries have been monitored by observer programs, other information may also be used to classify the fisheries.

If data from fishery observer programs are not available, NMFS may also use fishers' reports made formally through the Marine Mammal Assessment Program, stranding data, logbook data from the Marine Mammal Exemption Program, alternative observer programs that use platforms such as aircraft and non-fishing vessels, and other sources of information to classify fisheries.

Publication of the List of Fisheries

Under Section 118, NMFS must publish a list of fisheries (LOF) in the *Federal Register* at least once a year that places all U.S. commercial fisheries into Category I, II, or III based on the level of marine mammal incidental mortality and serious injury that occurs incidental to each fishery. Proposed changes to the LOF for the following year are published in the spring or early summer. Public comments received during the 90-day comment period will be considered when developing the final LOF, which is published during the late fall or early winter.

For each fishery, the LOF must include the number of vessels or participants in that fishery and which marine mammals interact with that fishery. Because the focus in the law is on "injuries and mortalities" to marine mammals, any marine mammal that has been injured or killed in a particular commercial fishery is included in the table.

Definitions of U.S. Commercial Fisheries in the List of Fisheries

Fisheries in the LOF are defined by the broad or specific geographic area in which they operate, the gear type used, the method used, and the target species. NMFS will, whenever possible, define fisheries the way they are defined in Federal, regional, or state fishery management plans or programs. Defining fisheries in the LOF consistent with Federal, regional, or state fishery management plans will:

- reduce confusion caused by having multiple names for the same fishery;
- provide a "common name" for a fishery that can be used by NMFS, fishers, and state and regional fishery managers;
- allow NMFS to more easily collect information on fishery statistics, such as the number of participants, target species landed, length of fishing season, etc.;
- help NMFS meet its statutory obligations by coordinating registration under the MMPA with existing fishery management programs.

In the future, NMFS may have sufficient information to subdivide certain commercial fisheries into components that have different levels of impact to marine mammal stocks. This approach may help NMFS focus management actions on certain "hot spots" where there are documented high impacts to marine mammal stocks. Subdivisions of fisheries in the LOF are likely to occur only for those fisheries for which there are reliable data on the level and geographic location of incidental mortality and serious injury in all components of the fishery. NMFS will continue to seek public comment on the optimum way to define commercial fisheries, and will modify the LOF as necessary to reflect changes in the fisheries of the United States.

The 1997 List of Fisheries

A proposed List of Fisheries for 1997 was published in the *Federal Register* on July 16, 1996 (61 FR 37035). Because little new information on the level of serious injury or mortality of marine mammals incidental to commercial fisheries was available for the proposed LOF for 1997, this LOF focused primarily on those fisheries that NMFS committed to review in the 1996 LOF. Minor changes to names and definitions of certain commercial fisheries were proposed; the only significant actions proposed were the reclassification of the Gulf of Maine/U.S. mid-Atlantic lobster trap/pot fishery from Category III to Category I, and the reclassification of the California squid purse seine fishery from Category III to Category II.

The final LOF for 1997 was published on January 2, 1997 (62 FR 33). NMFS received 15 public comments on the proposed LOF; the majority of the comments on the proposed LOF addressed the proposed classification of the Gulf of Maine/U.S. mid-Atlantic lobster trap/pot fishery in Category I. In particular, commenters questioned the data used to reclassify the lobster trap/pot fishery, the method used to determine whether an injury should be considered a serious injury, and whether inshore lobster pot gear (e.g., along the coast of New Hampshire and Maine, Long Island Sound) should be included in Category I. The *Federal Register* notice (62 FR 33) provides NMFS' responses to these comments, and a thorough description of the number of serious injuries and mortalities of right, humpback, and minke whales that have occurred incidental to the Gulf of Maine/Mid-Atlantic lobster trap/pot fishery.

A table that provides a list of all U.S. commercial fisheries was not published in the *Federal Register* notice announcing the final LOF for 1997, but was made available to the public upon request. This list is found in Appendix A.

Marine Mammal Mortality and Serious Injury, 1990-1995

Section 117 requires that NMFS publish Stock Assessment Reports (SARs) for each marine mammal stock that occurs in U.S. waters (see Chapter III for additional details). Information on fishery-specific marine mammal mortality and serious injury is provided in these SARs; this information is often used as a basis for changes in fishery classification in the List of Fisheries.

Registration Requirements for Commercial Fishers

U.S. commercial fishers who participate in Category I or II fisheries in the LOF must register under the MMPA. Vessel owners must obtain a registration packet from NMFS and submit the application and the $25 fee to the nearest NMFS Regional Office in which their fishery operates. NMFS will then send vessel owners an Authorization Certificate, program decal, and reporting forms within 60 days of receiving the registration form and application fee.

Integration of MMAP Registration with Existing State or Federal Permit Systems

The MMPA states that NMFS should, to the maximum extent practicable, integrate registration of participants in Category I or II fisheries under the MMPA with existing state or Federal permit systems. The first NMFS office to successfully integrate registration under the MMPA was the Northwest Regional Office (NWR). In 1995, the NWR integrated the registration of the Oregon swordfish floating longline fishery and the Oregon blue shark floating longline fishery with the permit system operated by the State of Oregon, and integrated the registration of the Puget Sound salmon drift gillnet fishery with the State of Washington. In 1996, the Alaska Regional Office successfully integrated the registration of all Category I and II fisheries with the State of Alaska permit system and the Northeast Regional Office integrated the registration of the Gulf of Maine/Mid-Atlantic lobster trap/pot fishery, the Atlantic squid/mackerel/butterfish trawl fishery, and the New England multispecies sink gillnet fishery with either state or Federal permit systems. Over the past two years, these efforts have resulted in reduced paperwork for both NMFS and commercial fishers, and a waived registration fee for approximately 21,000 commercial fishers. The Southeast Regional Office and the Southwest Regional Office plan to coordinate registration of Category I and II fisheries in their regions by 1998.

Reporting Requirements for Commercial Fishers

All vessel owners or operators in Category I, II, or III fisheries must report all mortalities or injuries of marine mammals incidental to commercial fishing operations. Reports of marine mammal mortality or injury are to be made on postage-paid forms provided by NMFS, and these forms should be sent to NMFS Headquarters in Silver Spring, Maryland.

These reporting forms have been designed to be scannable by computers. Because a computer will electronically "read" the reporting form, data entry will be faster and summaries of reports will be more readily available. In 1996, 98 reports of injuries and/or mortalities were received by vessel operators. Appendix B is a table identifying self-reported injuries and mortalities, by species and then by fishery.

Take Reduction Teams and Take Reduction Plans

Section 118 Requirements for the Development and Implementation of Take Reduction Plans

In the 1994 amendments to the MMPA, section 118 established the immediate goal that the incidental mortality or serious injury of marine mammals occurring in the course of commercial fishing operations be reduced to insignificant levels approaching a zero mortality rate goal (ZMRG) and serious injury rate within 7 years of enactment of this section (i.e., April 30, 2001). The amendments established a three-part strategy to govern interactions between marine mammals and commercial fishing operations. These include the preparation of marine mammal stock assessment reports, a registration and incidental take monitoring program for certain commercial fisheries (Category I and II) and a marine mammal injury and mortality self-reporting requirement for all fisheries, and the development and implementation of take reduction plans.

Section 118(f) of the MMPA requires that NMFS develop and implement take reduction plans designed to assist in the recovery, or prevent the depletion of, strategic marine mammal stocks that interact with Category I or II fisheries. A strategic stock is: (1) a marine mammal species that is listed as endangered or threatened under the Endangered Species Act (ESA); (2) a marine mammal stock for which the human-caused mortality exceeds the potential biological removal (PBR) level for that stock; or (3) a marine mammal stock that is declining and likely to become listed as a threatened species under the ESA. The PBR level is the maximum number of animals, not including natural mortalities, that may be annually removed from a marine mammal stock while allowing that stock to reach or maintain its optimal sustainable population level.

All commercial fishermen that interact with marine mammals must report the circumstances of said interaction to NMFS within 48 hours if the interaction resulted in an injury or mortality. (Photo credit: Gregory Silber, NMFS)

The immediate goal of a take reduction plan is to reduce, within 6 months of its implementation, the mortality and serious injury of strategic stocks incidentally taken in the course of commercial fishing operations to levels less than the PBR levels established for those stocks. The long-term goal of a take reduction plan is to reduce, within 5 years of its implementation, the incidental mortality and serious injury of all marine mammals incidentally taken in commercial fishing operations to insignificant levels approaching a zero mortality and serious injury rate, taking into account the economics of the fishery, the available existing technology, and existing state or regional management plans.

NMFS must establish take reduction teams (TRT's) to prepare draft take reduction plans. Team members must have expertise regarding the conservation or biology of the marine mammal species that the take reduction plan will address, or the fishing practices which result in the incidental mortality or serious injury of such species. Members shall include representatives of Federal agencies, each coastal State that has fisheries that interact with the species or stocks, appropriate Regional Fishery Management Councils, interstate fisheries commissions, academic and scientific organizations, environmental groups, all commercial and recreational fisheries groups and gear types which incidentally take the species or stocks, Alaska Native organizations or Indian tribal organizations, or others as the Secretary of Commerce (i.e., NMFS) deems appropriate. Take reduction teams are not subject to the Federal Advisory Committee Act and meetings of the teams are open to the public with prior notice of the meetings made public in a timely fashion.

The TRT will submit a draft take reduction plan for strategic stocks to NMFS not later than 6 months after the team has been established. Take reduction plans must include a review of information in the final stock assessment reports and any substantial new information that may have become available since the publication of the stock assessment reports, an estimate of the total number and, if possible, age and gender, of animals from the stocks that are being incidentally killed or seriously injured each year during the course of commercial fishing operations, recommended regulatory or voluntary measures for the reduction of the incidental mortality and serious injury, and recommended dates for achieving the specific objectives of the plan.

In implementing a take reduction plan, NMFS may, where necessary to protect or restore a marine mammal stock or species covered by such

a plan, promulgate regulations that may include, but

are not limited to, measures to:

> (1) Establish fishery-specific limits on incidental mortality and serious injury of marine mammals in commercial fisheries or restrict commercial fisheries by time or area;
>
> (2) Require the use of alternative commercial fishing gear or techniques and new technologies, encourage the development of such gear or technology, or convene expert skippers' panels;
>
> (3) Educate commercial fishers, through workshops and other means, on the importance of reducing the incidental mortality and serious injury of marine mammals in affected commercial fisheries; and
>
> (4) Monitor the effectiveness of measures taken to reduce the level of incidental mortality and serious injury of marine mammals in the course of commercial fishing operations.

The draft take reduction plan will be developed by consensus. In the event consensus cannot be reached, the TRT shall advise NMFS, in writing, on the range of possibilities considered by the TRT, and the views of both the minority and majority. Not later than 60 days after the submission of the draft plan, NMFS will publish in the *Federal Register* the draft plan, any changes proposed by NMFS with an explanation of the reasons therefore, and proposed regulations to implement the plan for public review and comment for a period not to exceed 90 days. Not later than 60 days after the close of the public comment period, NMFS will issue a final plan and implementing regulations.

NMFS and the TRT's will meet every 6 months, or at other intervals as NMFS determines are necessary, to monitor the implementation of the final take reduction plans until such time as NMFS determines that the objectives of the plan have been met. NMFS will amend the final plan and implementing regulations if necessary, in consultation with the TRT.

NMFS' Approach to Establishing Take Reduction Teams

The coordination process to form take reduction teams was initiated in 1995. Recognizing the benefits of using professional facilitators in the development of plans that rely on the involvement of stakeholders representing a wide variety of interests, NMFS contracted a professional facilitator with expertise in environmental dispute resolution in 1995 to conduct a pilot study to explore processes for the development of take reduction plans. The Resolve Center for Environmental Dispute Resolution was awarded the pilot study contract and subsequently prepared a report recommending guidelines for developing take reduction teams, using the bycatch of harbor porpoise in the sink gillnet fishery and the bycatch of bottlenose dolphins in mid-Atlantic gillnet fisheries as test cases.

NMFS then contracted a group of professional facilitators in late 1995 to assist in the development of six potential take reduction plans. The facilitators' role in the development of each take reduction plan was to:

- assist in the interviewing of potential team members,
- select sites and provide public notice of team meetings,
- facilitate the meetings,
- develop draft meeting summaries,
- submit team expenses to NMFS for payment, and,
- assemble the team's draft plan and submit it to NMFS within the timeframe specified by the MMPA (6 months from the date of establishment of the team).

Each take reduction team was established using the same general process. Before each team was formed, the NMFS Office of Protected Resources and the appropriate NMFS Regional Office would forward a list of potential team members to the facilitator for that team, identifying persons that had either worked with NMFS in the past on issues related to marine mammal bycatch or that had worked with NMFS on other teams or committees because of their expertise

in marine mammals or fisheries. The facilitator's interview process was also a method for identifying other potential team members. At the end of the interview process, the facilitator for each team submitted a list of recommended team members to NMFS, and the Director of the Office of Protected Resources reviewed and approved the list, in consultation with the Assistant Administrator for Fisheries and the appropriate Regional Director(s). The publication of a *Federal Register* notice identifying the team members also established the team.

Six potential take reduction teams were identified as having the highest priority for the development of take reduction plans to reduce the incidental bycatch of several strategic marine mammal stocks. They were (listed in order of priority):

- The Gulf of Maine Harbor Porpoise take reduction team,
- The Atlantic Offshore Cetacean take reduction team,
- The Pacific Offshore Cetacean take reduction team,
- The Atlantic Large Whale take reduction team,
- The Mid-Atlantic take reduction team, and,
- The Alaska Steller sea lion take reduction team.

The Gulf of Maine Harbor Porpoise Take Reduction Plan

NMFS established the Gulf of Maine Harbor Porpoise Take Reduction Team (HPTRT) on February 12, 1996 to address incidental takes of the Gulf of Maine/Bay of Fundy stock of harbor porpoise *(Phocoena phocoena)* in the Northeast multispecies sink gillnet fishery. The HPTRT included representatives of the sink gillnet fishery, NMFS, state marine resource management agencies, the New England Fishery Management Council (NEFMC), environmental organizations, and academic and scientific organizations. The HPTRT met five times between February and July 1996. Each meeting was open to the public and facilitated by Resolve, Inc., Washington, D.C..

The HPTRT submitted a consensus draft plan to NMFS on August 8, 1996. The team's draft plan represents a comprehensive approach to the problem of harbor porpoise incidental take and includes:

- A Core Management Plan consisting of a schedule of time/area closures and periods when pingers would be required for each of the established management areas (see Table 1). The plan builds on closures already instituted by the NEFMC. Consensus on the core management plan was contingent on the following understandings: A) that the regime was recommended only for the first year of the plan; B) that a scientific experiment be conducted to study the effectiveness of pingers in reducing harbor porpoise bycatch in the Mid-coast area in the spring, and C) that research on the effect of pingers on harbor porpoises and other marine life be conducted at the same time, including the initiation of research on the possible habituation of harbor porpoise to pingers.

- An Implementation Plan that includes recommendations regarding a detailed census of the gillnet fleet; outreach, training and certification programs for fishers who wish to use pingers; NMFS' and the HPTRT's coordination and consultation with Canadian counterparts regarding the reduction of harbor porpoise takes in Canadian waters; enforcement of the HPTRP; coordination of HPTRT's efforts with those of the Mid-Atlantic Take Reduction Team; investigation of impacts on harbor porpoise by the state gillnet and bait gillnet fisheries; and the reconvening of the team to provide periodic evaluations of the HPTRP.

- A series of recommendations regarding NMFS' collection, analysis, and management of data on the status of the harbor porpoise stock, sink gillnet fishery effort, by-catch rate, and total by-catch estimates; and recommendations regarding design of pinger experiments and gear technology research.

The proposed requirements and other recommended measures would govern and pertain to all fishing with sink gillnets and other gillnets capable of catching multispecies in the inshore and offshore waters of New

Table 1.--Time/area closures and periods during which pinger use is required, as recommended by the HPTRT.

Downeast Area:	
Aug. 15 to Sep. 13	Closed to sink gillnet fishing
Mid-coast Area:	
Jan. 1-31	Closed to sink gillnet fishing
Mar. 1 to May 15	Closed to sink gillnet fishing
Sept. 15 to Oct. 31	Pingers required on all sink gillnets
Nov. 1 to Dec. 31	Closed to sink gillnet fishing
Massachusetts Bay Area:	
Feb. 1-28/29	Pingers required on all sink gillnets
Mar. 1-30 (sic)	Closed to sink gillnet fishing
Apr. 1-30	Pingers required on all sink gillnets
South Cape Cod Area:	
Feb. 1-28/29	Pingers required on all sink gillnets
Mar. 1-30 (sic)	Closed to sink gillnet fishing
Apr. 1-30	Pingers required on all sink gillnets

England from Maine through Rhode Island.

The draft plan submitted by the HPTRT was under review by NMFS as of the end of 1996. However, concurrent with the HPTRT's proceeding, the NEFMC considered amendments to the Northeast Multispecies Fishery Management Plan that would affect sink gillnet effort. These actions--specifically, opening the Mid-Coast area to gillnet fishing with pingers during November and December--were implemented subsequent to NMFS' receipt of the HPTRT plan. As the NEFMC actions altered the assumptions upon which the HPTRT's consensus proceedings were based, NMFS will strive to minimally adjust the take reduction plan while maintaining the spirit of the HPTRT's comprehensive consensus plan. NMFS expects to publish notice of availability of the plan, NMFS recommended changes to the plan, and proposed regulations to implement the plan in the Spring of 1997.

The Atlantic Offshore Cetacean Take Reduction Team

NMFS convened the Atlantic Offshore Cetacean Take Reduction Team (AOCTRT) on May 23, 1996 to address interactions between strategic marine mammal stocks and the Atlantic pelagic driftnet, pair trawl, and longline fisheries for

swordfish, tuna and sharks. Cumulatively, these fisheries incidentally take Atlantic spotted dolphin (*Stenella frontalis*), bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*), pantropical spotted dolphin (*Stenella attenuata*), long-finned pilot whales (*Globicephala melas*), short-finned pilot whales (*Globicephala macrorhynchus*), beaked whales (*Mesoplodon* spp. and *Ziphius cavirostris*), right whales (*Eubalaena glacialis*), humpback whales (*Megaptera novaeangliae*), and sperm whales (*Physeter macrocephalus*) at levels that are estimated to be above the PBR levels established for these stocks. The AOCTRT included representatives of each of the three fisheries, environmental and conservation groups, several states, the Mid-Atlantic Fisheries Management Council, independent fisheries scientists, cetacean biologists, and NMFS.

The Team reviewed stock assessment information for each stock, appropriate marine mammal behavioral studies, available mortality and serious injury data for each of the fisheries (broken down by area and season or month), target species catch data, take reduction strategies tested in similar fisheries, and other pertinent information. The Team held five meetings in New England between May and November, 1996. Each meeting was open to the public and facilitated by Susan Podziba and Associates, Inc., Boston, MA.

On November 22, 1996, the AOCTRT reached consensus on a draft plan. The AOCTRT developed comprehensive strategies for each fishery -- pair trawl for tuna, swordfish driftnet, and pelagic longline. Each comprehensive strategy included a number of activities that are designed to reduce the serious injury and incidental take of strategic stocks of marine mammals. The team's plan recommended that several regulatory and non-regulatory actions be initiated to reduce bycatch of marine mammals in each fishery. These included:

- For each fishery, reductions would be achieved in part by: education and outreach; development of a Technical Advisory Group; research on cetacean behavior; closure of northern right whale critical habitat; and coordination of fishery management measures.

- In the driftnet fishery, reductions would be achieved by: a closure south of Hudson Canyon from November 1 to May 31; an allocation of a pre-determined number of sets between participating fishers; limited entry; 100% observer coverage; pinger experiment; real-time monitoring and evaluation of marine mammal takes; research on gear modifications; and a buy-out program.

- In the longline fishery, reductions in the Mid-Atlantic and Northeast Coastal areas (areas of highest marine mammal bycatch) would be achieved by: reducing the length of line; retrieving gear in reverse to reduce maximum soak time; moving fishing location after one marine mammal interaction; limited entry; guidance for releasing injured marine mammals; and enhancing communication between fishers.

- In the pair trawl fishery, reductions would be achieved by: minimum operator qualifications; certification of nets; research on cetacean behavior; the establishment of an industry panel to review fishing activities related to takes; and a marine mammal take "trigger" to alleviate poor performance.

The team's draft plan also included: (1) a review of the current information on the status of the strategic Atlantic offshore cetaceans that interact with the driftnet, longline, and pair trawl fisheries; (2) a description of these fisheries, including regulatory/management structure; (3) an indication of foreign and other domestic fisheries that interact with Atlantic offshore cetaceans; (4) sources and a summary of observer data; (5) research and data recommendations; and (6) draft guidance for handling marine mammals; and (7) strategies discussed but not selected. The AOCTRT submitted its draft plan to NMFS on November 25, 1996.

On December 5, 1996, NMFS closed the drift gillnet fishery for swordfish in the Atlantic Ocean from December 1, 1996 through May 29, 1997. NMFS had reinitiated consultation under the Endangered Species Act for Atlantic swordfish fisheries due to new information concerning the status of the northern right

whale. The closure would ensure that no irreversible and irretrievable commitment of resources was made that had the effect of foreclosing the formulation or implementation of any reasonable and prudent measures while the consultation on the fishery was pending.

The draft plan submitted by the AOCTRT was under review by NMFS as of the end of 1996. NMFS expects to publish notice of availability of the plan, NMFS recommended changes to the plan, and proposed regulations to implement the plan in the Spring of 1997.

The Pacific Offshore Cetacean Take Reduction Plan

NMFS convened the Pacific Offshore Cetacean Take Reduction Team (PCTRT) on February 12, 1996 to address takes of short-finned pilot whales (*Globicephala macrorhynchus*), Mesoplodont beaked whales (*Mesoplodon* spp.), Baird's beaked whales (*Berardius bairdii*), Cuvier's beaked whales (*Ziphius cavirostris*), pygmy sperm whales (*Kogia breviceps*), sperm whales (*Physeter macrocephalus*), and humpback whales (*Megaptera novaeangliae*) in the California/Oregon drift gillnet fishery for thresher shark and swordfish (CA/OR DGN fishery). Members on the TRT included representatives of the CA/OR DGN fishery, environmental groups, the California Department of Fish and Game, the Pacific States Marine Fisheries Commission, independent fisheries scientists and whale biologists, and NMFS. Representatives of other groups and agencies (i.e., recreational fishers and the Oregon Department of Fish and Wildlife) were interviewed but chose no to participate on the team.

The PCTRT considered a full menu of potential take reduction strategies for inclusion in the draft take reduction plan. The team reviewed the literature on incidental taking of marine mammals in drift gillnets and heard presentations on the status of strategic stocks incidentally taken by the fishery, the estimated annual taking of these stocks from observer data, and strategies currently used by the fishery to avoid taking marine mammals. In addition, the team reviewed extensive analyses of observer data (which were gathered over the past five fishing seasons) to determine if there were correlations between incidental take of cetaceans and fishing techniques, gear used, or oceanographic factors that might suggest appropriate take reduction strategies. The team held five meetings in locations near Los Angeles, San Diego, and San Francisco between February and June, 1996. Each meeting was open to the public and facilitated by The Mediation Institute, Woodland Hills, CA.

On June 27, 1996, the PCTRT reached consensus on a draft plan. The team believed that no single strategy could meet the goals of the MMPA. Therefore, the team identified four primary strategies which, if implemented as a package, was expected to meet the 6-month goal of reducing the takes of strategic stocks to below PBR, and to some extent, the long term goal of attaining a ZMRG and serious injury rate for all marine mammal stocks. In addition, there is a section of the take reduction plan that addresses possible contingency strategies, should the primary strategies prove less effective than anticipated and a section describing additional recommendations to NMFS regarding supplementary data gathering and study activities. The strategies include:

- *Acoustic Devices* -- NMFS and the fishery should initiate a multi-year experiment to test the effectiveness of acoustic devices (pingers) beginning in the 1996-97 fishing season, before a final take reduction plan has been adopted by NMFS. The success of pingers in reducing overall cetacean incidental take during the 1996 fishing season (August 15, 1996 - January 31, 1997) would determine whether pingers are recommended as a mandatory strategy for reducing takes when the final plan is in place.

- *Gear Modifications* -- There should be fleetwide deployment of a 6 fathom minimum buoy line extender length on a mandatory basis for the 1997-98 season. NMFS and the TRT should review the efficacy of this strategy after the final plan has been in place for at least 6 months to determine if the minimum extender length should be modified.

- *Skipper Education and Feedback* -- NMFS should conduct skipper workshops on the final take reduction plan coupled with expert skipper panels to further generate and consider potential, additional take reduction strategies. Workshop attendance would be mandatory.

- *Reduction in the Number of Drift Gillnet Permits* --The California Department of Fish and Game (CDFG) should continue its policy of not issuing new shark and swordfish drift gillnet permits to replace those that have lapsed. A permit buy-back program should be instituted for CDFG drift gillnet permit holders to encourage part-time skippers to leave the fishery permanently.

The draft plan also included: (1) a review of the current information on the status of the affected strategic marine mammal stocks; (2) a description of the CA/OR DGN fishery; (3) an analysis of data from NMFS's CA/OR DGN fishery observer program from 1990-1995; (4) recommendations to enhance NMFS's CA/OR DGN observer program; and (5) an evaluation of other potential strategies to reduce strategic stock bycatch in the fishery. The team assumed that each individual strategy would be refined or modified if necessary based upon the initial year results. The PCTRT submitted its draft plan to NMFS on August 15, 1996.

The draft plan submitted by the PCTRT was under review by NMFS as of the end of 1996. NMFS expects to publish notice of availability of the plan, NMFS recommended changes to the plan, and proposed regulations to implement the plan early in 1997.

The Atlantic Large Whale Take Reduction Team

On August 6, 1996, NMFS established the Atlantic Large Whale Take Reduction Team (LWTRT) to address the incidental bycatch of large baleen whales, specifically the northern right whale *(Eubalaena glacialis)* and the humpback whale *(Megaptera novaeangliae)* in the following fisheries: The Gulf of Maine/U.S. mid-Atlantic lobster trap/pot fishery, the mid-Atlantic coastal gillnet fishery, the southeastern U.S. Atlantic shark gillnet fishery, and the Gulf of Maine sink-gillnet fishery. These large whale marine mammal stocks are considered strategic under the MMPA because they are listed as an endangered species under the Endangered Species Act (ESA), and because the level of human-caused mortality is greater than their PBR levels.

The LWTRT includes representatives from each fishery, NMFS, state marine resource management agencies, the New England Fishery Management Council, the Mid-Atlantic Fishery Management Council, the Marine Mammal Commission, environmental organizations, and academic and scientific organizations. The LWTRT is being facilitated by The Keystone Center, Washington, D.C.. The team met four times in 1996 will meet twice more in early 1997. The team is charged with submitting a consensus plan to NMFS by February 1, 1997.

The Mid-Atlantic Take Reduction Team

As of the end of 1996, NMFS had not yet established the Mid-Atlantic Take Reduction Team. However, NMFS expects to convene this team in the spring of 1997 to address incidental takes of harbor porpoise (*Phocoena phocoena*) and bottlenose dolphins (*Tursiops truncatus*) in ocean gillnet fisheries from New York to North Carolina. The team will be facilitated by RESOLVE, Inc., Washington, D.C.

The Alaska Steller Sea Lion Take Reduction Team

As of the end of 1996, NMFS had not yet established the Alaska Steller Sea Lion Take Reduction Team. However, NMFS expects to convene this team to address incidental takes of Steller sea lions (*Eumetopias jubatus*) in Alaska commercial fisheries. The team will be facilitated by Mediation Services, Seattle, WA.

MMPA Sections 117 and 118: The Integrated Program

Sections 117 and 118 of the MMPA are directly related. These sections direct NMFS to complete Stock Assessment Reports, to convene Scientific Review Groups, to publish the List of Fisheries, to convene Take Reduction Teams in order to form Take Reduction Plans, and to meet both short- and long-term goals for reducing incidental takes of marine mammals. These are all components of a comprehensive program designed to reduce interactions between marine mammals and commercial fishing vessels.

The SARs required under Section 117 indicate whether the status of a marine mammal stock is considered "strategic" and provide much of the data NMFS uses to classify fisheries under Section 118 in the List of Fisheries. The formation of a Take Reduction Team to reduce interactions between marine mammals and commercial fisheries is dependent on a fishery's classification in the List of Fisheries and whether its status is strategic according to the SARs. In addition, the SARs provide much of the data used during the development of the Take Reduction Plans. Scientific Review Groups, formed pursuant to Section 117, review and make recommendations on the SARs and the LOF. Results of observer programs used to collect data on the level of incidental mortality and serious injury in Category I or II fisheries are presented in the SARs. As NMFS begins to implement Take Reduction Plans in order to meet the 6-month and 7-year goals of the MMPA, the SARs and SRGs will continue to play a critical role as NMFS monitors fisheries to ensure that incidental marine

The MMPA Bulletin - Distribution

Group	Number of individuals/groups
Congress	96
Environmental Groups	130
Federal/State organizations	167
Fishing Industry	758
General Inquiry	329
Media	8
Native American	391
Public Display	158
Research	217
Tourism	68

mammal mortalities and serious injuries decline over time.

Outreach Program-MMPA Bulletin

In 1995, the Office of Protected Resources began publishing the "MMPA Bulletin" to increase public awareness of and participation in the regulatory process. Our readership increased quite dramatically from 1,800 at the end of 1995, to 2,400 in 1996. This increase is largely due to posting announcements about the availability of the "Bulletin" on key internet listservers, such as "MARMAM" and "FISHFOLK". The majority of the readers of the Bulletin are members of the commercial fishing industry, followed by Native American organizations and the general public.

Chapter III. MMPA Section 117: Stock Assessment Program and Reports

Marine Mammal Stock Assessment Reports

Section 117 of the MMPA (16 U.S.C. 1361 et seq.) required NMFS and the U.S. Fish and Wildlife Service (FWS) to prepare stock assessments for each stock of marine mammals that occurs in waters under the jurisdiction of the United States. These reports contain information regarding the distribution and abundance of the stock, population growth rates and trends, estimates of annual human-caused mortality from all sources, descriptions of the fisheries with which the stock interacts, and the status of the stock.

NMFS convened a workshop in April, 1996, to evaluate the guidelines upon which stock assessment reports were based and to revise the guidelines as needed. The workshop results indicated that substantive changes to the guidelines were not required; however, several provisions were clarified, primarily to ensure that default values for various parameters were interpreted correctly.

The MMPA also requires NMFS and FWS to update these reports annually for strategic stocks of marine mammals and every 3 years for stocks determined to be non-strategic consistent with any new information. NMFS has revised those reports for which new information is available. (See Appendix C for summary of marine mammal stock assessments for stocks under NMFS authority.)

Most proposed changes to the stock assessment reports incorporate new information into abundance or mortality estimates. Stock structure was also reexamined, which resulted in revised stock identification for killer whales in the Alaska and Pacific regions and for harbor

porpoise in Alaska; none of these stocks is designated as strategic.

Three stocks were identified as special subsistence stocks in the initial stock assessment reports; these included harbor seals in the Gulf of Alaska and beluga whales in Cook Inlet and Norton Sound. After examining new information, and in accordance with advice from the Alaska Scientific Review Group, NMFS proposes to revise these reports to present the full information required under the MMPA. Two of the stocks, Gulf of Alaska harbor seals and Cook Inlet beluga would be identified as strategic stocks because total human-caused mortality exceeds the calculated Potential Biological Removal level (PBR). Norton Sound beluga would be identified as non-strategic. Any management actions concerning these or any other stock that is used for subsistence purposes would be addressed through a co-management process as indicated by section 119 of the MMPA.

New abundance estimates for beaked whales in the Pacific Ocean, which included a recently developed correction factor for animals not seen on the track line, allowed NMFS to determine that human-caused mortality and serious injury of these stocks did not exceed PBR; therefore, these stocks have been designated as nonstrategic. Uncertainty in field identification of these stocks does not allow either mortality or abundance estimates to be identified to species in all cases, and estimates for these stocks continue to be combined.

A *Federal Register* notice announcing availability of the draft reports will be published in January, 1997. The draft revised reports will be subject to a 90-day comment period, and final reports are anticipated in June, 1997.

Scientific Review Groups—Summary

Background

The regional Scientific Review Groups were established under the U.S. Marine Mammal Protection Act (MMPA, as amended in 1994). The MMPA provides the following text regarding the groups:

Sec. 117 (d) Regional Scientific Review

Groups.

(I) Not later than 60 days after the date of enactment of this section [June 29, 1994], the secretary of Commerce shall, in consultation with the Secretary of the Interior (with respect to marine mammals under that Secretary's jurisdiction), the Marine Mammal Commission, the Governors of affected adjacent coastal States, regional fishery and wildlife management authorities, Alaska Native organizations and Indian tribes, and environmental and fishery groups, establish three independent regional scientific review groups representing Alaska, the Pacific Coast (including Hawaii), and the Atlantic Coast (including the Gulf of Mexico), consisting of individuals with expertise in marine mammal biology and ecology, population dynamics and modeling, commercial fishing technology and practices, and stocks taken under section 101(b). The Secretary of Commerce shall, to the maximum extent practicable, attempt to achieve a balanced representation of viewpoints among the individuals on each regional scientific review group. The regional scientific review groups shall advise the Secretary on**C**

(A) population estimates and the population status and trends of such stocks;

(B) uncertainties and research needed regarding stock separation, abundance, or trends, and factors affecting the distribution, size, or productivity of the stock;

(C) uncertainties and research needed regarding the species, number, ages, gender, and reproductive status of marine mammal;

(D) research needed to identify modifications in fishing gear and practices likely to reduce incidental mortality and serious injury of marine mammals in commercial fishing operations;

(E) the actual, expected, or potential impacts of habitat destruction, including marine pollution and natural environmental change, on specific marine mammal species or stocks, and for strategic stocks, appropriate conservation or management measures to alleviate any such impacts; and

(F) any other issue which the Secretary or the groups consider appropriate.

(II) The scientific review groups established under this subsection shall not be subject to the Federal Advisory Committee Act (5 app. U.S.C.).

(III) Members of the scientific review groups shall serve without compensation, but may be reimbursed by the Secretary, upon request, for reasonable travel costs and expenses incurred in performing their obligations.

(IV) The Secretary may appoint or reappoint individuals to the regional scientific review groups under paragraph (1) as needed.

Scientific Review Group meetings held in 1996:

09-10	May 96, Atlantic SRG meeting, Charleston, SC
01-02	July 96, Pacific SRG meeting, La Jolla, CA
11-13	September 96, Alaska SRG meeting, Anchorage, AK
23-34	October 96, Atlantic SRG meeting, Gloucester, MA

The three scientific review groups (SRGs) were formed in 1994 with approximately 11 members each. These groups are convened and organized out of each of the following Science Centers: Alaska, Southwest and Northeast/Southeast. Each SRG has a designated NMFS contact person at these centers. The Centers are responsible for assisting the SRG members in arranging meetings, identifying and coordinating lodgings and travel accommodations, providing materials requiring SRG consultation, and assisting in facilitating communication between SRG members

and documentation of recommendations. NMFS, through the Centers, provides travel, hotel and meeting-location expenses.

In their first year of existence, the SRGs reviewed the proposed guidelines for stock assessment reports (see SRG comments in Barlow, Swartz, Eagle, and Wade, 1995, U.S. marine mammal stock assessments: guidelines for preparation, background, and a summary of the 1995 assessments, NOAA Technical Memorandum NMFS-OPR-6). Additionally, they reviewed the draft 1995 stock assessment reports themselves, and assisted NMFS in revising and finalizing the 1995 assessments. In doing so, the SRGs have advised on marine mammal stock structure, population estimates, population status and trends, annual removals, and uncertainties in available information and data.

Scientific Review Group Members in 1996

Alaska

NMFS contact:

Doug DeMaster	Alaska Fisheries Science Center, Seattle, WA
Carl Hild	Rural Alaska Community Action Program
Sue Hills,	University of Alaska, Fairbanks
Brendan Kelly,	University of Alaska, Juneau
Denby Lloyd	Aleutians East Borough
Lloyd Lowry	Department of Fish and Game, Alaska
Beth Mathews	University of Alaska, Southeast
Caleb Pungowiyi	Kawerak, Nome, Alaska
Jan Straley	Sitka, Alaska
Kate Wynne	Sea Grant Marine Advisory Program, University of Alaska

Atlantic

NMFS contact:

Gordon Waring	Northeast Fisheries Science Center
Solange Brault	University of Massachusetts, Boston
Joseph DeAlteris	University of Rhode Island
James Gilbert	University of Maine, Orono
Mike Harris	Georgia Department of Natural Resources
Robert D. Kenney	University of Rhode Island
Robert Mackinnon	Marshfield, Massachusetts
James Mead	Smithsonian Institution
Daniel Odell	Sea World, Orlando, Florida
Andrew Read	Duke University Marine Laboratory
Randall S. Wells	Chicago Zoological Society,

SRG Group Members in 1996 (cont.)

Pacific
NMFS contact: Jay Barlow, Southwest Fisheries Science Center
Hannah J. Bernard, Huy Moana Wildlife Conservation Education, Lahaina, Hawaii
Robin Brown, Oregon Department of Fish and Wildlife
Mark Fraker, Terramar Environmental Research, Sidney, British Columbia
Doyle A. Hanan, California Department of Fish and Game
John Heyning, Natural History Museum of Los Angeles County
Steve Jeffries, Washington Department of Fish and Wildlife
Katherine Ralls, National Zoological Park, Smithsonian Institution
Michael Scott, Inter-American Tropical Tuna Commission
Terry E. Wright, Northwest Indian Fisheries Commission

Scientific Review Groups in 1996

In 1996, representatives from all 3 SRGs participated in a workshop to review the guidelines for assessing marine mammal stocks (Wade and Angliss, 1997, Guidelines for Assessing Marine Mammal Stocks: Report of the GAMMS Workshop, NOAA Technical Memorandum NMFS-OPR-12). A total of four SRG meetings were held during 1996. In these meetings, the SRGs reviewed new data and information that were available for marine mammal stocks, and made recommendations on what revisions needed to be made to the stock assessment reports. In the fall, the Atlantic and Alaska SRGs reviewed the draft revised stock assessment reports, and provided comments on revisions. All three groups are planning to meet in the first half of 1997 to provide further comments on the revised stock assessment reports, to assist NMFS in finalizing the revisions.

Recommendations from the Scientific Review Groups

The following sections of text have been extracted from the written summaries of the scientific review group meetings that took place in 1996. Where appropriate, recommendations relevant to marine mammal species (sea otter, walrus, polar bear, manatee) under the jurisdiction of the US Fish and Wildlife Service have been removed.

Atlantic Scientific Review Group: Meeting of 9-10 May, 1996, Charleston, South Carolina

I. Review of NMFS Progress on Previous Atlantic SRG Recommendations

The Atlantic SRG reviewed progress that had been made on recommendations made at its previous two meetings. The Atlantic SRG believes that this is a useful exercise that will ensure that its voice is being heard by the agencies responsible for assessing marine mammal stocks. In general, the Atlantic SRG's recommendations had either been acted upon or there was sufficient justification for delay or inaction. Outstanding issues include:

(1) No take reduction team has been implemented for the coastal migratory stock of bottlenose dolphins, due to a lack of information on the stock structure, abundance and incidental mortality of these animals. Further information is urgently required for this depleted stock.

(2) No resolution of the issue of live releases from fishing gear, particularly longlines. Experiments or observations are required to determine the fate of animals that are released alive, but injured, from these fisheries.

(3) The definition of ZMRG remains uncertain.

(4) There is still a need for improved identification of many species, particularly beaked whales, pilot whales and common dolphins, by observers aboard fishing vessels.

(5) There has been insufficient co-operation between the U.S. and Canada on the management of trans-boundary stocks.

(6) More information is required on the incidental takes of marine mammals in mid-water and demersal trawl fisheries for forage species, such as mackerel, butterfish, herring and squid.

(7) The application of correction factors has not been uniform, particularly in regard to deep-diving species.

(8) There is a lack of assessments for certain cetaceans in the Atlantic waters of the SE US.

(9) Data analysis for mortality estimation of harbor porpoises in the Gulf of Maine has been extremely slow, which has hampered stock assessments and the work of the Harbor Porpoise Take Reduction Team. This delay is a serious and continuing concern of the Atlantic SRG. A letter from Andy Read, on behalf of the Atlantic SRG, has been circulated to the NE Regional Director of the NMFS asking for an increase in human resources to rectify this problem.

New Research Recommendations

The Atlantic SRG reviewed its previous recommendations for research and generated a prioritized list of projects that would be helpful to NMFS/OPR in its allocation of assessment funds for 1997. The Atlantic SRG notes that many other important research projects are always planned and funded or already underway - this list only includes new projects.

Stock Assessment

(1) Resolution of the stock identification of bottlenose dolphins, particularly of the coastal migratory stock complex on the Atlantic coast. The Atlantic SRG recommends that this issue be resolved through the combination of a variety of techniques, including photographic identification, genetics, and telemetry.
(2) Improve understanding of the species and stock identity of pelagic cetaceans, particularly beaked whales, common dolphins, and pilot whales, to facilitate identification both at sea and in bycatches.
(3) Improve estimation of g(0), the proportion of animals that are missed during line transect surveys, particularly for deep-diving species.
(4) Improve understanding of the stock structure of harbor porpoises impacted by incidental catches in the Gulf of Maine and mid-Atlantic regions.
(5) Investigate stock structure of sperm whales in the North Atlantic.
(6) Estimate abundance of bottlenose dolphins and pilot whales in waters of the US Caribbean Sea.

Mortality Estimation

(1) Improve estimates of fishing effort for most fisheries in the Atlantic and Gulf of Mexico that interact with marine mammal stocks.
(2) Estimate incidental catches of marine mammals for the mixed coastal gillnet fishery of the Atlantic coast, using data from strandings wherever possible, and investigating the possibility of alternative observational techniques.
(3) Further information is needed on fishing practices and incidental catches in the large mesh shark drift gillnet fishery in Georgia and Florida.

(4) Estimates of incidental catches need to be refined for the Atlantic trawl fisheries for squid, mackerel, herring and butterfish.
(5) Increased efforts should be made to standardize the collection and reporting of information on fisheries interactions from stranded cetaceans.
(6) Increased efforts should be made to detect strandings in areas not currently observed with any frequency, such as the shores of Louisiana.

Bycatch Reduction

(1) Harbor porpoise bycatch mitigation measures, such as pingers, should be examined in greater detail.
(2) Gear modification research should be conducted to identify current fishing techniques and practices that have a low probability of bycatch.
(3) Research should be done to determine why certain vessels are taking beaked whales and other pelagic cetaceans at higher or lower rates than are others.
(4) The concept of individual bycatch "quotas" or other means of allocating PBR within and among fisheries should be explored.

Recovery and Conservation Plans

(1) Estimate abundance of North Atlantic right whales using photo-identification mark-recapture techniques.
(2) Conduct demographic analyses of North Atlantic right whales to determine which factors are limiting recovery.
(3) Expand survey areas for North Atlantic right whales outside known critical habitat.
(4) Conduct forensic analyses of stranded right whales to determine cause(s) of mortality.

Long-term Research Needs

(1) Indirect human-induced mortality and the effects of environmental contaminants on reproduction for coastal bottlenose dolphins need to be investigated in more detail. Health assessment research may be able to quantify the effects of some contaminants on sensitive response parameters such as immunological function. In this way, bottlenose dolphins can serve as a useful ecosystem model.
(2) Observer collection of life history samples (reproductive tracts, mammaries, jaws, stomachs) should be improved, and these samples should be processed expeditiously. It would be best for whole carcasses to be recovered. The ETP sample collection should be explored as a model.
(3) Site-specific population monitoring of bottlenose dolphins at long-term research sites should be continued to provide the means for assessing changes in key populations, and because they provide models for understanding the processes of coastal dolphin populations. In some cases these population monitoring studies are linked to health assessment monitoring programs, as described and ranked above.
(4) Surveys of expanding pinniped populations should be conducted to monitor the growth of these stocks to help anticipate habitat and fisheries-related issues that may develop as a result of this expansion.

Alaska Scientific Review Group: Meeting of 11-13 September, 1996, Anchorage, Alaska

Research recommendations

Regarding research recommendations for species managed by the NMFS, the Alaska SRG's recommendations are summarized in Table 2 (high

priority recommendations only- i.e., three or more votes for a particular activity), while management recommendations are summarized in Table 3.

Due to constraints on time, there was only a modest amount of discussion on each of the research and management needs identified by Alaska SRG members. However, some specific recommendations were developed during these discussions. These included:

(1) Consideration of the establishment of "trend sites" for monitoring harbor porpoise in Alaska due to the extreme difficulty in estimating absolute abundance,
(2) distribution of a report on results of tagging studies on harbor porpoise in Washington to a subset of Alaska SRG members.
(3) expand program to collect tissue samples for genetic analyses of harbor seals from the Aleutians and Bristol Bay,
(4) determine whether there are differences in hauling pattern of harbor seals in Alaska on sandy, rocky, and glacial ice haulouts during the survey window,
(5) expand food habit studies of harbor seals in Alaska, paying particular attention to new techniques such as FFA signature analyses,
(6) expand harvest monitoring programs for Steller sea lion, harbor seal, and ice seals to include collection of biological samples for research on trends in life history parameters over time, trends and absolute value of specific contaminants, and stock identify (e.g., genetics, morphology), and
(7) improve enforcement of existing regulations regarding disturbance of marine mammals by human activities, especially related to species thought to be sensitive to human disturbance (e.g., humpback whale, killer whale, and harbor seal).

Steller sea lion, *Eumetopias jubatus*, eating salmon off the Aleutian Islands. (Photo credit: Gregory Silber, NMFS)

Pacific Scientific Review Group: Meeting of 1-2 July 1996, La Jolla, California

Review of Actions Taken on Previous Pacific SRG Recommendations

The Pacific SRG was concerned about the lack of feedback from NMFS headquarters about Pacific SRG recommendations. The Pacific SRG needs to know whether its recommendations have been considered or not, and what priority they have received. For those recommendations that are not followed, NMFS should adhere to the PBR guidelines which require that NMFS provide a justification in such cases.

The Pacific SRG reviewed NMFS activities in response to a list of the previous major recommendations listed in the report of the 3rd meeting of the Pacific SRG.

Highest Priority

(1) The Pacific SRG recommends that a Take Reduction Team be formed to evaluate the driftnet fishery for shark and swordfish off California. This fishery is involved with all the species in which the PBR is exceeded except two (California sea otters and Hawaiian monk seals),

which already have recovery teams under the ESA. Because this one fishery is involved with so many stocks, the Pacific SRG recommends that one take team for the fishery be established, rather than separate ones for each stock.

The Pacific SRG notes that a Take Reduction Team was formed and a Take Reduction Plan agreed to in May, 1996.

(2) The Pacific SRG recommends conducting a comprehensive survey of the Hawaiian archipelago to fill the large gap in our knowledge about the abundance and status of Hawaiian cetacean stocks. Examining any survey data from the ATOC experiments may provide additional information for these assessments. Although fishery mortality has not been estimated, available information suggests that instituting observer programs to estimate mortalities would be problematic because of the small-scale nature of the local fisheries. The problem of dolphins that may be shot at to discourage them from stealing fish from fishing lines was thought to be a law enforcement and education issue rather than one requiring an observer program.

The Pacific SRG notes that a NMFS survey of Hawaiian is being planned for 1998.

(3) The Pacific SRG recommends that monitoring of the central California harbor porpoise stock be continued. Although the almost total closure of the coastal set-net fishery has apparently reduced mortality, recent data by the NMFS suggest that the population still may be declining at a rate of 9-10% per year. Monitoring of this stock should continue to determine whether it is truly declining, and whether the decline is due to environmental or human-caused factors, and to document the population

growth rate in the wake of fishery mortalities and population decline.

The Pacific SRG notes that monitoring of the central California stock has continued, and future surveys are being planned.

(4) The Pacific SRG recommends that the stock structure of West Coast harbor porpoise be studied in greater detail. This species appears to be particularly vulnerable to interactions with fisheries.

The Pacific SRG notes that samples are being collected and analyzed

(5) The Pacific SRG recommends research into developing correction factors to obtain better population estimates for both cetaceans and pinnipeds. For deep-diving cetaceans, such as ziphiid and kogiid whales, research should be conducted into devising correction factors for submerged animals during surveys. For pinnipeds that are counted while hauled out on land, more stock-specific correction factors for estimating the proportion at sea are needed. Demographic models could be developed to estimate the total minimum population size from pup counts.

The Pacific SRG notes that field studies have collected significant new data for deep-diving cetaceans and harbor seals. These correction factor will be used in the next SARs. Proportion of animals hauled out will be available for harbor seals (Hanan's work). No new correction factors available for other pinnipeds.

(6) The Pacific SRG strongly supports the role of a NMFS liaison to promote consistency among the SRGs. The group notes the lack of consistency among SRGs for such issues as defining stocks and in the criteria for adopting recovery factors. The group recommends that the NMFS liaison distribute a list of stocks for which non-default values in the PBR calculations have been used, and the rationale for those deviations, to provide guidance and promote consistency among the groups in dealing with diverse management situations. The Pacific SRG recommends increased communication among the SRGS and within NMFS to maintain consistent application of the PBR concept, and increased cooperation with international, state, and other agencies to promote co-management plans.

The Pacific SRG notes that Paul Wade of the Office of Protected Resources has been serving as a liaison between the different SRGs, which has better informed the SRGs and helped promote consistency among the groups.

(7) The Pacific SRG recognizes the problems of increasing pinniped populations in some areas, particularly where pinniped predation on threatened and endangered salmonid species may be an issue. The literature review being conducted by the Pinniped-Fishery Interaction Task Force was not thought to be sufficient for answering the critical fisheries-interaction questions for California sea lions and harbor seals along the Northwest Pacific coast, and the Pacific SRG recommends region-wide research be conducted, particularly into the food habits of these species.

The Pacific SRG notes that a report of the team is being finalized. The recommended research has not been done.

Second Priority

(1) The Pacific SRG recognizes the problems inherent in defining ZMRG, and the group could not provide a viable alternative. The group recommends that the NMFS assess the performance of the ZMRG guidelines in its third-year report to Congress.

The Pacific SRG notes that the GAMMS workshop dealt with this issue and NMFS is considering a final position

(2) The Pacific SRG recommends that the use of fishermen logbook data for monitoring marine mammal mortality be discontinued. Such data are not reliable and the program is a drain of resources from more effective programs.

The Pacific SRG notes that the MMPA now requires that all commercial fishermen report mortality and injury of marine mammals to NMFS. These reports are being collected by NMFS' regional offices. Regarding the use of such information, the PBR guidelines used by NMFS to prepare marine mammal stock assessment reports states: "There is a general view that marine mammal mortality information from logbook or fisher report data can only be considered as a minimum estimate of mortality, although exceptions may occur. Logbook or fisher report information can be used to determine whether the minimum mortality is greater than the PBR (or greater than 10% of the PBR), but it should not be used to determine whether the mortality is less than the PBR (or 10% of the PBR). Logbook data for fisher reports should not be used as the sole justification for determining that a particular stock is not strategic or that its mortality and serious injury rate is insignificant and approaching zero rate."

Table 2. Summary of Alaska SRG's research recommendations for species managed by the NMFS

Species	Research Recommendations- High Priority Only
Humpback whale	1. Develop and implement protocol for estimating abundance.
Harbor Porpoise	2. Improve survey design for harbor porpoise in Alaska
	3. Expand sampling regime for genetic analysis to determine stock structure of harbor porpoise in Alaska.
Harbor seal	4. Expand sampling regime for genetic analysis to determine stock structure of harbor seals in Alaska.
	5. Improve estimates of abundance of harbor seals, especially in Bristol Bay, through improved survey techniques, better estimates of P(hauled), and more careful attention to seasonal and habitat differences in hauling behavior.
Beluga whale	6. Improve estimates of abundance for beluga whales, especially in Bristol Bay and Norton Sound, through improved survey techniques, better estimates of P(sight), and more careful attention to seasonal movement patterns.
	7. Expand seasonal coverage of beluga whales in Cook Inlet to include fall and possibly early winter surveys.
N. fur seal	8. Evaluate the suitability of the current correction factor used to extrapolate current abundance from pup counts, and if appropriate, reevaluate the depleted status of this stock.

Table 3. Summary of Alaska SRG's management recommendations for species managed by NMFS

Species	Management Recommendations
Marine mammals	1. Develop policy on classifying mortalities associated with the use of "personal-use" nets.
	2. Finalize regulations on the use of deterrents by commercial fishers in mitigating marine mammal-fishery interactions.
	3. Expand existing stranding response program in Alaska, especially regarding the development of a rapid response team.
	4. Initiate observer programs in all Cat. II fisheries and use these data to provide fishery-specific estimates of marine mammal by-catch annually.
	5. Develop policy on classifying injuries as serious and how such data will be used in the PBR process.
Steller sea lion	6. Evaluate the effect of the "no-trawl" zones on the population dynamics of Steller sea lions and on commercial fisheries.

(3) The Pacific SRG recommends research into non-fishery human-caused mortality. Specifically, how to quantify such mortality,
and how to incorporate this mortality into the PBR process. Such research should be given a higher priority as the fishery mortality approaches the PBR.

The Pacific SRG notes that no progress has been made on this. Paul Wade suggested a more specific recommendation could be made to encourage further research.

(4) It is unknown whether the virtual disappearance of pilot whales from the California coast is a natural phenomena due perhaps to changing environmental conditions or due to fishery interactions. Research into the current distribution and migration patterns on an opportunistic basis may shed light on these questions. Broad-scale ecosystem studies may suggest reasons for these changes, as well as recent changes in the distribution and abundance of other pinniped and cetacean species in the North Pacific.

The Pacific SRG notes that no progress has been made on this item.

(5) The Pacific SRG recommends monitoring the west coast squid purse-seine fishery with an observer program because of the lack of current information about marine mammal mortalities in this fishery and the previous interactions thought to occur with the southern California pilot whale population that has since declined in the area.

(6) The Pacific SRG notes that this fishery is being proposed as a Category II fishery in the 1997 List of Fisheries based in part on the Pacific SRGs recommendations.

Chapter III. MMPA Section 117
Stock Assessment Program and Reports

Chapter IV. Ecosystem Activities

Bering Sea Ecosystem Study

The MMPA 1994 Amendments require NMFS to undertake a scientific research program to resolve uncertainties concerning the causes of population declines in marine mammals, sea birds and other living resources of the ecosystem. The amendments also require that the study consider the research recommendations developed by previous workshops on the Bering Sea and that it include research on subsistence use of resources and ways to provide for the continued use of these resources. An important component of the study will be the involvement of native Alaskan groups in the work, and the use of traditional local knowledge in the conduct of Bering Sea research.

NMFS and numerous other federal and state agencies and academic institutions already conduct research in the Bering Sea which contributes to an understanding of the ecosystem and potential declines in living marine resource populations. However, the various research efforts are not coordinated from an ecosystem perspective. NMFS' objective in undertaking this research program is not to duplicate research already ongoing, but to coordinate among these programs and supplement this work as required.
As a first step, NMFS is developing a comprehensive ecosystem study plan to define research, monitoring and assessment priorities. The plan is being developed through a series of steps involving NMFS, other federal agencies, the State of Alaska and Alaska native groups. NMFS completed the first draft of the plan in early 1995. During this phase, recommendations of previous Bering Sea workshops and symposia were reviewed and incorporated into the plan as appropriate. The plan was circulated to the MMC, State of Alaska, FWS, NBS, Alaska native organizations and others for review and comment, and revised.

In November 1995, NMFS sponsored a workshop in Anchorage to review current Bering Sea research efforts, determine gaps in current research efforts, finalize the study plan, and determine how the research would be conducted. The workshop was attended by over 90 participants from NOAA, the above-mentioned agencies and organizations, and the general public, and was successful in reviewing current research efforts and research gaps. Alaska Native organizations at the workshop focused on the role of traditional environmental knowledge (TEK) in the study. NMFS will continue development of the scientific plan, and will incorporate any Alaska Native input on TEK once it is available.

Gulf of Maine Ecosystem Workshop

On September 18, 1995, NMFS convened the Gulf of Maine Ecosystem Workshop at Dartmouth University. The workshop objectives were to: 1. assess the human-caused factors affecting the affecting the health and stability of the Gulf of Maine ecosystem; and 2. identify research and management options to restore and/or maintain the environmental quality of the ecosystem. Over 70 participants from state and federal government, academic institutions, environmental NGOs and fishing groups as well as private citizens gathered to discuss the status of the ecosystem.

The workshop consisted of plenary presentations and a public comment forum, followed by focused working groups, and synthesis and drafting sessions. Plenary subjects included the Gulf of Maine physical environment, water column processes, benthic environments, fisheries resources, protected species, and sources, fates and effects of contaminants. The three working groups were anthropogenic impacts, fisheries harvesting and protected species/marine mammals. In each working group, the status of knowledge for that topic was surveyed, individual ecosystem stressors (direct and indirect) were identified, and research and management recommendations were then developed for each. Habitat, biodiversity, and ecosystem function were emphasized as cross-cutting themes in each working group.

The following were identified as the major factors affecting the health and stability of the system:

- Overfishing, and related impacts,

- Contaminant introduction,
- Physical alteration and loss of critical habitat,
- Impacts of human-activities and development on endangered/threatened species,
- Factors external to the Gulf which affect seasonally resident and indigenous populations (global warming, mortality to migratory populations while outside the Gulf).

Based on these priority impacts, the workshop made the following recommendations with regard to research and management:

Research

- Identify critical linkages between ecosystem components and subsystems, and their sensitivity to cumulative and individual stressors;
- Implement additional interdisciplinary research approaches;
- Evaluate the resilience of the Gulf of Maine ecosystem and its components known to be affected by stressors;
- Develop criteria to assess sensitivity of coastal embayments and estuaries from an interdisciplinary perspective of habitat change, contaminant introduction, fisheries harvesting and physical and biological processes.

Management

- Seek cost-effective solutions through increased integration of rigorous scientific assessment of the problems and potential management options;
- Develop and implement integrated management strategies encompassing the key or sensitive components of both the Gulf of Maine *per se* and its watersheds;
- Strengthen existing water quality criteria and enforcement activities in the Gulf of Maine;
- Adopt a *precautionary approach* in the face of uncertainty or insufficient information.

The Executive Summary report of the workshop, as well as a NMFS report including major conclusions and recommendations on research, management and legislation, was forwarded to Congress on January 23, 1996. The final workshop proceedings were completed and available on April 30, 1996.

Chapter V. Dolphin Interactions with Commercial Tuna Fisheries in the Eastern Tropical Pacific Ocean

Background and Domestic Fleet

The most widely known interaction between marine mammals and commercial fisheries is the incidental take of dolphins by yellowfin tuna purse seiners in the eastern tropical Pacific Ocean (ETP). For reasons not fully understood, schools of large yellowfin tuna (25 kg or larger) tend to associate with dolphins in the ETP. In the late 1950s, fishermen began exploiting this association by deploying large purse seine nets around the dolphin schools to catch the tuna swimming below. Despite the fishermen's attempts to release the dolphins, many became trapped in the nets and drowned. Efforts to reduce dolphin mortality in the ETP have been a central focus of the MMPA since it was enacted in 1972.

In 1992, efforts to reduce dolphin mortality in the ETP resulted in passage of the International Dolphin Conservation Act (IDCA), which focuses on ways to eliminate rather than merely reduce dolphin mortality. The IDCA (Title III of the MMPA) gave authority to the Department of State to enter into international agreements with other nations to institute, effective March 1, 1994, a 5-year moratorium on harvesting tuna by setting purse seine nets on marine mammals. It also amended the general permit issued to the American Tunaboat Association (ATA), reducing the dolphin mortality allowed under the permit from an annual maximum of 20,500 dolphins to not more than 1,000 for 1992 and not more than 800 for the 14-month period from January 1993 to March 1994. The ATA general permit was scheduled to expire at that point. However, no major tuna fishing nation committed to the 5-year moratorium. Thus, the general permit continued in effect (with an expiration date of December 31, 1999), with the additional requirement that annual incidental dolphin mortality not exceed the number of mortalities which occurred under the permit during the preceding year. The IDCA also prohibited, with certain exceptions, any person or vessel subject to the jurisdiction of the United States intentionally to set a purse seine net on or to encircle any marine mammal during any tuna fishing operation after February 1994. The U.S. fleet did not make any sets on dolphins in 1995 and the total mortality for 1995 was zero dolphins. This means that there was no allowable mortality quota available to the U.S. fleet in 1996.

Since June 1994, the MMPA allows only tuna that are dolphin safe to be sold, bought, offered for sale, shipped or transported in the United States. Even though the U.S. market was restricted under the MMPA to only dolphin safe tuna, the MMPA also requires all U.S. purse seine vessels intending to fish in association with dolphin in the ETP to request a Dolphin Mortality Limit (DML) from the Inter-American Tropical Tuna Commission (IATTC). A vessel is not required to have a DML if it fishes "dolphin safe" and does not target schools of fish found beneath dolphins. Five U.S. flag purse seine fishing vessels, each with a carrying capacity of greater than 400 short tons, operated in the ETP in 1996. Several U.S. vessels requested DML's from the IATTC at the beginning of 1996 in anticipation of changes to the MMPA that would allow the U.S. vessels to set on dolphin. Passage of bills that would amend the MMPA was not successful in 1996, however, and the DML’s issued to U.S. vessels at the beginning of the year were forfeited for the second semester.

International Fleet

By the end of 1996, five harvesting nations with purse seine vessels greater than 400 short tons (362.8 metric tons) carrying capacity harvesting yellowfin tuna in the ETP remained under primary embargo as required by the MMPA: Colombia, Mexico, Panama, Vanuatu and Venezuela. The MMPA requires that yellowfin tuna or products from yellowfin tuna caught in the ETP by purse seine vessels be prohibited from importation into the United States from any harvesting nation unless the Secretary has issued an affirmative finding. An affirmative finding is issued if the nation demonstrates that it has a marine mammal regulatory program and a marine mammal mortality rate

comparable to that of the United States. Alternatively, a harvesting nation may request an affirmative finding if it has prohibited dolphin sets by its fleet. Spain and Ecuador were issued affirmative findings for 1996 as harvesting nations whose vessels do not set on dolphins.

Under the MMPA, an intermediary nation is one that exports yellowfin tuna to the United States and also imports yellowfin tuna or yellowfin tuna products that are subject to a ban on direct importation into the United States. Three nations, Costa Rica, Italy and Japan, remained subject to "intermediary nation" embargo in 1996. All yellowfin tuna and yellowfin tuna products are prohibited from importation into the United States from a nation under "intermediary nation" embargo.

The La Jolla Agreement

The United States, as a member of the IATTC, participates in the Intergovernmental meetings and the International Review Panel (IRP) meetings. The IRP was established by international agreement in 1992 in La Jolla, California, to review the performance of each of the vessels of the international fleet that participates in the yellowfin tuna purse seine fishery (La Jolla Agreement). The goal of this multilateral agreement is to reduce marine mammal mortalities in the fishery while sustaining the yield of tuna. Reductions in dolphin mortality in the international fishery have been achieved through the International Dolphin Conservation Program (IDCP) under the La Jolla Agreement. The total dolphin mortality in the international fishery in 1996 was 2,547 animals, or 28 percent of the overall limit of 9,000.

The overall annual Dolphin Mortality Limit (DML) set for the international fleet by the La Jolla Agreement through 1999, is allocated annually to vessels that meet certain criteria, including observer coverage, possession of the equipment required for releasing captured dolphins unharmed, agreement to adhere to IATTC standards regarding fishing practices, training of crew members in dolphin safety techniques, and monetary support of the IDCP observer program. Every vessel in the fishery is assigned an individual vessel quota based on the total number of vessels in the fishery for the year divided into the total DML for the year. The information collected by the required 100 percent observer coverage is essential for scientific research and for ensuring compliance with the agreement.

The IRP meets about three times annually and is charged with reviewing and reporting on the compliance of the international fleet with the La Jolla Agreement and verifying the performance of individual vessels. The IRP is made up of representatives of governments, the fishing industry, and non-governmental environmental organization.

The Panama Declaration

On October 4, 1995, the governments of Belize, Colombia, Costa Rica, Ecuador, France, Honduras, Mexico, Panama, Spain, the United States of America, Vanuatu, and Venezuela met in Panama City to reaffirm the following commitments and objectives of the La Jolla Agreement: (1) progressively reducing dolphin mortality in the ETP to levels approaching zero through the setting of annual limits and (2) with a goal of eliminating dolphin mortality in the fishery, seeking ecologically sound means of capturing large yellowfin tunas not in association with dolphins. These nations announced their intention to formalize the La Jolla Agreement as a binding legal instrument which shall be open to all nations with coastlines bordering the ETP or with vessels fishing for tuna in this region. This would be accomplished by adoption of a binding resolution or other legally binding instrument. The adoption of the IATTC resolution or other legally binding instrument, that utilizes to the maximum extent possible the existing structure of the IATTC is contingent upon the enactment of changes in U.S. Law, specifically the Marine Mammal Protection Act.

The Panama Declaration would, among other things, establish: (1) through the year 2000 a per-stock, per-year cap of between 0.2% of the Minimum Estimated Abundance (Nmin) (as calculated by NMFS or equivalent standard) and 0.1% of Nmin; (2)

beginning in the year 2001 a per-stock, per-year cap of 0.1% of Nmin; (3) a 5,000 total numerical cap on dolphin mortalities in the fishery; and (4) a per-vessel maximum annual DML consistent with the per- year mortality caps.

The countries agreeing to the Panama Declaration envisioned several changes to U.S. Law which would result in the lifting of primary and secondary embargoes, and a change in the definition of "dolphin safe" to describe any tuna caught in the ETP purse seine fishery in a set in which no dolphin mortality occurred as documented by observers.

Several bills pending before Congress at the end of 1995 would implement all or some of the provisions of the Panama Declaration. Both the Senate and the House held hearings in 1996 to discuss the proposed legislation. At the end of 1996, legislation that would implement the Panama Declaration had passed in the House but failed in the Senate. Steps were underway at the end of 1996 to reintroduce appropriate legislation early in the 105th Congress.

Chapter VI. Marine Mammal Interactions with Other Human Activities

Regionwide Pinniped-Fishery Interactions Study

NMFS has been given the authority to conduct a study on the interaction between pinnipeds and anadromous fish in at least three areas within the Northwest Region (Washington and Oregon) to evaluate: 1) fish behavior in the presence of predators; 2) holding times and passage rates of anadromous fish in the presence and absence of predation; and 3) whether additional facilities exist, or can be modified to improve escapement. However, this investigation will not be conducted until appropriations have been allocated.

Interaction of California Sea Lions and Pacific Harbor Seals with Salmonid Stocks

NMFS is to investigate whether California sea lions and Pacific harbor seals are having: 1) a significant negative impact on the recovery of salmonid fishery stocks listed as threatened or endangered under the ESA or are approaching endangered or threatened status; and 2) broader impacts on coastal ecosystems of Washington, Oregon and California.

To assist in compiling information for the investigation, NMFS established a working group comprised of biologists familiar with pinniped and salmonid issues in the Pacific Northwest. The working group met twice in 1995, and produced a draft report in October 1995. After a prolonged review process, the scientific report has been submitted to editors for publication as a NOAA Technical Memorandum from the Northwest Fisheries Science Center.

Using the information from the scientific report as a focus of discussions, NMFS began discussions with the Pacific States Marine Fisheries Commission (PSMFC) and representatives of Washington, Oregon, and California in June, 1996. Over the course of four meetings and numerous conference calls during the last 8 months, two issues were identified from the scientific investigation, and four recommendations were developed.

The two issues on pinniped impacts on salmonids and west coast ecosystems described in the Report are as follows:

1. California sea lion and Pacific harbor seal populations on the West Coast are increasing while many salmonid populations are decreasing. Salmonid populations that are depressed and declining, especially those that are listed or proposed to be listed under the ESA, can be negatively impacted by expanding pinniped populations and attendant predation.

2. Increasing California sea lion and Pacific harbor seal populations and their expanding distribution are negatively impacting commercial fisheries, affecting recreational fishing and private property, and posing threats to public safety.

The four recommendations in the draft report to Congress are:

1. <u>Implement site-specific management for California sea lions and Pacific harbor seals</u>. Establish a framework that would allow state and Federal resource management agencies to immediately address conflicts involving California sea lions and Pacific harbor seals. Any lethal takings would have to be within the Potential Biological Removal levels established by NMFS for all human causes of mortality.

The three components of the framework would be:

(a) In situations where California sea lions or Pacific harbor seals are preying on salmonids that are listed or proposed for listing under the ESA, immediate use of lethal removal by state or Federal resource agency officials would be authorized;

(b) in situations where California sea lions or

Pacific harbor seals are preying on salmonid populations of concern to the state or are impeding passage of these populations during migration as adults or smolts, lethal takes by state or Federal resource agency officials would be authorized if (i) non-lethal deterrence methods are underway and are not fully effective, or (ii) non-lethal methods are not feasible in the particular situation or have proven ineffective in the past; and,

> (c) in situations where California sea lions or Pacific harbor seals conflict with humans, such as at fishery sites and marinas, lethal removal by state or Federal resource agency officials would be authorized as a last resort when an individual pinniped fails to respond to repeated deterrence attempts, or when repeated deterrence attempts do not affect the behavior of an individual pinniped over the long-term.

2. Develop safe, effective non-lethal deterrents. In order to provide an array of options broader than lethal removal to resolve West Coast pinniped problems, there is a pressing need for research on the development and evaluation of deterrent devices and further exploration of other non-lethal removal measures. Potential options need to be evaluated in a concerted, adequately funded effort to address this issue. Research and development of pinniped deterrence methods should be a research priority for addressing expanding pinniped populations on the West Coast.

3. Selectively reinstate authority for the intentional lethal taking of California sea lions and Pacific harbor seals by commercial fishermen to protect gear and catch. Prior to the 1994 Amendments to the MMPA, commercial fishermen were allowed to kill certain pinnipeds as a last resort in order to protect their gear or catch. Although the 1992 NMFS legislative proposal contained provisions to continue such authority, it was not included in the 1994 Amendments to the MMPA. A limited authorization, based on demonstrated need, should be provided to certain commercial fishermen at specified sites to use lethal means, as a last resort, to protect their gear and catch from depredation by California sea lions and Pacific harbor seals until such time that effective non-lethal methods are developed for their specific situation.

4. Information needs. An array of additional information is needed to better evaluate and monitor California sea lion and Pacific harbor seal impacts on salmonids and other components of the West Coast ecosystems. Details of such studies are described in the draft report to Congress.

The discussions with PSMFC and the States were completed in early 1996, and the draft report was submitted through the NMFS clearance process. The report must be made available for public review and comment for a mandatory 90-day period before preparation of a final report. The final report is expected to be submitted to Congress during the summer of 1997.

Gulf of Maine Pinniped-Fishery Interaction Task Force

The 1994 MMPA Amendments require NMFS to convene a task force to provide advice on issues or problems regarding pinnipeds interacting in a dangerous or damaging manner with aquaculture resources in the Gulf of Maine. The task force, appointed in January 1995, was comprised of salmon growers, a state resource manager, representatives of environmental organizations, and a pinniped biologist from the academic research community. Three task force meetings were held in the Eastport, ME area and one was held in Portland, ME. All meetings of the task force were open to the public.

On February 7, 1996, the task force submitted its final report to NMFS. Among the recommendations to mitigate pinniped-aquaculture interactions were:

- NMFS should review regulations, permit processes and all restrictions on currently held permits, and revisit those measures which limit a grower's ability to control seal predation through non-lethal measures.
- NMFS should increase transboundary cooperation with Canadian authorities and work to endure that Canadian growers do not have a production or marketing advantage due to less restrictive regulations.
- NMFS should halt the importation of salmon from nations that allow use of lethal measures to control predation at salmon pen-sites.
- NMFS, Maine DMR and the Maine Aquaculture Innovation Center should investigate innovative net pen designs.
- NMFS should support research on the effects of acoustic deterrence devices.
- NMFS and Maine DMR should conduct studies of seal life history to better understand the causes underlying interactions with aquaculture operations.
- The salmon aquaculture industry should increase efforts to document losses from predator impacts.
- Salmon growers and Maine aquaculture associations should work with federal and state agencies, academic institutions and NGOs to make predation control measures more effective and affordable.
- NMFS should offer subsidized loans and an insurance program to assist growers to implement predation-control measures and to withstand losses from predators when they occur.

NMFS will use the task force report as the basis of a report to Congress, which will include recommendations on how to mitigate the pinniped-aquaculture interactions. NMFS made the task force report available for public review and comment. Following the close of the comment period, NMFS used the task force recommendations and comments received from the public to prepare its proposed recommendations to Congress

A draft of the report to Congress is completed and was made available for a 30-day public review and comment period in mid-March, 1997. Highlights of the recommendations include the following:

(1) The aquaculture industry needs to develop a reporting system to substantiate its claims, develop and implement standards to prevent damage by predators, take advantage of government assistance in developing deterrence strategies, and develop marketing strategies to help make future losses more sustainable;

(2) Congress should clarify whether or not it intended that the lethal take provisions in MMPA section 109(h) be applied to the situation when a marine mammal gets inside a net-pen; and

(3) NMFS reiterates its support of the intentional lethal take provision included in its 1992 legislative proposal and recommends that Congress re-examine

the need for intentional lethal taking under the MMPA. The 1992 legislative proposal would allow intentional lethal taking marine mammals not listed under the Endangered Species Act when:

- There is a demonstrated need;
- Non-lethal means were attempted and were unsuccessful;
- The taking would have little effect on the marine mammal stock; and
- The taking was monitored.

In reiterating the NMFS legislative proposal of 1992, the draft report suggests that Congress, in consultation with various constituents and resource management agencies, re-examine the need for selective intentional lethal removal of marine mammals.

Small Take Authorizations

Since 1982, the MMPA has provided a mechanism for authorizing, upon request, the incidental, but not intentional, taking of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) for periods not to exceed five years per authorization. Before issuing regulations that allow the takes, NMFS must determine that the takes will not have more than negligible impact on the species requested to be taken and will not have an unmitigable adverse impact on the availability of the species for subsistence hunting. The regulations require the applicant to monitor the taking of marine mammals during the activity and to report the results to NMFS.

During 1996, three specific activities had authorizations to incidentally take marine mammals under this provision of the MMPA. The authorized activities were (1) the taking of ringed seals incidental to seismic activities on the ice in the Beaufort Sea; (2) the taking of bottlenose dolphins and spotted dolphins incidental to the removal of oil and gas structures in the Gulf of Mexico; and (3) the taking of a number of species of marine mammals during Navy ship shock trials off southern California. However, no Letters of Authorization were issued during 1996 for conducting ship shock trials off southern California. Authorizations for (1) the taking of six species of marine mammals incidental to energy exploration in the Beaufort Sea, and (2) the taking of seals and sea lions incidental to the launching of Titan IV rockets from Vandenberg Air Force Base, California, expired in 1995 and 1996 respectively. Both activities obtained small take authorizations under the new Incidental Harassment Authorization program described below.

While no new regulated small take authorizations were issued in 1996, NMFS received two applications for takings incidental to specified activities. These are:

U.S. Navy Seawolf Shock Trial Application

On June 7, 1996, NMFS received a request from the U.S. Navy for a small take of marine mammals incidental to shock testing the USS SEAWOLF submarine in the waters offshore Norfolk VA or Jacksonville, FL in the summer of 1997. The Navy proposes to shock test the USS SEAWOLF by detonating a 10,000-lb explosive charge near the submarine once per week over a 5-week period between May 1 and September 30, 1997, decreasing the distance between submarine and explosive each time. Detonations would occur 100 ft below the ocean surface in a water depth of 500 ft. The USS SEAWOLF would be underway at a depth of 65 ft at the time of the test. For each test, the submarine would move closer to the explosive so the submarine would experience a more severe shock.

On August 2, 1996, NMFS released for public comment proposed regulations that, if implemented, would authorize the harassment, injury and mortality of a small number of marine mammals incidental to the Navy's shock trial. The rule contains proposed measures for assuring minimal loss of marine life and requirements for monitoring the planned detonations. The public review and comment period closed on September 17, 1996. A final rule is expected in late spring, 1997.

U.S. Coast Guard (USCG) Large Whale-ship Strike Application

Chapter VI. Marine Mammal Interactions with Other Human Activities

On May 31, 1995, NMFS received an application for a small take exemption from the USCG in order to allow a small take of certain marine mammal species incidental to USCG vessel and aircraft operations off the U.S. Atlantic shoreline. The application was in response to an order dated May 2, 1995, and was revised by an order dated May 19, 1995, in Strahan v. Linnon wherein the presiding District Court judge order the USCG to apply by May 31, 1995, for a small take of northern right whales. The USCG also requested a small take of humpback, blue, fin, sei and sperm whales. Specific activities covered in the application are the operation of USCG vessel and aircraft activities in the North Atlantic, including responses to marine pollution events, port safety and security issues, law enforcement efforts, search and rescue missions, vessel traffic control, and maintenance of aids to navigation.

Before processing this application, NMFS determined that it would be necessary to first complete consultation under section 7 of the ESA. The USCG submitted a final ESA Biological Assessment for the U.S. Atlantic Coast on August 3, 1995, and NMFS issued a Biological Opinion on September 15, 1995. As a result of an October 9, 1995, humpback whale strike in the Gulf of Maine, the USCG requested reinitiation of consultation on February 22, 1996. That process was concluded on July 22, 1996. During the time period for consultation, processing the USCG application for a small take authorization was suspended.

Because the finding of the July 22, 1996, section 7 consultation was that continued vessel and aircraft operations by the USCG are likely to jeopardize the continued existence of northern right whales, and because NMFS has determined that the loss of even a single northern right whale is significant, a negligible impact finding under section 101(a)(5)(A) could not be made for ship strikes of northern right whales by the USCG. As a result, the USCG's June 2, 1995, application for a small take authorization for northern right whales was denied by letter on July 31, 1996. The requested authorization for the additional species of marine mammals incidental to USCG operations was not addressed at that time.

As the presiding District Court judge in Strahan v. Linnon expressed concern with NMFS' actions on the small take application and other marine mammal authorizations, on October 17, 1996 (61 FR 54157), NMFS announced receipt of the USCG application and offered the public 30 days in which to submit comments on the application, in order to crystallize the underlying issues more efficiently and formally in the public forum. NMFS expects to make a final determination on the application in early spring, 1997.

Small Take Amendment-Incidental Harassment

Section 101(a)(5) of the MMPA was amended by the 1994 MMPA amendments (Public Law 103-238) to establish an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. It established specific time limits for processing the application, for public notice and comment on the application and for issuance or denial of the authorization.

On April 10, 1996 (61 FR 15884), NMFS published an interim rule to amend the small take regulations to implement the process for issuing harassment authorizations without the need to issue specific regulations governing the taking of marine mammals for each and every activity. This rule sets forth the process for applying for and obtaining an authorization; the time limits set by the statute for NMFS review, publication, and public notice and comment on any applications for authorization that would be granted; and the requirements for submission of a plan of cooperation and for scientific peer review of an applicant's monitoring plans (if that activity may affect the availability of a species or stock of marine mammal for taking for subsistence purposes). The rule also changed the existing regulations to clarify the requirements for obtaining a small take authorization and for requesting NMFS concurrence that no marine mammal takes are likely.

NMFS believes that this rule will result in a more streamlined and cost effective method for obtaining small take by incidental harassment authorizations, without lessening the MMPA's protection of species and stocks of marine mammals.

Under the new small take provisions, during 1996, NMFS accepted applications from, and issued authorizations to, the following activities: (1) the U.S. Air Force for authorization to take small numbers of seals and sea lions by harassment incidental to launches of Delta, Lockheed, Taurus and Titan rockets from Vandenberg Air Force Base, California; (2) Massachusetts Institute of Technology, Cambridge, MA, for authorization to take small numbers of marine mammals by harassment incidental to conducting a physical oceanography experiment that uses sound to study the flow field and mixing processes in Haro Strait, Puget Sound, WA; and (3) BPX (Alaska), Anchorage, AK for authorization to take small numbers of bowhead whales and 4 other species of marine mammals by harassment incidental to conducting a 3-D seismic survey in the Northstar area of the western Beaufort Sea, Alaska.

Vandenberg AFB -- Launches of Delta, Lockheed, Taurus and Titan Rockets

During 1996, NMFS issued incidental harassment authorizations to the U.S. Air Force at Vandenberg AFB to take small numbers of harbor seals, California sea lions, elephant seals and northern fur seals incidental to launches of Delta, Lockheed, Taurus and Titan rockets at Vandenberg Air Force Base, California. These authorizations, which are valid for one year were issued on July 17, 1996 (Lockheed launch vehicles), November 13, 1996 (McDonnell Douglas Delta II), November 13, 1996 (Orbital Science's Taurus rocket) and November 27, 1996 (Titan II and IV rockets).

Based upon documentation submitted with these requests, NMFS concurred with the U.S. Air Force that the launches will result in only negligible impacts to harbor seals located on the Vandenberg base and no impacts are likely at the pinniped haul-outs on San Miguel Island, except for launches of Titan IV rockets with a trajectory that could produce a sonic boom over the Northern Channel Islands. To ensure that these determinations are correct, the U.S. Air Force will conduct shore-side pinniped surveys along the Vandenberg coastline and will employ time-lapse photographic monitoring during any launch taking place during harbor seal pupping season, when observers are denied access to the beach. Acoustic monitoring will also be employed whenever necessary at South Vandenberg and on San Miguel Island to obtain launch noise profiles. Biological monitoring at locations on the NCI will take place whenever sonic

booms greater than 2 lbs/ft^2 are predicted.

Massachusetts Institute of Technology -- Haro Strait, Puget Sound, WA Oceanography Experiment

On June 10, 1996, NMFS issued an incidental harassment authorization for approximately 30 days to MIT for the harassment of small numbers of marine mammals incidental to conducting a physical oceanography experiment that uses sound to study the flow field and mixing processes in Haro Strait, in the San Juan Island Archipelago (Puget Sound). The experiment, which ran from June 10 through July 5, 1996, was scheduled to take advantage of the extreme ebb tides that occur only twice a year. The principal species of marine mammals requested for incidental harassment were: Harbor porpoise, killer whale, Dall's porpoise, and harbor seal.

NMFS determined that the short-term impact on marine mammals from conducting this physical oceanography experiment in Haro Strait, would result in a negligible impact on marine mammals. This impact was expected to be limited to a short-term modification in behavior by certain species of marine mammals. While behavioral modifications may be made by these species to avoid noise, this behavioral change was expected to have only a negligible impact on the animals. However, the mitigation and monitoring measures, including the establishment of a scientific oversight committee, that were developed by the applicant, and are part of the authorization, provided additional protection to ensure that the project's impact on marine mammals and the affected whalewatching industry was at the lowest level practicable.

BPX (Alaska) -- 3-D Seismic Survey in Beaufort Sea, Alaska.

On March 18, 1996, NMFS received an application from BPXA requesting an authorization for the harassment of small numbers of several species of marine mammals, principally bowhead whales, incidental to conducting an ocean-bottom-cable-seismic survey during the open water season in waters in and near the Northstar Unit, located in the U.S. Beaufort Sea. The purpose of the survey was to refine assessments of petroleum reserves in the Northstar Unit prior to developing those reserves.

Bowhead whale mother and calf in the Beaufort Sea. (Photo credit: Gregory Silber)

After a 30-day public comment period and a review of the documentation provided by the applicant and the commenters, NMFS determined that the short-term impact of conducting seismic surveys in the Northstar Unit would result, at worst, in a temporary modification in behavior by bowhead whales and certain other species of cetaceans and pinnipeds. While behavioral modifications may be made by these species to avoid the resultant noise, this behavioral change is expected to have a negligible impact on the animals.

The number of potential incidental harassment takes will depend on the distribution and abundance of marine mammals (which vary annually due to variable ice conditions and other factors) in the area of seismic operations. Due to the distribution and abundance of marine mammals during the projected period of activity and the location of the proposed seismic activity in waters generally too shallow and distant from the edge of the pack ice for most marine mammals of concern, the number of potential harassment takings is estimated to be small. In addition, no take by injury and/or death was anticipated and the potential for temporary or

permanent hearing impairment would be avoided through incorporation of mitigation measures, including a shutdown protocol when marine mammals entered a predesignated safety zone, ramping up the source whenever it is powered down for more than 1 minute, requiring biological observers to monitor safety zones, and aerial monitoring after September 1, 1996 to look for bowhead whales.

Because bowhead whales are east of the seismic area in the Canadian Beaufort Sea until late August/early September, seismic activities were not expected to impact subsistence hunting of bowhead whales prior to that date. After September 1, 1996, BPX initiated aerial survey flights for bowhead whale assessments. In addition, appropriate mitigation measures to avoid an unmitigable adverse impact on the availability of bowhead whales for subsistence needs were the subject of consultation between BPX and subsistence users.

Therefore, an incidental harassment authorization was issued to BPXA on July 18, 1996 (July 25, 1996, 61 FR 38715).

On August 30, 1996, NMFS was notified by BPXA that, in accordance with the results of the transmission loss (TL) test required by the IHA, the safety ranges around the source for pinnipeds and cetaceans should be increased by 100 m (328 ft) to 250 and 750 m (820 and 2,460 ft), respectively. Further investigation by NMFS determined that these increased safety ranges would be appropriate for the seismic array only, and would not apply to the use of single airguns, which had a 20 dB (re 1µPa @ 1 m) lower amplitude. NMFS noted at the time that these increased safety ranges were immediately implemented by BPXA.

Chapter VII. Conservation and Recovery Programs

The MMPA authorizes NMFS to initiate management actions, such as the development of conservation plans, for species or stocks whose survival is in jeopardy. The ESA offers similar management authority to NMFS for endangered and threatened marine species. This chapter summarizes species management, as well as research, activities undertaken by NMFS pursuant to the MMPA and ESA in 1996.

Northern Right Whale, *Eubalaena glacialis*

The northern right whale has long been recognized as the world's most endangered large whale species. Recent mortalities off the Atlantic coast of the United States, have caused escalating concern for the western North Atlantic population, especially with regard to the population's vulnerability to human interaction. Since 1995, there have been 13, possibly 14, known serious injuries and/or mortalities of right whales off the Atlantic coast (5 due to entanglement, 3 due to ship strikes, 5 due to unknown or natural causes and 1 death in 1996 due to ship strike of a whale injured by an entanglement in 1995). The primary human-induced causes of right whale mortality are ship collisions and entanglement in fishing gear. In addition, habitat degradation and disturbance by vessels were identified as major threats to the population.

Significant uncertainties remain concerning the current population status and trends. Regardless of the uncertainties, the precarious state of the right whale population strongly suggests that human activity may have a greater impact on population growth rates and trends relative to the other whale species.

Recent Right Whale Injuries and Mortalities

During the first three months of 1996, seven northern right whale (right whale) mortalities were documented. Six of these occurred in waters adjacent to the calving grounds off the southeastern United States.

Following is a summary of the whales that were retrieved and necropsied (these descriptions are excerpted from the respective necropsy reports) as well as those that were observed but not retrieved, during January- March 1996.

January 2, 1996 - A stranded dead, female right whale calf was located on Atlantic Beach, near Jacksonville, Florida. The whale was necropsied at New England Aquarium on January 11. No obvious sign of gross trauma was evident from the internal exam. A definitive statement was made that there were no gross lesions suggestive of vessel collision.

January 30, 1996 - A 45 foot floating dead right whale was observed 10 miles east of Sapelo Island, Georgia by a private vessel and was reported to the USCG. The carcass was towed to shore and necropsied. No external evidence of trauma was visible with no evidence of chronic disease. Grossly the animal appeared in good flesh, but a large contusion was discovered that corresponded with deeper bone damage. The cranium sustained massive fracturing that extended into the upper left palate. The lateral processes of the cervical vertebrae were also broken and the atlas was disarticulated. The left ribs, left scapula and associated tissue and musculature showed heavy damage. The cranial fractures extended through massive bone elements. These injuries with the associated hemorrhage indicate blunt impact trauma with a large moving vessel. The nature of injuries indicate that death was rapid and cause of death was recorded as vessel collision.

February 5, 1996 - Whale carcass observed by Navy at 30°29' N latitude (lat)/80°37' W longitude (long)(reported to Florida Department of Environmental Protection (FLDEP) on February 09, 1996)

February 7, 1996 - A 35 foot female right whale carcass observed by the US Navy at 30°44'N lat/80°

57.2'W long. Carcass not retrieved, species confirmed by FLDEP. Drift pattern believed to be inconsistent with carcass noted above (i.e. these likely were two different carcasses).

February 19, 1996 - A female right whale calf was necropsied at the University of Florida. No external scars, abrasions or contusion were apparent. Significant findings included saturated, congested lungs and the fact that the calf appeared to be in good flesh and to have been nursing prior to death which precludes abandonment by the mother. Microscopically, the left eye exhibited mild inflammation around the ocular vasculature. Also, a small fracture of the basioccipital bone was observed, but no hemorrhage was associated with these fractures.

February 22, 1996 - A male right whale calf was reported at 30°56.53'N lat/80°47.70'W long and towed to necropsy site north of Brunswick, GA. The changes observed in lung tissue from this calf are generally associated with shock. Internal hemorrhaging of tissues in the periocular region was noted and suggestive of a unilateral traumatic event such as concussion. The combination of the acute respiratory distress and the hemorrhaging behind the eye suggest effects from unidentified external trauma.

March 9, 1996 - An adult male right whale stranded in Wellfleet, Massachusetts and was necropsied. The whale had lobster polypropylene going through both sides of the mouth and a lobster pot was attached to line. Propeller cuts were evident along the back, baleen was damaged and line scarring was present around the tailstock and leading edges of the flukes. A thick area of the skull was broken suggesting a ship strike, but it was not determined if this was before or after death. Propeller scarring was present and a major infection process was in progress. Cause of death could have been one of two possibilities: **septicemia from abscess** resulting from an old penetration wound **or** the animal was killed by a **ship strike** (evidence suggests that the cut in the back occurred premortem as dead whales typically float on their sides or belly up, making it unlikely, but not impossible, to be cut on the back). The gear entanglement did not seem severe enough to have caused the animal's death, although it may have compromised feeding and swimming.

March 25, 1996 - A dead whale was sighted by the Navy at 28° 55.3'N lat/079° 12.1'W long, approximately 80 nm east of New Smyrna Beach. The animal was reported as small, dark, and floating on its side which was consistent with the previous two right whale calves recently recovered. However, this animal could not be located by aerial sighting efforts and the search was abandoned. Species identification was unconfirmed.

NMFS Ongoing Activities Concerning the Northern Right Whale

ESA Section 7 Consultations

Because of this increased level of mortality and the potential magnitude of those impacts to the population, and because NMFS was concerned that the biological baseline upon which an evaluation of impacts is based may have changed for the right whale population, NMFS believed that enhanced protective measures were appropriate for all activities, including Federal and non-Federal activities, that might have an impact on right whales. This included reinitiating consultations on Federal activities that could potentially impact right whales. The ESA requires reinitiation of consultation if new information reveals that listed species or critical habitat may be affected in a manner, or to an extent, not previously considered

Consultation with the U.S. Navy--

Given the serious concern over the status of right whales, the Navy and NMFS began convening meetings on a near-continuous basis in mid-February 1996. On March 12, 1996, the Navy initiated consultation with NMFS on the potential impacts of their gunnery and air-dropped ordnance operations in waters off the southeastern United States. The purpose of this consultation was to ensure that the Navy was taking all appropriate measures to protect the right whale, and to determine, if possible, the cause of death of the whales.

Although there was no indication that naval operations were responsible for any of the right whale mortalities,

in March 1996 the Navy implemented additional right whale protective measures. Specifically, all ordnance activities during the right whale calving season were moved to locations at least 50 nm from shore adjacent to the right whale critical habitat; north-south transits through the habitat were prohibited; and a mine countermeasure exercise (using inert mines) was relocated further away from the critical habitat.

As part of the consultation, on April 19, 1996, the Navy convened a panel of leading experts in marine mammal biology and physiology. The panel's purpose was to review, and if possible, determine the causes of the right whale mortalities in January and February 1996. The panel reviewed the four available necropsy reports and concluded that one of the four whales died of massive acute trauma (shipstrike likely) but could not determine the cause of death for the other three cases.

Vessel collisions with right whales do account for the greatest number of known mortalities to this species. Vessel collisions are also known causes of death and injury to endangered sea turtles. Therefore, to significantly reduce any possibility that any Navy action in the southeastern U.S. could result in a whale mortality or otherwise adversely affect right whales, and to minimize the effects of Navy activities on sea turtles, the scope of the consultation between the Navy and NMFS was expanded to include all Navy vessel and aircraft activities related to training in the consultation area (consultation area described in Section II, Critical Habitat and Area of Concern).

NMFS and the Navy consulted on each activity being conducted by the Navy in the consultation area, and discussed mitigative or protective measures for each activity that would further reduce the possibility of any impacts to right whales, as well as other ESA listed species. Some, but not all, of the protective or mitigative measures discussed included: moving the activity away from critical habitat and contiguous high-density areas; limiting the scope of naval activities in critical habitat and contiguous high-density areas to those that occur at a very slow, safe speed, and moving other activities that require higher speeds away from the critical habitat and contiguous high-density areas; moving gunnery and ordnance activities well outside of known high density right whale areas; and providing dedicated lookouts for surface ships while operating in critical habitat. For consultations on vessel activities that were similar to those of other Federal agencies, any reasonable and prudent alternatives or conservation recommendations from those opinions were incorporated into the proposed naval operations described in the Biological Assessment. NMFS and the Navy considered for adoption by the Navy in its suite of protective measures the reasonable and prudent alternatives and the conservation measures that appeared in other biological opinions recently issued by NMFS to other Federal agencies. Every attempt was made to mitigate the potential impacts of naval activities on right whales prior to the completion of their Biological Assessment.

On November 27, 1996, the Navy completed a Biological Assessment describing naval activities that take place off the southeastern United States, and the mitigation or protective measures that the Navy had implemented, or proposed to implement, in connection with those activities to ensure that their activities are not likely to jeopardize right whales or other ESA listed species. This consultation will analyze the potential impacts of naval activities as modified and described in their Biological Assessment.

The Navy will impose mitigation measures in the consultation area, designed to ensure that activities are not likely to adversely affect the right whale or other ESA listed species described in the following sections. All of these measures will be implemented by naval vessels and aircraft between December 1 and March 31, generally referred to as the right whale calving season. If whale sightings indicate an early arrival or late departure of significant numbers of right whales off the southeast U.S., the timing of the protective measures is expected to be modified accordingly.

Coast Guard Consultation

On September 15, 1995, NMFS issued a Biological Opinion to the U.S. Coast Guard pursuant to Section 7 (a)(2) of the Endangered Species Act of 1973, as amended, on vessel and aircraft activities along the Atlantic Coast. That opinion included a discussion of information on protected species in this area as well as

discussion of the possible impacts from these activities. In 1991 and 1993, the severely depleted northern right whale (Eubalaena glacialis) was involved in two (one each year) documented strikes by Coast Guard vessels. Because so few individuals are left in the population, any impact to this species is considered extremely critical. For the Coast Guard, the most serious impact is the possibility of a ship strike that results in injury or mortality of a right whale. Since the strikes that occurred in 1991 and 1993, the Coast Guard has implemented many programs to protect whales, working in conjunction with NMFS and the Recovery Plan Implementation Teams for right whales in the Northeast and Southeast Regions.

NMFS concluded that the programs implemented since the 1993 incident were adequate to reduce the probability of another ship strike. That factor, combined with current information on the population at that time, which showed a small but steady 2.5% population growth rate, resulted in a determination that continued vessel activities may adversely affect, but would not jeopardize the continued existence of the northern right whale and would not result in the destruction or adverse modification of its critical habitat.

The 1995 Biological Opinion required reinitiation of consultation if there is a strike of any endangered whale, or if new information becomes available that changes the basis for the original conclusions including information on effects that were not considered, modification of the proposed action, or a new species is listed or critical habitat designated that may be affected by this action.

On November 7, 1995, the District Commander notified the NMFS Northeast Regional Director by letter that a Coast Guard cutter may have made physical contact with a humpback whale while on patrol in the vicinity of George's Basin. NMFS staff received the initial Letter Incident Report from the *Reliance* on January 24, 1996. On February 20, 1996, the Coast Guard sent the completed investigation report to NMFS headquarters. This correspondence requested reinitiation of consultation, as specified in the September 15, 1995 biological opinion, and was based on the probability that the vessel strike involved an endangered humpback whale.

Between February 20 and June 24, 1996, NMFS continued to consult with the Coast Guard through meetings at the headquarters level and coordination through the First District and the NMFS Northeast Region. This includes meetings on April 22 and June 7 at headquarters to discuss issues pertaining to the reinitiation. On May 20, 1996, NMFS sent a letter delineating the information that was needed before the reinitiated biological opinion could be completed. This information was received from the Coast Guard on June 21, 1996. A final Biological Opinion was issued by NMFS to the Coast Guard on July 22, 1996.

As a result of the consultations, the Coast Guard issued stricter reporting requirements which went out under the District's guidance. The reporting requirements state that "OPCON shall immediately notify District Command Center if any vessel comes into contact with a whale. The First Coast Guard District is required to notify NMFS within 24 hours of the incident."

Proposed Activity

This reinitiation of consultation considered continued operation of vessels and aircraft by the USCG in support of its missions: response to marine pollution events, port safety and security issues, law enforcement issues, search and rescue missions, vessel traffic control, and maintenance of aids to navigation. These activities are described in detail in the biological assessment and the NMFS Biological Opinion. In addition, this consultation considered the activities that are being implemented in response to the conservation recommendations in that opinion, but do not constitute a modification of the proposed action and are not a reason for the reinitiation. These actions have been adopted as part of the Coast Guard's "Atlantic Protected Living Marine Resource Initiative."

In the biological opinion, NMFS provided the Coast Guard with a reasonable and prudent alternative, stating that the Coast Guard must reduce significantly the possibility of vessel collisions with right whales, including those by non-Coast Guard vessels where the agency has the authority to act. If implemented fully and in a timely manner, would significantly reduce the Coast Guard's potential to cause injury or mortality to

a right whale and, therefore, avoids the likelihood of jeopardizing the continued existence of right whales and would not violate section 7(a)(2) of the ESA. This alternative included measures to mitigate the probability of a strike by the Coast Guard as well as measures to reduce the probability of a strike by other vessels. Also, it required new measures to reduce the possibility of a strike in addition to those described as conservation recommendations in the September 1995 NMFS opinion to the Coast Guard.

The following are significant components of the Reasonable and Prudent Alternatives from both the 1995 and 1996 consultations, considered necessary to ensure that Coast Guard vessel operations avoid striking whales to the maximum extent possible and that long-term operations are not likely to jeopardize the north Atlantic right whale:

1. Between January 1 and March 31, when humpback and fin whales are concentrated in shallow waters between Cape Henry and Cape Hatteras, all USCG vessels operating in this area should post dedicated lookouts to spot endangered species. This lookout should watch for whales at all times, and the vessel operator
should take necessary precautions to avoid whales.

2. In addition to posting dedicated observers on vessels in the southeastern critical habitat area over the calving season, it is recommended that dedicated observers also be posted on all USCG vessels operating in the general area between Savannah Georgia and Palm Beach, Florida, to watch for whales. Critical months in Savannah are November - December and March - April, when the whales are transiting to and from the calving grounds, and January to March in the extended area to the south of designated critical habitat.

3. The Coast Guard must ensure that all dedicated lookouts have successfully completed the marine mammal training program which includes a field training section. The field training section must be conducted during the course of normal onboard duty to learn sighting and identification cues and common behavioral patterns of all species of endangered whales as they are encountered during operations. This program must also provide training on appropriate operation of vessels in the vicinity of whales. Although the current training program points out all the appropriate sources of information such as regulations and field guides, and slides are used to show the different species characteristics, it is difficult to actually apply such knowledge to any group of animals without the appropriate field experiences. Improving the current training program should help prevent most future potential interactions. The Coast Guard should standardize this requirement by making it part of Coast Guard qualification criteria for bridge watch standers. This component will not only help Coast Guardsmen observe whales so that they can be avoided, but it will also increase the effectiveness of the agency in whale watch enforcement actions and in providing disentanglement assistance.

4. In the southeastern United States (Georgia through Florida) from mid-December through March, to protect the calving grounds for the northern right whale, broadcasts reporting right whale sightings by the Early Warning System should be transmitted as quickly as possible over NAVTEX and any other practicable means available to as wide a distribution of vessels possible. The message should advise mariners within 15 nm of the sighting to operate at the slowest safe speed, exercise caution, and keep a watch for right whales.

5. The USCG should develop training for personnel that emphasizes not only stranding and enforcement issues, but information on the distribution and behavior of these species that will help the USCG to anticipate where and when conflicts may occur.

6. When and where possible, routine transits should avoid those high-use and high-density whale habitat areas during the seasons when whales are concentrated in those areas. For the northern right whale, these areas are shown on nautical charts as Critical Habitat.

7. The USCG should continue its active participation in regional recovery plan implementation teams and task forces.

8. The USCG should continue fulfilling its missions, with modifications as discussed above, which support recovery efforts of protected species.

9. During standard operations, and following a whale sighting, USCG vessels should maintain a minimum distance from the whale (recommended distances are a minimum 100-yards for all large whales).

10. The Coast Guard must post dedicated lookouts during all transits, both emergency and non-emergency, that occur within 20 nm of shore in addition to posting lookouts during transits in all areas of whale concentrations and high use by right whales, including but not limited to critical habitat in Cape Cod Bay, the Great South Channel and in the calving grounds off the Georgia and Florida Coast and other special areas off Georgia and Florida recently recognized as right whale habitat (specifically, the area offshore and also to the south of currently designated critical habitat, east to the western wall of the Gulf Stream and south to West Palm Beach). A "dedicated lookout" can be the person who is the regular posted lookout, but who has successfully completed the marine mammal training program described below and, while posted as a lookout, does not perform duties that would require leaving the lookout post unattended.

11. The First, Fifth, and Seventh Districts must continue current activities in conjunction with the respective Recovery Plan Implementation Teams in New England and the Southeast to provide support for aerial surveys during periods of high use in the different districts, and if necessary, provide additional effort. Current areas and times include, but are not limited to, February through June for the Great South Channel and Cape Code Bay critical habitats and December through March for the southeast calving and nursery areas. Since no team is currently addressing the mid-Atlantic issues, vessel support for sighting must be increased when right whales are in the area.

12. The Coast Guard will adopt a policy during non-emergency operations of not approaching whales head-on and not approaching right whales within 500 yards and all other whales within 100 yards. NMFS will work with the Coast Guard to establish a detailed protocol regarding approaches to whales. Unless positively identified as another whale species, any large whale should be considered a suspected right whale especially if one has been recently sighted by the vessel, or if the vessel is in an area where right whales could be present. Obviously, if the Coast Guard is assisting in the rescue of an endangered whale, including right whales, or performing its duties to enforce the ESA and the MMPA, the recommended distance does not apply.

13. The Coast Guard must provide information to commercial and recreational vessel operators that is geared to avoiding collisions with endangered whales. It should include information to identify whales, critical habitat and other whale concentration and high-use areas, photos of what whales look like on the surface when vessel operators are most likely to encounter them, and regulations applicable to the protection of right whales. Also, it should include information about the whale's highly endangered status and what the operator can do to avoid causing them harm. Operators must be instructed to report all collisions or sightings of dead right whales immediately. In addition to other public education and outreach endeavors, the Coast Guard will work with the two Federal agencies that maintain and publish the established publications commonly used by U.S. mariners for voyage planning purposes (i.e., the Coast Pilot and Sailing Directions) to ensure that these documents include information necessary to avoid vessel collisions with endangered whales. Depending on vessel size, most U.S. vessels will have one of these publications onboard.

14. The Coast Guard must continue to coordinate with the Recovery Plan Implementation Teams to provide timely information on current locations of all endangered whales to commercial vessels coming into major ports in both the New England and Georgia/Florida areas designated as critical habitat. The Coast Guard must develop, in cooperation with NMFS, a plan to alert commercial traffic through port pilots, Captain's of the Port, Vessel Traffic Service (if available), who are aware of the expected arrival time of ships in the various ports and often their current location, and requesting them to relay this information to shippers. Improved methods of getting information to the vessels must be implemented.

Summary of Interagency Collaboration with the Coast Guard

The Coast Guard and NMFS have cooperated informally for many years. In late 1994, this arrangement began to be formalized through the drafting of a Memorandum of Agreement (MOA). As this MOA moves toward final signatures, a pilot effort since December 1993 has provided a number of reports, including 12 "floaters" (8 fin whales, 3 humpbacks, and 1 right whale). Photo and video documentation have provided valuable data.

The Coast Guard has also on several occasions provided logistical support: Coast Guard vessels have been made available to transport researchers and disentanglement teams to event sites, and vessels and aircraft have been deployed to photo-document floater events.

This effort also involves NMFS staff providing training and materials to Coast Guard vessel and aircraft personnel; as well as compilation of data and photographs. When fully established, this program will provide valuable information on events in the more offshore areas.

Other Coast Guard Activities

As described above, this biological opinion specifically considers the potential impacts of the operation of USCG vessels and aircraft on listed species that may be affected by the proposed action. Numerous other Coast Guard Activities are outlined in section 4 of the BA "Description of Activities of U.S. Coast Guard". These other activities, including permitting of marine events, engineering projects, oil spill contingency planning, are not addressed in this biological opinion. Consultation is continuing on the Coast Guard's permitting of marine events in the NMFS SER. Although consultation on this activity was not specifically requested in conjunction with this consultation, it has been addressed in the BA and other correspondence between the Coast Guard, and NMFS' SER has confirmed the Coast Guards' intent to consult on these activities. A biological opinion on marine event permitting will be completed in the near future. The Coast Guard should review all activities that it authorizes or conducts to determine if the activities may affect listed species, and should initiate consultation as appropriate.

Coast Guard Application for a Small Take Authorization--

On June 2, 1995, in response to a court directive, the Coast Guard applied to NMFS for a small take authorization. At this time it appears unlikely that NMFS could make the "negligible impact" determination necessary to issue such an authorization.

Activities Under the MMPA That Affect Northern Right Whales

Proposed List of Fisheries, 1997

The List of Fisheries (LOF) is required under section 118 of the MMPA and classifies U.S. commercial fisheries into one of three categories based upon the level of marine mammal mortalities and serious injuries that occur incidentally to those fisheries. A notable change proposed for the 1997 LOF is the combination of the New England inshore and offshore lobster pot fisheries into one fishery, and the classification change of this fishery from a category III (remote likelihood of serious injury or mortality) to a category I (frequent serious injury or mortality) status. This change was due to entanglement records that indicate that 0.2 right whales per year are seriously injured or killed incidental to the Atlantic lobster pot fishery. Because of the precarious state of the northern right whale population (295 animals), this level of impact is considered significant.

Large Whale Take Reduction Team

Take Reduction Teams are required under section 118 of the MMPA for those fisheries whose bycatch includes endangered or threatened species, or whose incidental marine mammal mortality and serious injury exceeds the potential biological removal (PBR). On August 6, 1996, NMFS formed the Large Whale Take Reduction Team (TRT) to address the reduction of humpback whale and northern right whale bycatch to insignificant levels. The TRT consists of representatives from each of the following fisheries: the Gulf of Maine/U.S. mid-Atlantic lobster trap/pot

fishery, the mid-Atlantic coastal gillnet fishery, the southeastern U.S. Atlantic shark gillnet fishery, and the Gulf of Maine sink-gillnet fishery.

The TRT will focus entirely on the entanglement issues in these fisheries. The first meeting was September 16-17, 1996, and the TRT will meet monthly until February 1997. A draft Take Reduction Plan has to be forwarded to NMFS by March 17, 1997. NMFS then expects to review and make changes to the plan, and develop implementing regulations. A 60-day comment period follows.

Proposed Rulemaking on Minimum Approach Distances to Right Whales

Disturbance to whales is identified in the Final Recovery Plan for the Northern Right Whale as among the principal human-induced factors impeding recovery of the northern right whale.
Often where human activities coincide with the distribution of right whales off the coast of the United States, there is the potential that right whales may be disturbed or have their behavior altered, conceivably being injured or killed as a result.

On August 7, 1996, NMFS published a proposed rule in the Federal Register to minimize human-induced disturbance by restricting close approach to right whales (61 FR 41116). These approach regulations propose to prohibit all approaches within 500 yards (460 m) of any right whale, whether by vessel, aircraft or other means. Exceptions are proposed for emergency situations and where certain authorizations are provided. These regulations, if finalized, will be consistent with Massachusetts' approach regulations for right whales. Comments in response to the proposed approach rule are currently being reviewed, and a final determination is being drafted for publication in early 1997.

Right Whale News-Recovery Plan Implementation Team Newsletter

The Southeast Implementation Team developed a quarterly newsletter to place greater emphasis on increasing the efficiency and effectiveness of recovery efforts for the northern right whale. The newsletter is edited by members of the team, and participation in the newsletter is open to anyone actively involved in right whale conservation efforts, including, to this point in time, ship operators, harbor pilots, port authorities, fishermen, educators, scientists, managers, policy makers, non-governmental organizations and other concerned citizens. Relevant information from areas other than the southeastern calving grounds (i.e., Bay of Fundy field season summaries) were included in the newsletter in 1996. The first newsletter was published in August 1994 and subsequent newsletters have been published through 1996. Information or questions regarding the newsletter should be forwarded to Hans Neuhauser, Georgia Land Trust Service Center, 640 Cobb Street, Athens, Georgia.

Early Warning Network

An "early warning network" is being developed in New England, comparable to that which was developed in 1994 in the Southeastern United States, to reduce the chance of collisions between vessels and the whales, a significant cause of death for the whales off the U.S. east coast. The early warning network makes sighting information available to mariners through marine radio announcements, automated fax and the Internet.

Sources of information for the network include weekly survey flights by Coast Guard helicopters, mammal lookouts posted during Coast Guard vessel operations and from Coast Guard pilots, vessel-based sightings by the Center for Coastal Studies during their studies of feeding and behavior of right whales in Cape Cod Bay and when they are responding to reports of whale entanglements, and research and other vessels operated by NMFS and the Commonwealth of Massachusetts.

Sightings from these sources are reported to NMFS Northeast Fisheries Science Center in Woods Hole, Massachusetts. A coordinator at the Center compiles the information and creates "boxes" that contain right whale sightings. This information is then sent to all cooperating partners for re-broadcast through their established communications channels. For instance,

NOAA Weather Radio broadcasts alerts and updates through its VHS channel. The NMFS Inquiry Line (508-281-9278) announces updates and transmit location maps through its fax-on-demand system. The Coast Guard broadcasts updates through its "Notice to Mariners" (VHF and single sideband) and sends telex updates to ships through NAVTEX, its international communication system. Location information is also posted on the website for the Massachusetts' Executive Office of Environmental Affairs.

The early warning network is coordinated by NMFS; cooperating agencies include NOAA Weather Radio, Stellwagen Bank National Marine Sanctuary, Coast Guard - District 1, the Commonwealth of Massachusetts Executive Office of Environmental Affairs, the Center for Coastal Studies and the New England Division of the U.S. Army Corps of Engineers. The network will start operations in January, 1997.

Disentanglement Response and Network

The Northern Right Whale Recovery Plan calls for the establishment of a marine mammal disentanglement program. Because of the critical need for life history and human-impacts data on right whales and other species, and the limited opportunities to collect these data, information from stranded whales is essential. Networks and standardized protocols have been developed to help insure that there are no "lost data." Likewise, when whales become entangled in fishing gear, judgements must be made as to the efficacy and merits of disentanglement. Experience has shown that disentanglement is best undertaken by trained and experienced personnel, with appropriate protocols for the procedure as well as the associated data collection. Emergency response to marine mammal entanglements involves:

a. multi-agency/institution/network to locate, monitor, and safely disentangle marine mammals.

b. development and maintenance of a database for entanglements, and provide data access to users, and periodic reports.

c. development of regional protocols and plans, including outreach to general public.

Early Consultations on Fishery Management Plans

NMFS has reinitiated ESA section 7 consultations on the Northeast Multispecies Fisheries Management Plan and the Lobster Fishery Management Plan. In part, this was done because of a letter that was sent by the Implementation Team regarding the Great South Channel Critical Habitat, asking that the area be closed during right whale migration periods. NMFS is considering the following Reasonable and Prudent Alternatives: 1) Prohibition of multispecies gear and lobster gear from April 1 through June 30, unless it is designed to eliminate entanglement; 2) coordination of similar restrictions in Cape Cod Bay from February through May of each year; 3) other provisions.

NMFS is exploring an option with the New England Fishery Management Council to do the restrictions under the Magnuson Act. If the Council does not approve this action, NMFS will work under MMPA/ESA emergency provisions.

NMFS will also work with industry to modify gear. The agency is examining the dynamic management system and alternative fishing practices that eliminate entanglement.

Recovery Plan Research Program

A summary of contracted research supported by NMFS in 1996 include the following:

Integrated Right Whale Studies Contract with New England Aquarium

1. Maintenance of the photo-identification catalog and associated data. Photo-identification, along with associated mark-recapture techniques, has been identified as the best way to monitor the North Atlantic right whale population and its trends. Maintenance of the catalog and the associated expertise is central to a broad range of right whale science and management goals.

2. Stranding and human impacts response. Life-history and human impacts data are obtained from stranded and offshore human-impacted right whales. Response to right whale strandings, offshore carcass strandings and other human-impact events is a collaboration between NMFS, the Coast Guard, and the Center for Coastal Studies. Participation in networks insures that there are no "lost data." The on-site presence of experienced researchers is provided, as well as the maximization of data collection following standardized protocols, and the submission of reports which include the cause of injury or death.

3. Genetics. Genetic studies have been underway since 1988. The use of DNA markers has provided data on sexes, taxonomy, matrilines, genealogies, and habitat-use patterns. The program to date has resulted in the collection of skin samples from 211 right whales (about 70 percent of the total) through 1995. The understanding of the genetic component of the population is needed to provide a genetic profile for each individual right whale to assess the level of genetic variation in the population, identify the number of reproductive animals (the genetic-effective population size) and their reproductive fitness, identify the basis for associations and social units in each habitat area, define the mating system, matriline identification, inbreeding status, population viability, and other factors essential to management.

4. Satellite tagging. Identification of location and characteristics of unknown wintering and summering grounds are to be determined. Tagging will occur in two locations: Cape Cod in the spring for Gulf of Maine movements and unknown summering grounds, and Bay of Fundy in the fall for unknown wintering grounds.

5. Reduction of ship strikes on right whales. This contract study is a follow-up to New England Aquarium/ Massachusetts Institute of Technology ship modeling study to include a) shallow water, b) other vessel types, and c) the third (depth) dimension. It will include the assessment of shipping traffic relative to high risk areas, as well as education and outreach programs.

6. Foraging and habitat in Cape Cod/Mass bays. Studies of the bays system will document the development of conditions favorable to right whales. Emphasis will be on near-field conditions with detailed profiles of physical and biological conditions. Patterns of habitat use by right whales will be described. Data from the bays system will also be merged with that of the Great South channel area to develop a comprehensive model of acceptable habitat.

7. Data compilation and review: Right whales in New England waters. This project will summarize, synthesize, and update information to present a comprehensive picture of right whales in New England waters. This will describe distribution and habitat of right whales by area and date, with central trends as well as outliers. Anomalies and habitat shifts, if any, will be addressed. Movements and connections between sub-areas will be included, as well as demographics and habitat partitioning.

8. Population modeling and vital rates. A series of demographic population models will be used to evaluate population status; discover the vital rates most important in determining population trends; describe the population in terms of its potential for growth, its expected fluctuations, and its risk of extinction; and to provide guidance for population monitoring and other management activities. The models will also help to decide whether apparently unusual events should be considered natural fluctuations, or evidence of worrisome changes in population performance.

Cooperative Marine Education and Research Agreement with University of Rhode Island

1. Maintenance of the computer database for the right whale in waters of the western North Atlantic, and associated analyses and data products.

The long-term sighting and survey database is maintained, and newly collected information is added on a timely basis. Data products and analyses are provided to collaborating investigators. In 1996-97, emphasis is on the addition of missing data and ‘filling in the holes.’

Analyses of tasks at present include a data compilation

report on distribution and demographics of right whales in New England waters, and an analysis estimated mortalities in right whales and relation to sighting effort.

Steller Sea Lion, *Eumetopias jubatus*

Proposed Reclassification Under the Endangered Species Act

Based on biological information collected since the Steller sea lion, *Eumetopias jubatus*, was listed as threatened under the Endangered Species Act (ESA) in 1990, NMFS is now considering reclassification of the species as two distinct population segments.

The Alaska population, which numbered close to 157,000 nonpups in the 1970s, declined to less than 69,100 nonpups by 1989, a decline of over 60 percent. Because of this precipitous decline in abundance, the species was listed as threatened throughout its range in 1990. At the time of the listing, NMFS determined that there was insufficient information available to consider animals in different geographic regions as separate populations. However, subsequent analysis indicates that two separate populations are represented within the different regions.

Since the 1990 listing, NMFS and the Alaska Department of Fish and Game have conducted monitoring surveys that indicate that the decline of Steller sea lions has continued throughout most of Alaska. The Steller sea lion population in the United States (U.S.) has declined 24 percent since 1989.

Because of this continued decline, NMFS initiated a formal population status review in 1993, to determine whether a change in listing status was warranted. Based on status review comments, recommendations from the Steller Sea Lion Recovery Team, and data collected and analyzed by NMFS (including genetics, phenetics, population trend data, and data from tagging/branding studies), it was concluded that the species should be split into two population segments at Cape Suckling, Alaska--an eastern population segment (east of 144° W. longitude) and a western population segment (west of 144° W. longitude). The final determination regarding this proposed reclassification is currently going through clearance for publication in the Federal Register.

Population Determination

Discreteness: A population segment of a vertebrate species may be considered discrete if it satisfies either one of the following conditions: (a) It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors (quantitative measures of genetic or morphological discontinuity may provide evidence of this separation); or (b) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the ESA.

The former criterion is particularly relevant for Steller sea lions. Genetic studies provide the strongest evidence that discrete population segments of Steller sea lions exist. Genetic samples were collected from 224 Steller sea lion pups on rookeries in Russia, the Aleutian Islands, the western and central GOA, southeastern Alaska, and Oregon. Mitochondrial DNA analyses of these samples identified a total of 52 haplotypes (sets of alleles of closely linked genes that tend to be inherited together, uniquely identifying a chromosome) that could be further grouped together into eight lineages. A distinct break was found in haplotype distribution between the four western localities and the two eastern localities. Cluster analysis indicated that the eight lineages could be subdivided into two genetically differentiated populations, with the division at about Prince William Sound. A similar analyses on samples obtained from 11 Steller sea lions on Año Nuevo Island, CA, found seven haplotypes. Six of these were identical to those identified from southeastern Alaska and Oregon. One was unique to Año Nuevo Island, CA.

Population trend data provide further evidence of separation among these two population segments. The Steller sea lion population east of Cape Suckling (with the exception of the portion in southern

California) has remained stable since the 1970s, whereas the population to the west has declined dramatically. It is also worth noting that the only break in the distribution of Steller sea lions along the Alaskan coast occurs in the Yakutat area, near the proposed longitudinal border that would delineate the western and eastern population segments.

Status of the Western Steller Sea Lion Population Segment

The western Steller sea lion population segment suffered substantial declines prior to the 1990 ESA listing. Since the 1990 listing, Steller sea lion trend site counts for the western population segment have shown a continued decline. In the Gulf of Alaska portion of the western population, adult and juvenile counts have declined nearly 26 percent since 1992. Counts have declined by 12 percent in the Aleutian Islands portion of the western population and by nearly 14 percent in the Kenai-Kiska area since 1992.

Regionally Differing Decline Rates

The number of adult and juvenile animals counted at trend sites during aerial surveys throughout Alaska has dropped from 34,844 in 1992 to 30,348 in 1996 (a 13-percent overall decrease). Counts of eastern and central Gulf of Alaska (a 43-percent and a 32-percent decline, respectively) and the central and western Aleutian Islands (a 14-percent and a 24-percent decline, respectively) have shown the largest declines in adult/juvenile numbers since 1992. Adult and juvenile counts of the eastern Aleutian Islands area (a 2.6-percent decline), the western Gulf of Alaska area (a 0.5-percent increase) and the Bering Sea region (a 0.8-percent increase) have been relatively stable since 1992. However, the eastern Aleutian Islands and Bering Sea regions declined substantially prior to the original listing, and populations there remain only a fraction of what they were 20 years ago.

Pup production has decreased since the 1990 listing. Overall, a decline of nearly 28-percent has been observed between pup counts made in 1991-92 as compared to 1996 (excluding the western Aleutian Islands and Bering Sea where comparative counts are not available). Pup production in the central Gulf of Alaska declined by 49-percent between 1991-92 and 1996. Pup production in the eastern and western Gulf of Alaska declined by 52-percent and approximately 25-percent, respectively, between 1992 and 1996. The eastern Aleutian Islands also had large decreases in pup production (a 13-percent change between 1992 and 1996).

Status of the Eastern Steller Sea Lion Population Segment

The 1990 ESA listing of Steller sea lions resulted primarily from the declines observed in the western population area; in the eastern population, decline has remained at a minimum,

noted mostly in the central California part of the range.

California experienced a large decline in Steller sea lion numbers prior to 1980; NMFS (1995) estimated a greater than 50-percent decline between about 1950 and 1980. Some of the available data indicate that a northward shift in the Steller sea lion range may be occurring, which may exacerbate the decline at southern rookeries. Steller sea lion counts in California have been relatively stable since 1980 (1980 count was 982) although counts declined 19-percent from 1990-94 (from 1,123 animals to 915) (NMFS, 1995). The reasons for the historical decline in Steller sea lion total abundance and the current decline at southern locations in California is not known. Causal factors under investigation include changes in prey base, possible effects of anthropogenic contaminants and disease, disturbance, and competition with other pinniped populations that are increasing in abundance in California, e.g., California sea lions, elephant seals, northern fur seals.

Proposed Determinations re: the Steller sea lion

The best available information indicates that Steller

sea lions should be managed as two discrete population segments. NMFS proposed separate listings of the eastern and the western population segments of the Steller sea lion for the purposes of the ESA.

Available data on population trends indicate that the western population of Steller sea lions had exhibited a precipitous, large population decline at the time that the Steller sea lion was listed as a threatened species in 1990, and has continued to decline since the listing. Although the precise cause(s) of the decline have not been determined, it is likely that the current condition is caused by a combination of the factors specified under section 4(a)(1) of the ESA. Therefore, an endangered classification is appropriate for the western population of Steller sea lions.

The eastern population segment was originally listed as a threatened species in 1990 when the entire species was listed. The eastern population has exhibited a stable to increasing population trend for the last 15 years; however, NMFS believes that the large decline within the overall U.S. population threatens the continued existence of the entire species. This is particularly true since the underlying causes of the decline remain unknown, and thus, unpredictable.

Therefore, despite the apparent stability of the eastern population segment, NMFS proposes to maintain a threatened listing for this portion of the geographic range.

Northern Fur Seal, *Callorhinus ursinus*

Northern Fur Seal Stock Assessments

In 1994 the MMPA was amended to provide a new approach for managing interactions between marine mammals and fisheries. In part, it required that NMFS prepare annual stock assessments for all marine mammal stocks in U.S. waters. The 1995 final stock assessment report concluded that northern fur seals in U.S. waters consisted of two distinct stocks - an eastern Pacific stock composed of animals breeding on the Pribilof Islands and Bogoslof Island, and a San Miguel Island stock in southern California. NMFS is currently preparing the 1996 draft stock assessments for public review and comment.

Northern Fur Seal Research Activities in 1996

In 1996, NMFS conducted counts of adult males at rookeries on the Pribilof Islands, collected and analyzed scat samples to monitor prey utilization, took measurements of pups to assess their condition, and evaluated the accuracy of the methodology used to estimate population size.

NMFS is continuing studies begun in 1995 to investigate the proportion of time pups spend at sea and on land prior to their weaning and departure from the rookeries to begin their one- to three-year period of life at sea. During the 1996 field season, NMFS developed lightweight satellite tags and deployed them on seal pups to determine their migration routes and at-sea habitat use patterns. In addition, NMFS collected dive data on pre-migration pups using time-depth recorders.

Among the cooperative research projects continued from 1995 were genetic studies to assess movement of animals between rookeries in different parts of the species' range; an assessment of the effect of pollutants on the immune response system of fur seal pups; monitoring marine debris entanglement rates among juvenile male fur seals returning to the rookeries after their first few years at sea; a study of paternity as it relates to territorial male behavior; monitoring population trends and mortality at rookeries on the Pribilof Islands for possible impacts associated with discharges from seafood processing plants; and investigating differences in female foraging patterns and rates of milk transfer to pups during the lactation period. This last study was expanded in 1996 to include direct measures of metabolic rates of pups and assessment of the development of thermoregulatory and oxygen storage

capacity in pups. A cooperative study, which was begun in

1996, will analyze territorial male recognition, behavior, and reproductive success.

San Miguel Island

Studies of the life history parameters of northern fur seals were conducted at San Miguel Island throughout June, July and August 1996. The primary objective of these long-term studies, conducted in cooperation with the Channel Islands National Sanctuary Program and the National Park Service is 1) to estimate survival, recruitment, and natality of these species as a comprehensive assessment of the ecology of pinnipeds in the Channel Islands and 2) to assess the status and recovery of fur seals throughout the north Pacific ocean in accordance with the Fur Seal Conservation Plan.

Counts of Fur Seals on Bogoslof Island

The average of two counts on Bogoslof Island on September 25, 1996, was 1,272 pups. Dead pups were not counted. The estimated number of live pups was lower in 1996 compared to August 18, 1995, when 1,482 were counted. This may be due to the late date of the 1996 census. By the end of September, pups are highly mobile and readily enter the water for hours at a time, making them difficult to count.

Pribilof Islands

Population characteristics monitored in 1996 include the size of the subsistence harvest, the number of adult males, estimates of numbers of pups born, and mortality rates of fur seals on St. Paul Island and St. George Island.

Censuses of Adult Males on Pribilof Islands. Adult male northern fur seals were counted by section for each rookery on St. Paul and St. George Islands during July 1996. The "idle" bull counts on St. Paul for 1996 as compared to 1995 showed an increase from 8,459 to 9,239. "Harem" male counts on St. Paul also increased slightly from 5,154 (1995) to 5,643 (1996). On St. George Island, a total of 1,248 harem and 790 idle adult male seals were counted in 1996. There was an increase in the count of territorial males with females on St Paul Island between 1995 and 1996 (9.5 percent), and the count of these males on St. George Island was slightly lower in 1996 than in 1995 (0.5 percent less). The total of these males for the Pribilof Islands was therefore greater by about 7.7 percent in 1996. Such changes were expected effects of the terminated commercial harvest in 1984.

Entanglement Studies: St. Paul and St. George Islands. In 1996, in cooperation with the St. Paul and St. George Islands Tribal Councils and the Pribilof Islands Stewardship Program, NMFS continued a study of juvenile and adult male fur seal entanglement initiated in 1995 using a combination of research roundups and surveys during the subsistence harvest. Surveys conducted in conjunction with the subsistence harvests are designed to reduce the number of times seals are disturbed when otherwise conducting subsistence harvests separately from entanglement roundups on the same haulouts during July and early August.

The objective of this study is to determine current trends in the rate of observed on-land entanglement of northern fur seals in marine debris on St. Paul and St. George Islands. This information is being collected in order to provide: 1) a continuing index of entanglement rates, 2) a comparison of entanglement rates on St. Paul (stable population) and St. George (decreasing population) Islands, 3) a means of indirectly assessing the relative amount of entangling debris within the habitat of the fur seal, and 4) an assessment of the proportion of debris types associated with different fisheries that are impacting fur seals.

Twenty-three subsistence harvest surveys and 30 research roundups were conducted on St. Paul Island (53 total) and 26 research roundups and 9 harvest surveys (35 total) were conducted on St. George Island during July and early August of 1996. On St. Paul observers sampled 38,311 seals (all age classes combined) and 10,763 seals on St. George Island. Samples included 24,701 juvenile males (2-4 years old) on St. Paul Island and 6,057 juvenile males on St. George island. Seventy-one entangled juvenile and

adult male seals were captured, examined and the debris was removed during harvest surveys and roundups (56 on St. Paul Island and 15 on St. George Island). Forty-three seals with scars indicating evidence of previous entanglement were also observed during surveys. Twenty-one of these seals were adult males, some of which had fresh, open wounds indicating their debris was removed or lost during 1996. An additional 47 male seals, 14 female seals, 25 seals of unknown sex and approximately 7 pups were captured and disentangled during other research activities from late June through November. As in previous years, entangling debris consisted primarily of pieces of trawl net, plastic packing bands and loops of synthetic or natural twine. No seals entangled in monofilament gillnet were observed during male entanglement surveys in 1996. Differences in the relative percentage of entangling debris were observed between age classes of seals (Figure 1). A higher proportion of adult males was observed entangled in packing bands on St. Paul Island (68.4 percent). The proportion of adult males entangled in all three major debris types on St. George Island was approximately equal (33.3 percent in each major debris category), however only three adult males were observed entangled. Trawl net comprised the largest proportion of entangling debris among juveniles on both islands (43.2 percent, and 50 percent on St. Paul and St. George Island respectively), followed by packing bands (32.4 percent on St. Paul and 25 percent on St. George). The observed incidence of loops of twine on St. George Island decreased from 29.4 percent in 1995 to 15.8 percent in 1996. As in 1995, more entanglement in packing bands was observed on St. Paul (44.6 percent) relative to St. George Island (26.7 percent) for all age classes combined.

The rate of entanglement was estimated for both adult and juvenile male fur seals as the ratio of all entanglement sightings (initial and subsequent sightings for juveniles) to the total number of animals observed in each age class. The rate of entanglement for juvenile males was calculated as 0.23 percent (56/24,701) on St. Paul Island and 0.21 percent (13/6,057) on St. George Island. Among adult males, the rate of entanglement was calculated as 0.14 percent (19/13,610) on St. Paul Island and 0.06 percent (3/4,706) on St. George Island. The incidence of entanglement on among juvenile males on St. Paul Island is within the range of entanglement rates observed from 1988 to 1992 and in 1995.

Gulf of Maine Harbor Porpoise, *Phocoena phocoena*

The Multispecies FMP includes a framework adjustment process that allows NEFMC to modify management measures in a timely manner that is usually associated with the development of a management plan or plan amendment. Using that procedure, NEFMC developed a strategy to address the porpoise bycatch issue by integrating a mitigation plan with fishery management measures.

In 1994, the New England Fishery Management Council (NEFMC) adopted a management objective for the Gulf of Maine harbor porpoise and included it in Amendment #5 to its Northeast Multispecies Fishery Management Plan (FMP). The goal was to reduce the porpoise bycatch in the sink gillnet fishery to a level not to exceed 2 percent of the population, based on the best estimates of abundance and bycatch. Amendment #7 to the Northeast Multispecies FMP, implemented in July 1996, included a revised objective to address the provisions adopted pursuant to the 1994 MMPA amendments. Thus, NEFMC's intent currently is to reduce the bycatch to the PBR level, 403 animals, through a series of time and area closures implemented as framework adjustments to the Multispecies Plan. NEFMC also has recommended the use of acoustic deterrents or "pingers" in several experimental fisheries in order to evaluate their use as a mitigation tool.

Under Framework Adjustments 4, 12, 14 and 15 to the Multispecies FMP, sink gillnet vessels are restricted in defined areas and at certain times based on the historic bycatch of porpoise in that fishery. Framework Adjustment 9 to the Multispecies FMP prohibited the use of all small mesh gear, including all small mesh gillnet gear, unless the fishery qualified for an exemption based on a finding that it had a catch of less than 5 percent, by weight, of regulated multispecies finfish. The effect of Framework 9, relative to harbor porpoise, was to prohibit the use of small mesh pelagic gillnets, including bait gillnets, in the harbor porpoise closed areas. Consequently, even though the harbor

porpoise measures prohibited only sink gillnet gear in the porpoise closed areas, Framework 9 prohibited the use of any small mesh pelagic gillnet gear in the same areas for reasons unrelated to the protection of harbor porpoise.

Hawaiian Monk Seal, *Monachus schauinslandi*

The Hawaiian monk seal (*Monachus schauinslandi*) is endemic to the Hawaiian Archipelago and is the only endangered marine mammal located entirely within U.S. waters. The species was listed as endangered after a 50-percent decline in beach counts between the late 1950s to the 1970s. Studies conducted over the past decade indicate that population abundance has continued to decline at four to five percent per year. In the last three to four years, beach counts have stabilized, but further declines are likely due to high juvenile mortality and an expected decline in recruitment. In 1996, total abundance was estimated at ca. 1450.

Studies of the Hawaiian monk seal are conducted primarily by the Marine Mammal Research Program of the Honolulu Laboratory, NMFS. The purpose of these studies is to provide up-to-date information on the status and trends of each of the six main reproductive subpopulations of seals. Information is collected on abundance, composition, survival and reproductive rates, growth and condition of seals, evidence of health and disease, behavior, movement rates between sites, fisheries interactions including entanglement in marine debris, foraging ecology, and the effectiveness of management programs aimed at facilitating recovery.

Status

In 1996, field studies were conducted at French Frigate Shoals, Laysan and Lisianski Islands, Pearl and Hermes Reef, and Midway and Kure Atolls. Three indices of the species' status are derived from these studies. The first is the number of pups born at five of the six main reproductive sites. (Reproduction has been negligible at Midway Atoll for the past four decades, and research effort has been sporadic.) In 1996, 209 births were recorded, which is above the mean of 183 for the period from 1983 to 1995 (excluding 1994, when studies were incomplete). Since 1983, the number of pups born has been highly variable (ranging from 141 to 224) without evidence of a long-term trend.

The second index is the sum of the mean beach counts at five of the six main sites (excluding Midway Atoll). In 1958, this sum was 969. By 1985, the counts had declined to 509, and in 1996, the sum was 379. Since 1993, the sum of the counts has been essentially unchanged. For the past decade, however, the trend in the beach counts has been determined largely by loss of seals at French Frigate Shoals. Beach counts are expected to decline further at French Frigate Shoals, and the future trend for the species will depend on whether growth at other sites can compensate those losses.

The third index of the status of the Hawaiian monk seal is the composition of beach counts. Since the mid-1980s, composition has shifted considerably, with the percent of adults rising from ca. 50 percent to 70 percent, and the percent of subadults and juveniles decreasing in a corresponding manner. This shift in composition portends a decline in reproductive recruitment in the near future.

Island-by-Island Description

The observed trends in pups born, beach counts, and composition of beach counts are best explained by study of individual subpopulations. Table 3 provides a brief summary of research findings at each of the main reproductive sites in 1996. In addition, we provide a brief summary of each of the main reproductive subpopulations.

French Frigate Shoals

In the late 1950s, the subpopulation of seals at French Frigate Shoals was depleted, due largely to human disturbance. After disturbance was eliminated, the subpopulation grew for three decades and by the mid 1980s, abundance was thought to have reached or approached the environmental carrying capacity. Because subpopulations at the other main reproductive sites plummeted during the same period, the overall

distribution of monk seals shifted toward French Frigate Shoals, and nearly 50 percent of the entire species was found at this site in the mid 1980s. In 1989, the period of growth reversed itself and by 1996, beach counts had dropped by 55 percent. The primary cause of the problem appears to be related to a decrease in prey availability, which has led to a severe drop in juvenile survival. In the mid 1980s, ca. 80 to 90 percent of weaned pups survived to age two. Since 1988-89, survival of these young animals has declined to 20 percent or lower. In 1996, studies continued to document juvenile survival rates, and to investigate their foraging ecology to better understand factors that may be related to the decline (see the section below on foraging studies).

Laysan Island

Contrary to the long-term trend at French Frigate Shoals, the subpopulation of Hawaiian monk seals at Laysan Island has declined steadily since the late 1950s and is currently about one-third of its historical maximum size. The cause(s) of the decline prior to the late 1970s has not been determined. In 1978, abundance at this site dropped considerably due to a large die-off of seals, possibly from ciguatera poisoning. No subsequent die-offs have been observed, but the population has continued to decline slowly. Since the late 1970s, mobbing has been considered an important (if not primary) impediment to recovery at this site. Mobbing occurs when multiple males gather and attempt to mount and mate with the same individual seal (usually an adult female, but sometimes an immature seal of either sex). The mobbed seal is frequently injured or killed, and the loss of females has impeded recovery.

Mobbing is thought to occur due, in part, to an imbalance in the adult sex ratio, with males outnumbering females by as much as 3 to 1. In 1994, 22 adult males were removed from the Laysan population to normalize the sex ratio and thereby reduce the probability of mobbing. Studies in 1995 and 1996 have continued to focus on the rate and consequences of mobbing, and results indicate that the occurrence of mobbing has been significantly lower since the removal of males. The males have not returned to the site from the main Hawaiian Islands, where they were released. While mobbing seems to have been reduced, recovery at this site likely will be slow, as juvenile survival rates have also been low at Laysan Island. The cause(s) of additional juvenile mortality have not been determined. In 1996, studies continued to investigate and document male behavior, the occurrence of mobbing, and factors influencing the survival of immature animals.

Lisianski Island

The trend of the monk seal population at Lisianski Island has been very similar to that at Laysan Island, but far less study has been directed at the Lisianski population and cause(s) of the decline at this site are uncertain. The sex ratio at this site has been more skewed toward adult males than at Laysan Island, but the occurrence and rate of mobbing have not been well documented. Nevertheless, mobbing is thought to be an important problem at Lisianski Island.

In addition to mobbing, entanglement in marine debris is considered a serious impediment to recovery at Lisianski Island. Entanglement occurs at all sites, and is difficult to quantify because seals may be entangled at sea and not observed. However, studies of debris deposition and seal entanglement indicate that the decline of seals at this site must be due, in part, to entanglement-related mortality. In 1996, research at Lisianski Island focused on characterization of various sources of seal mortality, including mobbing behavior and entanglement.

Pearl and Hermes Reef

The subpopulation of seals at Pearl and Hermes Reef dropped more than 80 percent in the 1960s, but since 1975 has shown steady recovery. The cause for the decline prior to the mid 1970s has not been confirmed, but may have been related to military activities in the two decades following World War II. The more recent recovery of this population has been vitally important for several reasons. First, the recovery has occurred without intensive management intervention, demonstrating that monk seal subpopulations can recover under natural conditions. Second, the rate of recovery provides the best estimate of the potential growth rate of these subpopulations, and thereby

serves as a reference for research and management. And third, recovery at this site and at Kure Atoll is, at least to some extent, balancing losses at other sites, particularly French Frigate Shoals. In 1996, study efforts at Pearl and Hermes Reef were directed at identifying the entire subpopulation of seals at this site, and verifying that the local recovery continues.

Midway Atoll

The subpopulation of Hawaiian monk seals at Midway Atoll may have been driven extinct on two separate occasions: at the turn of the century when seals were killed for blubber and/or food by seal hunters and ship-wrecked sailors, and in the 1950s and 1960s when human activities displaced seals and compromised their habitat. The present population of seals is approximately 45 to 50 seals, most of which are either immigrants from nearby locations or offspring of immigrants. For the last three decades, the seal subpopulation at this site has failed to recover on its own.

The primary cause for the decline of this subpopulation has been related to human disturbance during and after World War II. In the 1950s, beach counts of seals numbered in the 50s, but by the late 1960s, few seals were seen at the atoll. Human disturbance continued through the 1970s, 1980s, and into the 1990s. In 1993, the U.S. Naval Air Facility at Midway Atoll was closed and from 1993 to 1997, the Navy has been cleaning and restoring the two main islands in the atoll. Jurisdiction of the atoll has been transferred to the USFWS, which will maintain the site as a National Wildlife Refuge.

To manage the atoll, the USFWS has entered a cooperative agreement with a commercial aircraft company that will maintain the atoll's runway. To compensate for the cost of maintaining the runway, the company has established an "Eco-tourism" venture that will provide educational and recreational opportunities for visitors to Midway. Public education is considered a vital element of the recovery plan for the Hawaiian monk seal, and tourists at this site will have opportunities for observing and learning about these seals. However, the severely endangered status of the Hawaiian monk seal throughout its range, especially at Midway Atoll, argues that such tourist activities must be managed with extreme care to avoid disturbance of the seals and further obstacles to recovery.

Kure Atoll

The westernmost subpopulation of Hawaiian monk seals is at Kure Atoll and, like other western subpopulations, the number of seals at this site declined severely in the 1960s and 1970s. The primary cause seems to have been related to human disturbance during the construction and occupation of a U.S. Coast Guard LORAN station. The station was closed in 1991 and the atoll, which is owned by the State of Hawaii, is no longer inhabited.

The population of seals at Kure Atoll hit a low point in 1986, when a single pup was born at the atoll. Since then, the number of pups has increased to 17 in 1996. The increase in pup production is expected to continue and can be attributed to intensive management efforts to recover this population. In the early 1980s, Coast Guard regulations were modified to limit disturbance of seals on the beaches. From 1981 to 1991, NMFS conducted a captive program (referred to as "Headstart") to protect recently weaned female pups from sharks and aggressive adult males during the first months of the post-weaning period. From 1985 to 1995, seals that had been taken from French Frigate Shoals for rehabilitation were introduced to Kure Atoll to bolster reproductive recruitment. A number of these seals, and those that had been included in the Headstart project, have reached reproductive maturity and are producing pups. In 1996, studies were conducted at this site to ensure that recovery was, in fact, continuing, to quantify the rate of recovery, and to identify any impediments to further recovery.

Management Activities

In addition to the assessment activities conducted at these sites, other activities were conducted to enhance recovery of this endangered species. Three such activities are described below.

Foraging ecology

For the past decade, the study and management of the Hawaiian monk seal has been based largely on information collected on land. Our understanding of the marine distribution and behavior of these seals has been limited by our inability to study them at sea. The lack of information about their foraging ecology has been a particular impediment to their management. We know relatively little about the distribution of seals at sea, their foraging behavior and strategies, and their preferred prey. Thus, we have been handicapped in our ability to predict or assess the possible consequences of direct or indirect fisheries interactions. Also, while we attribute the recent severe increase in juvenile mortality to starvation, we can not describe the feeding habits or patterns of young seals.

In recent years, however, technological advances have enabled study of these seals at sea. Foraging distributions are currently being evaluated using satellite-linked telemetry (both ARGOS and GPS technologies), as well as underwater video systems that allow observation of feeding and other behaviors. While the seals were previously thought to remain near their haulout locations, they are now known to travel to distant banks around the Northwestern Hawaiian Islands. Further, seals were thought to feed primarily on reef fishes, but video data indicates that they prey primarily on benthic organisms. The seals in these and other studies fed primarily at depths less than 100 meters, but some seals foraged at depths greater than 500 meters.

A complete assessment of the foraging ecology of Hawaiian monk seal will take extensive effort over many years. Nevertheless, important progress was made in 1996, based on satellite-linked studies of distribution and diving, video camera studies of foraging strategies, and assessment of reef productivity around the main reproductive sites.

Rehabilitation

The severe loss of young female seals at French Frigate Shoals represents a serious threat to the recovery of the Hawaiian monk seal. Since 1984-85, rehabilitation and relocation efforts have been the primary means for salvaging the reproductive potential that is otherwise lost with deaths of these young seals. In 1995, efforts were made to double our capacity for rehabilitating seals. Twelve undersized female pups were collected from French Frigate Shoals for eventual release at Midway Atoll. Shortly after collection, however, these seals began to show symptoms of an eye ailment that has not yet been documented in monk seals or other pinnipeds. Extensive diagnostic efforts were conducted to identify the cause of the ailment, but were not successful. These seals cannot be released because of the risk of spreading the disease to wild populations. A panel of experts will meet in June 1997 to consider options for the disposition of these seals and review the implications of the eye ailment for future rehabilitation efforts.

Marine debris and entanglement---Each year, biologists at the main reproductive sites remove beach debris capable of entangling seals or other wildlife, and disentangle seals that have become entangled. In 1996, at least 21 different seals were entangled in debris. Four of these seals were found in the water, entangled in debris caught on coral reefs. One of these four seals drowned, while the others were released unharmed.

The overall impact of marine debris and entanglement on the recovery of the Hawaiian monk seal cannot be fully quantified because of the difficulty of assessing entanglement rates at sea. In past years, efforts to remove debris from monk seal habitat focused on debris that had washed ashore. In 1996, pilot studies were conducted to determine the feasibility of 1) assessing the amount and nature of debris caught on coral reefs, and 2) removing such debris. These studies were initiated at French Frigate Shoals, and demonstrated that extensive amounts of debris can be successfully and safely removed. Further studies will evaluate the amount of effort that would be required to remove the debris from the marine habitat of this endangered species.

Cooperation with Other Agencies

Table 1. Summary of main reproductive subpopulations of the Hawaiian monk seal in 1996.

Site	Research period	Mean beach count* (± sd)	Pups born	Status and trends	Known problems and issues
French Frigate Shoals	20 April to 1 Sept	120 (± 17.5)	94	Declining at 11-12% since 1989	Severe juvenile mortality
Laysan Island	15 March to 30 July	86 (± 8.9)	47	Declining slowly (2%), approx. one-third historical maximum	Mobbing (?), and high juvenile mortality
Lisianski Island	14 March to 28 July	62 (± 9.4)	24	Declining slowly (2%), approx. one-third historical maximum	Mobbing, entanglement in marine debris
Pearl and Hermes Reef	26 April to 27 July	72 (± 13.4)	26	Growing at ca. 7% per year since 1975	None at present
Midway Atoll	29 March to 1 May	13 (± 3.1)	6	Severely depleted	Human disturbance, tourism
Kure Atoll	28 April to 25 July	38 (± 7.7)	17	Depleted but recovering due to management intervention	Continued recovery after management intervention

*Excluding pups

and Organizations in 1996

As in previous years, research and recovery efforts in 1996 involved participation and cooperation of several divisions within the National Marine Fisheries Service, as well as a number of government and private agencies, including the U.S. Marine Mammal Commission, the U.S. Fish and Wildlife Service, the Hawaiian Monk Seal Recovery Team, the Western Pacific Fishery Management Council, the State of Hawaii, various academic institutions (University of Hawaii, University of Minnesota), Sea Life Park Hawaii, and the U.S. Navy, Air Force, and Coast Guard.

Humpback Whale, *Megaptera novaeangliae*

North Pacific

Review of Research and Management Priorities of the Humpback Whale Recovery Plan and Hawaiian Island National Marine Sanctuary Management Plan

On December 1991, NMFS completed the Final Recovery Plan for the Humpback Whale (Recovery Plan) (NMFS, 1991). The objectives of the Recovery Plan were compatible with those of the draft Hawaiian Islands Humpback Whale National Marine Sanctuary Management Plan and include maintaining and

enhancing humpback whale habitat(s); reducing human-related mortality, injury and disturbance; measuring and monitoring key population parameters; and promoting a state/Federal partnership for administration and implementation of the Recovery Plan.

In order to facilitate the development of a Sanctuary Management Plan, resource managers from NOAA, Sanctuaries and Reserves Division (SRD), and NMFS, convened a workshop to assess research and other needs and opportunities related to humpback whale management in the Hawaiian Islands on April 26-28, 1995, at Kaanapali, Maui, Hawaii, to bring together representatives of county, state and Federal agencies, representatives of non-government agencies and organizations, resource managers, and researchers to participate in developing research and management objectives for the Sanctuary. The workshop was to initiate the development of a Management Plan for the Sanctuary, and implement those items listed within the Recovery Plan considered necessary for the recovery of the humpback whale in the North Pacific.

Workshop participants were: (1) to identify information and uncertainties that should be considered in developing a long-term research plan that meets the management and recovery objectives of the Sanctuary and the Recovery Plan; (2) to describe the research and long-term monitoring programs that would be required to characterize the present population status and to detect and monitor trends in life-history parameters of the humpback whale population in the North Pacific (with focus on the Hawaiian Islands); (3) to describe the essential components of humpback whale habitat(s) in the Hawaiian Islands; and (4) identify the county, state and Federal agencies that would participate in the implementation of Recovery Plan and the Final Management Plan for the Sanctuary.

A workshop report providing a summary of the information that was contributed to the workshop by these participants will be completed in 1997.

Review of Research and Management Priorities of the Humpback Whale Recovery Plan in the North Pacific

On September 20-21, 1995, a NMFS working group convened a meeting at NMFS/Marine Mammal Laboratory in Seattle, to review the Humpback Whale Recovery Plan relative to completed tasks identified for the North Pacific, to review the discussion from the NOAA/NMFS and SRD meeting held in Hawaii the previous May, and to develop a draft implementation plan for North Pacific humpback whale recovery, for FY 96-FY 98

The working group discussed the overall objective of population assessment and monitoring of humpback whales in the North Pacific relative to the management needs of NMFS. There was general agreement that recommendations should focus on information needed to evaluate the status and recovery of

humpback whale populations in the North Pacific.

The following activities were considered essential to evaluating the status and recovery of humpback whales in the North Pacific.

1. Maintain the North Pacific Fluke Collection (NPFC): Having a single photo-identification facility that curates photographs of individual humpback whales from an entire ocean basin facilitates communication among researchers and allows quality control of data. Maintenance of the collection will include incorporating photographs submitted during the past four years, cross matching within the photographic collection to create a working catalog of unique individuals and updating the video disc used for the matching and archiving of photographs.

2. Study exchange rates of humpback whales within and between geographic regions: Using movement patterns of photographically identified individual humpback whales to estimate exchange rates between putative stocks was considered the primary information source for determining stock structure.

3. Estimate North Pacific basin-wide humpback whale abundance: The primary objective of this study

was to estimate the size of the entire humpback whale population in the North Pacific. Independent researchers have conducted photo-identification studies which now include all known wintering areas and many different feeding areas. Using capture-recapture analyses, these data may be sufficient to provide a more precise estimate of humpback whale abundance in the North Pacific than is currently available.

4. Conduct capture-recapture studies off California, Oregon and Washington: The humpback whale population which feeds off the coasts of California and Oregon was estimated by capture-recapture techniques to include approximately 600 (CV = 0.07) individuals in 1993. The resumption of intensive photo-identification studies of humpback whales off California, Oregon and Washington during 1997 and 1998 will allow for an update of this estimate and an evaluation of trends in population size.

5. Conduct aerial surveys in Hawaiian waters: Aerial surveys of abundance of humpback whales in Hawaiian waters have been conducted intermittently for the past decade with the most extensive surveys conducted in 1993 and 1995. Aerial surveys provide an efficient means of obtaining abundance and distribution of whales at a particular point in time. The aerial surveys are being proposed for FY97, following the development of an aerial survey correction factor in FY96. This will coincide with the first year of a proposed capture-recapture study, allowing for a more comprehensive, comparative population survey.

6. Develop a correction factor for aerial survey estimates: Aerial survey correction factors need to be developed to estimate the proportion of whales not at the surface. Age, sex and group size-specific respiration and dive data, which have been collected from shore-based observations, need to be analyzed and examined for intra- and inter-annual variation.

7. Conduct capture-recapture surveys in Hawaiian waters: Coordinated photo-identification surveys throughout the Hawaiian Islands were conducted at weekly intervals during the winter season in 1995. The objectives of this study were to: 1) estimate the abundance of humpback whales which visit Hawaii during a single year, and 2) provide information on residency and the extent of within season inter-island movements of individuals.

8. Summarize existing information and expand surveys in Southeastern Alaska to study distribution, survivorship and reproductive success: Expanded systematic sampling in southeastern Alaska should provide information on the distribution of adults including mothers with calves, and return of known-age animals (i.e., those first photographed as calves), and will provide data for capture-recapture estimates of abundance. Documenting the return of known-age animals to feeding areas will allow the estimation of recruitment and/or recovery rates.

9. Convene second workshop to estimate calf mortality: In 1991, the first stage of a two-part workshop was convened to begin the process of synthesizing data needed to estimate calf mortality of humpback whales based on sightings of females with calves (and the same females subsequently without calves) on the winter and feeding grounds. The second workshop has been tentatively scheduled for the spring/summer of 1996. Based on the database of sightings of females with and without calves, calf mortality rates during the first six months of life will be estimated.

10. Convene workshop on adult mortality: At the first calf mortality workshop, participants suggested that the next life history parameter to measure should be adult mortality. This will be based on longitudinal studies of several individuals over a number of years.

11. Monitor anthropogenic noise on the wintering grounds using acoustic tags: Anthropogenic noise poses a potential threat to the quality of the habitat used by females to nurse dependent calves in Hawaiian waters. At this time, the technology to adequately monitor the response of humpback whales to anthropogenic noise does not exist. However, based on research supported by the ATOC program, a satellite linked transmitter capable of recording received sound levels, depth of dive information, and position should be commercially available by FY 98. Therefore, a pilot study is recommended to determine the feasibility of attaching such transmitters to 2-5

adult females with calves and 2-5 females without calves on the wintering grounds. The information obtained by such an experiment would be used to design a study that could test the hypothesis as to whether anthropogenic noise could potentially degrade habitat critical to the recovery of humpback whales.

12. Develop a GIS database of whale sightings data, based on aerial surveys: At present, information on the distribution of humpback whales in Hawaiian waters is available, but it has not been synthesized into a single database. The objective of this activity would be to develop a GIS database, which would then be combined with information on the physical environment, reproductive success and survival of humpbacks, and human-related disturbance patterns to evaluate whether particular areas are more important than others.

13. Summarize information on physical and biological oceanographic factors that affect the distribution of humpback whales: More accurate characterization of humpback whale habitats and their use will contribute to effective management of this stock. Factors to be evaluated more precisely include depth, bottom type and topography, water temperature, turbidity, acoustic characteristics, and current speed and direction. Features offering protection from currents or storms need to be identified, particularly on the wintering grounds.

14. Summarize information on calf distribution in and around the Hawaiian Islands: Anecdotal information on distribution of humpback whale mothers and calves implies some geographic stratification and certain preferred areas. Systematic data should be collected to delineate distribution around the Hawaiian Islands.

15. Examine prey biomass and oceanographic data from fisheries surveys: Data on prey biomass and associated data on physical and biological oceanographic features (bathymetry, salinity, temperature, plankton, etc.) are collected systematically in a number of areas throughout the North Pacific as part of other survey projects (e.g., fisheries and other surveys, etc). A review of existing state and federal fisheries data collected in areas of interest in the North Pacific was recommended to evaluate whether integration of these data sets with whale sightings data would help provide information relating to habitat and prey studies. Concurrent collection of marine mammal sightings and prey and oceanographic data was deemed most valuable and the placement of marine mammal observers aboard fisheries survey vessels was recommended.

16. Develop quantitative criteria for delisting North Pacific large whales under the ESA: Section 4(c)(2) of the ESA requires that, at least once every 5 years, a review of the species on the Endangered Species List be conducted to determine whether any species should be 1) removed from the List, 2) changed in status from an endangered species to a threatened species, or 3) changed in status from a threatened species to an endangered species. NMFS completed its first 5-year review on the status of endangered whales in 1984. In January 1990, NMFS announced that it was conducting status reviews on certain listed species under its jurisdiction. The status review was completed and made available in June 1991 (56 FR 29471).

One of the problems with the current process for amending the status of listed species is that there are no objective criteria for classifying large whales as threatened or endangered. That is, how does one quantify what it means for there to be a significant risk that a species will become extinct over a major portion of its range?

Diving humpback whale, Hawaii. (Photo credit: Gregory Silber, NMFS)

In FY95, a contract was let to the University of

Washington to support a student to initiate the development of criteria that are 1) quantifiable and 2) applicable to populations of large whales. The initial approach was to take advantage of recent work by the International Union on the Conservation of Nature (IUCN) (see IUCN Red List Categories, 30 November 1994) in quantifying criteria used to classify stocks in various categories of being threatened (i.e., extinct, extinct in the wild, critically endangered, endangered, and vulnerable). The goal of the project is to associate the two classifications under the ESA with specific categories of threatened under the IUCN classification scheme and then use or revise the quantitative criteria for classifying under the IUCN scheme for classifying large whales under the ESA.

Objective listing and delisting criteria for the following stocks will be developed over the next two years: North Pacific humpback whale, North Pacific fin whale, North Pacific right whale, and possibly sperm whales and bowhead whales. The performance of the proposed criteria will be evaluated by simulation trials. Population projections will be made using computer simulations which incorporate the effects of demographic, environmental, and catastrophic stochasticity and changes in meta-population dynamics. In addition, existing PVA software will be used to determine the applicability of such software in determining the extinction probability of large whale stocks, where data on trends in abundance and abundance are either imprecise or unavailable.

A workshop report providing a summary of the information that was contributed to the workshop by these participants will be completed in early 1996.

Eastern North Pacific Stock of Gray Whales, *Eschrichtius robustus*

In June 1994, the eastern North Pacific stock of gray whale was removed from the list of Endangered and Threatened Wildlife. The ESA requires that stocks/species removed from the list be monitored for a minimum period of 5 years and its status reassessed at the end of that period of time. Therefore, as part of the delisting process, NMFS developed a 5-year monitoring and research plan for eastern gray whales and initiated this program in 1994.

As part of this 5-year plan, counts of southward migrating gray whales were conducted in January 1995 and December 1995 to February 1996, as they passed the Granite Canyon research station in central California. The project was directed by NMML with assistance from the SWFSC. During the January 1995 study, an experiment was conducted using 25-power binoculars and a thermal sensor to determine the onshore-offshore distribution of migrating gray whales. In the 1995/1996 study, the research was directed at determining total abundance. The abundance estimate of approximately 22,600 animals was based on the number of whales observed during the daytime watch and a series of correction factors to account for whales that were not counted. This estimate of total abundance was similar in value to an estimate based on data collected during the winter of 1993/1994. Support for this research was provided by the NMFS Office of Protected Resource's Marine Mammal Assessment Program.

During the 1995 meeting of the Scientific Committee of the IWC several papers prepared by NMML and SWFSC staff regarding gray whales were discussed. A paper by Shelden et al. (SC/47/AS4) reported a substantial increase in the number and proportion of calves observed during the southward migration, which may possibly be a response to the increase status of gray whales relative to their carrying capacity. Shelden et al. further noted that since the mid-1980s and the mid-1990s, the median date of the southward migration past the counting site in central California has been delayed 5 and 9 days, respectively. Perryman et al. (SC/47/AS1) reported on the results from the 1994 northward migration to enumerate the number of gray whale calves in the population. This survey was conducted from Piedras Blancas, CA. Total calf production was estimated at 1,001 calves (SE 92), which represents 4.3% of the best estimate of abundance. This survey was done in response to concerns raised over a possible reduction in calf production and indicates that calf production is currently at a reasonable level.

It was also noted during the 1995 SC meeting that 44 gray whales from the eastern North Pacific stock were

harvested by Russian subsistence hunters in 1994. The SC noted that this level of take was extremely unlikely to adversely affect this population. Catch limits for the eastern stock of gray whales in the North Pacific for 1995, 1996, and 1997 have been set by the IWC at 140 animals per year, but only when the meat and products of such whales are to be used exclusively for local consumption by the aborigines.

Chapter VIII. Alaska Native Take of Marine Mammals

MMPA Section 101(b) provides an exemption to the moratorium against taking marine mammals for Alaskan Indians, Aleuts, or Eskimos if the taking is for subsistence purposes or for purposes of creating and selling authentic native articles of handicrafts and clothing. These takes, however, may be limited by quota and, in some cases, other regulations. Two of the five subsistence takes listed below, bowhead whales in the Beaufort and Chukchi Seas and the northern fur seals on the Pribilof Islands, are subject to such limitations. The remainder are undergoing harvest level assessments.

Bowhead Whales

Subsistence Program Management

NMFS works cooperatively with the Alaska Eskimo Whaling Commission to manage bowhead issues. Catch limits for the subsistence take of bowhead whales are established by the International Whaling Commission (IWC). At the 1994 IWC Annual Meeting, a 4-year subsistence take quota was established. For the years 1995 - 1998, the number of bowhead whales landed shall not exceed 204, and the number of bowhead whales struck shall not exceed 68 in 1995, 67 in 1996, 66 in 1997, and 65 in 1998, with the exception that any unused portion of the yearly quota may be carried over and added to the subsequent year's strike quota, provided that no more than 10 strikes is added to the strike quota for any one year.

Steller Sea Lions and Harbor Seals

Subsistence Harvests

Under section 10(e) of the ESA, prohibitions on the taking of threatened and endangered species normally do not apply to takings by Native Alaskans if such taking is primarily for subsistence purposes. To date, no action has been taken to regulate, or otherwise manage, the subsistence harvest of Steller sea lions by Alaska Native groups. If subsistence takings materially and negatively affect the species, regulations or restrictions may be imposed following a hearing.

Section 119 of the MMPA allows the Secretary of Commerce to enter into cooperative agreements with Alaska Native organizations to conserve marine mammals and provide co-management of subsistence uses. In 1994, an interim Alaska Native Steller Sea Lion Commission consisting of representatives from Alaska communities that take Steller sea lions for subsistence needs was formed to improve communication among indigenous communities that use sea lions, to advocate for conservation of Steller sea lions, to advocate for protection of customary and traditional rights of indigenous peoples with regard to access and use of sea lions, and to serve as the focal point for development of co-management agreements with NMFS. Through co-management agreements between NMFS and the Alaska Native Sea Lion Commission or tribal entities, self-management and regulation of the subsistence harvest by Alaska Native tribes, communities, or the Commission will be achieved. NMFS is not considering regulation of the subsistence harvest at this time but hopes to work with Alaska Native communities and representatives to ensure that subsistence harvest does not adversely affect the Steller sea lion population.

Alaska Native subsistence hunters have been estimated to take approximately 500 Steller sea lions annually in recent years; virtually all of the subsistence harvest in Alaska occurs within the range of the western population segment. These removals may have an impact on the population although the magnitude of estimates in comparison to the reported declines indicate that subsistence harvest has not been a significant factor in the decline.

Alaska Native Subsistence Harvest of Steller Sea Lions

Although Steller sea lions and harbor seals have been a traditional subsistence resource for Alaska Natives in many areas of the State, information on harvest

levels prior to the 1990s is limited. Therefore, beginning in 1992, NMFS provided funds to the Alaska Department of Fish and Game to gather information on the subsistence use of harbor seals (and Steller sea lions) in Alaska. From surveys with hunters and Native households in coastal villages throughout the State, details of the subsistence take, including an estimate of total take (i.e., landings plus animals struck but lost), have been developed for the years 1992 to 1996.

The estimated total Native subsistence take of Steller sea lions in Alaska for those years was 549 in 1992 (370 killed, 179 struck and lost), 487 in 1993 (348 killed, 139 struck and lost), and 416 in 1994 (336 killed, 80 struck and lost). During 1995, the estimated take of sea lions by Alaska natives was 339 sea lions, with a 95 percent confidence range of between 258 to 465 sea lions. Of the take, 9.5 percent (32 sea lions) were struck and lost and 90.5 percent (307) were harvested. The 1995 take of sea lions was the lowest recorded of the 4-year survey. The 1996 estimate of take will be available in 1997.

Almost the entire subsistence take of Steller sea lions has been in the range of the western U.S. stock, and more than three-fourths of that take occurred on the Pribilof and Aleutian Islands. The highest annual take from the eastern U.S. stock between 1992 and 1994 was estimated at six animals in 1992.

In light of concern about the decline of Steller sea lions and their importance as a subsistence resource, Native residents in the Pribilof and Aleutian Islands established an Alaska Native Steller Sea Lion Commission (ANSSLC) to develop a system of self-regulation and to explore co-management arrangements with Federal and State resource managers.

Steller Sea Lion Subsistence Sampling

In September 1995, NMFS Alaska Region began, under contract, a Steller sea lion tissue sampling and education project in 3 Alaska Native communities that have a high subsistence harvest (St. Paul Island, St. George Island, and Unalaska). Sampling focuses on obtaining tissue to determine the age, sex, and genetic makeup of harvested animals, as well as their physical condition, reproductive history, and exposure to anthropogenic contaminants.

A second major emphasis of the contract was to increase awareness of the plight of the Steller sea lion and to encourage local management of the subsistence harvest. The contractor, in association with NMFS Alaska Region, will hold community workshops to discuss Steller sea lion recovery efforts and to inform hunters of the tissue collection project. In future years, NMFS hopes to expand this program to include other Alaska Native communities that harvest Steller sea lions, and to increase its emphasis on conservation through improved hunting practices and local management of harvest. The project continued in 1996, and a first year project report is available.

Alaska Native Subsistence Harvest of Harbor Seals

NMFS contracted ADFG, Division of Subsistence, to estimate the annual take of harbor seals (and Steller sea lions) by Alaska Natives. The information is derived by systematic interviews with hunters and users of marine mammals. The most recent technical report regarding this contract includes data collected in 1994.

The estimated total Native subsistence take of harbor seals in Alaska was 2,888 in 1992 (2,535 retrieved, 353 struck and lost), 2,736 in 1993 (2,365 retrieved, 371 struck and lost), 2,621 in 1994 (2,313 retrieved, 308 struck and lost) and 2,742 in 1995. In 1995, 8.9 percent of the take was struck and lost, the lowest rate reported for any survey year. The 1996 estimate of take will be available in 1997.

Northern Fur Seal Subsistence Harvest

The subsistence harvest of northern fur seals on the Pribilof Islands, Alaska, is governed by regulations published under the authority of the Fur Seal Act and the MMPA. Pursuant to these regulations, NMFS publishes a summary of the fur seal harvest for the

previous 3-year period and a projection of the number of seals expected to be taken in the subsequent 3-year period to meet the subsistence needs of the Aleut residents on the Pribilof Islands. In 1994 NMFS estimated that the subsistence needs for 1994, 1995, and 1996 could be met by annual harvests of between 281 and 500 fur seals on St. George Island and between 1,645 and 2,000 fur seals on St. Paul Island. In 1995, the subsistence harvest take total was 1,525 fur seals, including 260 animals on St. George Island and 1,265 animals on St. Paul Island. Subsistence harvesting of fur seals was conducted on St. Paul Island for 22 days between July 1, 1995 and August 8, 1995, and on St. George Island on 13 days between June 30, 1995, and August 7, 1995. A total of 1,591 sub-adult male seals were killed in the subsistence harvest by St. Paul Island residents in 1996. Three female fur seals were harvested accidentally on St. Paul Island. On St. George Island, 232 subadult male seals were taken in the subsistence harvest in 1996. The harvesting of fur seals was conducted on St. Paul Island for 24 days between June 26, 1996 and August 8, 1996, and on St. George Island for 11 days between July 2 and August 6, 1996.

Beginning with the 1995 harvest, as a step toward maximum utilization of harvested seals for subsistence purposes, the tribal government of St. Paul voluntarily eliminated the "butterfly cut" as a standard method of field dressing harvested seals and resolved to take only whole animals off the field. The only exceptions to the removal of whole carcasses from the field, as permitted by the tribal government, are: (a) those animals taken to accommodate some of the elder residents who are physically unable to butcher whole animals supplied to them by the tribal government, and; (b) those carcasses in which the gall bladder was inadvertently ruptured, thus contaminating some of the meat with bile. During 1995 and 1996, only 44 butterfly cuts (1.3 percent of the combined Pribilof total take for these years), were taken from the field under these exceptions.

As a result of the elimination of the butterfly cut as a standard field dressing method, and since the removal of whole carcasses constitutes full utilization of the edible portions of harvested seals, NMFS determined that it was no longer necessary to continue the percent-use calculations previously applied to the harvest. The butterfly cut was never a standard field dressing method on St. George Island; therefore, removal of only whole carcasses from the harvesting field is now a uniform practice in the Pribilofs.

Also during the 1995 and 1996 harvests, NMFS and the tribal governments of both islands agreed to conduct an investigation into the entanglement of fur seals in marine debris, such as discarded fishing net, rope, and packaging bands that will be discussed later in this discussion.

NMFS will continue to monitor the entire harvest on St. Paul Island and a portion of the harvest on St. George Island during 1997-1999

to ensure that the harvest of fur seals is non-wasteful and in full compliance with the MMPA.

Beluga Whales

Subsistence Program

The Alaska Beluga Committee (ABC) was formed in 1988. Since that date, the ABC has met annually to provide harvest information on takes by Alaska Natives. Hunters from approximately 50 villages take beluga whales in Alaska. Animals are harvested from 5 stocks that are defined by summering areas.

A beluga whale in the lead. (Photo credit: Gregory Silber, NMFS)

In 1995, 135 animals were taken in the beluga harvest by areas as follows: Cook Inlet-42, Bristol Bay-6, Norton Sound-50, Chukchi Sea-34 and the Beaufort Sea-1. The 1996 estimate of take will be available in 1997.

Research on Beluga Whales in 1996

A series of aerial surveys of the Cook Inlet belugas began in June, 1996, and is tentatively planned for even numbered years thereafter to monitor trends in the population. The tagging studies and aerial surveys are conducted with the cooperation of the Alaska Region Office in

Anchorage, the Cook Inlet Marine Mammal Council and the Alaska Beluga Whale Committee. Survey and research results will be available in 1997.

Chapter IX. Permit Programs

Display, Scientific Research, Enhancement and Photography Permits

NMFS administers provisions within the permit program, pursuant to the MMPA, the ESA, and the Fur Seal Act of 1966 (FSA), as they apply to species under the jurisdiction of the Secretary of Commerce. Under these statutes, permits may be issued for certain purposes (e.g., public display, scientific research, enhancement, and photography), to take, import, export, or conduct an otherwise prohibited activity involving such protected species.

Between January 1, 1996 and December 31, 1996, NMFS issued 22 permits. Of these, 20 were issued for scientific research and two were issued for photography. # applications were returned or withdrawn, and # applications were awaiting final action at the end of December 1996

NMFS also processes permit amendments if the proposed modifications meet the appropriate statutory and regulatory standards, and other permit-related authorizations. An amendment of an existing permit, including a request for extension of a permit by more than 12 months beyond its original term, or a request for authorization to continue activities under a permit, is usually subject to the same notice, review and comment procedures as a permit application. During the reporting period, over 50 permit amendments/authorizations were processed. [Tables D-1 through D-5 in Appendix D provide an overview of major permit-related activities during the reporting period.]

Revised Permit Regulations

On May 10, 1996, NMFS published a final rule in the *Federal Register* that amended the regulations for permits under the MMPA, the ESA and the FSA. This rule was based on portions of a proposed rule (58 FR 53320) published in October 1993. The final rule updates and consolidates the regulations for special exception permits and establishes basic permit requirements applicable to all permits to take, import and export marine mammals and marine mammal parts for purposes of scientific research and enhancement, photography, and public display (for captures and initial imports) under the MMPA; provides additional permit criteria specific to scientific research and enhancement only; and determines the status and establishes clarified administrative procedures for determining the releasability or non-releasability of rehabilitated stranded marine mammals and their disposition.

While the proposed rule was undergoing final modification prior to publication as a final rule, the 1994 amendments to the MMPA were signed into law. The 1994 Amendments made substantial changes to sections 102 and 104 of the MMPA governing permits for public display, scientific research, and enhancement activities and consequently eliminated the basis for many of the provisions that had been included in the proposed rule. However, other portions of the proposed rule were either unaffected by the 1994 Amendments or only to a minor extent; therefore, NMFS proceeded with final regulations that incorporated comments on the proposed rule and included some of the elements of the 1993 proposals.

In addition, the major statutory changes to the MMPA addressed by the final rule include: Statutorily defining the term harassment; providing a General Authorization for bona fide research involving only Level B harassment; waiving the public comment process for research permits to be issued under emergency situations; eliminating the statutory restriction against duplication of scientific research projects; statutorily providing for the issuance of permits for purposes of educational and commercial

photography; and substantial changes to the public display provisions of the Act.

The following highlights the major issues addressed in the final rule:

General Permit Conditions and Restrictions. The regulatory text establishes permit-specific conditions and restrictions. By contrast, non-statutory general permit conditions and reporting requirements have been eliminated from the regulatory text. As a general rule, these general conditions and reporting

requirements tend to vary given the nature of the permitted activity. Appropriate general conditions and reporting requirements will be incorporated into the permit itself, and must be adhered to along with all other terms and conditions.

In addition to conditions and reporting applicable to all permit holders; the regulations also outline the conditions and reports that apply specifically to scientific research and enhancement permits. For example, research and enhancement permits are subject to a final reporting requirement as well as an annual reporting requirement. If captive marine mammals are the subject of research or enhancement activities, special reports must be submitted for purposes of the Marine Mammal Inventory including animal-specific data when animals are initially obtained, and subsequent updates to be submitted for any changes in the captive holding status.

Permit Amendments. Major and minor amendment categories were established. Major amendments change elements of a permit which are statutorily highlighted as fundamental permit terms and conditions, i.e., changes in the number and species of marine mammals affected; the manner in which they are taken; the location; and an extension of the duration of the permit more than 12 months. Major amendments would require public review. Other changes would be "minor" and would be addressed on a case by case basis without additional opportunity for public comment.

Import and Export of Marine Mammal Parts. Outlines the required notifications to NMFS on the initial importation of marine mammal parts, and the subsequent transfer, export or re-importation of marine mammal parts.

Beached and Stranded Marine Mammals. Beached or stranded marine mammals taken under the authority of section 109(h) of the MMPA may be held only for the purpose of rehabilitation until: (1) The animal is returned to its natural habitat; (2) NMFS concurs with a determination by the attending veterinarian that it is not feasible to return the animal to its natural habitat and permanent holding is authorized by NMFS; or, (3) although the attending veterinarian determines that the animal is releasable, NMFS authorizes the permanent retention of the animal as a substitute for the capture of one of the same species from the wild.

The permanent retention of a beached or stranded marine mammal previously taken for the purpose of rehabilitation must be authorized by NMFS before an unreleasable animal may be retained by the rehabilitating facility, or transported or exported to another facility for public display purposes, in accordance with applicable MMPA requirements. Additionally, the recipient or retaining facility must meet the three public display criteria specified in the 1994 Amendments (and cited below on page 78). During 1996, seven rehabilitated beached and stranded marine mammals were determined nonreleasable and were retained and/or transferred for public display purposes.

A permit is required to retain or obtain rehabilitated beached and stranded marine mammals for purposes of scientific research, enhancing the survival or recovery of marine mammal species or stocks or to retain a releasable marine mammals for purposes of public display in lieu of a capture. All of the these provisions were implemented in the May 10 final rule.

The final rule does not include the additional requirements specific to photography or public display established by the 1994 Amendments. NMFS will publish separate proposed rules in 1997 for public comment for these areas.

Photography Permits

The 1994 Amendments established a new category of permits to allow marine mammals in the wild to be photographed for educational and commercial purposes. These permits are limited to Level B harassment of non-endangered marine mammals and require that the photographic products be made available to the public. Until final regulations are published, NMFS limits the authorization for photographic activities to one year and requires a report on the activity and its effect on the marine mammals within 60 days of completing the photographic work. During 1996, two permits were issued for commercial photography.

General Authorization

The 1994 Amendments required NMFS to issue a General Authorization (GA) and implementing regulations for *bona fide* scientific research involving Level B harassment of marine mammals in the wild. In lieu of a scientific research permit, the GA provides a simplified process for authorizing research activities involving low levels of harassment. Research activities that are expected to cause no more than Level B harassment include photo-identification studies, behavioral observations, and vessel and aerial population surveys. An Interim Final Rule was published on October 3, 1994 (59 FR 50372). Based on comments received on the interim final rule, a final rule will be published in 1997.

From January 1, 1996 through December 31, 1996, NMFS received 20 letters of intent to conduct Level B harassment on marine mammal species or stocks for scientific research purposes; 15 proposals were approved and five were returned either for insufficient information or because they included listed species, involved level A harassment, or did not meet the *bona fide* research requirements.

Permit Program Information Management System (PPIMS)

NMFS has automated many aspects of its permit program and, during 1996, converted to the newly developed PPIMS, a PC-based relational database software configured to support administration of the permit database and permit processing. PPIMS replaces less sophisticated software and was developed to improve permit processing, and to facilitate and simplify both permit applicant and permit holder interaction with NMFS including maintenance of the Marine Mammal Inventory mandated by the MMPA. NMFS anticipates PPIMS will become fully operational when final regulations for photography and public display permits have been implemented.

Marine Mammal Inventory

Information on marine mammals held captive must be submitted for purposes of the Marine Mammal Inventory. Such information includes animal-specific data when animals are initially obtained, and subsequent updates to be submitted for any changes in the captive holding status (i.e., animal identification, sex, estimated or actual birth date, date of acquisition or disposition by the permit holder, source of acquisition including location of the take from the wild if applicable, name of recipient if animal is transferred, notation if animal was acquired as the result of a stranding, date and cause of death, and prior notification of any sale, purchase, export, or transport).

Exports of Marine Mammals

Marine Mammals may be exported from U.S. facilities as long as the foreign recipient meets requirements comparable to those of a U.S. recipient. To obtain marine mammals from the United States for public

Common Dolphin, Northern Gulf of California, Mexico. (Photo credit: Gregory Silber, NMFS)

display, the recipient must: (a) offer a program for education or conservation purposes that is based on professionally recognized standards of the public display community; (b) meet comparable standards to someone who is registered or holds a license issued under 7 U.S.C. 2131 et seq., i.e., from the Animal and Plant Health Inspection Service (APHIS); and (c) maintain facilities for the public display of marine mammals that are open to the public on a regularly scheduled basis and to which access is not limited or restricted other than by charging of an admission fee.

Because foreign facilities are not subject to licensing or registration requirements under the Animal Welfare Act (AWA), it is only through the MMPA's comparability requirement that adequate care of marine mammals transferred to foreign facilities can be assured. Following a policy established in 1975, NMFS continues to require the foreign government with jurisdiction over the facility to provide a certification that includes a comity statement to enable NMFS to enforce the comparability provisions of the MMPA once the animals have been exported.

During 1996 the following live marine mammals were exported:

- Six (6) Atlantic bottlenose dolphins (*Tursiops truncatus*) to Dolphin Quest - Bermuda;

- Four (4) Atlantic bottlenose dolphins (*Tursiops truncatus*) to Dolphin Quest - French Polynesia;
- Five (5) California sea lions (*Zalophus californianus*) and 1 harbor seal to Canada's Wonderland for a seasonal exhibit; and
- One (1) California sea lion (*Zalophus californianus*) to Toba Aquarium, Japan.

Acoustic Activities

Statutory requirements dictate that NMFS identify and, if necessary, authorize the harassment of marine mammals, including harassment by sound. However, the legal meaning of "harassment" is vague, the intent of Congress on this subject is unclear, and scientific data demonstrating that certain sounds harass are lacking. Lacking clear statutory guidance and complete scientific information, NMFS needs to develop new policies and procedures which are consistent with the MMPA and cognizant of the needs of the affected communities.

As a first step toward this goal, NMFS established an Acoustic Team responsible for ensuring in-house coordination on acoustic issues. Among other things, the Team is preparing a discussion paper, for ultimate distribution to the public, that fully describes the problems that noise in the marine environment creates, and that explores various policy options. The paper is limited in scope to marine mammal species under the MMPA and the ESA. Although some of the issues discussed have relevance for other species, such as endangered and threatened sea turtles and fish, the issues concerning those species are divergent enough to require a separate review. It is envisioned that the paper will be distributed to the public in 1997.

On December 17, 1996, an Interagency Coordinating Group (ICG) on Acoustics was established to explore both individual and common avenues for addressing acoustic issues. The Group is comprised of representatives from NMFS, MMC, ONR, MMS, the U.S. Coast Guard, the U.S. Geological Survey, and the U.S. Army Corps of Engineers.

Release of Captive Dolphins to the Wild

As previously reported, there has been increasing public and media interest in releasing captive marine mammals to the wild. NMFS has consistently stated that such releases may result in a "take" as defined in the MMPA, and, therefore, can only occur after a scientific research permit has been issued. Established protocols do not currently exist for rehabilitating and releasing captive marine mammals back into the wild. Therefore, NMFS intends for scientifically sound protocols to be developed through the permit process which affords the opportunity for both scientific and public review. NMFS is concerned that both the released animals and populations of wild marine mammals could be vulnerable to a take.

Specific issues of concern include: disease transmission between released animals and wild marine mammals; unwanted genetic exchanges

between introduced and endemic stocks/populations; the ability of the released dolphins to adequately forage and defend themselves from predators; and any behavioral patterns developed in captivity which could prove detrimental to the social structure of local populations as well as the social assimilation of the released animal. These concerns were acknowledged by Congress in the Conference report accompanying H.R. 4650, enacted as Public Law 103-335, which included provisions for the transfer of dolphins from Navy facilities.

However, despite these concerns, two unauthorized releases of captive bottlenose dolphins (*Tursiops truncatus*) occurred in May 1996. The first involved two female dolphins (named "Bogie" and "Bacall") who were maintained at a public display facility in the Indian River, Florida, and who were released from their ocean pen allegedly by vandals. Although the intent of this facility was to seek a scientific research permit to prepare the dolphins for eventual release, neither dolphin had been prepared for return to the wild. To date, there have been no confirmed sightings demonstrating that either dolphin survived the release. NMFS staff visited the area to search for the dolphins, but they were not found.

The second release involved two male dolphins (named "Buck" and "Luther") who had been illegally transported and released to the wild off Key West on May 23, 1996. These two dolphins had been maintained at the Sugarloaf Dolphin Sanctuary (SDS, located at the Sugarloaf Motel) since 1993. NMFS conducted a successful rescue operation that recovered both dolphins. In a related action, NMFS, in cooperation with the Animal and Plant Health Inspection Service (APHIS), seized a third dolphin "Jake" from the SDS facility on June 7, 1996. All three dolphins were formally in the U.S. Navy's marine mammal research program, but were transferred to the SDS facility upon the petition of several animal welfare groups who stated their intention to seek a scientific research permit to release the dolphins. However, NMFS never received a permit application.

NMFS and APHIS had been in the process of obtaining a warrant for the seizure of all three dolphins when the unauthorized release of "Buck" and "Luther" occurred. Both efforts were conducted under the authority of the MMPA and at the direction of NMFS personnel from the Office of Protected Resources and the Office of Enforcement who were on-site. NMFS organized a rescue team to assist the dolphins which was comprised of personnel from the public display, research and stranding-response communities. Additional assistance was provided by the National Marine Sanctuary program, U.S. Navy, Florida Marine Patrol and U.S. Coast Guard.

Both "Buck" and "Luther" were found in poor body condition, having suffered extreme weight loss and injuries. Immediately after the release, the dolphins separated: "Luther" appeared in Key West, and "Buck" appeared north in the Islamorada/Marathon areas. They both approached boaters in marinas and local waterways, and were observed performing trained behaviors, begging for food, and being fed fish-bait and unidentified objects by the public. Their behavior demonstrated that they were still highly conditioned and dependent upon human care, and thus were not prepared for life in the wild. In addition, their injuries required prompt medical attention. Since both dolphins were still trained to respond to human commands, the NMFS rescue team was able to engage them in trained boat-follows and lead them voluntarily to safety.

On June 7, NMFS seized "Jake," the remaining former Navy dolphin at the SDS facility. Seizure occurred after APHIS suspended Sugarloaf's exhibitor's license for multiple violations of the Animal Welfare Act (AWA), including the failure to utilize a qualified veterinarian, provide necessary physical examinations and blood testing, and maintain the dolphins within the facility. The seizure was conducted pursuant to the MMPA, which authorizes NMFS to seize animals that are held by a public display facility which does not have a valid AWA exhibitor's license. Although "Jake" was not in the same critical condition as "Buck" and "Luther," the veterinarians who examined him determined that he was underweight and in need of medical attention.

Since then, "Jake" and "Luther" were returned to the Navy's marine mammal facility in San Diego, California, where they are receiving the appropriate care and treatment they were denied at SDS. Given

his poor medical condition, "Buck" did not return to San Diego, and he continues to recover at an APHIS-approved public display facility in the Florida Keys. NMFS sincerely appreciates the hard work of everyone who assisted with the rescue and seizure operations. Many individuals and organizations dedicated their time, expertise, and equipment to ensure that "Buck," "Luther" and "Jake" were brought into safety and given the proper medical attention they needed. As of December 31, 1996, the SDS case was still under investigation and an enforcement decision is expected in 1997.

Public Interaction with Marine Mammals in the Wild

In 1996, NMFS continued to receive reports about the public seeking close encounters with marine mammals in the wild. Specific activities of concern include: illegal feeding of dolphins in the southeast and sea lions on the west coast; "swim-with-dolphin" encounters; jet-ski operation around whales and dolphins; and encroachment on pinniped haul-out sites. Under the MMPA, feeding or harassing marine mammals is illegal.

The negative effects of feeding wild marine mammals has already been established. An in depth review conducted by NMFS, outside marine mammal experts, and the Marine Mammal Commission, determined that feeding marine mammals in the wild is contrary to the mandates of the MMPA to protect individuals, species and stocks of marine mammals. This review was published by NMFS and entitled Report to Congress on Results of Feeding Wild Dolphins: 1989-1994. Feeding dolphins and other marine mammals in the wild alters their behavior in ways that places them at increased risk of injury and death. Repeated exposure to humans and human activities has been correlated with placing these animals at greater risk of incidental interactions with vessels and fishing activities, directed vandalism, and ingestion of inappropriate and contaminated food items. In addition, feeding may impact their ability or willingness to forage for food, which is of particular concern for young animals who need to learn foraging skills. Feeding is ongoing and growing with bottlenose dolphins (*Tursiops truncatus*) throughout the southeast in coastal Florida, Texas, and South Carolina, and also occurs with California sea lions (*Zalophus californianus*) on the west coast.

Other types of commercial and recreational activities with marine mammals in the wild are of concern. In particular, "Swim-With-Dolphin" (SWD) interactions, boating and jet-ski activities, and encroaching on pinniped rookeries disturb the animals' natural behavioral patterns, and also have the potential to injure the animals. In the southeast, SWD activities are facilitated by illegal dolphin feeding. In Hawaii, SWD activities with spinner dolphins occurs when the public encroaches upon the dolphins' coastal resting areas. The MMPA does not provide an exception for such recreational activities. Although there may be certain instances where marine mammals approach humans and initiate an interaction, activities that target marine mammals are, by their nature, acts of pursuit or annoyance which might have the potential to disturb or injure the animals.

An additional concern with feeding and recreational activities is that individual marine mammals may become identified as "nuisance animals." This problem has a long history on the west coast with pinnipeds and in the Southeast with dolphins. In April 1996, a male Steller sea lion who had been provisioned by people was put down by Alaska state wildlife officials because he was considered a threat to public safety due to aggressive behavior which was caused by human provisioning. In the Southeast, the problem of "nuisance animals" is growing as increasing commercial enterprises are turning dolphins into aggressive panhandlers. NMFS has received reports of people being bitten by aggressive provisioned wild dolphins, and complaints from sport fishermen who have lost their catch to dolphins that have been "trained" to take fish from boaters.

Since the general public may not be aware of the MMPA provisions, and that interactions with wild marine mammals maybe harmful and dangerous, NMFS continued its education efforts throughout 1996. Staff from NMFS' Office of Protected Resources and Office of Public Affairs gave interviews to several media publications and public presentations about protecting marine mammals. Additional education efforts have been planned for 1997, and will include close coordination with NMFS' Regional Offices and the Office of Enforcement.

Captive Care Standards for Marine Mammals

During 1995-1996, NMFS was included as a non-voting observer to the USDA-APHIS Negotiated making for marine mammal captive care standards under the AWA. This Federal advisory committee consists of several voting and non-voting ("observer") members. NMFS suggested that the advisory committee address certain practices authorized under the AWA that have the potential of impacting marine mammals in the wild which are under the jurisdiction of the MMPA. Specifically, open-water pens and releases of captive marine mammals to the wild for various purposes (i.e., filming, scientific research, swim-with programs) have the potential of facilitating disease transmission and unwanted genetic exchange between captive animals and those in the wild.

NMFS recommended that facilities with open-water pens be required to have closed-water system quarantine pools. In addition, NMFS recommended that the proposed rule include an explicit reference to the MMPA requirement that captive marine mammals may only be released to the wild under a scientific research permit issued by NMFS. Also, NMFS suggested that the regulations which allow the public to feed captive marine mammals (i.e., feeding or petting pools) be amended to require that the public be informed that feeding and interacting with marine mammals in the wild could be harmful to the animals; why it could be harmful, and that feeding is prohibited under Federal law. The recommendations from this negotiated rulemaking are under consideration by APHIS/USDA for possible publication of a proposed rulemaking on the AWA care and maintenance standards.

Chapter X. Marine Mammal Health and Stranding Response Act

Background

In 1992, the Marine Mammal Health and Stranding Response Act (MMHSRA) (Public Law 102-587) was enacted into law. The Act became Title IV of the MMPA. It contains three basic elements: Marine Mammal Stranding Networks; Response to Unusual Mortality Events; and the National Marine Mammal Tissue Bank. To implement the Act, NMFS has instituted the Marine Mammal Health and Stranding Response Program (MMHSRP) that includes: stranding networks; response to unusual mortality events; monitoring; the National Marine Mammal Tissue Bank; quality assurance; and information management. A discussion of activities in each of these areas follows.

Marine Mammal Stranding Network members are generally volunteers who respond to both live and dead strandings of pinnipeds and cetaceans. (Photo credit: Gregory Silber, NMFS)

Stranding Networks

Marine Mammal Stranding Networks have been established in each of NMFS' regions. Most members of the Marine Mammal Stranding networks are volunteers who respond to both live and dead strandings of pinnipeds and cetaceans. They must satisfy minimum requirements in terms of marine mammal experience in order to be issued letters of authorization by the appropriate Regional Office giving them authority to respond to strandings. Different levels of authorization may apply, e.g., response to live stranded animals is generally limited to those institutions that have medical expertise and the physical facilities to rehabilitate animals. Network members are required to collect certain basic biological data including species name, sex, length, location, and any evidence of human interaction. In addition, they are encouraged to collect other data and tissues for use in scientific research and for educational purposes.

In 1996, Network members reported 1,202 cetacean strandings and 2,050 pinniped strandings. Table E-1 in Appendix E provides detailed information on strandings by species and Region.

Regional Stranding Networks

Northeast Region Stranding Network

A total of 558 marine mammal strandings were reported in the Northeast Region in 1996. Of these, 381 were pinnipeds and 177 were cetaceans.

Continuing a trend noted in the 1995 Annual Report, the number of arctic seals has continued to increase. The number of stranded harp seals increased from 78 in 1995 to 153, and hooded seals increased from 14 to 46.

Bottlenose dolphins with 74 strandings and harbor porpoise with 68 strandings were the most common species of cetaceans. Four large whale strandings were attributed to vessel strikes--two fin, one humpback, and one right whale. The right whale also had been entangled in lobster gear from Canada.

Southeast Region Stranding Network

In 1996, 795 marine mammal strandings were reported in the Southeast Region. Nine pinniped strandings were reported--eight harbor seals and a hooded seal

which stranded in Puerto Rico. The balance were cetacean strandings. Of the cetacean strandings, bottlenose dolphins were the most numerous with 676 strandings.

On January 6, 1996 a mass stranding of 12 Atlantic spotted dolphins occurred in the Florida Keys. Seven dolphins beached themselves on a sandbar. The U.S. Coast Guard transported the animals to a nearby lagoon. Despite efforts to treat them, they all died within a few days. The five other dolphins were trapped in a deep water basin near a marina. They were led back to sea by a NMFS area representative.

Two mortality events occurred--one affecting right whales off of Florida and Georgia and one affecting bottlenose dolphins in Mississippi. These events are discussed below in the section on Unusual Mortality Events.

A major improvement in Stranding Network coverage occurred in Louisiana where an active network was set up for the first time. This has resulted in a marked increase in the number of strandings reported from that state. In 1996, 98 strandings were reported in Louisiana. Of these, 87 were bottlenose dolphins.

Southwest Region Stranding Network

A total of 1,554 marine mammal strandings were reported to the Southwest Region in 1996--1,449 pinnipeds and 105 cetaceans. Pinniped strandings of interest included ten Steller sea lions, 12 northern fur seals, and two Guadalupe fur seals. Cetacean strandings of interest included six humpback whales in Hawaii, three pygmy sperm whales and two Cuvier's beaked whales.

A common dolphin which had stranded alive on August 21, 1995, and was being prepared for release back to the wild tested positive for antibodies to morbillivirus. This was the first known case of a cetacean with a positive titer to morbillivirus stranding on the Pacific coast. Between October 6, 1995, and December 31, 1996, nine additional common dolphins stranded alive in California. Because of the positive result in the earlier dolphin, it was decided that tests should be conducted on all live stranded dolphins. Five of the nine had positive titers to the disease. None of the animals, however, exhibited clinical symptoms associated with morbillivirus. All but one of the animals died shortly after being taken to a rehabilitation facility. The surviving dolphin was a newborn calf being rehabilitated at Sea World at the end of the year which was negative for exposure to morbillivirus.

Alaska Region Stranding Network

A total of 118 cetacean strandings and 23 pinniped strandings were reported to the Alaska Region. The cetacean figures are inflated because of three mass strandings involving beluga whales in the Cook Inlet area. These strandings seem to occur in association with late runs of Coho salmon in Turnagain Arm. The whales apparently came in on incoming tides in pursuit of the salmon and were left stranded by rapidly retreating, very low tides. The three incidents occurred on August 28, September 6, and October 2. The first incident involved 60 whales--four of which died. On the other two occasions 20-30 individuals were involved, none of which died. Personnel from the Alaska Region responded to each of the events placing wet blankets on the animals until they were refloated on the incoming tide.

Unusual Mortality Events

Section 304 of the MMHSRA establishes a Working Group on Unusual Marine Mammal Mortality Events. It includes individuals from a range of scientific disciplines, including veterinary medicine, pathology, epidemiology, toxicology, and marine mammal science. The Working Group is consulted when an unusual mortality event is suspected, determines whether such an event is actually occurring, and provides advice on specific actions that should be taken to respond to an event.

In 1996, the Working Group was consulted three times on mortality events. In February, the Working Group

was consulted because of six right whale mortalities off the Georgia coast. Details of these mortalities and subsequent actions are contained in Chapter VII. In March, the Working Group was consulted on a mortality event involving manatees. Over 150 manatees died along the west coast of Florida. Although manatees are under the jurisdiction of the USFWS, the Working Group was actively involved in providing advice and guidance. Ultimately, it was determined that a biotoxin produced by the red tide organism, *Gymnodinium breve*, was the cause. In November and December, 27 bottlenose dolphins stranded in Mississippi. A cause of the mortality event had not been determined by the end of the year.

MMHSRP Monitoring Program

The MMHSRP monitoring program consists of: (1) real time evaluation of specimens for contaminants and health, (2) method development and validation, and (3) research on problem characterization and correlation of contaminants and health. One main goal of the monitoring component is to provide baseline information on contaminant loads and diseases in populations of marine mammals. The effort is focused on two main areas: contaminant monitoring and health monitoring.

Marine Mammal Pathology

The calendar year 1996 was the second year of a three year contract with the Department of Veterinary Pathology, Armed Forces Institute of Pathology to examine tissues from marine mammals. Tissues were received from aquaria, researchers, stranding network personnel and federal or state employees. The Department of Veterinary Pathology issued diagnostic histopathology reports on 165 marine mammals, of which 103 were cetaceans, 29 seals or sea lions, 27 walruses and 9 sea otters. The species and numbers represented include 41 *Tursiops truncatus*, 9 *Stenella clymene*, 8 *Stenella frontalis*, 7 *Delphinus delphis*, 5 *Physeter macrocephalus*, 4 *Delphinapterus leucas*, 3 *Phocoena phocoena*, 3 *Ziphius cavirostris*, 3 *Lissodelphis borealis*, 2 *Kogia simus*, 2 *Phocoenoides dalli*, 2 *Delphinus apensis*, 2 *Orcinus orca*, 2 *Grampus griseus*, 1 *Kogia breviceps*, 1 *Mesoplodon europaeus*, 1 *Lagenodelphis hosei*, 1 *Peponocephala electra*, 1 *Globicephala macrorhynchus*, 1 *Stenella attenuata*, 1 *Eschrichtius robustus*, 9 *Phoca vitulina*, 6 *Phoca groenlandica*, 4 *Zalophus californianus*, 3 *Cystophora cristata*, 2 *Erignathus barbatus*, 1 *Mirounga angustirostris*, 1 *Callorhinus ursinus*, 27 *Odobenus rosmarus divergens*, and 9 *Enhydra lutris*. In addition, 73 marine mammals were tested for morbillivirus by reverse transcriptase polymerase chain reaction. No new cases of morbillivirus were identified. The comprehensive pathologic study of the 1987-88 U.S. Atlantic coast bottlenose dolphin epizootic was completed, and the AFIP helped organize and participated in an expert panel assessment of pathological findings in the right whale mortality event (January-February 1996). The AFIP also consulted with the on-site coordinators of the manatee mortality event and the Mississippi bottlenose dolphin mortality event.

Brucella

After the discovery in 1995 of brucella in harbor seals in Puget Sound, the NMFS in conjunction with Washington State, the National Veterinary Services Lab, and the stranding networks continued efforts to determine the incidence and pathogenicity of brucella in pinnipeds. In addition, efforts were made to validate the various tests for brucella in marine mammals. Using samples provided by the Washington State Department of Fish and Game, four isolates of brucella were obtained from harbor seals. These isolates are different from other brucella organisms isolated from terrestrial animals in the United States and are similar to marine mammal isolates from Europe. A pilot survey of samples obtained from stranded pinnipeds in the northeastern United States revealed that these animals had also been exposed to brucella. Efforts will continue to address the issues of prevalence, pathogenicity, and assay validation.

Contaminants

The contaminants component of the MMHSRP includes biomonitoring, archiving and quality

assurance. The Environmental Conservation Division (ECD) of the Northwest Fisheries Science Center serves as the NMFS lead for the quality assurance and biomonitoring components of the MMHSRP. In 1996, the ECD continued the work to determine the concentrations of chemical contaminant in marine mammals and to develop techniques to improve capabilities for determining the health risk to marine mammals from highly toxic substances. These activities create a national database on toxic substances in marine mammals that is linked to biological data, improve the quality of chemical measurement in marine mammals nation-wide through the Quality Assurance/Quality Control (QA/QC) program and provide timely information in response to stranding events. The studies in 1996 targeted those species at risk of stranding, those showing evidence of population decline, and those that serve as sentinels of habitat quality.

In 1996, over 360 tissue samples from a number of matrices (blubber, liver, kidney, brain, heart, lung, muscle, melon, mandibular fat, blood, milk, and stomach contents) from 16 cetacean species and 10 pinniped species were either acquired or analyzed for chlorinated hydrocarbons and essential and non-essential elements. These samples were collected from a variety of projects: 1) ongoing monitoring of contaminant in animals obtained from subsistence hunts (e.g. Steller sea lion), 2) collection of tissues for the Specimen Bank project (e.g. beluga whale, bowhead whale and ring seal), 3) analyses of tissues from stranded animals (e.g., pygmy sperm whale, harp seal), 4) continued investigations of relationships between contaminant exposure and disease (e.g., California sea lions with metastatic carcinomas), and 5) as part of a study on the health effects of contaminants in northern fur seal pups.

In 1996, the ECD also initiated projects to improve our current analytical methods of measuring dioxin-like PCB congeners and methylsulfone metabolites in marine mammal tissues and of testing the susceptibility of marine mammals to biotoxins. In addition two studies on the effects of tissue degradation on analytical results were begun in 1996. Changes in tissue condition on the recovery and quality of the DNA used in an assay for polycyclic aromatic compound-like DNA adducts were completed to show the effects of sample quality on analytical results. The second study on the effects of tissue degradation on chemical analytical results was continued in cooperation with Texas A&M University.

The National Institute of Standards and Technology (NIST) continues to cooperate with NMFS in the maintenance of the National Marine Mammal Specimen Bank (NMMSB) and the Quality Assurance Program as part of the interagency National Marine Analytical Quality Assurance Program. In 1996, tissue banking efforts included the collection of 208 new specimens from 78 animals representing 10 species. Of these species, 4 were cetaceans, 6 pinnipeds and 1 polar bear. This brings the total number of specimens in the NMMSB to 669 representing 252 animals of 16 species. In 1996, a total of 24 tissue bank samples from beluga whale, elephant seal, ringed seal and harbor porpoise were transferred to ECD for analyses. Detailed analyses for CHs were completed in 12 samples of blubber and liver. Fourteen essential and non-essential elements were analyzed in 12 liver and kidney samples.

The Quality Assurance (QA) program was initiated in 1992 in response to the legislative mandate to improve the quality of chemical contaminant data for marine mammals and has proceeded as a collaborative effort between NIST and NMFS. In 1996, NIST and NWFSC collaborated in an interlaboratory comparison exercise involving the analyses of liver tissue of 2 beluga whales, a ringed seal and a pilot whale control material for 13 essential and non-essential elements. The results show good comparability between the two labs and the utility of performance based QA programs in assessing comparability of data. Other milestones for the QA program include the publication of interlaboratory comparison results on PCBs and chlorinated pesticides, the preparation and distribution of a manatee blubber analytical control material (as part of the mortality investigation QA), and the collection and analysis of a beluga whale liver control material (Homogenate II).

Appendix A

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Category I:		
Gillnet fisheries:		
CA angel shark/halibut and other species large mesh (>3.5in) set gillnet fishery	80	Harbor porpoise, central CA Common dolphin, short-beaked, CA/OR/WA Common dolphin, long-beaked CA California sea lion, U.S. Harbor seal, CA Northern elephant seal, CA breeding
CA/OR thresher shark/swordfish drift gillnet fishery	150	Steller sea lion, Eastern U.S.*+ Sperm whale, CA to WA*+ Dall's porpoise, CA/OR/WA Pacific white sided dolphin, CA/OR/WA Risso's dolphin, CA/OR/WA Bottlenose dolphin, CA/OR/WA offshore Common dolphin, short-beaked, CA/OR/WA Common dolphin, long-beaked, CA Northern right whale dolphin, CA/OR/WA Short-finned pilot whale, CA/OR/WA* Baird's beaked whale, CA/OR/WA Mesoplodont beaked whales, CA to WA* Cuvier's beaked whale, CA/OR/WA Pygmy sperm whale, CA/OR/WA* California sea lion, U.S. Harbor seal, CA Northern elephant seal, CA breeding Harbor porpoise, OR/WA coastal Humpback whale, CA/OR/WA-Mexico
Category II:		
Gillnet fisheries		
AK Peninsula/ Aleutian Island salmon set gillnet	120	Steller sea lion, Western U.S.*+ Harbor porpoise, AK

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean (cont.)

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Southeast Alaska salmon drift gillnet fishery	443	Steller sea lion, Eastern U.S.*+ Harbor seal, Southeast AK Pacific white-sided dolphin, central North Pacific Harbor porpoise, AK Dall's porpoise, AK Humpback whale, central North Pacific*+
AK Cook Inlet drift gillnet	554	Steller sea lion, Western U.S.*+ Harbor seal, GOA Harbor porpoise, AK Dall's porpoise, AK
AK Cook Inlet salmon set gillnet	633	Steller sea lion, Western U.S.*+ Harbor seal, GOA Harbor porpoise, AK Beluga, Cook Inlet
AK Yakutat salmon set gillnet	152	Harbor seal, Southeast AK
AK Kodiak salmon set gillnet	162	Harbor seal, GOA Harbor porpoise, AK
AK Bristol Bay drift gillnet	1,741	Steller sea lion, Western U.S.*+ Northern fur seal, North Pacific* Harbor seal, Bering Sea Beluga, Bristol Bay Gray whale, Eastern North Pacific
AK Bristol Bay set gillnet	888	Harbor seal, Bering Sea Beluga, Bristol Bay Gray whale, Eastern North Pacific
AK Metlakatla/ Annette Island salmon drift gillnet	60	None documented

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean (cont.)

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
WA Puget Sound Region salmon drift gillnet fishery (includes all inland waters south of US-Canada border and eastward of the Bonilla-Tatoosh line-- Treaty Indian fishing is excluded)	1,044	Harbor porpoise, inland WA Dall's porpoise, CA/OR/WA Harbor seal, WA inland
Purse seine fisheries		
CA anchovy, mackerel, tuna purse seine	150	Bottlenose dolphin, CA/OR/WA offshore California sea lion, U.S. Harbor seal, CA
CA squid purse seine	65	Pilot whales, short-finned, CA/OR/WA
AK Southeast salmon purse seine	443	Humpback whale, central North Pacific*+
Trawl fisheries		
AK pair trawl	2	None documented
Longline fisheries		
OR swordfish floating longline fishery	20	None documented
OR blue shark floating longline fishery	10	None documented
Category III		
Gillnet fisheries		
AK Prince William Sound set gillnet	29	Steller sea lion, Western U.S.*+ Harbor seal, GOA
AK Kuskokwim, Yukon, Norton Sound, Kotzebue salmon gillnet	1,651	None documented

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean (cont.)

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
AK roe herring and food/bait herring gillnet	162	None documented
WA, OR herring, smelt, shad, sturgeon, bottom fish, mullet, perch, rockfish gillnet	913	None documented
WA Willapa Bay drift gillnet	82	Harbor seal, OR/WA coast Northern elephant seal, CA breeding
WA Grays Harbor salmon drift gillnet (excluding treaty Tribal fishing)	24	Harbor seal, OR/WA coast
WA, OR lower Columbia River (includes tributaries) drift gillnet	40	California sea lion, U.S. Harbor seal, OR/WA coast
CA set and drift gillnet fisheries that use a stretched mesh size of 3.5 in or less	341	None documented
AK miscellaneous finfish set gillnet	9	Steller sea lion, Western U.S.*+
Hawaii gillnet	115	Bottlenose dolphin, Hawaiian Spinner dolphin, Hawaiian
Purse seine, beach seine, round haul and throw net fisherie		
AK salmon purse seine (except Southeast Alaska, which is in Category II)	1,053	Harbor seal, GOA
AK salmon beach seine	34	None documented
AK roe herring and food/bait herring purse seine	866	None documented

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean (cont.)

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
AK roe herring and food/bait herring beach seine	14	None documented
AK Metlakatla purse seine	3	None documented
AK octopus/squid purse seine	3	None documented
CA herring purse seine	100	Bottlenose dolphin, CA coastal California sea lion, U.S. Harbor seal, CA
CA sardine purse seine	120	None documented
CA squid purse seine	145	California sea lion, U.S.
AK miscellaneous finfish purse seine	6	None documented
AK miscellaneous finfish beach seine	4	None documented
WA salmon purse seine	440	None documented
WA salmon reef net	53	None documented
WA, OR herring, smelt, squid purse seine or lampara	130	None documented
WA (all species) beach seine or drag seine	235	None documented
HI purse seine	18	None documented
HI opelu/akule net	16	None documented
HI throw net, cast net	47	None documented
Dip net fisheries		
WA, OR smelt, herring dip net	119	None documented
CA squid dip net	115	None documented

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean (cont.)

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Marine aquaculture fisheries		
WA, OR salmon net pens	21	California sea lion, U.S.
CA salmon enhancement rearing pen	>1	None documented
OR salmon ranch	1	None documented
Troll fisheries		
AK salmon troll	1,450	Steller sea lion, Eastern U.S.*+
CA/OR/WA salmon troll	4,300	None documented
AK north Pacific halibut, AK bottom fish, WA, OR, CA albacore, groundfish, bottom fish, CA halibut non-salmonid troll fisheries	1,354	None documented
HI trolling, rod and reel	1,795	None documented
Guam tuna troll	50	None documented
Commonwealth of the Northern Mariana Islands tuna troll	50	None documented
American Samoa tuna troll	<50	None documented
HI net unclassified	106	None documented
Longline/set line fisheries		
AK state waters sablefish long line/set line	240	None documented
Miscellaneous finfish/groundfish longline/set line	838	Harbor seal, GOA Harbor seal, Bering Sea Northern elephant seal, CA breeding

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean (cont.)

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
HI swordfish, tuna, billfish, mahi mahi, wahoo, oceanic sharks longline/set line	140	Hawaiian monk seal, HI*+ Humpback whale, Central North Pacific*+ Risso's dolphin, Hawaiian Bottlenose dolphin, Hawaiian
WA, OR North Pacific halibut longline/set line	350	None documented
AK southern Bering Sea, Aleutian Islands, and Western Gulf of Alaska sablefish longline/set line (federally regulated waters)	226	Northern elephant seal, CA breeding Killer whale, resident Killer whale, transient
AK halibut longline/set line (state and Federal waters)	213	Steller sea lion, Western U.S.*+
WA, OR, CA groundfish, bottomfish longline/set line	367	None documented
AK octopus/squid longline	1	None documented
CA shark/bonito longline/set line	10	None documented
Trawl fisheries		
WA, OR, CA shrimp trawl	300	None documented
AK shrimp otter trawl and beam trawl (statewide and Cook Inlet)	48	None documented
AK Gulf of Alaska groundfish trawl	490	Steller sea lion, Western U.S.*+ Northern fur seal, North Pacific* Harbor seal, GOA Dall's porpoise, AK Northern elephant seal, CA breeding

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean (cont.)

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
AK Bering Sea and Aleutian Islands groundfish trawl	490	Steller sea lion, Western U.S.*+ Northern fur seal, North Pacific* Killer whale, resident Killer whale, transient Pacific white-sided dolphin, central North Pacific Harbor porpoise, AK Harbor seal, Bering Sea Harbor seal, GOA Bearded seal, AK Ringed seal, AK Dall's porpoise, AK Spotted seal, AK Ribbon seal, AK Northern elephant seal, CA breeding Northern (Alaska) sea otter, Pacific Walrus, Pacific
AK state-managed waters of Cook Inlet, Kachemak Bay, Prince William Sound, Southeast AK groundfish trawl	8	None documented
AK miscellaneous finfish otter or beam trawl	324	None documented
AK food/bait herring trawl	2	None documented
WA, OR, CA groundfish trawl	585	Steller sea lion, Western U.S.*+ Northern fur seal, North Pacific* Pacific white-sided dolphin, central North Pacific Dall's porpoise, CA/OR/WA California sea lion, U.S. Harbor seal, OR/WA coast
Pot, ring net, and trap fisheries		
AK crustacean pot	1,951	None documented
AK Bering Sea, GOA finfish pot	226	Harbor seal, GOA Northern (AK) sea otter, Pacific

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean (cont.)

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
WA, OR, CA sablefish pot	176	None documented
WA, OR, CA crab pot	1,478	None documented
WA, OR shrimp pot & trap	254	None documented
CA lobster, prawn, shrimp, rock crab, fish pot	608	None documented
OR, CA hagfish pot or trap	25	None documented
HI lobster trap	15	Hawaiian monk seal, HI*+
HI crab trap	22	None documented
HI fish trap	19	None documented
HI shrimp trap	5	None documented
Handline and jig fisheries		
AK North Pacific halibut handline and mechanical jig	84	None documented
AK other finfish handline and mechanical jig	474	None documented
AK octopus/squid handline	2	None documented
WA groundfish, bottomfish jig	679	None documented
HI aku boat, pole and line	54	None documented
HI inshore handline	650	Bottlenose dolphin, HI
HI deep sea bottomfish	434	Hawaiian monk seal, HI*+
HI tuna	144	Rough-toothed dolphin, HI Bottlenose dolphin, HI Hawaiian monk seal, HI*+
Guam bottomfish	< 50	None documented

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean (cont.)

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Commonwealth of the Northern Mariana Islands bottomfish	<50	None documented
American Samoa bottomfish	<50	None documented
Harpoon fisheries		
CA swordfish harpoon	228	None documented
Pound net/weir fisheries		
AK Southeast Alaska herring food/bait pound net	7	None documented
WA herring brush weir	1	None documented
Bait pens		
WA/OR/CA bait pens	13	None documented
Dredge fisheries		
Coastwide scallop dredge	106	None documented
Dive, hand/mechanical collection fisheries		
AK abalone	177	None documented
AK dungeness crab	1	None documented
AK herring spawn-on-kelp	306	None documented
AK urchin and other fish/shellfish	127	None documented
AK clam hand shovel	125	None documented
AK clam mechanical/hydraulic fishery	3	None documented
WA herring spawn-on-kelp	4	None documented

Table A-1-- List of Fisheries
Commercial Fisheries in the Pacific Ocean (cont.)

Fishery Description	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
WA/OR sea urchin, other clam, octopus, oyster, sea cucumber, scallop, ghost shrimp hand, dive, or mechanical collection	637	None documented
CA abalone	111	None documented
CA sea urchin	583	None documented
HI squiding, spear	267	None documented
HI lobster diving	6	None documented
HI coral diving	2	None documented
HI handpick	135	None documented
WA shellfish aquaculture	684	None documented
WA, CA kelp	4	None documented
HI fish pond	10	None documented
Commercial passenger fishing vessel (charter boat) fisheries		
AK, WA, OR, CA commercial passenger fishing vessel	1,243	None documented
AK octopus/squid "other"	19	None documented
HI "other"	114	None documented
Live finfish/shellfish fisheries		
CA finfish and shellfish live trap/hook-and-line	93	None documented

TableA- 2--List of Fisheries Commercial Fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean

Description of Fishery	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Category I		
Gillnet fisheries		
Atlantic Ocean, Caribbean, Gulf of Mexico large pelagics drift gillnet	75	North Atlantic right whale, WNA*+ Humpback whale, WNA*+ Sperm whale, WNA*+ Dwarf sperm whale, WNA* Pygmy sperm whale, WNA* Cuvier's beaked whale, WNA* True's beaked whale, WNA* Gervais' beaked whale, WNA* Blainville's beaked whale, WNA* Risso's dolphin, WNA Long-finned pilot whale, WNA* Short-finned pilot whale, WNA* White-sided dolphin, WNA* Common dolphin, WNA* Atlantic spotted dolphin, WNA* Pantropical spotted dolphin, WNA* Striped dolphin, WNA Spinner dolphin, WNA Bottlenose dolphin, WNA offshore* Harbor porpoise, GME/BF*
New England multispecies sink gillnet (including species as defined in the Multispecies Fisheries Management Plan and spiny dogfish and monkfish)	341	North Atlantic right whale, WNA*+ Humpback whale, WNA*+ Minke whale, Canadian east coast Killer whale, WNA White-sided dolphin, WNA* Striped dolphin, WNA Bottlenose dolphin, WNA offshore Harbor porpoise, GME/BF* Harbor seal, WNA Gray seal, Northwest North Atlantic Common dolphin Fin whale Spotted dolphin False killer whale Harp seal
Longline fisheries		

TableA- 2--List of Fisheries Commercial Fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean (cont.)

Description of Fishery	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Atlantic Ocean, Caribbean, Gulf of Mexico large pelagics longline	361	Humpback whale, WNA*+ Minke whale, Canadian east coast Risso's dolphin, WNA Long-finned pilot whale, WNA* Short-finned pilot whale, WNA* Common dolphin, WNA* Atlantic spotted dolphin, WNA* Pantropical spotted dolphin, WNA Striped dolphin, WNA Bottlenose dolphin, WNA offshore* Bottlenose dolphin, GMX Outer Continental Shelf Bottlenose dolphin, GMX Continental Shelf Edge and Slope Atlantic spotted dolphin, Northern GMX Pantropical spotted dolphin, Northern GMX Risso's dolphin, Northern GMX Harbor porpoise, GME/BF *
Trap/pot fisheries - lobster		
Gulf of Maine, U.S. mid-Atlantic lobster trap/pot	13,000	North Atlantic right whale, WNA*+ Humpback whale, WNA*+ Fin whale, WNA* Minke whale, Canadian east coast White-sided dolphin, WNA Harbor seal, WNA
Category II		
Gillnet fisheries		
U.S. mid-Atlantic coastal gillnet fishery	>655	Humpback whale, WNA*+ Minke whale, Canadian east coast Bottlenose dolphin, WNA offshore* Bottlenose dolphin, WNA coastal*+ Harbor porpoise, GME/BF*
Gulf of Maine small pelagics surface gillnet	133	Humpback whale, WNA*+ White-sided dolphin, WNA Harbor seal, WNA
Southeastern U.S. Atlantic shark gillnet fishery	10	Bottlenose dolphin, WNA coastal* North Atlantic right whale, WNA*+

TableA- 2--List of Fisheries Commercial Fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean (cont.)

Description of Fishery	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Trawl fisheries		
Atlantic squid, mackerel, butterfish trawl	620	Common dolphin, WNA* Risso's dolphin, WNA* Long-finned pilot whale, WNA* Short-finned pilot whale, WNA* White-sided dolphin, WNA*
Haul seine fisheries		
North Carolina haul seine	unknown	Bottlenose dolphin, WNA coastal* Harbor porpoise, GME/BF*
Stop net fisheries		
North Carolina roe mullet stop net	13	Bottlenose dolphin, WNA coastal*
Category III		
Gillnet fisheries		
Rhode Island, southern Massachusetts (to Monomoy Island), and New York Bight (Raritan and Lower New York Bays) inshore gillnet	32	Humpback whale, WNA*+ Bottlenose dolphin, WNA coastal*+ Harbor porpoise, GME/BF*
Long Island Sound inshore gillnet	20	Humpback whale, WNA*+ Bottlenose dolphin, WNA coastal*+ Harbor porpoise, GME/BF*
Delaware Bay inshore gillnet	60	Humpback whale, WNA*+ Bottlenose dolphin, WNA coastal*+ Harbor porpoise, GME/BF*
Chesapeake Bay inshore gillnet	45	None documented
North Carolina inshore gillnet	94	None documented

TableA- 2--List of Fisheries Commercial Fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean (cont.)

Description of Fishery	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Gulf of Mexico inshore gillnet (black drum, sheepshead, weakfish, mullet, spot, croaker)	unknown	None documented
Gulf of Maine, Southeast U.S. Atlantic coastal shad, sturgeon gillnet (includes waters of North Carolina)	1,285	Minke whale, Canadian east coast Harbor porpoise, GME/BF* Bottlenose dolphin, WNA coastal*+
Gulf of Mexico coastal gillnet (includes mullet gillnet fishery in LA and MS)		Bottlenose dolphin, Western GMX coastal Bottlenose dolphin, Northern GMX coastal Bottlenose dolphin, Eastern GMX coastal Bottlenose dolphin, GMX Bay, Sound, & Estuarine*
Southeastern U.S. Atlantic coastal gillnet	0.00	Bottlenose dolphin, WNA coastal*+
Florida east coast, Gulf of Mexico pelagics king and Spanish mackerel gillnet	271	Bottlenose dolphin, Western GMX coastal Bottlenose dolphin, Northern GMX coastal Bottlenose dolphin, Eastern GMX coastal Bottlenose dolphin, GMX Bay, Sound, & Estuarine*
Trawl fisheries		
North Atlantic bottom trawl	1,052	Long-finned pilot whale, WNA* Short-finned pilot whale, WNA* White-sided dolphin, WNA* Striped dolphin, WNA Bottlenose dolphin, WNA offshore*
Mid-Atlantic, Southeastern U.S. Atlantic, Gulf of Mexico shrimp trawl	>18,000	Bottlenose dolphin, WNA coastal*+
Gulf of Maine northern shrimp trawl	320	None documented
Gulf of Maine, Mid-Atlantic sea scallop trawl	215	None documented

TableA- 2--List of Fisheries Commercial Fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean (cont.)

Description of Fishery	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Gulf of Maine, Southern North Atlantic, Gulf of Mexico coastal herring trawl	5	None documented
Mid-Atlantic mixed species trawl	>1,000	None documented
Gulf of Mexico butterfish trawl	2	Atlantic spotted dolphin, Northern GMX Pantropical spotted dolphin, Northern GMX
Georgia, South Carolina, Maryland whelk trawl	25	None documented
Calico scallops trawl	200	None documented
Bluefish, croaker, flounder trawl	550	None documented
Crab trawl	400	None documented
U.S. Atlantic monkfish trawl	unknown	None documented
Marine aquaculture fisheries		
Finfish aquaculture	48	Harbor seals, WNA
Shellfish aquaculture	unknown	None documented
Purse seine fisheries		
Gulf of Maine Atlantic herring purse seine	30	Harbor porpoise, GME/BF* Harbor seal, WNA Gray seal, Northwest North Atlantic
Mid-Atlantic menhaden purse seine	22	Bottlenose dolphin, WNA coastal*+
Gulf of Maine menhaden purse seine	10	None documented
Gulf of Mexico menhaden purse seine	50	Bottlenose dolphin, Northern GMX coastal

TableA- 2--List of Fisheries Commercial Fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean (cont.)

Description of Fishery	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Florida west coast sardine purse seine	10	Bottlenose dolphin, Eastern GMX coastal
U.S. Atlantic tuna purse seine	unknown	None documented
U.S. mid-Atlantic hand seine	> 250	None documented
Longline/hook-and-line fisheries		
Gulf of Maine tub trawl groundfish bottom longline/ hook-and-line	46	Harbor seal, WNA Gray seal, Northwest North Atlantic
Southeastern U.S. Atlantic, Gulf of Mexico snapper-grouper and other reef fish bottom longline/hook-and-line	3,800	None documented
Southeastern U.S. Atlantic, Gulf of Mexico shark bottom longline/hook-and-line	124	None documented
Gulf of Maine, U.S. mid-Atlantic tuna, shark swordfish hook-and-line/harpoon	26,223	None documented
Southeastern U.S. Atlantic, Gulf of Mexico & U.S. mid-Atlantic pelagic hook-and-line/harpoon	1,446	None documented
Trap/pot fisheries - lobster and crab		

TableA- 2--List of Fisheries Commercial Fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean (cont.)

Description of Fishery	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Gulf of Maine, U.S. mid-Atlantic mixed species trap/pot	100	North Atlantic right whale, WNA*+, Humpback whale, WNA*+ Minke whale, Canadian east coast Harbor porpoise, GME/BF* Harbor seal, WNA Gray seal, Northwest North Atlantic
U.S. mid-Atlantic and Southeast U.S. Atlantic black sea bass trap/pot	30	None documented
U.S. mid-Atlantic eel trap/pot	>700	None documented
Atlantic Ocean, Gulf of Mexico blue crab trap/pot	20,500	Bottlenose dolphin, WNA coastal* Bottlenose dolphin, Western GMX coastal Bottlenose dolphin, Northern GMX coastal Bottlenose dolphin, Eastern GMX coastal Bottlenose dolphin, GMX Bay, Sound, & Estuarine* Florida manatee, FL*+
Southeastern U.S. Atlantic, Gulf of Mexico, Caribbean spiny lobster trap/pot	750	Florida manatee, FL*+
Stop seine/weir/pound fisheries		
Gulf of Maine herring and Atlantic mackerel stop seine/weir	50	North Atlantic right whale, WNA* Humpback whale, WNA*+ Minke whale, Canadian east coast Harbor porpoise, GME/BF* Harbor seal, WNA Gray seal, Northwest North Atlantic
U.S. mid-Atlantic mixed species stop/seine/weir (except the North Carolina roe mullet stop net)	500	None documented
U.S. mid-Atlantic crab stop seine/weir	2,600	None documented

TableA- 2--List of Fisheries Commercial Fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean (cont.)

Description of Fishery	Estimated # of vessels/ persons	Marine mammal species/stocks incidentally injured/killed
Dredge fisheries		
Gulf of Maine, U.S. mid-Atlantic sea scallop dredge	233	None documented
U.S. mid-Atlantic offshore surfclam and quahog dredge	100	None documented
Gulf of Maine mussel	> 50	None documented
U.S. mid-Atlantic/Gulf of Mexico oyster	7,000	None documented
Haul seine fisheries		
Southeastern U.S. Atlantic, Caribbean haul seine	150	None documented
Beach seine fisheries		
Caribbean beach seine	15	Florida manatee, FL+
Dive, hand/mechanical collection fisheries		
Gulf of Maine urchin dive, hand/mechanical collection	> 50	None documented
Atlantic Ocean, Gulf of Mexico, Caribbean shellfish dive, hand/mechanical collection	20,000	None documented
Commercial passenger fishing vessel (charter boat) fisheries		
Atlantic Ocean, Gulf of Mexico, Caribbean commercial passenger fishing vessel	4,000	None documented

Appendix B

Marine Mammal Authorization Program
Mortality/Injury Reports (received as of 12/31/96)

Species	Fishery	Injured	Killed
Minke whale	CA/OR thresher shark/swordfish pelagic driftnet	0	1
Humpback whale	AK Southeast salmon drift gillnet	1	0
	Atlantic lobster pot	1	0
Sperm whale	CA/OR thresher shark/swordfish pelagic driftnet	1	0
Atlantic white-sided dolphin	New England multi-species sink gillnet	0	2
Pacific white-sided dolphin	CA/OR thresher shark/swordfish pelagic driftnet	2	2
Common dolphin	CA/OR thresher shark/swordfish pelagic driftnet	6	19
	CA coastal set gillnet	0	1
	Atlantic swordfish pelagic driftnet	0	22
	New England multi-species sink gillnet	0	1
Risso's dolphin	Atlantic swordfish/tuna/shark pelagic longline	4	0
Northern right whale dolphin	CA/OR thresher shark/swordfish pelagic driftnet	0	1
Harbor por2poise	New England multi-species sink gillnet	0	15
Dall's porpoise	CA/OR thresher shark/swordfish pelagic driftnet	0	1
Pilot whale	Atlantic swordfish/tuna/shark pelagic longline	1	0
	Atlantic swordfish pelagic driftnet	0	4
	Atlantic squid/mackerel/butterfish trawl	0	1
Unid. small cetacean	CA/OR thresher shark/swordfish pelagic driftnet	0	4
	AK Southeast salmon drift gillnet	1	1
	Mid-Atlantic coastal gillnet	0	1
California sea lion	CA/OR thresher shark/swordfish pelagic driftnet	0	6
	CA coastal set gillnet	0	10
	WA aquaculture	0	5
Harbor seal	AK Prince Wm. Sound dift gillnet	1	0
	CA coastal set gillnet	0	2
	New England multi-species sink gillnet	0	16
Grey seal	New England multi-species sink gillnet	0	4
Northern elephant seal	CA/OR thresher shark/swordfish pelagic driftnet	0	5
Unid. sea lion	AK Bering Sea/Aleutian Islands groundfish trawl	0	1
Unid. seal	New England multi-species sink gillnet	0	3

Appendix C

Appendix C. Summary of draft marine mammal stock assessment reports for stocks of marine mammals that occupy waters under U.S. jurisdiction and are under NMFS jurisdiction.

Species	Stock Area	Region	NMFS Center	Nmin	Rmax	Fr	PBR	Total Annual Mort.	Annual Fish. Mort.	Strategic Status
Steller sea lion	Western U.S.	AKA	AKC	42,536	0.12	0.3	766	518	38	Y
Steller sea lion	Eastern	AKA	AKC	23,533	0.12	0.75	1,059	8	4	Y
Northern fur seal	North Pacific	AKA	AKC	969,595	0.086	0.5	20,846	1,731	18	Y
Harbor seal	Southeast Alaska	AKA	AKC	35,226	0.12	1.0	2,114	1,630	34	N
Harbor seal	Gulf of Alaska	AKA	AKC	22,427	0.12	0.5	673	966	35	Y
Harbor seal	Bering Sea	AKA	AKC	12,648	0.12	0.5	379	242	30	N
Spotted seal	Alaska	AKA	AKC	N/A	0.12	0.5	N/A	N/A	2	N
Bearded seal	Alaska	AKA	AKC	N/A	0.12	0.5	N/A	N/A	2	N
Ringed seal	Alaska	AKA	AKC	N/A	0.12	0.5	N/A	N/A	1	N
Ribbon seal	Alaska	AKA	AKC	N/A	0.12	0.5	N/A	N/A	1	N
Beluga	Beaufort Sea	AKA	AKC	39,039	0.04	1.0	781	168	0	N
Beluga	Eastern Chukchi Sea	AKA	AKC	3,710	0.04	1.0	74	63	0	N
Beluga	Norton Sound	AKA	AKC	6,439	0.04	1.0	129	109	0	N
Beluga	Bristol Bay	AKA	AKC	1,526	0.04	1.0	31	21	1	N
Beluga	Cook Inlet	AKA	AKC	981	0.04	1.0	20	40	0	Y
Killer whale	Eastern North Pacific, Northern Resident	AKA	AKC	601	0.04	0.5	6.0	1.2	1.2	N
Killer whale	Eastern North Pacific, Transient	AKA	AKC	187	0.04	0.5	1.9	1.2	1.2	N
Pacific white-sided dolphin	North Pacific	AKA	AKC	486,719	0.04	0.5	4,867	2	2	N
Harbor porpoise	Southeast Alaska	AKA	AKC	8,156	0.04	0.5	82	3	3	N
Harbor porpoise	Gulf of Alaska	AKA	AKC	7,085	0.04	0.5	71	27	27	N
Harbor porpoise	Bering Sea	AKA	AKC	8,549	0.04	0.5	86	2	2	N
Dall's porpoise	Alaska	AKA	AKC	76,874	0.04	1.0	1,537	41	41	N
Sperm whale	Alaska	AKA	AKC	N/A	0.04	0.1	N/A	0.0	0.0	Y
Baird's beaked whale	Alaska	AKA	AKC	N/A	0.04	0.5	N/A	0.0	0.0	N
Cuvier's beaked whale	Alaska	AKA	AKC	N/A	0.04	0.5	N/A	0.0	0.0	N

Appendix C

Species	Stock Area	Region	NMFS Center	Nmin	Rmax	Fr	PBR	Total Annual Mort.	Annual Fish. Mort.	Strategic Status
Stejnerger's beaked whale	Alaska	AKA	AKC	N/A	0.04	0.5	N/A	0.0	0.0	N
Gray whale	Eastern North Pacific	AKA	AKC	21,597	0.04	1.0	432	47	4.0	N
Humpback whale	Western North Pacific	AKA	AKC	N/A	0.04	0.1	N/A	0.0	0.0	Y
Humpback whale	Central North Pacific	AKA	AKC	1,407	0.04	0.1	2.8	1.6	1.6	Y
Fin whale	N. Pacific	AKA	AKC	N/A	0.04	0.1	N/A	0.0	0.0	Y
Minke whale	Alaska	AKA	AKC	N/A	0.04	0.5	N/A	0.0	0.0	N
Northern right whale	North Pacific	AKA	AKC	N/A	0.04	0.1	N/A	0.0	0.0	Y
Bowhead whale	Western Arctic	AKA	AKC	7,738	0.04	0.5	77[1]	51	0.0	Y
Harbor seal	Western North Atlantic	ATL	NEC	28,810	0.12	1.0	1,729	476	476	N
Gray seal	Northwest North Atlantic	ATL	NEC	2,035	0.12	1.0	122	4.5	4.5	N
Harp seal	Northwest North Atlantic	ATL	NEC	N/A	N/A	N/A	N/A	0.0	0.0	N
Hooded seal	Northwest North Atlantic	ATL	NEC	N/A	N/A	N/A	N/A	0.0	0.0	N
Harbor porpoise	Gulf of Maine/Bay of Fundy	ATL	NEC	48,289	0.04	0.5	483	1,834	1,834	Y
Risso's dolphin	Western North Atlantic	ATL	NEC	11,140	0.04	0.5	111	68	68	N
Atlantic white-sided dolphin	Western North Atlantic	ATL	NEC	19,196	0.04	0.5	192	181	181	N
White-beaked dolphin	Western North Atlantic	ATL	NEC	N/A	0.04	N/A	N/A	0.0	0.0	N
Common dolphin	Western North Atlantic	ATL	NEC	3,996	0.04	0.5	40	234	234	Y
Atlantic spotted dolphin	Western North Atlantic	ATL	NEC	1,617[2]	0.04	0.5	16	22[2]	22[2]	Y
Pantropical spotted dolphin	Western North Atlantic	ATL	NEC	1,617[2]	0.04	0.5	16	22[2]	22[2]	Y
Striped dolphin	Western North Atlantic	ATL	NEC	18,220	0.04	0.45	164	47	47	N

Species	Stock Area	Region	NMFS Center	Nmin	Rmax	Fr	PBR	Total Annual Mort.	Annual Fish. Mort.	Strategic Status
Spinner dolphin	Western North Atlantic	ATL	NEC	N/A	N/A	N/A	N/A	1.0	1.0	N
Bottlenose dolphin	Western North Atlantic, offshore	ATL	NEC	8,794[3]	0.04	0.5	88	82	82	N
Bottlenose dolphin	Western North Atlantic, coastal	ATL	SEC	2,482	0.04	0.5	25	29	29	Y
Dwarf sperm whale	Western North Atlantic	ATL	NEC	N/A	0.04	N/A	N/A	0.2	0.2	Y
Pygmy sperm whale	Western North Atlantic	ATL	NEC	N/A	0.04	N/A	N/A	N/A	N/A	Y
Killer whale	Western North Atlantic	ATL	NEC	N/A	0.04	N/A	N/A	0.0	0.0	N
Pygmy killer whale	Western North Atlantic	ATL	SEC	6	0.04	0.5	0.1	0.0	0.0	N
Northern bottlenose whale	Western North Atlantic	ATL	NEC	N/A	0.04	N/A	N/A	0.0	0.0	N
Cuvier's beaked whale	Western North Atlantic	ATL	NEC	895[4]	0.04	0.5	8.9	9.7	9.7[5]	Y
Mesoplodont beaked whale	Western North Atlantic	ATL	NEC	895[4]	0.04	0.5	8.9	9.7	9.7[5]	Y
Pilot whale, long-finned (Globicephala spp.)	Western North Atlantic	ATL	NEC	4,968[6]	0.04	0.5	50	42	42[7]	N[8]
Pilot whale, short-finned	Western North Atlantic	ATL	NEC	457	0.04	0.5	3.7	42	42[7]	Y
Sperm whale	Western North Atlantic	ATL	NEC	1,617	0.04	0.1	3.2	0.2	0.2	Y
North Atlantic right whale	Western North Atlantic	ATL	NEC	295	0.025	0.1	0.4	2.7	0.4	Y
Humpback whale	Western North Atlantic	ATL	NEC	4,848	0.04	0.1	9.7	0.7	0.7	Y
Fin whale	Western North Atlantic	ATL	NEC	1,704	0.04	0.1	3.4	0.0	0.0	Y
Sei whale	Western North Atlantic	ATL	NEC	N/A	0.04	0.1	N/A	0.0	0.0	Y
Minke whale	Canadian east coast	ATL	NEC	2,053	0.04	0.5	21	2.5	2.5	N

Appendix C

Species	Stock Area	Region	NMFS Center	Nmin	Rmax	Fr	PBR	Total Annual Mort.	Annual Fish. Mort.	Strategic Status
Blue whale	Western North Atlantic	ATL	NEC	N/A	0.04	0.1	N/A	0.0	0.0	Y
Bottlenose dolphin	Gulf of Mexico, outer continental shelf	ATL	SEC	43,233	0.04	0.5	432	2.8	2.8[9]	N
Bottlenose dolphin	Gulf of Mexico, continental shelf edge and slope	ATL	SEC	4,530	0.04	0.5	45	2.8	2.8[9]	N
Bottlenose dolphin	Western Gulf of Mexico coastal	ATL	SEC	2,938	0.04	0.5	29	13	13[10,11]	N
Bottlenose dolphin	Northern Gulf of Mexico coastal	ATL	SEC	3,518	0.04	0.5	35	10	10[9]	N
Bottlenose dolphin	Eastern Gulf of Mexico coastal	ATL	SEC	8,963	0.04	0.5	90	8	8[9]	N
Bottlenose dolphin	Gulf of Mexico bay, sound, and estuarine[12]	ATL	SEC	3,934	0.04	0.5	39.7	30	30[9]	Y
Atlantic spotted dolphin	Northern Gulf of Mexico	ATL	SEC	2,255	0.04	0.5	23	1.5[2]	1.5[2]	N
Pantropical spotted dolphin	Northern Gulf of Mexico	ATL	SEC	26,510	0.04	0.5	265	1.5[2]	1.5[2]	N
Striped dolphin	Northern Gulf of Mexico	ATL	SEC	3,409	0.04	0.5	34	0.0	0.0	N
Spinner dolphin	Northern Gulf of Mexico	ATL	SEC	4,465	0.04	0.5	45	0.0	0.0	N
Rough-toothed dolphin	Northern Gulf of Mexico	ATL	SEC	660	0.04	0.5	6.6	0.0	0.0	N
Clymene dolphin	Northern Gulf of Mexico	ATL	SEC	4,120	0.04	0.5	41	0.0	0.0	N
Fraser's dolphin	Northern Gulf of Mexico	ATL	SEC	66	0.04	0.5	0.7	0.0	0.0	N
Killer whale	Northern Gulf of Mexico	ATL	SEC	197	0.04	0.5	2.0	0.0	0.0	N
False killer whale	Northern Gulf of Mexico	ATL	SEC	236	0.04	0.5	2.4	0.0	0.0	N
Pygmy killer whale	Northern Gulf of Mexico	ATL	NEC	285	0.04	0.05	2.8	0.0	0.0	N
Dwarf sperm whale	Northern Gulf of Mexico	ATL	SEC	N/A	0.04	N/A	N/A	0.0	0.0	Y

Species	Stock Area	Region	NMFS Center	Nmin	Rmax	Fr	PBR	Total Annual Mort.	Annual Fish. Mort.	Strategic Status
Pygmy sperm whale	Northern Gulf of Mexico	ATL	SEC	N/A	0.04	N/A	N/A	0.0	0.0	Y
Melon-headed whale	Northern Gulf of Mexico	ATL	SEC	2,888	0.04	0.5	29	0.0	0.0	N
Risso's dolphin	Northern Gulf of Mexico	ATL	SEC	2,199	0.04	0.5	22	19	19	N
Cuvier's beaked whale	Northern Gulf of Mexico	ATL	SEC	20	0.04	0.5	0.2	0.0	0.0	N
Blainville's beaked whale	Northern Gulf of Mexico	ATL	SEC	N/A	N/A	N/A	N/A	0.0	0.0	N
Gervais' beaked whale	Northern Gulf of Mexico	ATL	SEC	N/A	N/A	N/A	N/A	0.0	0.0	N
Pilot whale, short-finned	Northern Gulf of Mexico	ATL	SEC	186	0.04	0.5	1.9	0.3	0.3	N
Sperm whale	Northern Gulf of Mexico	ATL	SEC	411	0.04	0.1	0.8	0.0	0.0	Y
Bryde's whale	Northern Gulf of Mexico	ATL	SEC	17	0.04	0.5	0.2	0.0	0.0	N
California sea lion	U.S.	PAC	SWC	106,825	0.12	1.0	6,410	1,294	1,235	N
Guadalupe fur seal	Mexico to California	PAC	SWC	3,028	0.137	0.5	104	0.0	0.0	Y
Northern fur seal	San Miguel Island	PAC	AKC	5,018	0.086	1.0	216	2.0	2.0	N
Harbor seal	California	PAC	SWC	27,962	0.12	1.0	1,678	325	310	N
Harbor seal	Oregon/ Washington coast	PAC	AKC	25,665	0.12	1.0	1,540	231	231	N
Harbor seal	Washington inland waters	PAC	AKC	15,349	0.12	1.0	921	57	57	N
Northern elephant seal	California breeding	PAC	SWC	48,000	0.083	1.0	1,992	152	150	N
Hawaiian monk seal	Hawaii	PAC	SWC	1,441	0.07	0.1	5.0[13]	N/A	N/A	Y
Harbor porpoise	Central California	PAC	SWC	3,431	0.04	0.48	33	14	14	N
Harbor porpoise	Northern California	PAC	SWC	7,640	0.04	0.5	76	0.0	0.0	N
Harbor porpoise	Oregon/ Washington coast	PAC	AKC	22,049	0.04	0.5	220	13	13	N
Harbor porpoise	Inland Washington	PAC	AKC	2,681	0.04	0.5	27	15	15	N

Appendix C

Species	Stock Area	Region	NMFS Center	Nmin	Rmax	Fr	PBR	Total Annual Mort.	Annual Fish. Mort.	Strategic Status
Dall's porpoise	California/Oregon/ Washington	PAC	SWC	34,393	0.04	0.48	330	28	28	N
Pacific white-sided dolphin	California/Oregon/ Washington	PAC	SWC	82,939	0.04	0.48	796	13	13	N
Risso's dolphin	California/Oregon/ Washington	PAC	SWC	22,388	0.04	0.48	215	32	32	N
Bottlenose dolphin	California coastal	PAC	SWC	121	0.04	0.5	1.2	0.0	0.0	N
Bottlenose dolphin	California/Oregon/ Washington offshore	PAC	SWC	1,904	0.04	0.5	19	0.0	0.0	N
Striped dolphin	California/Oregon/ Washington	PAC	SWC	19,248	0.04	0.4	154	2.0	2.0	N
Common dolphin, short-beaked	California/Oregon/ Washington	PAC	SWC	309,717	0.04	0.5	3,097	183	183	N
Common dolphin, long-beaked	California	PAC	SWC	5,504	0.04	0.48	53	15	15	N
Northern right whale dolphin	California/Oregon/ Washington	PAC	SWC	15,080	0.04	0.5	151	50	50	N
Killer whale	Southern Resident Stock	PAC	SWC	96	0.04	1.0	1.9	0.0	0.0	N
Killer whale	California/Oregon/ Washington	PAC	SWC	436	0.04	0.4	3.5	2.0	2.0	N
Pilot whale, short-finned	California/Oregon/ Washington	PAC	SWC	741	0.04	0.48	7.1	20	20	Y
Baird's beaked whale	California/Oregon/ Washington	PAC	SWC	252	0.04	0.4	2.02	2.00	2.00	N
Mesoplodont beaked whales	California/Oregon/ Washington	PAC	SWC	1,169[14]	0.04	0.48	11[15]	5.7-7.7	5.7-7.7	N
Cuvier's beaked whale	California/Oregon/ Washington	PAC	SWC	6,070	0.04	0.5	61	29	29	N
Pygmy sperm whale	California/Oregon/ Washington	PAC	SWC	2,059	0.04	0.4	16	2.3	2.3	N
Dwarf sperm whale	California/Oregon/ Washington	PAC	SWC	N/A	0.04	0.5	N/A	0.0	0.0	N

Species	Stock Area	Region	NMFS Center	Nmin	Rmax	Fr	PBR	Total Annual Mort.	Annual Fish. Mort.	Strategic Status
Sperm whale	California to Washington	PAC	SWC	896	0.04	0.1	1.8	5	5	Y
Humpback whale	California/Mexico	PAC	SWC	563	0.04	0.1	0.5	1.16	0.5	Y
Blue whale	California/Mexico	PAC	SWC	1,463	0.04	0.1	1.5	N/A	0.0	Y
Fin whale	California to Washington	PAC	SWC	747	0.04	0.1	1.5	<1	0.0	Y
Bryde's whale	Eastern Tropical Pacific	PAC	SWC	11,163	0.04	0.5	0.2[16]	N/A	0.0	N
Sei whale	Eastern North Pacific	PAC	SWC	N/A	0.04	0.1	N/A	N/A	0.0	Y
Minke whale	California/Oregon/ Washington	PAC	SWC	122	0.04	0.4	1.0	2.0	2.0	Y
Rough-Toothed dolphin	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Risso's dolphin	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Bottlenose dolphin	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Pantropical spotted dolphin	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Spinner dolphin	Hawaii	PAC	SWC	677	0.04	0.5	6.8	N/A	N/A	N
Striped dolphin	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Melon-headed whale	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Pygmy killer whale	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
False killer whale	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Killer whale	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Pilot whale, short-finned	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Blainville's beaked whale	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Cuvier's beaked whale	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Pygmy sperm whale	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N

Appendix C

Species	Stock Area	Region	NMFS Center	Nmin	Rmax	Fr	PBR	Total Annual Mort.	Annual Fish. Mort.	Strategic Status
Dwarf sperm whale	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N
Sperm whale	Hawaii	PAC	SWC	N/A	0.04	0.1	N/A	N/A	N/A	Y
Blue whale	Hawaii	PAC	SWC	N/A	0.04	0.1	N/A	N/A	N/A	Y
Fin whale	Hawaii	PAC	SWC	N/A	0.04	0.1	N/A	N/A	N/A	Y
Bryde's whale	Hawaii	PAC	SWC	N/A	0.04	0.5	N/A	N/A	N/A	N

- The IWC subsistence quota is not affected by the calculation of PBR using the formula specified in the MMPA.

- This value includes either or both of Stenella frontalis or Stenella attenuata.

- Estimates may include sightings of the coastal form.

- This estimate includes Cuvier's beaked whales and mesoplodont beaked whales.

- This is the average mortality of beaked whales (Mesoplodon sp.) based on 5 years of observer data. This annual mortality rate includes an unknown number of Cuvier's beaked whales.

- This estimate includes both long-finned and short-finned pilot whales.

- Mortality data are not separated by species; therefore, species-specific estimates are not available. The mortality estimate represents both short- and long-finned pilot whales.

- Mortality estimates for the 1994-1995 pelagic longline fishery are not available; status may be revised when these are available.

- This value may include either or both of the Gulf of Mexico, continental shelf edge and slope and the outer continental shelf stocks of bottlenose dolphins.

- Low levels of bottlenose dolphin mortality (0-4 per year) incidental to commercial fisheries have been reported. It is unknown to which stock this mortality can be attributed.

- Estimates derived from stranded animals with signs of fishery interactions, and these could be either coastal or estuary stocks.

- This entry encompasses 33 stocks of bottlenose dolphins. All stocks are considered strategic; see the full report for information on individual stocks. The listed estimates for abundance, PBR and mortality are sums across all bays, sounds, and estuaries.

- Although the calculated PBR is 5.0, the allowable take is zero due to findings under the ESA.

- This value includes a species-specific minimum abundance estimate of 249 Blainville's beaked whales, Mesoplodon densirostris.

- This PBR includes 2.5 Blainville's beaked whales.

- This PBR has been adjusted because only 0.2% of this stock is estimated to be in U.S. waters.

Appendix D

Appendix D. Estimates of Total Incidental Dolphin Mortality for U.S. and Foreign Purse Seine Vessels in the Eastern Tropical Pacific Ocean, 1971-1995

Year	U.S. Vessels[1]	U.S. Kill[2]	Foreign Vessels[1]	Foreign Kill[3]	Total Kill[4]
1971	124	246,213	48	15,715	261,928
1972	127	368,600	58	55,078	423,678
1973	133	206,697	68	58,276	264,973
1974	135	147,437	77	27,245	174,682
1975	142	166,645	82	27,812	194,457
1976	155	108,740	94	19,482	128,222
1977	142	25,452	104	25,901	51,353
1978	101	19,366	121	11,147	30,513
1979	93	17,938	121	3,488	21,426
1980	89	15,305	132	16,665	31,970
1981	94	7,890	118	7,199	35,089
1982	89	23,267	97	5,837	29,104
1983	60	8,513	99	4,980	13,493
1984	34	17,732	91	22,980	40,712
1985	36	19,205	105	39,642	58,847
1986	34	20,692	101	112,482	133,174
1987	34	13,992	126	85,195	99,187
1988	37	19,712	95	59,215	78,927
1989	29	12,643	93	84,336	96,979
1990	29	5,083	94	47,448	52,531
1991	13	1,004	90	26,288	27,292
1992	7	431	90	15,108	15,539
1993	7	115	89	3,486	3,601
1994	7	106	75	3,989	4,095
1995	5	0	99	3,274	3,274
1996	6	0	88	2,547	2,547

[1]Data from Inter-American Tropical Tuna Commission (IATTC).
[2]Data from National Marine Fisheries Service (NMFS).
[3]Derived by subtracting U.S. data from IATTC total mortality estimates of sets made on dolphin during the period.
[4]Data for 1971-78 from NMFS; data after 1978 from IATTC using MPS method.

Appendix E

Table E-1
Marine Mammal Strandings in 1996

Species	1996				
	NE	SE	SW	NW	AK
Baleen Whales					
Blue Whale			1		
Bryde's Whale					
Fin Whale	5	2	1		
Gray Whale			13	4	
Humpback Whale	2	2	7		5
Minke Whale			1		1
Northern Right Whale	1	5			
Sei Whale					
Unidentified Whale		2	3	1	
Physeteridae					
Sperm Whale		4	1		
Dwarf Sperm Whale		1			
Pygmy Sperm Whale		12	3		
Pyg. or Dwf. Sperm Whale			2		
Beaked Whales					
Baird's Beaked Whale					
Blainville's Beaked Whale		1			
Bottlenose Whale					
Cuvier's Beaked Whale		2	2		
Gervais' Beaked Whale	1	4			
Hubbs' Beaked Whale					
Stejneger's Beaked Whale				1	
Unidentified Beaked Whale		2	1		

Table E-1 (cont'd)
Marine Mammal Strandings in 1996

Species	1996				
	NE	SE	SW	NW	AK
Monodontidae					
Beluga					110
Delphinidae					
Killer Whale			1		1
False Killer Whale		1			
Pygmy Killer Whale		2			
Melon Headed Whale		1			
Long-finned Pilot Whale	6	1		1	
Delphinidae (cont.)					
Short-finned Pilot Whale		6	1		
Unidentified Pilot Whale					
Bottlenose Dolphin	74	676	3		
Common Dolphin	5	1	30		
Fraser's Dolphin					
Atlantic White-sided Dolph	8				
Pacific White-sided Dolph.			1		
Northern Right Whale Dolph.					
Risso's Dolphin	1	2	1		
Rough-Toothed Dolphin		1			
Long-snouted Spinner			1		
Short-snouted Spinner		1			
Spinner Dolphin					
Atlantic spotted Dolphin		16			
Pantropical spotted Dolphin					
Spotted Dolphin					
Striped Dolphin	2	1	1		

Table E-1 (cont'd)
Marine Mammal Strandings in 1996

Species	1996				
	NE	SE	SW	NW	AK
Unidentified Stenella sp.		7			
Unidentified Dolphin		18	9	1	
Phocoenidae					
Dall's Porpoise			2	8	
Harbor Porpoise	68	15	18		1
Unidentified Cetacean	4		2		
TOTAL CETACEAN	**177**	**786**	**105**	**16**	**118**

Table E-1 (cont'd)
Marine Mammal Strandings in 1996

Species	1996				
	NE	SE	SW	NW	AK
Otariid (fur seals/sea lions)					
California Sea Lion			724	30	
Steller Sea Lion			10	2	14
Guadalupe Fur Seal			2		
Northern Fur Seal			12		
Unidentified otariid					
Phocids (true seals)					
Gray Seal	9				
Harbor Seal	167	8	302	109	8
Harp Seal	153				
Hooded Seal	46	1			
Hawaiian Monk Seal					
Northern Elephant Seal			240	2	1
Ringed Seal					
Unidentified phocid	6				
Unidentified pinniped			159	45	
TOTAL PINNIPED	**381**	**9**	**1449**	**188**	**23**
TOTAL MARINE MAMMALS	**558**	**795**	**1554**	**204**	**141**