Marine Mammal Protection Act of 1972

Annual Report

January 1, 1992 to December 31, 1993

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

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Northern Fur Seals on St. Paul, Pribilof Islands, Alaska

Photo by: Michael Payne, NMFS

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Executive Summary

This Annual Report to Congress regarding the administration of the Marine Mammal Protection Act (MMPA or Act) has been prepared pursuant to sections 103(f), 104(h)(3)(C), 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 the order Cetacea (whales and dolphins) and species, other than walrus, of the order Carnivora, suborder Pinnipedia (seals and sea lions). The Department of the Interior, U.S. Fish and Wildlife Service is responsible for the dugong, manatee, polar bear, sea otter, and walrus.

MMPA activities are administered through 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. The Office of Protected Resources oversees these administrative activities.

The Act, as originally enacted in 1972, places a moratorium, with few exceptions, on the taking or importing into the United States of marine mammals or their products. The Act defines the term "take" to mean "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any marine mammal." NMFS, however, may authorize the take of marine mammals for scientific research, for public display, the enhancement of survival of a species or stock, and incidental to commercial fishing and other lawful activities.

Since its original enactment, the Act has been amended and reauthorized on several occasions. Amendments to the MMPA in 1981 added two "small take" categories to the moratorium exception: (1) commercial fishing, and; (2) activities such as oil and gas exploration. In 1988, the MMPA was amended to establish a new 5-year Interim Exemption Program that authorized the take of marine mammals incidental to commercial fishing operations, the primary objective of which was to provide a mechanism that documented the extent of interactions between marine mammal and commercial fisheries while allowing commercial fishing operations to continue. Also pursuant to the 1988 amendments, a "Proposed Regime to Govern Interactions Between Marine Mammals and Commercial Fishing Operations" was submitted by NMFS to Congress in November 1992. NMFS was then directed to develop a final management regime to govern the incidental take of marine mammals by commercial fisheries, following the expiration of the Interim Exemption and effective by October 1, 1993.

This 1992/1993 Annual Report addresses several requirements pursuant to the 1988 amendments to the MMPA:

(1) the development of a new regime to govern the incidental take of marine mammals by commercial fisheries, effective following the expiration of the Interim Exemption Program and;

(2) the refinement of the permitting process to be granted for the take of marine mammals, in order to enhance the survival or recovery of a species or population. The report also describes the following activities undertaken by NMFS under the Act's authority in 1992 and 1993.

- NMFS activities regarding marine mammal interactions with commercial fisheries and other commercial activities, including, for example, implementation of the Interim Ex-

emption Program, development of NMFS' proposed regime for governing marine mammals/commercial fishery interactions, and initiation of efforts to mitigate the impact to salmon by California sea lions on the Lake Washington winter steelhead run, are described in Chapter I and Chapter II.

- The findings of marine mammal stock assessment efforts, including those assessment efforts exercised pursuant to the Interim Exemption Program, are described in Chapter III.

- Section 115 of the Act requires NMFS to develop and implement conservation programs for all depleted species or stocks. In addition, NMFS is in the process of developing guidelines for recovery programs which will ensure that the ESA (ESA) recovery plans meet the conservation plan requirements of the MMPA. Chapter IV summarizes species management actions, including status reviews, conservation and recovery plans.

- Chapter V explains the tuna-dolphin interaction issues pursuant to MMPA sections 101(a) and 104 (h), the International Dolphin-Conservation Act, the High Seas Driftnet Fisheries Enforcement Act and the Dolphin Consumer Protection Act.

- MMPA Section 101(b) provides an exemption to the Act's take moratorium when the taking of marine mammals is for subsistence purposes or for purposes of creating and selling authentic native articles of handicrafts and clothing. Chapter VI discusses the subsistence take of marine mammals pursuant to section 101(b).

- Chapter VII provides an overview of the permit program, the proposed amendments to the current program and notable permit requests, pursuant to MMPA Section 104.

- Chapter VIII discusses stranding network activity and the Marine Mammal Tissue Bank program according to sections 302, 303, 304, and 307 of the Marine Mammal Health and Stranding Response Act, which creates a new title under the MMPA.

- Chapter IX describes NMFS involvement, pursuant to MMPA section 108, in the international programs and activities that occurred during 1992 and 1993.

- Chapter X presents highlights of NMFS enforcement activities in accordance with MMPA Section 107.

- Chapter XI summarizes major legal actions involving NMFS.

- Chapter XII presents a list of publications regarding marine mammal protection issues produced by NMFS staff during 1992-1993.

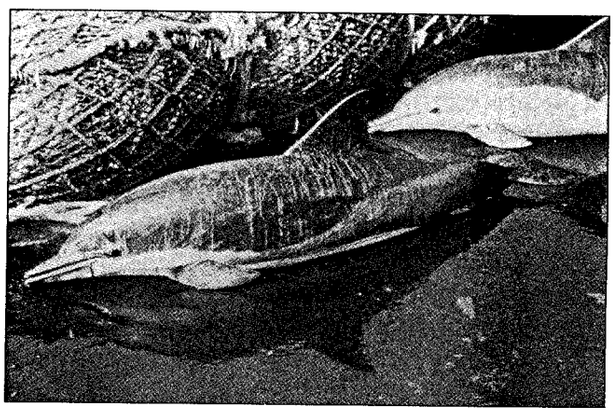
Copies of the MMPA 1992-1993 Annual Report are available from the Office of Protected Resources, National Marine Fisheries Service, 1335 East-West Highway, Silver Spring, Maryland 20910.

Chapter I. Marine Mammal Interactions With Fisheries and Other Commercial Activities

This chapter discusses NMFS' efforts to manage and reduce the incidental take of marine mammals by commercial fisheries. The importance of this issue can be measured in terms of both public concern and the allocation of NMFS resources. A major component has been focused on the development of the Interim Exemption Program, and the publication of the "Proposed Regime to Govern Marine Mammal Interactions with Commercial Fisheries," and other related activities concerning the reauthorization of the MMPA to address marine mammal-commercial fishery interactions. A general description of the Interim Exemption Program is provided, as well as a summary of marine mammal interaction data obtained from vessel logbooks and observers placed on fishing vessels.

Interim Exemption for Commercial Fisheries — Section 114 of the MMPA

The 1988 Amendments to the MMPA established a 5-year exemption program (the Interim Exemption Program) that allowed the incidental taking of marine mammals by commercial fisherman until October 1, 1993. The Interim Exemption Program was extended in September 1993, until April 1, 1994. A primary objective of the Interim Exemption Program was to provide a mechanism for obtaining data on interactions while allowing commercial fishing to continue. The Interim Exemption Program has provisions to identify fisheries (as defined by target species and/or gear type) that pose the greatest risk to marine mammals and to place observers on fishing vessels in these fisheries to monitor incidental takes. Fishermen active in those fisheries are also required to register their vessels under the Interim Exemption Program with NMFS, pay a fee, and fill out logbooks detailing what fisheries they participated in, where they fished each day, for how long, what marine mammals they interacted with, and the outcome of each interaction (whether the animals were deterred from gear, injured, or killed).



The Marine Mammal Interim Exemption Program has monitored the incidental take of marine mammals, such as this common dolphin, since 1988. *Photo credit: NMFS/FPR.*

For those marine mammal stocks that interact with fisheries, the Interim Exemption Program has resulted in a better understanding of stock size, animal distribution, and whether stocks are stable, increasing, or decreasing. Observer data have provided reliable information on where fisheries operate, how gear are fished, relative fishing effort, and the number of marine mammals taken incidentally in each fishery. Logbook data have been found to be less reliable than observer data, and their accuracy varies greatly from fishery to fishery. Data collected during the Interim Exemption Program have facilitated some mitigation experiments to reduce incidental takes, e.g., the use of "pingers" on sink gillnets in the Gulf of Maine to reduce the take of harbor porpoise. Although these experiments are still inconclusive, they are successful in the sense that they involve fishermen and biologists working cooperatively to develop methods to reduce marine mammal takes.

The Interim Exemption Program was designed to be a temporary measure for collecting data. Under the exemption, there is practically no limit to the number of marine mammals that can be taken in the course of fishing operations. The Secretary can only restrict fishing if it can be proven that this activity is having an "immediate and significant adverse impact" on a marine mammal population or stock. This authority has never been exercised, primarily because it is very difficult to attribute declines in stocks wholly to fishing operations. With the Interim Exemption Program scheduled to expire on April 1, 1994, NMFS proposed to replace the program with a long-term management regime developed to ensure the conservation and recovery of marine mammal stocks that interact with commercial fisheries.

Proposed Regime to Govern Interactions Between Marine Mammals and Commercial Fisheries

NMFS submitted its "Proposed Regime to Govern Interactions between Marine Mammals and Commercial Fishing Operations (Proposed Regime)" to Congress in November 1992. The proposed regime was developed after a three year process which began with public hearings and meetings with interested parties, and led to the issuance of two draft management regimes, and the incorporation of comments from both the environmental and fishing communities, the U.S. Fish and Wildlife Service, state agencies, Fishery Management Councils, and the Marine Mammal Commission.

The Proposed Regime offered a procedure for issuing incidental take permits to fishermen that may interact with marine mammal stocks determined to be below their Optimum Sustainable Population (OSP) level. OSP determination is a lengthy and expensive process for NMFS, as it requires data on historical and current population sizes and reproductive rates. The Proposed Regime instead uses the calculation of a Potential Biological Removal (PBR) for each marine mammal stock, using conservative default reproductive rates and best available population estimates. PBR's would then be allocated annually among groups that have authorization to take marine mammals (native Alaskans, fishermen, scientific research, public display, oil and gas, etc.).

Other provisions of the proposed regime are: (1) the authority to take small numbers of threatened and endangered marine mammals (listed under the ESA) in the course of fishing operations, (2) the consideration of all human-related activities in the assessment of impacts to marine mammals, and (3) the long-term monitoring of marine mammal stocks to ensure recovery to OSP, provided for by the continuation of observer programs and stock assessment research.

The "Negotiated Proposal"

Representatives from several fishery groups and environmental groups met in March 1993, to discuss a strategy for identifying possible amendments to the MMPA. These groups were critical of NMFS' Proposed Regime, and, thus, determined that they would develop an alternative plan for the long-term management of marine mammals. The negotiating group, as this alliance between the fishing industry and environmental community was commonly called, was composed of many of the same organizations that had put together the framework for the Interim Exemption Program for the 1988 reauthorization. The group included representatives from the following organizations: the Center for Marine Conservation, the Pacific States Marine Fisheries Commission, the Gulf of Alaska Coalition, the Northwest Indian Fishery Commission, Greenpeace, the Animal Protection Institute, the International Wildlife Coalition, the National Fisheries Institute, the Humane Society of the United States, the Alaska Groundfish Data

Bank, Trout Unlimited, Rural CAP (Alaskan Natives), and others.

The joint approach was successful in the 1988 reauthorization process, and the negotiating group was hopeful that it could negotiate an equally acceptable proposal again in 1993. The group met several times between April and June 1993 to develop specific amendments to the MMPA. All meetings were open to other interested parties, including NMFS Protected Species staff, the Marine Mammal Commission, and Congressional staff. Considerable resources and time were devoted by all participants to meet a self-imposed deadline of June 1, 1993.

The "negotiated proposal" was presented to Congress on June 10, 1993. It was signed by almost 40 groups representing nearly all members of the negotiating group (some groups refused to sign for reasons discussed below). The proposal contained several key provisions that varied from the NMFS' proposed regime. The negotiating group determined that the majority of U.S. fisheries did not have significant interactions with marine mammals, and resources should be focused on mitigating the few problem fisheries. To achieve this end, therefore, they proposed that Conservation Teams, composed of all interested parties and user groups, be formed to develop workable fishing strategies to reduce marine mammal takes for the critical stocks of marine mammals. The teams would submit Conservation Plans with agreed-upon strategies to the Secretary of Commerce, who would then implement the plans (or modify them, if needed). Tools available to mitigate interactions would include the placement of observers, registration of fishing vessels, area or seasonal closures, gear research, education and outreach to fishing communities, and any other measures the team found necessary.

Legislation

House of Representatives (H.R.) Bill 2760

H.R. 2760 was introduced on July 27, 1993, by the Committee on Merchant Marine and Fisheries (U.S. House of Representatives). The bill contained many of the important provisions of the NMFS' Proposed Regime and the negotiated proposal, such as the continued monitoring of commercial fishing impacts on marine mammals through marine mammal stock assessments, observer programs, and self-reporting of all serious injuries and lethal takes. However, the bill reversed the original intention of the MMPA by shifting the "burden of proof" from fishermen to NMFS, and allowed for a general authorization for all fisheries to take marine mammals until NMFS could prove that marine mammal stocks are being significantly impacted.

The bill would require the assessment of the status of all marine mammal stocks that interact with commercial fisheries, and the prioritization of stocks according to their level of take with regards to the calculated Potential Biological Removal. PBR's would be calculated for all critical stocks, in consultation with Scientific Working Groups composed of biologists with expertise in marine mammal biology and ecology, population dynamics and modeling, and commercial fishing technology and practices. Critical stocks were defined as those that are below or likely to be reduced below their maximum net productivity level, or whose status is unknown. It was not clear, however, how PBR's would be allocated among user groups.

For those fishermen that participate in fisheries that interact with a stock listed under the ESA, or a critical stock, the bill would require that

Conservation Teams be formed to develop a plan for reducing incidental lethal taking of marine mammals to levels below PBR, and to insignificant levels approaching zero within ten years. The bill would also establish a Pinniped-Fishery Interaction Task Force to advise NMFS on management practices regarding pinnipeds that are interacting in a dangerous or damaging manner with salmonid fishery resources. No authority to act on the advice of the Task Force was provided in the bill or under the existing authorities of the MMPA, unless the pinniped stock is at OSP.

Senate (S.) Bill 1636

S. 1636 was reviewed on November 10, 1993, by the Committee on Commerce, Science and Transportation (U.S.). It contained many of the important components of the NMFS' Proposed Regime and the negotiated proposal, yet removes commercial fishing from the general moratorium on marine mammal takes contained in the MMPA. It also shifted the burden of proof to NMFS (i.e., before fishing could be restricted, NMFS must demonstrate that takes of marine mammals, due to fishing, is causing significant harm). The bill also provided for long-term monitoring of marine mammal stocks and incidental take levels, and the continuation of the zero mortality rate goal.

Assessments would be required for all marine mammal stocks, and these assessments would include information on population abundance, stock identification, a description of commercial fishery interactions (including take levels), status of the stock with respect to OSP, a determination of the calculated acceptable removal level (similar to PBR), and classification of stocks according to take levels and status. Monitoring would be achieved through the continuation of observer programs, a requirement for fishermen to report all serious injuries and mortalities, and access to existing databases to assess fishery effort.

The bill also provided for the establishment of a Pinniped-Fishery Interaction Task Force upon receipt of an application to lethally remove individually-identifiable pinnipeds that habitually exhibit dangerous or damaging behavior, and which cannot otherwise be deterred. If the Task Force recommended approval of the lethal removal, and NMFS agreed that lethal removal was the only recourse available, NMFS would take steps to implement the removal.

Comments on the Congressional Bills to Reauthorize the MMPA

NMFS was provided comments on both bills which addressed concerns about the ability of the bills to ensure the long-term conservation and recovery of marine mammal stocks. NMFS agreed that the focus of a long-term management regime should be on those stocks that are most affected by fishery interactions. Shifting the burden of proof from the industry to NMFS, however, would change the philosophical and practical basis of the MMPA's precautionary principle for the protection of marine mammals.

NMFS was also concerned about the lack of revocable authorization to take marine mammals in the course of commercial fishing. Authorization to take marine mammals would be granted through a "general authorization" covering all commercial fisheries. There was no mechanism in the bills to allow for the revocation of an individual's authorization to take if it were found that an individual was in violation of an Incidental Take Plan or any other provisions of the MMPA.

The only recourse available to NMFS would be the regulation of the entire fishery through seasonal or area closures. At the end of 1993, these issues were still being considered.

Data Collected Under the Interim Exemption Program

Pursuant to the Interim Exemption Program, data collection with respect to marine mammal interactions and commercial fisheries continued in 1992 and 1993, through the registration and reporting requirements for commercial fishermen and the placement of observers aboard fishing vessels. The following is a summary of these interim programs:

Marine Mammal Stock Assessments Under the Interim Exemption

The 1988 amendments to the MMPA established a limited interim exemption to the moratorium on taking marine mammals so that information necessary to evaluate the impact of commercial fishing operations on marine mammal population stocks could be collected. The amendments authorized funds for observer programs to collect data regarding the extent to which marine mammals were taken in certain fishing operations and to verify similar information submitted by vessel operators. Funds were also appropriated in 1991, pursuant to the 1988 amendment, so that NMFS could initiate a major effort to assess the status of marine mammal populations that interacted with the fisheries under the Interim Exemption Program.

The primary goal of the marine mammal assessment program was to collect, through shipboard observation, data necessary to develop a permanent regime to govern interactions between marine mammals and commercial fishing operations through shipboard observation. Thus, the initial objectives of the program were to obtain minimum abundance estimates for all marine mammal populations that interact with fishing operations and to refine these estimates and collect additional information regarding populations for which interactions with fishing operations may result in a significant level of mortality and injury.

Research efforts included projects directed at single stocks of marine mammals, as well as six studies designed to obtain abundance estimates for multiple stocks, primarily of offshore cetaceans (Tables 1 and 2). The results of the marine mammal assessment program will be used to determine the status of each marine mammal population stock that interacts with commercial fishing operations. These status reviews will include mortality and injury estimates derived from observer and logbook data, and will form the basis for the permanent management regime that will replace the interim exemption for commercial fishing.

List of Fisheries

As a preliminary step to establish the exemption program, the 1988 Amendments required that the Secretary of Commerce compile a list of fisheries that interact with marine mammals and the number of vessels or persons operating in each fishery. Fisheries were then to be divided into three categories:

- Category I fisheries, in which there is frequent incidental taking of marine mammals;
- Category II fisheries, in which there is an occasional incidental taking of marine mammals; and
- Category III fisheries, in which there is a remote likelihood or no known incidental taking of marine mammals.

Table 1
Marine mammal population assessments (Pacific Oceans, Gulf of Alaska and Bering Sea) supported by funds appropriated during the interim exemption period. An "✓" indicates that fieldwork or data analyses were supported; the 1994 column indicates projects recommended in 1993 for support in 1994.

Species/Stock	1991	1992	1993	1994
Alaska Region				
Harbor porpoise	✓	✓	✓	✓
Harbor seal	✓	✓	✓	✓
Cetacean, offshore	✓	✓		
Killer whale	✓	✓	✓	✓
Spotted seal	✓	✓	✓	✓
Beluga whale			✓	✓
Northwest Region				
Harbor porpoise	✓	✓	✓	✓
Harbor seals	✓	✓	✓	✓
Cetaceans, offshore		✓	✓	✓
Southwest Region				
Humpback whale	✓	✓		
Cetaceans, offshore	✓	✓		
Multiple, stock structure - genetics		✓	✓	✓
Harbor porpoise			✓	
Bottlenose dolphin, coastal			✓	
Gray whale				✓

The fishery category determines the requirements that vessel owners/operators must meet under the Interim Exemption Program. The Amendments require the Secretary to review the list annually. Changes may be made to the list after providing opportunity for public comment. In 1992, several changes were made to the list, resulting in the identification of 13 Category I fisheries, 38 Category II fisheries, and 134 Category III fisheries. In 1993, the list was revised again, increasing the number of Category I fisheries to 14. Fisheries that are not classified as being in Category I or II are included in category III by default. Table A-1 in Appendix A presents the 1992-1993 list of Category I and Category II Fisheries. In addition, Figures 1 and 2 illustrate the percentage of Category I and Category II fisheries in 1992 and 1993, respectively.

Registration and Reporting

Under the Interim Exemption Program, vessel owners must register with NMFS, obtain an Exemption Certificate, and fulfill specified reporting requirements to legally fish in any Category I or Category II fishery. Owners of vessels engaged only in Category III fisheries are not required to register, but must report marine mammals killed incidentally.

Table 2

Marine mammal population assessments (Atlantic Ocean and Gulf of Mexico) supported by funds appropriated during the interim exemption period. An "✓" indicates that fieldwork or data analyses were supported; the 1994 column indicates projects recommended in 1993 for support in 1994.

Species/Stock	1991	1992	1993	1994
Northeast Region				
Harbor porpoise	✓	✓	✓	✓
Harbor seal		✓		
Cetaceans, offshore	✓	✓	✓	✓
Humpback whale		✓	✓	✓
Right whale		✓		
Southeast Region				
Bottlenose dolphin, Gulf of Mexico	✓	✓	✓	✓
Bottlenose dolphin, Coastal Mid-Atlantic				✓
Cetaceans, offshore, Gulf of Mexico	✓	✓	✓	✓
Cetaceans, offshore, Atlantic	✓	✓	✓	✓

Figure 1

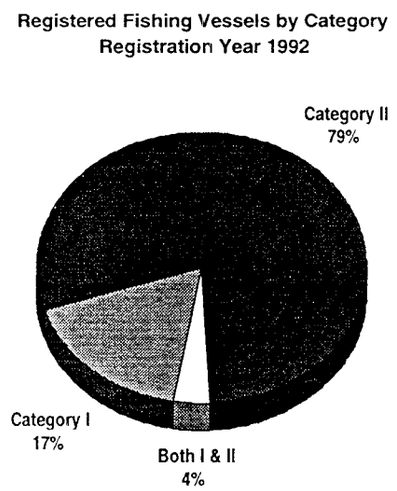
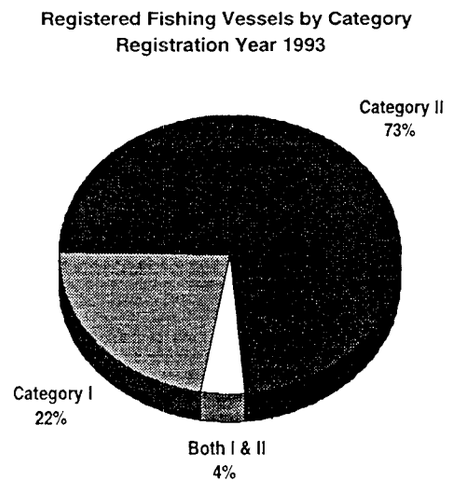


Figure 2



Vessel owners registered initially by submitting a registration form and a fee to NMFS. In return, the owner received a decal, an annual sticker, a fishing log, and exemption compliance instructions. The Exemption Certificate must be renewed each year by submitting an updated registration form, required fee, and required reports covering all Category I and II fisheries in which the vessel was registered. All registration data are entered into the Marine Mammal Exemption Program (MMEP) database which allows NMFS to analyze the number and size of fishing vessels on a nationwide basis.

In 1990, NMFS registered 15,756 vessels. The number of registered vessels declined to 12,156 in 1991. In 1992 and 1993, the number of registrants declined again to 11,310 and 8,345 fishermen, respectively. Graphic summaries of the distribution of registered vessels in 1992 and 1993, respectively, by gear type are provided in Figures 3 and 4. Figures 5 and 6 represent summaries of the distribution of 1992 and 1993 registered vessels by region, respectively.

Figure 3

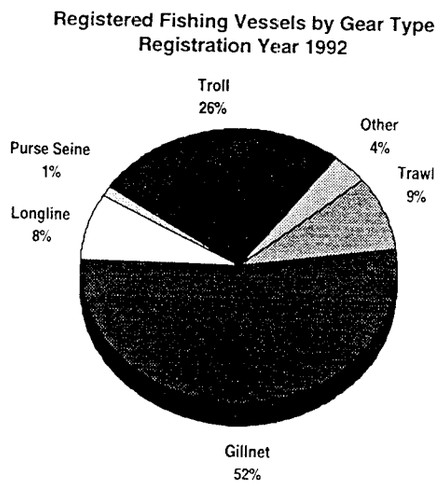
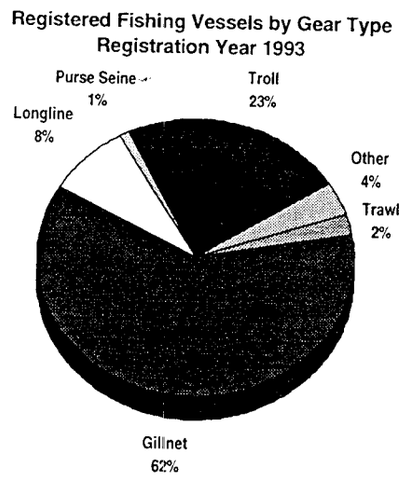


Figure 4



Exemption Certificate holders must maintain accurate daily logs of fishing effort and incidental takes of marine mammals. For each fishing day, the log should include information on: the fishery, fishing effort, and gear type; the marine mammal species or a description of the marine mammals involved if the species is not known; number, date, and location of marine mammal incidental takes; type of interaction and any injury to the marine mammal; a description efforts to deter animals by any non-lethal or lethal means; and any loss of fish or gear caused by marine mammals. A report, consisting of a copy of daily logs covering Category I and II fisheries, must be submitted annually to NMFS by December 31. Fishermen, however, are encouraged to submit log sheets at the conclusion of each fishing season or on a regular basis throughout the year.

NMFS received 11,588 log books in 1990 from vessel owners. In 1991, the number of log books received declined to 9,034. In 1992, vessel reports received dropped to 8,024. At the time of this publication, 1993 reports were still being received. Appendix B contains tables that summarize the data submitted in the log books.

Figure 5

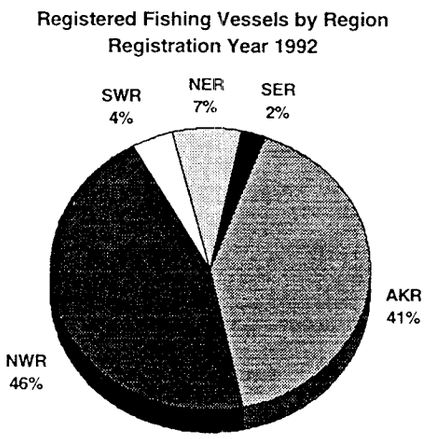
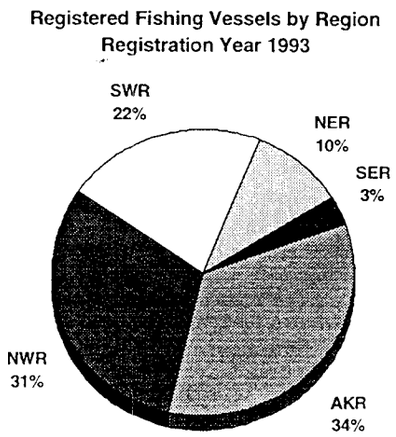


Figure 6



Observer Program

Section 114(e) of the MMPA requires the Secretary of Commerce to place observers on Category I vessels to monitor between 20 and 35 percent of the fishing operations in each fishery. The purpose of the observer program is to: (1) obtain statistically reliable information on the species and number of marine mammals incidentally taken in a fishery; (2) verify the accuracy of self-reporting by fisherman; (3) identify possible means for reducing such takes; and (4) collect other biological information on marine mammals and the marine ecosystem.

Presently, if NMFS is unable to meet the required observer coverage level in any particular year, observers must be allocated among Category I fisheries according to the following priorities:

- Those fisheries that incidentally take marine mammals from stocks designated as depleted;
- Those fisheries that incidentally take marine mammals from stocks that are declining;
- Those fisheries, other than those described above, in which the greatest incidental take of marine mammals occur; and
- Any other Category I fishery.

If observers cannot be placed on Category I vessels at the required level, NMFS should establish observation and verification programs to supplement or replace the mandated on-board observer program. Alternative observer programs may include direct observation of fishing activities from vessels, airplanes, or points on shore. If sufficient resources are available, alternative programs or voluntary observer programs may also be established in Category II and Category III fisheries for which reliable information is not otherwise available.

NMFS designed its observer program to obtain statistically reliable information on the species

and number of marine mammals incidentally taken in as many Category I fisheries as possible. The specific design of the observer program was based on the size and nature of each Category I fishery, the desired precision for mortality estimates, and the resources available. An overview of observer coverage in Category I fisheries during 1992 and 1993 and descriptions of regional observer programs are presented in the following section. Detailed analyses of 1990 and 1991 observer data are presented in separate reports.

Observer Workshop. Many of the observer programs initiated in the last 5 years were prompted by, and funded as a result of, the 1988 amendments to the MMPA. The Office of Protected Resources sponsored a 2-day workshop to discuss the challenges currently facing the observer programs and critical factors that should be considered when initiating new observer programs. The observer program workshop was held in Galveston, Texas on November 10-11, 1993, in conjunction with the Biennial Conference on the Biology of Marine Mammals.

Participants in the workshop addressed all aspects of observer programs, including:

- The mandates and authorities observer programs operate under
- The calculation of fishery effort and observer coverage
- The design of statistically reliable sampling schemes
- Observer safety and training
- Optimal placement of observers
- How data are used by resource managers
- Insurance and liability issues
- The use of contracted observers vs. in-house observer programs

A number of conclusions and recommendations were made regarding ways to increase the efficiency of observer programs while ensuring that data collected by observers are of consistently high quality and statistically reliable, and that programs remain operationally flexible and responsive to the needs of resource managers. As a result of this workshop, the participants resolved that a national network be formed to assist in the development of NMFS policies and to address the recommendations of the workshop. This "observer network" would also provide a point of contact to facilitate communication between programs and with other agencies to ensure that observer programs meet the growing demands for more information about the biological impacts of U.S. fisheries on marine mammal populations.

Marine Mammal Take Estimates Based on Data Collected in Observer Programs and Interim Exemption Programs

Northeast Region

The Northeast Fisheries Science Center (NEFSC) Observer Program was initiated in 1989. It has expanded under the MMPA to cover several northeast fisheries that take protected species, including the Gulf of Maine sink-and Mid-Atlantic coastal gillnet fisheries; pelagic drift gillnet fisheries; the pelagic pair trawl; and pelagic longline fisheries. In 1992, approximately 1,200 trips totalling 1,900 sea days were completed in these fisheries (Table 2); in 1993, there were 837 trips and 1594 sea days coverage for these fisheries (Table 3).

The following marine mammal incidental takes (by fishery) were recorded in 1992 by observers in the northeast. Unless otherwise stated, one take equals one mortality:

Table 2
Northeast Region 1992 Monthly Domestic Observer Coverage by Fishery.

	Sink Gillnet		Pelagic Drift Gillnet		Pelagic Pair Trawl		Pelagic Longline		Totals for Month	
Months	# OF TRIPS	# OBS DAYS	# OF TRIPS	# OBS DAYS	# OF TRIPS	# OBS DAYS	# OF TRIPS	# OBS DAYS	# OF TRIPS	# OBS DAYS
JAN	37	47	1	8	-	-	-	-	38	55
FEB	21	31	1	13	-	-	1	1	23	45
MAR	30	45	2	29	-	-	-	-	32	74
APR	105	127	2	30	-	-	5	5	112	162
MAY	153	170	-	-	-	-	2	21	155	191
JUN	158	190	-	-	-	-	-	-	158	190
JUL	155	166	9	81	-	-	3	81	167	328
AUG	136	171	3	10	-	-	1	35	140	216
SEP	103	123	-	-	-	-	2	11	105	134
OCT	71	78	-	-	3	28	4	65	78	171
NOV	140	159	-	-	6	39	2	65	148	263
DEC	81	93	-	-	-	-	1	16	82	109
TOTAL FOR YEAR	1190	1400	18	171	9	67	21	300	1238	1938
									Totals for Year for all Fisheries	

- **Sink gillnet fishery (1190 trips, 1400 sea days).** 61 harbor porpoises (*Phocoena phocoena*), 24 harbor seals (*Phoca vitulina*), 8 Atlantic whitesided dolphins (*Lagenorhynchus acutus*), 2 saddleback/common dolphins (*Delphinus delphis*), 1 unidentified dolphin, 1 severely decomposed marine mammal, and 1 minke whale (*Balaenoptera acutorostrata*) released alive.

- **Pelagic drift gillnet fishery (18 trips, 171 sea days).** 99 saddleback/common dolphins (one released alive uninjured and one released alive with severe injuries), 15 Risso's dolphins (*Grampus griseus*), 15 pilot whales (*Globicephala* sp) (one moderately injured), 12 spotted dolphins, 12 bottlenose dolphins (*Tursiops truncatus*), 1 spinner dolphin (*Stenella longirostris*), and 1 unidentified beaked whale.

- **Pelagic pair trawl fishery (9 trips, 67 sea days).** 4 bottlenose dolphins, 4 unidentified dolphins (one released alive), 3 saddleback dolphins, and 1 Risso's dolphin.

- **Pelagic longline fishery (21 trips, 300 days).** 10 pilot whales and 2 unidentified dolphins. Nine of the pilot whales were released alive, two of which were noticeably injured. Both dolphins were released alive.

Table 3
Northeast Region 1993 Monthly Domestic Observer Coverage by Fishery.

	Sink Gillnet		Pelagic Drift Gillnet		Pelagic Pair Trawl		Pelagic Longline		Totals for Month	
Months	# OF TRIPS	# OBS DAYS	# OF TRIPS	# OBS DAYS	# OF TRIPS	# OBS DAYS	# OF TRIPS	# OBS DAYS	# OF TRIPS	# OBS DAYS
JAN	21	27	1	25	-	-	2	21	24	73
FEB	11	14	1	18	-	-	3	40	15	72
MAR	36	44	1	10	-	-	3	10	40	64
APR	93	99	-	-	-	-	-	-	93	99
MAY	156	176	-	-	-	-	1	16	157	192
JUN	37	47	1	19	1	16	2	29	41	111
JUL	35	44	6	81	2	21	1	4	47	155
AUG	76	81	-	-	7	50	9	119	92	250
SEP	27	45	-	-	4	29	2	18	38	97
OCT	97	110	-	-	4	35	5	69	110	218
NOV	106	115	-	-	-	-	6	61	118	182
DEC	58	67	-	-	-	-	2	12	62	81
TOTAL FOR YEAR	753	869	10	153	18	151	36	399	837	1594
									Totals for Year for all Fisheries	

The following marine mammal incidental takes (dead unless otherwise noted) were recorded in 1993 by fishery:

- **Sink gillnet fishery (753 trips, 869 sea days).** 53 harbor porpoises, 23 harbor seals 7 Atlantic whitesided dolphins, 3 unidentified seals, 2 gray seals (*Halichoerus grypus*), 1 bottlenose dolphin, and 1 unidentified dolphin.

- **Pelagic drift gillnet fishery (10 trips, 153 sea days).** 116 saddleback/common dolphins (three released alive with injuries), 13 striped dolphins (*Stenella coeruleoalba*), 11 pilot whales (one released alive), 6 bottlenose dolphins, 2 whitesided dolphins, 2 Risso's dolphins, 2 True's beaked whales (*Mesoplodon mirus*), 1 harbor porpoise, 1 Sowerby's beaked whale (*Mesoplodon bidens*), 1 goosebeaked whale (*Ziphius cavirostris*), 1 unidentified beaked whale, 1 humpback whale (*Megaptera novaeangliae*), and 1 right whale (*Eubalaena glacialis*) released alive and injured.

- **Pelagic pair trawl fishery (18 trips, 151 sea days).** 17 bottlenose dolphins, 6 saddleback/common dolphins, and 5 pilot whales.

- **Pelagic longline fishery (36 trips, 399 days).** 15 pilot whales released alive, 1 bottlenose dolphin released alive, 1 Risso's dolphin released alive, and 1 Atlantic spotted dolphin (*Stenella plagiodon*) released alive.

Mid-Atlantic Coastal Gillnet (20 trips, 22 observer days). In addition to those fisheries listed in Table 3, observer coverage was expanded in 1993 (as mentioned above) to include the Mid-Atlantic coastal gillnet fishery. Coverage began in July 1993 with the highest observer effort occurring between September and November. There have been no incidental takes to date in this fishery.

Southeast Region

The Southeast Fisheries Science Center (SEFSC) began its pelagic longline fleet observer program in early 1992, sampling approximately 5 percent of the U.S. commercial longline fishery effort in the Atlantic Ocean and Gulf of Mexico. Pelagic longline fleet observers spent 1,269 days at sea and observed 719 sets between April 1992 and December 1993. Observed fishing effort was recorded as the total number of hooks set; 80,426 hooks were set in 1992, and in 1993, 356,353 hooks were set. According to observer reports, 2 Risso's dolphin 2 pilot whales. were incidentally caught on longlines in 1992, and all were released alive. Three Risso's Dolphins and 1 pilot whale sp. takes were recorded in 1993. All were released alive, with the exception of 1 Risso's dolphin, the carcass of which was not recovered.

Southwest Region

Hawaii. All commercial fisheries in Hawaii and the western Pacific are classified as Category III under the Interim Exemption Program. In response to the rapid growth of the Hawaiian longline fishery and the resultant increase in incidental take of protected species, a mandatory Federal fishing logbook system and a voluntary observer program were implemented in 1990 to document interactions between longline vessels and protected species. Observer programs for these fisheries are authorized under the Magnuson Fishery Conservation and Management Act.

Voluntary observers were placed on longline vessels operating out of Hawaii in 1992 and 1993. Observer data from this fishery have indicated a rate of incidental take of sea turtles and marine mammals higher than that reported by the logbook program. Since the closure of the Protected Species Zone to longline fishing in the Northwestern Hawaiian Islands (NWHI), there has been no confirmed evidence of fisheries interactions with Hawaiian monk seals (*Monachus schauinslandi*) as was observed in 1990 and 1991. Between January 1992 and September 1993, ten small cetaceans (i.e., dolphin sp.) were reported in the logbook data as incidental takes in this fishery. A mandatory observer program under the Fishery Management Plan for Pelagic Fisheries in the Western Pacific Region (Pelagics FMP) for the NWHI's longline fishery was implemented in 1993 and will begin placing observers on longline boats in February 1994.

In order to monitor interactions with bottlenose dolphins and Hawaiian monk seals, the mandatory observer program for the NWHI bottomfish fishery continued in 1992 and 1993. Observers were placed on 23 of 137 reported bottomfish trips to the NWHI between January 1992 and December 1993. Observers reported that depredation and loss of catch from Hawaiian monk seals and bottlenose dolphins occurred on 12 of 23 observed trips. There were no observer reports of mortality or injury to seals or dolphins and no information on marine mammal/fishery interactions from the State of Hawaii's logbook system.

After June 2, 1993, all captains and relief captains of vessels intending to fish for bottomfish in the Maui Zone of the NWHI, as well as the limited entry Ho'omalu Zone, were required to complete a protected species workshop conducted by the NMFS before a permit was issued or renewed. This requirement was published in the *Federal Register* on May 3, 1993, and a notice was sent to all Maui Zone permit holders and

vessel operators notifying them of the dates of scheduled workshops. By December 1993, 25 Maui Zone bottomfish vessel operators had completed the required protected species workshop conducted by NMFS.

California. During the late 1970s and early 1980s, there was a rapid expansion in the use of entangling nets (setnet fishery for California halibut and Pacific angel shark, and driftnet fishery for shark and swordfish) in coastal California waters. The incidental kill of many non-target species, including marine mammals, with these nets became a focus of concern for state and national environmental and legislative bodies.

The NMFS Southwest Region has managed the drift and set gillnet fishery observer programs since July 1990 and estimated the number of marine mammals killed in California gillnet fisheries based on observations made by observers or biological technicians placed aboard commercial fishing vessels. All observers are hired as direct Federal employees and receive three weeks of formal training. In the set gillnet observer program, five port field stations have been established in central and southern California. Local port coordinators monitor boat movement and arrange placements for set gillnet observers. Observers are assigned to each station and usually observe boats only departing from that port. Boats that are too small or unsafe for observers are observed from one of two seagoing alternative platforms. Set gillnet trips usually last one day and the season is open all year. In contrast, most activity in the drift gillnet fishery occurs between August 15 and January 31. A drift gillnet coordinator monitors boat activity and determines placement of observers. Port coordinators assist by tracking boat movement. Drift gillnet trips usually last from 6 to 20 days.

The NMFS Southwest Region continued the implementation of its marine mammal observer program for California's Category I fisheries in 1992 and 1993. Four Category I fisheries were active in California in 1992 and 1993: (1) thresher shark and swordfish drift gillnet; (2) angel shark set gillnet; (3) California halibut set gillnet; and (4) soupfin shark, yellowtail, and white seabass set gillnet. Set gillnetting for white croaker, bonito, and flying fish remained as Category II fisheries during this period.

The NMFS Southwest Region contracts with the California Department of Fish and Game to estimate the level of fishing effort in the drift and set gillnet fisheries. This information is used to extrapolate observed marine mammal mortality to total estimated mortality by Category I gillnet fisheries. The overall observer coverage rates for both the setnet and driftnet fisheries was 13 percent in 1972 and 13-15 percent in 1993; however, in some areas they had coverage of less than 8 percent. For 1992, the estimated incidental mortalities (with their associated standard errors in parentheses) of marine mammals for the set gillnet and drift gillnet fisheries are listed in Table 4.

Northwest Region

Washington, Oregon. The NMFS Northwest Regional Office conducted MMPA observer programs in four salmonid fisheries in 1992/93. Three salmon gillnet fisheries (lower Columbia River, Willapa Bay and Grays Harbor) were monitored in cooperation with the Pacific States Marine Fisheries Commission, the Washington Department of Wildlife and the Oregon Department of Fish and Wildlife. Monitoring of the Treaty Indian fisheries in Grays Harbor was conducted in cooperation with the Quinault Tribe. The salmon set gillnet fishery off the north coast of Washington was monitored in cooperation with the Makah Tribe. Observers in all of these fisheries collected data on the nature and extent of marine mammal interactions and mortalities.

Table 4
Estimated Total California Gillnet Fishery Marine Mammal Mortality.

Species	Set Gillnet Fishery	Drift Gillnet Fishery
Unidentified Cetacean	7 (0.00125)	15 (9.8)
Unidentified Delphinid	0	8 (7)
Common Dolphin	17 (11.4)	356 (66.1)
Harbor Porpoise	44 (20.6)	0
Cuvier's Beaked Whale	0	45 (16.5)
Risso's Dolphin	0	38 (18.2)
Pacific White-Sided Dolphin	0	23 (15.8)
Mesoplodont Beaked Whale	0	23 (12.0)
Unidentified Beaked Whales	0	23 (12.1)
Bottlenose Dolphin	0	23 (21.1)
Northern Right Whale Dolphin	0	15 (9.8)
Dall's Porpoise	0	8 (7.0)
Short-Finned Pilot Whales	0	8 (7)
Sperm Whales	0	8 (7)
Unidentified Pinniped	59 (25.6)	0
California Sea Lion	3255 (848.9)	68 (23.0)
Unidentified Sea Lion	63 (21.9)	0
Harbor Seal	1136 (484.4)	0
Northern Elephant Seal	51 (17.8)	114 (27.1)
Steller Sea Lion	0	8 (7)

The incidental take of harbor porpoise in the Northern Washington marine set-net fishery was monitored annually from June through September 1992-1993. The estimated take has dropped substantially since 1988 (n=102) when this fishery was first monitored: 1989 (23), 1990 (13), 1991 (15), 1992 (2), and 1993 (0). This decline is attributed primarily to a dramatic reduction in fishing effort for chinook salmon by the Makah Tribe due to the low abundance of chinook salmon in recent years. Ten harbor seal mortalities were observed during the 1992 marine set-net fishing season. Following 1992 the Northern Washington Marine Set-Net Fishery was redefined and that portion of the fishery found in inside waters (inside the entrance to the Strait of Juan de Fuca) was combined with an adjacent Category II fishery. There was no observed fishing effort in the remaining Category I fishery (in coastal waters) in 1993. The following marine mammal incidental mortalities (by fishery) were recorded by observers in Category I fisheries under the Marine Mammal Exemption Program in the Northwest Region.

Lower Columbia River Drift Gillnet. For 1545 drifts observed in 1992; 15 harbor seals and 3 California sea lions (*Zalophus californianus*). For 727

drifts observed in 1993; 1 harbor seal mortality was observed.

Willapa Bay Drift Gillnet. For 576 drifts observed in 1992; no marine mammal mortalities were observed. For 452 drifts observed in 1993; no marine mammal mortalities were observed.

Grays Harbor Drift Gillnet. For 307 drifts observed in 1992; 1 harbor seal mortality was observed. For 241 drifts observed in 1993; 1 harbor seal mortality was observed.

Alaska Region

NMFS observers placed on vessels in the domestic groundfish fisheries in the Alaskan Exclusive Economic Zone during 1992 and 1993 reported the number of marine mammals caught in trawl, longline, and pot fishing gear. A total of 44 marine mammals of 8 species were observed to have died incidental to fishing operations in 1992; 15 of these observed animals were Steller sea lions (*Eumetopias jubatus*). A total of 23 Steller sea lions was estimated to have died incidental to trawl fishing operations in these fisheries during 1992. This was higher than the total estimated incidental mortality of 16 Steller sea lions for each year during 1990-1991 in domestic groundfish trawl fisheries in Alaska. As of January 1994, returning observers had reported that 5 Steller sea lions had died incidental to trawl fishing operations during 1993, which indicates that the estimated total incidental mortality level for 1993 will be lower than that for 1992 (final estimates of incidental take for 1993 will not be available until late 1994). Eight sea otters and one harbor seal died in pot fishing gear in the Bering Sea in 1992, which was the only year such incidental takes are known to have occurred. (See Appendix B.)

Chapter II. Marine Mammal Interactions With Human Activities Other Than Commercial Fisheries

California Sea Lion/Steelhead Conflict

Commonly referred to as the "Herschel" problem, California sea lion predation on a depressed wild run of winter steelhead salmon returning to the Lake Washington drainage in Seattle, Washington, continues to adversely impact the run. Studies initiated in 1991 with a focus on potential means to enhance steelhead passage resumed during 1992. For example, based on the recommendations of an interagency technical committee, studies designed to assess the effects of the salinity gradient between fishway attraction water and the water below the dam continued; analysis of the data collected is underway. Periodic observations conducted during the course of the 1991/1992 run verified that the incidence of predation was comparable to that observed in previous years (60 percent predation). Additionally, although stream surveys in the Cedar River and other tributaries to Lake Washington documented that 599 of an estimated 1442 returning steelhead escaped to spawn, such a return is far from the escapement goal of 1600 wild steelhead for this system.

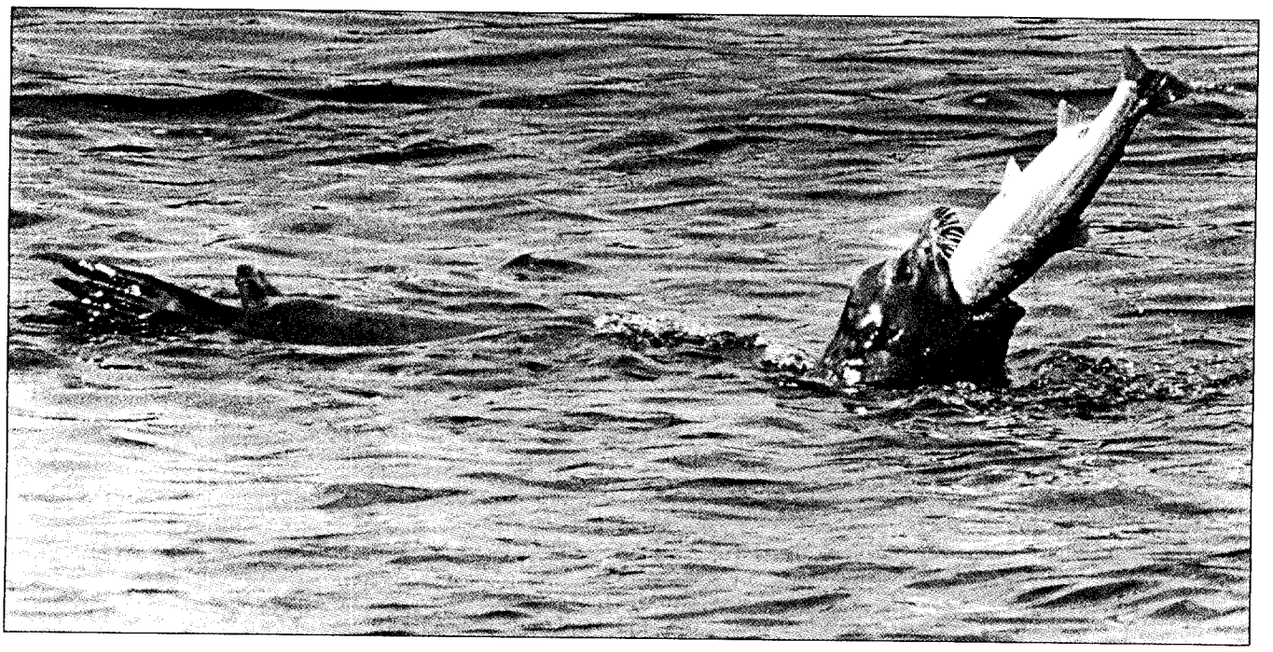
During the 1992/1993 winter run, experiments with an "acoustic barrier" were initiated. The acoustic barrier consisted of an array of underwater sound transducers which, when activated, created a high decibel sound intended to create an ensonified avoidance zone extending downstream approximately 200 yards from the entrance to the fish ladder to discourage the presence of predators. Limited testing of the underwater sound devices produced inconclusive results in 1992. Within three days of activation, however, one sea lion was observed foraging and taking steelhead near the entrance to the fishway. This animal was identified as one of the "habitual offenders" — sea lions that return each year and prey extensively on steelhead and quickly learn to avoid or tolerate deterrence efforts. Plans were implemented in December 1993, to re-test the devices beginning in January 1994, through the end of the 1993/1994 run (through April 1994).

Efforts to mitigate the impact to salmon by California sea lions on the Lake Washington winter steelhead run proceeded at the Ballard Locks during the winter and spring of 1993. Although the acoustic harassment devices appeared to initially keep sea lions away from the primary foraging areas, some individuals penetrated the acoustic barrier and did not appear bothered by the sound. Overall, results from the 1993 trials were inconclusive due to the low number of returning steelhead and logistical problems. Depredation of the few returning adult fish continued, and the escapement of wild steelhead for the 1993 season was estimated at 184 fish, the lowest count on record.

The low steelhead escapement during the 1993 season raised concerns and public outcry about the possible need to list the winter run under the ESA to provide further protection for this species. In an effort to reduce the conflict at the Ballard Locks, the Washington State congressional delegation formed an advisory committee to plan an interim program to protect returning adult steelhead in the 1993-1994 winter run from sea lion predation at the Ballard Locks. The success of this program will be evaluated after the 1993-1994 season.

Monterey Breakwater Restoration

Under section 109(h)(1)(C) of the MMPA, Federal, State, or local government officials, or their designee, may non-lethally remove "nuisance" marine mammals. In the fall of 1993, the U.S. Army Corps of Engineers (ACOE) conducted operations and maintenance repair of the



California sea lion (*Zalophus californianus*) eating salmon at Lake Washington Drainage, Seattle, WA. *Photo credit: Grant M. Haller, Lynnwood, WA.*

Monterey Harbor Breakwater in Monterey, California. Construction consisted of the unloading and deposition of rock material from barges. Due to the large number of California sea lions that haul out on this breakwater (up to 2,000 individuals), ACOE needed authority to temporarily move the animals off the breakwater and out of the way of construction activities. Because of the low level of "harassment" the sea lions would incur when removed from the breakwater and the healthy status of the California sea lion population, NMFS concurred with ACOE's determination that section 109(h)(1)(C) of the MMPA authorizes it to intentionally, but humanely, harass California sea lions hauled out on the breakwater.

To facilitate the most humane methods for removal of nuisance California sea lions, ACOE developed a plan to educate the construction workers about protected marine resources. In addition, a mitigation plan was developed to minimize anthropogenic disturbance to wildlife. The mitigation plan outlined procedures to be used for the removal of sea lions from the breakwater, including (in order of use): the approach of the rock barge, herding boards, loud noises, use of bull poles, use of noose poles, and seal bombs. The plan also included reporting procedures.

The ACOE contracted NMFS-approved biological technicians to implement the plans during breakwater repair and construction activities. Biological technicians needed to move animals on only ten occasions, which was achieved by human presence (holding a bull pole) and noise. No animals were injured, and the sea lions appeared to adjust fairly easily to the construction activities, e.g., sea lions would redistribute themselves daily on the breakwater and away from construction areas. The final report on the Monterey Breakwater Repair and Effects of Wildlife concluded that, although California sea lions were affected, primarily early on in construction, the impacts to them were negligible.

Chapter III. Marine Mammal Stock Assessments

Management decisions regarding marine mammals require the best possible data on abundance, population trends, distribution, and structure of species and stocks. NMFS, therefore, actively engages in stock assessment research. NMFS also undertakes projects to enhance the techniques used to evaluate population parameters (e.g., abundance, trends, distribution). Stock assessment activities are implemented by staff in the Regional Offices and Fishery Science Centers and through contracts and grants.

Several procedures have been used to attain data for stock assessments, including aerial surveys, ship surveys, physical tagging, radio and satellite tagging, photo-identification, and tissue and blood sampling. Aerial and ship surveys are used to develop abundance estimates and are often implemented by shipboard observers pursuant to the interim exemption program. When counts at haulouts are taken, aerial surveys are sometimes combined with radio tagging to correct for the proportion of the population that remains in the water. Tagging and photo-identification methods focus on migration, feeding, and other behavioral characteristics. Researchers use tissue and blood samples to analyze migration, feeding behavior, and anthropogenic contaminants that could adversely affect the species.

This chapter summarizes 1992 and 1993 stock assessment activities and findings for all stocks covered by NMFS assessment surveys, including those stocks covered by the Interim Exemption Program.

Dolphin Stocks (Eastern Tropical Pacific)

Since the passage of the MMPA, approximately 1.32 million dolphins have been killed incidentally during purse-seine fishing operations for yellowfin tuna in the eastern tropical pacific (ETP) see Appendix C. The three species of pelagic dolphins primarily involved in this fisheries interaction are the spotted dolphin, spinner dolphin and common dolphin. The striped dolphin is also taken, but in much smaller numbers.

In response to the level of dolphin take, the U.S. Congress directed NMFS, in 1984, to undertake studies that would provide information on the status of ETP dolphin stocks. These studies were initiated by the Southwest Fisheries Science Center (SWFSC) in 1986, after extensive planning and program review. In 1992, the SWFSC convened a workshop to review the status of dolphin stocks in the ETP. To obtain the necessary data required for assessing the status of dolphin stocks, eight surveys have been completed to date: Monitoring of Porpoise Stocks (MOPS) (1986-1990), California Marine Mammal Survey (CAMMS) (1991), and Population of *Delphinus* Stocks (PODS) (1992-1993).

Reliable abundance estimates have been calculated for most of the stocks of spotted, spinner, and striped dolphins; however, abundance estimates for common dolphins are not considered very reliable because of the limited number of sightings during the MOPS surveys (Table 5). Although the power of the test statistic was low, no trends in abundance have yet been detected for ETP dolphins when using the MOPS data. Therefore, the panel recommended that the 1992 and 1993 PODS surveys be designed to improve the estimates of common dolphin abundance.

Research vessel data from these surveys have been used to estimate minimum abundance for the purpose of setting absolute quotas on mortality for individual stocks, as has been proposed by the Inter-American Tropical Tuna Commission (IATTC) resolution. In addition, the IATTC Resolution was adopted during its Special Meeting held

Table 5

Abundance estimates (N) (in thousands of animals) for eastern tropical Pacific cetaceans based on 5 years of line transect research vessel surveys (MOPS). The coefficient of variation (CV) is given along with the upper (N-UP) and lower (N-L) 95 percent bootstrap confidence limits.

Species/Stock	N	CV	N-UP	N-L
Stenella attenuata				
Northern spotted dolphin	730.9	0.142	588.7	970.4
Western/southern spotted dolphin	1298.4	0.150	978.7	1654.1
Coastal spotted dolphin	29.8	0.346	15.1	50.8
Stenella longirostris				
Eastern spinner dolphin	631.8	0.238	389.5	938.3
Whitebelly spinner dolphin	1019.3	0.187	694.4	1456.2
Stenella coeruleoalba				
Striped dolphin	1918.0	0.112	1531.8	2249.3
Delphinus delphis				
Northern common dolphin	476.3	0.367	200.6	807.3
Central common dolphin	406.1	0.383	200.3	766.0
Southern common dolphin	2210.9	0.217	1536.6	3488.2
Lagenorhynchus obliquidens				
Pacific white-sided dolphin	289.3	0.335	138.0	508.1
Tursiops truncatus				
Bottlenose dolphin	243.5	0.286	190.9	409.9
Grampus griseus				
Risso's dolphin	175.8	0.381	90.0	375.4
Steno bredanensis				
Rough-toothed dolphin	145.9	0.320	89.4	256.8
Globicephala spp.				
Pilot whale	160.2	0.138	112.3	198.4
Peponocephala electra				
Melon-headed whale	45.4	0.467	34.2	110.3
Feresa attenuata				
Pygmy killer whale	38.9	0.305	18.5	63.1
Pseudorca crassidens				
False killer whale	39.8	0.636	11.5	109.5
Orcinus orca				
Killer whale	8.5	0.368	4.7	15.9
Ziphius cavirostris				
Cuiver's beaked whale	20.0	0.265	13.8	34.5

Table 5 (cont'd)
Abundance estimates (N) (in thousands of animals) for eastern tropical Pacific cetaceans based on 5 years of line transect research vessel surveys (MOPS). The coefficient of variation (CV) is given along with the upper (N-UP) and lower (N-L) 95 percent bootstrap confidence limits.

Species/Stock	N	CV	N-UP	N-L
Mesoplodon spp.				
All Mesoplodon species	25.3	0.195	17.4	34.4
Physeter macrocephalus				
Sperm whale	22.7	0.224	14.8	34.6
Kogia simus				
Dwarf sperm whale	11.2	0.294	7.7	16.2
Balaenoptera musculus				
Blue whale	1.4	0.243	1.1	2.5
Balaenoptera edeni				
Bryde's whale	13.0	0.202	8.9	19.9

in La Jolla, California, on April 21-23, 1992, to support a multilateral program to reduce 'nd possibly eliminate dolphin mortality in the fishery.

During the 1992 and 1993 PODS surveys, the NMFS scientists were responsible for collecting information on the density, size and species composition of all marine mammal pods encountered. The 1992 survey was designed to concentrate in the area inhabited by the central stock of common dolphins in order to make a reliable estimate of absolute abundance for this stock. The 1993 PODS survey was focused off the Pacific coast of Mexico and California, and in the Gulf of California. This survey was designed to collect data required to make minimum abundance estimates of the two forms of the northern common dolphin which recent information indicates are probably distinct species. In California, the distribution of both forms are likely to be continuous with animals to the south along Baja California, and possibly extending south into the eastern tropical Pacific.

Harbor Porpoise

Harbor Porpoise (West Coast and Alaska)

Movement of the harbor porpoise on the U.S. west coast appears limited, which suggests that harbor porpoise of central California, frequently taken incidental to the set gill net fisheries, should be managed as a separate stock. New harbor porpoise population estimates have been made based on aerial surveys conducted in 1988-1991 with correction factors accounting for the number of animals submerged or missed during a survey. During this 1992-1993 period, the population size is estimated to be 3,810 (CV=0.24) in central California and 13,900 (CV=0.21) for the entire state of California (Table 7). Minimum population sizes are estimated from bootstrap lower 95th percentiles to be 2,481 for central California and 9,571 for California as a whole, however, there is no information on population trends or growth rates in this area.

The status of the central California population relative to carrying capacity or OSP is unknown, but the population has more than likely been reduced by fishery mortality. In the early 1980s, porpoise mortality in set gillnet fisheries for halibut in central California was in excess of 200 harbor porpoise per year; mortality estimates since 1987 indicate less than 100 taken per year.

In August 1992, in collaboration with Cascadia Research Collective, NMFS/National Marine Mammal Laboratory (NMML) scientists conducted a population calibration study, using a team of shore-based observers to track porpoise groups which were being observed concurrently from an aircraft. The resulting data from this study allowed the estimation of a correction factor and, thus, the adjustment of population estimates for the number of harbor porpoise missed along the aerial trackline.

This empirically derived factor (CF = 3.1, SE = 0.048) has been applied to 1990-91 abundance estimates for the waters of Northern California (Crescent City) north to Southern British Columbia (Northern Puget Sound and the Strait of Juan de Fuca). The corrected estimate of the minimum population size (lower 95 percent confidence interval) for the outer coast (Oregon and Washington) is 16,700 (CV = 0.21) while the inside waters of Washington and British Columbia (Strait of Juan de Fuca and Puget Sound) is 2,700 (CV = .27). No harbor porpoise were seen during surveys in Southern Puget Sound (South of Whidbey Island) which supports the suggestion that harbor porpoise are uncommon to this area of the Sound.

Two studies that began in 1990, pertaining to harbor porpoise stock discrimination, continued during 1992-93. Skin samples from 81 harbor porpoise, collected from California to Alaska, were analyzed at SWFSC using standardized mitochondrial DNA (mtDNA) and Polymerase Chain Reaction (PCR) sequencing techniques. Thus far, results indicate that two distinct groupings of haplotypes were found for the northeast Pacific harbor porpoise, but there was no evidence of any geographic separation. One possibility is that two allopatric populations existed in the geologic past, possibly separated by ice, and are currently mixing and interbreeding. More sensitive techniques are being developed which could provide information on the existence of recent geographic boundaries that may delineate stocks. A second study, measuring organochlorine pollutant residue levels in the blubber of harbor porpoise, was also continued in 1992 and 1993 with the collection of blubber from stranded and incidentally caught harbor porpoise along the Pacific coast. Results from the laboratory analysis of these samples are currently being assessed.

Harbor Porpoise (Northeast)

In 1992 and 1993, the NEFSC conducted studies to determine the population size, distribution and habitat preferences, by-catch, life history parameter values, food habits, and population growth rate of harbor porpoise. In addition, the NEFSC assisted in developing by-catch reduction methods. To summarize some of these data, a workshop was convened in May 1992 to evaluate the status of the population and determine future research needs. A similar workshop is proposed for February 1994.

The population size estimate was made using data from shipboard surveys in 1991 and 1992. To test survey methodology, an experimental ship survey was conducted in 1993 which also tested a computerized data entry system. The best estimate of the harbor porpoise population is 47,200 animals (95 percent confidence interval is 39,500 to 70,600). To investigate seasonal distribution patterns, aerial surveys were performed during December 1992, February, April, November and December 1993; in addition, periodically during 1992 and 1993, observers on NOAA fish surveys performed dedicated marine mammal sighting surveys. Habitat studies were conducted

during April, May, June 1992 and September 1993 in Penobscot and Blue Hill Bays, Maine.

Annual by-catch estimates were made using data collected from the Sea Sampling and Weighout Programs. The estimated 1992 by-catch from the Gulf of Maine sink gill net fishery is 900 (95 percent confidence interval 700 to 1200). The 1993 by-catch estimate will be available by mid-1994.

Food habits and life history parameter values, such as age of first reproduction, age and sex distribution and pregnancy rate, were estimated from the necropsies of 44 harbor porpoises that were incidently caught in the Gulf of Maine sink gill net fishery. Two necropsy sessions were held, one in 1992 and one in 1993.

During 1992 and 1993, the NEFSC was part of a collaborative effort to develop methods that would estimate the upper bound of a population growth rate using population matrix models. During 1994, these methods are proposed to be applied to the harbor porpoise population.

The NEFSC investigated by-catch reduction methods in 1992 and 1993 through (1) development of a computer program that can be used by managers to assess fishery impacts on harbor porpoise, (2) the convening of a workshop addressing net modification, and (3) attention to field experiment design and implementation. To investigate the effect of time-area fishing restrictions on harbor porpoise by-catch and fish catch, the recently developed computer program plotted data from the 1990-1992 Sea Sampling and weighout databases, using the ARC-INFO Geographic Information System (GIS). Products resulting from the use of this program have been presented at several New England Fishery Management Council meetings. In September 1993, the by-catch reduction workshop, hosted by the NEFSC, considered net modifications that might make the nets more detectable or less likely to entangle a harbor porpoise. In May 1993, the NEFSC assisted in the design of a field experiment which tested how various sounds affect the behavior of harbor porpoises. The experiment was sponsored by NMFS Saltonstall-Kennedy funds and conducted by the New England Aquarium and the University of New Hampshire. Also, the NEFSC assisted in the design, execution and analysis of an experiment sponsored by the Memorial University of Newfoundland that evaluated the effect of acoustic warning devices on gill nets in the Gulf of Maine.

In 1992, NMFS initiated studies to determine basic life history parameters of small cetaceans incidentally killed during commercial fishing operations in the northwest Atlantic. The work is designed to describe age, reproductive rates and food habits for harbor porpoise in phase one and for pilot whales in phase two. The life history information, collected in phase one of the study, was provided by 77 incidentally caught harbor porpoise.

Harbor Seal

Harbor Seal (Northeast)

The NEFSC funded the University of Maine, Orono (UMO) to conduct aerial surveys in 1993 to obtain population abundance and recruitment indices of harbor seals in coastal Maine waters during the peak abundance/pupping period (May-June). These counts will be compared to UMO data collected during the 1980's to determine population trends. In addition, changes in habitat use (i.e., haulout sites) will be documented. A preliminary report on this study will be available in 1994.

Harbor Seal (West Coast and Alaska)

California. A recent status assessment of harbor seals, P.V. in California was completed using data collected by California Department of Fish & Game from 1982-1991 aerial surveys. Historically,

the harbor seal population in the eastern North Pacific Ocean was reduced to very low numbers by hunting and systematic removals. The population remained at those levels through the mid-1950s, after which legislation to protect marine mammals resulted in increasing populations, a trend that appears to be continuing. The rate of population increase has changed over time and, according to the assessment data, appears to have slowed down since 1984. Nevertheless, data are not yet available to support the belief that the population is above its maximum net productivity level and, thus, at optimum sustainable population level.

Alaska. Harbor seals are distributed throughout southeastern Alaska, along the Alaskan coast from the southeastern panhandle to the Gulf of Alaska, Aleutian Islands and Bristol Bay. Their northern limits extend to approximately 59°N latitude. Although once considered abundant throughout the state, surveys by the National Marine Mammal Laboratory (NMML) and the Alaska Department of Fish and Game (ADFG) indicate significant declines in the central portion of their range, which includes the Kodiak Archipelago since the 1970's and Prince William Sound since the 1980's.

The minimum population estimate of 47,636 harbor seals for the state was based on aerial surveys of Bristol Bay and Prince William Sound in 1991, the Gulf of Alaska along the south side of the Alaska Peninsula, Cook Inlet, Kenai Peninsula and Kodiak Archipelago in 1992 and southeast Alaska in 1993. The Aleutian Islands will be surveyed in 1994. Minimum population estimates for the Gulf of Alaska and Prince William Sound were 7,823 and 2,584, respectively. These survey results showed, as the continuing trend, declines of 90 percent since the 1970s in the Kodiak Archipelago and 60 percent in Prince William Sound. The cause of these declines is unknown. In 1993, southeastern Alaska was surveyed; results from those surveys are not yet available. The Aleutian Islands are proposed for survey in 1994. It is, however, estimated that less than 200 harbor seals are caught incidental to commercial fishing operations per year. Alaska Natives kill about 2,800 harbor seals per year for subsistence purposes. The impact of these takes upon the harbor seal population in Alaska is dependent on harbor seal migrations, the way species stocks are defined, and possible fluctuations in harbor seal prey resources.

Stock Discreteness. The Pacific harbor seal ranges along the west coast of North America from Ascension Island, off Baja California, northward to the Gulf of Alaska and is one of the more commonly observed pinnipeds along the coast. In 1993, as part of the MMPA stock assessments, NMML and the Washington Department of Wildlife collected skin samples from harbor seals for genetic studies to determine stock differentiation in the harbor seal population. Harbor seals from several locations in Washington, Oregon, and California were sampled. Geographic sampling locations were chosen where stock separation was suspected because of differences in pupping phenology. The genetic analysis of the skin samples using mt-DNA analysis is being conducted by LGL Ecological Research, Bryan, Texas, and their final report is due in 1994.

California Sea Lion (California)

California sea lions are recovering from over exploitation that took place prior to the passage of the MMPA in 1972. Three stocks have been defined for management purposes based on locations of major rookeries: (1) the United States; (2) Western Baja California; and (3) Gulf of California. The population size is estimated from the number of births by computing the predicted proportion of newborn pups in a population with a stable age distribution, a hypothetical schedule of survivorship, and annual factor of increase equal to the growth rate from annual counts of pups. In 1990, the United States stock was estimated to have a population size of 111,016 (Table 6), and, since 1983, has been growing at an

Table 6
Abundance Estimates for pinnipeds in California.

	Best estimate-US	Best estimate-MEXPacific/ Gulf of CA.	Minimum-(US)
Northern elephant seal (1991)	62200	33200	42845
California sea lion (1990)	111016	74467(Pacific)	53408 (US)
		17646(Gulf)	22822(Pacific)
			18701(Gulf)
Harbor seal (1991)	32325	na	23089

average of 10.2 percent per year. The total population size of the Western Baja California stock was estimated at 74,467 in 1990 and appears to be stable. The Gulf of California stock was estimated in 1987 and is in the range of 24,500-28,220 sea lions at 34 rookeries and haul-out sites. The annual increase in counts of sea lions in the Gulf from 1979-1987 was about 1.98 percent per year. Presently there are no quantitative methods of estimating the status (relative to MNPL or OSP) for the United States stock because: (1) there are no quantitative data available to estimate carrying capacity from historical population levels, and (2) the lack of a density-dependent signal in recent counts of sea lion pups in the United States does not allow any inferences of population status from the dynamics of the current population. Status relative to MNPL or OSP for the two Mexican stocks cannot be determined because little information is available regarding California sea lions in Mexico. Aerial photographic censuses (pup counts) were made by NMFS in 1992 and 1993. Boat and shore counts were made on Western Baja Islands in collaboration with Pesca in both years. Results from 1992-1993 indicate that the Western Baja California and the U.S. stocks were affected by the El Nino. The number of pages counted in Western Baja California rookies were 1/3 to 1/2 the amount counted in 1989/1990. The number of pages counted in the U.S. were approximately 15 percent less in 1992 and about 7 percent less in 1993 than in previous years. Because the 1992/1993 surveys in Mexico and the U.S. were made during El Nino conditions, which affect via lion populations, surveys are needed during non-El Nino years.

Northern Elephant Seal (California)

Northern elephant seals, *Mirounga angustirostris*, are recovering from excessive hunting that caused a population crash in the late 19th century. Their recovery began in Mexico, but current growth of the population is almost entirely in the United States. Approximately 21,000 northern elephant seal pups were born in United States rookeries in 1991. Based on this and a demographic model of age structure, the total population size in the United States is estimated to be about 73,300 animals with a range between 67,400 and 86,100. It has been suggested that the present status of the northern elephant seal population may be greater than any historic (pre-commercial-exploitation) levels. Conservatively, the current minimum population size is the actual count of seals hauled out during the 1991 breeding season, approximately 42,800 (Table 6). Since 1981, births have been increasing at an average rate of 6.67 percent per year, and the population as a whole is assumed to be

growing at the same rate. Dynamic response analysis of the 1964-1991 time series of births suggests that the population is currently above its OSP. From that analysis, the population is estimated to be at 77 percent of its carrying capacity with a 95th percentile confidence interval between 42-112 percent. However, given these extremely broad confidence intervals and additional sources of uncertainty, little confidence can be placed on the 77 percent estimate, nor can it be concluded that the population is within its OSP range. Incidental mortality, primarily associated with gillnet fisheries was estimated to be 137 seals in 1991 and 165 in 1992. Aerial photographic censuses (pup counts) were made by NMFS in 1992 and 1993. Results indicate that the U.S. population continues to increase, although no information is available on the population in Mexico.

Delphinids, Beaked Whales, Dall's Porpoise and Other Small Cetaceans (California)

A preliminary status review for the following species was undertaken during 1992 and 1993 by the SWFSC.

- Beaked Whales
  - Baird's beaked whale
  - Mesoplodont beaked whales
  - Cuvier's beaked whale
- Sperm Whales
  - Pygmy sperm whale
  - Dwarf sperm whale
- Porpoises
  - Dall's Porpoise
- Dolphins
  - Short-beaked common dolphin
  - Long-beaked common dolphin
  - Short-finned pilot whale
  - Risso's dolphin
  - Pacific white-sided dolphin
  - Northern right whale dolphin
  - Killer whale
  - False killer whale
  - Striped dolphin
  - Coastal bottlenose dolphin
  - Offshore bottlenose dolphin

Abundance estimates for California coastal cetacean stocks are found in Table 7. A final report on the status of these stocks should be available by mid-1994. A workshop was convened in March 1993, at the SWFSC to review the scientific information on the status of cetacean species that are found in California coastal waters. Experts on various aspects of marine mammal studies were invited from universities, private research groups, and other government agencies throughout the country. This panel, together with members of SWFSC scientific staff, reviewed a series of papers intended to provide information relevant to management of California cetaceans.

The major impetus for this workshop was the incidental take of cetaceans in two California fisheries: the set gillnet fishery for halibut and angel sharks and the drift gillnet fishery for swordfish and pelagic sharks. It was determined that assessment of the impact of gillnet mortality on cetacean populations must involve the calculation of abundance estimates, including confidence limits and the assessment of stocks. To provide the scientific basis for management, stock assessment reports should be drafted at a minimum of once every three years. Prior to finalization by NMFS, these stock assessment reports should undergo a review process, incorporating comments from the scientific community and the public. Currently, reports generated by NMFS are intended to provide information on (1) available biological information, (2) population and stock structure, (3) population size, (4) population growth rate and trends, (5) stock status, relative to the optimum sustainable population level, and (6) current removals.

Table 7
California coastal cetacean stocks based on the stock structure, abundance (N), coefficient of variation of the abundance estimate CV(N), and the minimum population estimates (N-min).

Species	Assumed Stock Structure	N	CV(N)	N-min
Harbor porpoise	Central California	3806	0.24	2393
	Northern California	10062	0.28	5927
Dall's porpoise	California	78422	0.35	40026
Pacific white-sided dolphin	CA+OR+WA	103724	0.48	42561
Risso's dolphin	CA+OR+WA	27146	0.45	11720
Bottlenose dolphin	California offshore	2098	0.36	1060
	California inshore	240	na	224
Striped dolphin	California	19008	0.41	8755
Short-beaked common dolphin	California	233378	0.28	136562
Long-beaked common dolphin	California	9472	0.68	2817
Total common dolphins	California	245581	0.27	146958
Northern right whale dolphin	CA+OR+WA	17118	0.46	7241
Killer whale	California	307	1.20	48
Baird's beaked whale	California	38	1.03	7
Total Mesoplodonl beaked whales	California	250	0.83	60
Cuvier's beaked whale	California	1621	0.82	3966
Total beaked whales	California	3231	0.56	1170
Sperm whale	California	756	0.49	303
Pygmy sperm whale	California	870	0.80	220
Right whale	California	16	1.04	3
Minke whale	California	526	0.97	106
Bryde's whale	California	61	1.08	11
Blue whale	California (summer)	2250	0.38	1093
Fin whale	California	935	0.63	299
Humpback whale	CA+OR+WA (summer)	581	0.03	482

Delphinids (Oregon & Washington)

Aerial population assessment surveys were conducted for dolphins during March-May of 1992 in the offshore waters of Oregon and Washington. The two primary species of concern were the Pacific white-sided dolphin, *L. obliguidens*, and Risso's dolphin. For Pacific white-sided dolphins, the population estimates ranged from 9,358-23,407, depending on whether the sample was stratified or not. For Risso's dolphins, the estimates ranged from 7,927-11,353. These estimates must be viewed with caution since they were obtained during an El Niño year of warm oceanic currents which may have altered the normal distribution of the coastal populations of

these dolphins. A ship survey was conducted for California delphinids during 1993.

Atlantic Coastal Migratory Bottlenose Dolphins

The SEFSC conducted aerial surveys of United States coastal waters from Cape Hatteras, North Carolina, to the mid-Florida coast during January-March, 1992, to estimate bottlenose dolphin abundance and to compare current estimates of bottlenose dolphins with 1983 aerial survey abundance estimates. The SEFSC also surveyed United States Atlantic continental slope waters south of Cape Hatteras, North Carolina to southern Florida from the NOAA Ship Oregon II during January-February 1992. Approximately 3,500 km of trackline were surveyed and ten cetacean species were identified in 85 pod sightings. The Atlantic bottlenose dolphin was the most frequently sighted cetacean.

In addition, the Mote Marine Laboratory completed a 5-year data collection project in 1992, as part of an SEFSC study, to estimate bottlenose dolphin abundance in the Indian and Banana River complex of Florida using aerial line transect surveys.

A workshop was held at the SEFSC Beaufort laboratory in North Carolina in September 1993 to discuss measures to affect recovery of the depleted mid-Atlantic coastal bottlenose dolphin stock.

North Atlantic Delphinids

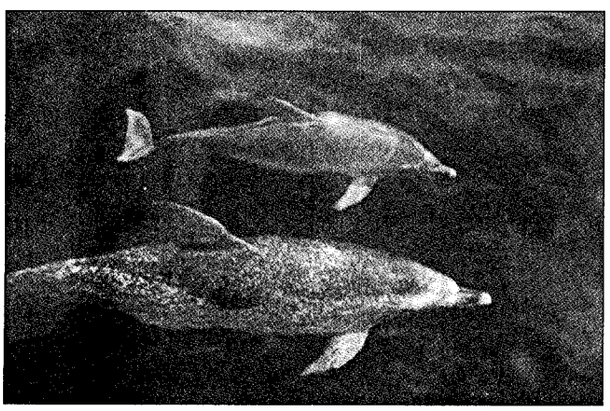
The NEFSC conducted shipboard sighting and habitat use surveys during March 16 - April 2, 1992 and June 1 - July 2, 1993. The 1992 survey was conducted in offshore shelf and shelf-edge (30-1000 fathoms) mid-Atlantic and southern New England waters. The primary objectives were: (1) to investigate small cetacean fine scale distribution in the vicinity of foreign Atlantic mackerel fishing operations, and (2) determine if the distribution of pelagic dolphins is continuous between fishing areas and several major canyons within the study area. Weather conditions severely hampered vessel operation, therefore only 8 transects covering 940 km were completed. Furthermore, due to Atlantic mackerel fishery management regulations, foreign fishing operations did not occur in 1992. A total of 85 marine mammals sightings were recorded, and pelagic prey were sampled at 21 research fishing stations. On one occasion a small group (4-6) of pilot whales were observed to be actively pursuing the trawl during the net retrieval process. Trawl chasing is an significant factor contributing to pilot whale mortality in the Atlantic mackerel fishery.

The 1993 survey was conducted along shelf edge and slope waters of the southern edge of Georges Bank to the Nova Scotian Shelf (i.e., 65°00'W). The objectives were: (1) to investigate beaked whale and pelagic delphinid fine scale distribution in shelf edge and Gulf Stream warm-core ring waters, (2) to determine if species distribution of beaked whales and pelagic delphinids is continuous across the United States-Canada boundary line, (3) to conduct line transect surveying, and (4) to conduct photoidentification studies using a rigid bottom inflatable boat. A total of 494 marine mammal sightings were recorded. Data analysis is currently underway.

A contract study to refine the reproductive rate information for Northeast Atlantic pilot whales was supported by NEFSC in 1992. This project focused on the life history information available from the directed harvest of pilot whales in the Faroe Islands, and the results are being integrated in a population model for this species. Studies of the trophic role of pilot whales were supported through the University of Massachusetts, Amherst, using stable isotope techniques. The results suggested that pilot whales, killed incidentally in the mackerel trawl fishery, prey on a mixture of both squid and mackerel, and that

pilot whales in the eastern and western Atlantic have different diet histories. The results of these two studies and other information for pilot whales was presented during an ICES Study Group on North Atlantic Pilot Whales in August 1993.

Also, NEFSC, working jointly with the Office of Naval Research, also supported contract studies in 1992 and 1993 to develop and test the application of satellite tags to small cetaceans. Studies included the biocompatibility of attachment materials, hydrodynamic aspects of tag design, dorsal fin morphology and role in temperature regulation. Preliminary study results will be available in September 1994.



Spotted dolphin (*Stenella attenuata*) mother and calf in the Gulf of Mexico. *Photo credit: NMFS/FPR.*

Gulf of Mexico Cetaceans

Aerial and shipboard surveys of the United States continental slope waters of the Gulf of Mexico, partially supported under a contract with the United States Minerals Management Service, were conducted through a cooperative study with Texas A&M University. The SEFSC conducted six seasonal aerial surveys in the northwestern Gulf of Mexico in depths between 100-2,000 meters(m) during 1992 and 1993. Line transect survey effort each season was approximately 6,300 km. Two hundred forty-eight cetacean pods were sighted, 17 species were identified, and five species comprised 75 percent of the sightings. The top species sighted included bottlenose dolphins (30 percent), *Kogia* sp. (13 percent), sperm whales (12 percent), pantropical spotted dolphins (10 percent), and Risso's dolphin (10 percent).

One line transect survey was conducted in the northwestern Gulf of Mexico from the NOAA Ship Oregon II during 1992, and two surveys were conducted during 1993. The April-June 1992 survey cruise resulted in the sighting of 20 species in 273 pods. The 1993 winter survey (January & February) in the northwestern Gulf of Mexico resulted in 10 cetacean species identified in 46 pods. Eighteen species were identified in 291 cetacean pods during the 1993 spring survey. Five species formed 71 percent of the pod sightings — pantropical spotted dolphins (29 percent), bottlenose dolphins (16 percent), dwarf sperm whales (10 percent), sperm whales (9 percent) and Risso's dolphins (7 percent). The SEFSC surveyed Gulf of Mexico continental shelf waters from aircraft during September and October 1992, from the United States-Mexico border to the mid-Louisiana coast, and September and October 1993, from mid-Louisiana to the northwest Florida coast to estimate abundance of bottlenose dolphins.

The SEFSC conducted low-level bottlenose dolphin population monitoring in Mississippi Sound during the winter of 1992 (January & February), the spring of 1993 (March & April) and the summer of 1992 and 1993 (July & August), to estimate bottlenose dolphin abundance over an approximately 1,600 km^2 area. Estimated bottlenose dolphin density was 0.47 dolphins/km^2 (0.32 CV) in the winter of 1992, 0.56 dolphins/km^2 (0.31 CV) in the spring of 1993, and 0.78 dolphins/km^2 (0.19 CV) and 0.62 dolphins/km^2 (0.26 CV) during the summer of 1992 and 1993, respectively.

Other SEFSC-sponsored studies of bottlenose dolphins along the Texas coast and in Charlotte Harbor, Florida, are using photo-identification of

individuals in mark-recapture analyses to estimate indices for low-level population monitoring. The data collection phase of one SEFSC-sponsored study, using multiple mark-recapture analyses and photographic identification to estimate population size, vital rate parameters and annual variation of the population dynamics of Sarasota and Tampa Bay bottlenose dolphins, was completed in 1993.

Spotted Seal

Research conducted in 1992 and 1993 on the spotted seal, *Phoca largha*, included late summer aerial surveys in Alaska of coastal rookeries and haul out areas, and satellite tagging of spotted seals in the vicinity of Pt. Lay, Alaska. Aerial surveys were conducted from September 5-17, and included haulouts between Kotzebue and Scammon Bay, St. Lawrence Island, Nunivak Island, and Kuskokwim Shoals. In addition, attempts were made, with moderate success, to count undisturbed spotted seals by flying at altitudes between 600m and 1500m. In general, survey conditions were good and they were synchronized with low tides at known haul sites. A total of 470 seals were counted (all in the water) north of Kuskokwim Shoals, while a maximum of 2,471 seals were counted at Kuskokwim Shoals. Data are insufficient, however, to estimate the abundance of the spotted seal population in the Bering and Chukchi Seas.

Interpreting photographic images at altitudes above 300m is possible because of the excellent optics of the cameras used during the surveys. Photogrammetric surveys were done in cooperation with staff from the SWFSC. The satellite telemetry research was a cooperative study involving NMFS, ADFG, North Slope Borough, and Texas A & M University. In addition to the attachment of satellite tags to ascertain movement patterns and the proportion of time that animals were hauled during survey periods, information on food habits, physiology, and stock discreteness were collected. The stock identification studies are being done in cooperation with the SWFSC.

Beluga Whale

The second and third seasons of field research on beluga whales Delphinapterus leucas, in Cook Inlet, Alaska, were conducted in the summers of 1992 and 1993. Studies included: (1) June-August aerial surveys to determine the optimal survey period and methods and (2) genetic analysis of tissues to determine the extent to which belugas in Cook Inlet are isolated from other populations of beluga whales. Information collected during the aerial surveys are consistent with previous surveys in Cook Inlet by the Alaska Regional Office and surveys by the Alaska Department of Fish and Game, which indicate maximum counts between 270 and 332 animals. Efforts were not successful to develop photogrammetric techniques to determine the percentage of animals not included in the count because of diving behavior. Plans are underway for 1994 to attach radio-tags to animals in Cook Inlet to derive independent correction factors for aerial surveys. Results of the genetic analysis, which are being conducted by staff from the SWFSC, are currently unavailable. All of the research on beluga whales by NMML staff is in accordance with recommendations from the Alaska Inuvialiut Beluga Whale Committee (see Chapter VI).

Gray Whale

Shore-based surveys were conducted December 10, 1992 to February 7, 1993 and December 10, 1993 to February 18, 1994, during the whales' southbound migration past Carmel, California. Survey methods were the same as those used in previous seasons. Paired independent counts were made whenever possible but not during every watch as occurred in 1987/1988. In total, 1,180 pods (2,112 whales) were recorded during 343 hours of watch from the main (south) observation site when visibility was classified as

excellent to good in 1992/1993, and 1864 pods (3411 whales) were recorded during 447 hours in 1993/1994. The survey data were analyzed using methods consistent with those used for the analysis of the 1987/1988 survey data. The population estimate from the 1992/993 survey is 17,674 (CV = 5.87 percent, 95 percent confidence interval, 15,800-19,800), which is significantly lower than the 1993/1994 estimate of 23,109 (CV = 5.42 percent, 95 percent confidence interval, 20,800 - 25,700) (z=-3.36, p=0.0004). Possible reasons for the difference are: 1) changes in the number of whales migrating as far south as Carmel; 2) poor sighting conditions in 1992/93, particularly during the peak of the migration; 3) estimates of variance do not include all sources of variation. The 1993/1994 estimate is not significantly different from the 1987/1988 estimate of 20,869 (CV = 4.37 percent) (z=1.46, P=0.072).

The estimate from the 1992/1993 survey was revised upward from the original estimate of 15,189 (13,400-17,200). The revision resulted from re-analysis based upon additional calibration data on pod size estimates that were collected during 1993/1994 aerial surveys. Further analysis of the pod size calibration data may result in refinements of the estimates and their variances.

Analysis of two-thirds of the thermal sensor data collected during the 1993/1994 survey did not show a significant difference between day and night counts of passing whales. Completion of the analysis and further examination of offshore distance patterns are on-going.

Aerial transects conducted during the 1992/93 and the 1993/94 surveys demonstrated that 94 to 99 percent of the gray whales pass within 3 nautical miles of the coast near the Granite Canyon survey site. During the 1993/94 survey, an experiment was conducted with a United States Coast Guard vessel to calibrate measurements of distance from the shore site and the data are currently being analyzed.

The 1988 amendments to the ESA specify that monitoring plans must be developed and implemented for any vertebrate population that is to be removed from the list of endangered and threatened wildlife. An initial period of five years post-delisting was specified in the ESA for monitoring and assessment. Thus, a task group was established under the direction of NMML, Alaska Fisheries Science Center, to develop a research and monitoring plan for the eastern North Pacific population of gray whale, which NMFS has proposed for delisting. The 5-year plan was submitted to NMFS Headquarters in October 1993. It is anticipated that the plan will be made available to the general public as a NOAA Technical Memorandum early in 1994.

Bowhead Whale

No field work was conducted on the bowhead whale (*Balaena mysticetus*) during 1992 and 1993. Rather, effort was placed on several analyses, as follows, the results of which are scheduled to be presented at the May 1994, Scientific Committee/IWC meeting: (1) a summary and update of length frequency data from aerial surveys (1985, 1986, 1989-1992), (2) an evaluation of the effects of timing of spring and fall migrations on the analysis of length frequency data, (3) a principle component analysis of how to assign components of the length frequency distribution to age classes, (4) an evaluation of the extent to which changes in the length frequency distribution could be used as an indicator of status, and (5) a summary of all bowhead whale landings by subsistence hunters between 1973 and 1992. In addition, NMML staff have cooperated with staff from the Office of Protected Resources and the Alaska Regional Office in reviewing ARCO's monitoring plan, to determine the extent to which bowhead whales may be impacted by drilling and seismic operations in Camden Bay, Alaska in the fall of 1993.

Steller Sea Lion

In 1990, the Steller (northern) sea lion was listed as depleted under the MMPA and threatened under the ESA (ESA). NMFS monitors status of the population in Alaska through a combination of adult and juvenile counts at index rookery sites and haul outs (from aerial photos) and pup counts at rookeries (from on-land counts). Every fifth year a range-wide survey is conducted to estimate the world population. The Steller sea lion estimated world population in 1989 was 90,621 non-pups and 25,888 pups. This total of 116,509 animals was 39-48 percent of the 240,000-300,000 pups and non-pups estimated 30 years ago. The Alaskan population in 1989 was estimated to include 63,823 non-pups. Of this total, 19,033 were in the Aleutian Islands, 887 in the Bering Sea, 31,600 in the Gulf of Alaska, and 12,303 in Southeastern Alaska. An additional 5,357 non-pups were in Oregon-California.

The best population trend estimate for Alaskan Steller sea lions from trend site survey data indicates that the Alaskan Steller sea lion population continues to decline. A total of 34,844 adult and juvenile sea lions were counted in 1992 at the 95 trend sites from southeast Alaska through the western Aleutian Islands. This tally is a decrease of 4.4 percent from the 36,459 animals counted in the same area in 1991, and 70.2 percent decrease from 1979 (116,804). The annual rate of decline from 1979 to 1992, based on linear regression, was 9.6 percent ($p = 0.0026$).

Sixty-nine of the trend sites are located between the Kenai Peninsula and Kiska Island. At these sites, 20,679 adult and juvenile sea lions were counted in 1992, a decline of 76.9 percent from the 1975-79 counts (89,364) and a 4.9 percent decrease ($p = 0.034$) from 1991 (21,737). Estimated annual rates of decline, based on linear regression, were 10.0 percent ($p = 0.002$) for 1975-79 to 1992 and 3.7 percent ($p = 0.026$) for 1989 to 1992.

Pup numbers during 1990-93 declined at a rate of 10.7 percent per year in the southeast Alaska to eastern Aleutian Island area, from 9,581 (±471) in 1990-91 to 7,632 (±281) in 1992-93. Pup numbers declined at a rate of 12.7 percent per year in the area from Kenai to the eastern Aleutian Islands, from 8,116 (±412) to 6,192 (±246).

Blue Whale

The North Pacific is thought to contain more than one population of blue whales, *Balaenoptera musculus*, a species currently listed as endangered under the ESA. Evidence is strong for at least one separate population that spends winter/spring in Mexican coastal waters and summer/autumn in California waters, with no verified links to any other feeding areas. Recently, blue whales have become common in Southern California. Furthermore, during the feeding period, there is an apparent hiatus in distribution south of the tip of Baja California and north of California in Oregon and Washington. It has been proposed that the California feeding population should be treated as a separate stock.

It is interesting to note that in previous years blue whale abundance in the entire North Pacific was estimated at 1,600 animals, based on a population model and trends in catch-per-unit-effort from whaling records; blue whales in the North Pacific were estimated to be at 33 percent of their carrying capacity. However, the current line transect assessment obtained from ship surveys conducted during the 1991 California Marine Mammal Survey estimate that 2,332 blue whales exist in California waters. Comparison of prior estimates of abundance with the recent estimate for California alone, indicates that blue whales in the North Pacific are at approximately 47 percent of their carrying capacity. In addition, if other feeding aggregations exist in the North Pacific, the percentage could be greater than 47 percent.

Northern Fur Seal

Because at any given time some portion of the animals are at sea, it is difficult to obtain a total estimate of the fur seal, Callorhinus ursinus, population or an assessment of the stock. The best indicator of population trends is the number of pups born, which is estimated in the middle of the breeding season when all pups are still accessible. The most recent census indicates that approximately 253,000 northern fur seal pups were born on St. Paul Island, resulting in a 1992 estimate of 982,000 fur seals in the Pribilof Islands stock. The current population estimate is similar to the level which resulted in the 1988 depleted status ruling for northern fur seals.

There have been no significant increasing or decreasing trends in pup production on the Pribilof Islands in 1992, however, the total number of fur seals on St. George Island continues to decline. Although the overall stock appears relatively stable, the recent decline on St. George may indicate localized factors (e.g., anthropogenic, environmental, or both) influencing the ability of the population to grow. Other population status indicators and simulations indicate that the Pribilof stock currently remains at a level less than half the carrying capacity.

Humpback Whale

North Pacific

There is increasing evidence for multiple populations of humpback whales, Megaptera novaeangliae, in the North Pacific. Genetic exchange between California and Alaska feeding areas, however, is estimated to be less than one female per generation. Interestingly, two breeding areas, Hawaii and coastal Mexico, showed fewer genetic differences than did the two feeding areas. Population structure in humpback whales appears to be based on matrilineal fidelity to feeding areas. Thus, for management purposes, it has been proposed that the feeding population along the coasts of California, Oregon and Washington be treated as a separate stock. The number of whales photographically identified in 1991 and 1992 in the North Pacific was 482 individuals from California, Oregon and Washington with the total abundance estimate of 2,271 humpback whales in the North Pacific. This estimate is approximately 13 percent of the pre-whaling abundance in the North Pacific population. Mark-recapture estimates from the photo-ID study indicates approximately 581 humpbacks in this population.

North Atlantic

An NEFSC-administered program of humpback whale research has been in effect in the western North Atlantic since the mid-1970s. The population estimates for the western North Atlantic population are on the order of 5,100 individuals. During the summer, there are at least five geographically distinct feeding aggregations from latitudes 42°N to 78°N. These areas are Gulf of Maine, Gulf of St. Lawrence, Newfoundland and Labrador, western Greenland, and the Iceland-Denmark Strait. In winter, humpback whales from all western North Atlantic feeding areas migrate to the West Indies, where courtship, breeding, and calving occur. The majority are found on Silver and Navidad Banks off the north coast of the Dominican Republic. The remainder are scattered from coastal Dominican Republic, Puerto Rico, through the Virgin Islands, and along the eastern Antilles chain south to Venezuela.

In 1992-1993, the principal NEFSC involvement with humpback whales occurred through participation in the Years of the North Atlantic Humpback (YONAH) Project. YONAH is a large-scale international effort that uses photographic identification and molecular genetics to study humpback whales across their entire known North Atlantic range, from the West Indies to the Arctic. The intention is to obtain as large a sample as possible of individual identifications and skin

biopsies to provide reliable answers to questions on size, structure (demographic and genetic), migratory movement, vital rates, and mating system of this population. Participating countries include Canada, Denmark, the Dominican Republic, Iceland, Norway, the United Kingdom, and the United States. Standardized sampling protocols were used throughout the project to ensure comparability of all data. Central archives have been established for all data, photographs, and tissue samples.

YONAH field work began in January of 1992. In 1993, the second and final year of field work was completed. Upon completion of this field work, YONAH had photographically identified approximately 4,000 humpback whales, and biopsied more than 2,500. While matches between areas (notably breeding and feeding grounds) will reduce these totals, these sample sizes are unprecedented for marine mammal study.

Important results from the two years of field work include: (1) the collection of a set of fluke photographs from Iceland and Norway, including photographs from previously unsurveyed Arctic areas, (2) the collection of the first biopsy samples from Norwegian waters, (3) the discovery of concentrations of humpback whales off Baffin Island, (4) the collection of biopsy samples from whales of all group and behavioral classes, including more than 150 mother/calf pairs, (5) the first large sample of fluke photographs from Navidad Bank, one of the major breeding grounds in the West Indies, and (6) the collection of a large body of data on variables that may influence or bias estimates of abundance.

The third year of the project (1994) will be devoted to analysis of photographs, data, and tissue samples. The analyses will include estimates of abundance and assessment of population structure. These YONAH activities and analyses are directly related to information needs required by the Final Recovery Plan for the Humpback Whale which was completed in November 1991, and released in March 1992.

Human-Induced Mortality. Entrapment and entanglement in fishing gear is the most frequently identified source of human-caused injury or mortality to humpback whales. The Center for Coastal Studies, Provincetown, Massachusetts, records 4-6 humpback entanglements a year, and typically disentangles 2-3 of these animals. In 1992, at least one humpback mortality (on Long Island) was attributable to gear entanglement. In 1993, there were 8-9 entanglements reported, and 3 disentanglements.

North Atlantic Right Whale

The NEFSC has administered an integrated research program on the north Atlantic right whale since the mid-1980s. Methods include vessel and aerial surveys, radio/satellite tagging, photo-identification, and genetic analysis. The research program has yielded findings on abundance, distribution, stock structure, and behavior. Five major habitats have been identified: coastal waters of the southeastern United States, Great South Channel, Cape Cod Bay, Bay of Fundy, and Scotian shelf. Genetic analysis, based on mitochondrial DNA, suggests that the population is based on three "matrilines," or distinct lineages stemming from reproductive females. The population is estimated to number between 300-350, and is thought to be recovering at three to four percent annually. However, the location of the non-calving females, many juveniles, and most males during the wintering season (about 85 percent of the population), as well as the location of about a third of the population during the summer season, remain unknown to researchers. In addition, inbreeding, due to the small population size, may reduce the viability of this population. The population is also threatened by human impacts — principally ship strikes and gear entanglements. Nearly 60 percent of the popula-

tion is affected by human activities, accounting for a third of the total mortality.

Human-Induced Mortality. An analysis of scarring patterns in living North Atlantic right whales showed that 57 percent have had entanglements with fishing gear at some time in their lives. Of the 30 right whale mortalities since 1970, two (7 percent) have been attributed to fishing activities. In 1993, one entangled right whale was observed on three occasions. On July 9, a right whale, believed to be a juvenile, was found entangled in a swordfish drift gillnet near Munson Canyon, at the southern edge of Georges Bank. With some difficulty, it was disentangled from most of the gear. The gear included some lengths of lobster pot warp. On 7 August, the animal was resighted northeast of Stellwagen Bank. A Center for Coastal Studies team cut remaining gear off the whale. Deep wounds around the tail stock, and lesser wounds to the head and back were recorded. On 22 August, this same animal was resighted in shallow water east of Montauk, Long Island. Incidents of this type and the associated wounding decrease the viability of the individual as well as the population. In January 1993, a U.S. Coast Guard vessel struck and killed a right whale calf off St. Augustine, Florida.

Hawaiian Monk Seals

The status of the endangered Hawaiian monk seal is assessed each year during the reproductive season (spring/summer) at the main breeding sites in the Northwestern Hawaiian Islands. In 1992 and 1993, field camps were established at French Frigate Shoals, Laysan and Lisianski Islands, Pearl and Hermes Reef, and Kure Atoll. Camps at Pearl and Hermes Reef were limited to approximately one week each year. In addition, volunteers were stationed at Midway for six weeks (1992) and four weeks (1993) to assess that population and, in 1993, week-long camps were established at Necker and Nihoa Islands. Monitoring objectives varied with the field camp, but generally included beach counts or censuses; tagging of weaned pups; studies of reproduction and growth, seal condition, injuries, and mortalities; behavioral observations; collection of scats and spews for analysis of prey; necropsies of dead animals; disentangling of entangled animals; and removal of potentially entangling debris from island beaches.

Results of the 1992 and 1993 seasons suggest that the Hawaiian monk seal is rapidly becoming more endangered. The total mean beach count of the five main populations was 425 in 1992 and 378 in 1993 and, since 1985, beach counts have declined at approximately 5 percent per year. The total number of births at the five main population sites was 203 in 1992 and 189 in 1993, both of which are substantially higher than the 135 pups born in 1990. The annual number of births has been highly variable over the last decade, with no apparent upward or downward trend, but poor survival of juvenile seals in the last four to five years has limited reproductive recruitment of females, even for relatively large cohorts.

The loss of seals in the French Frigate Shoals population appears to be the primary factor in the overall decline of the species. The population at French Frigate Shoals grew substantially between the late 1950s and the mid 1980s, and the current drops in birth rate and juvenile survival are thought to reflect adjustment to limits imposed by available resources (i.e., the population has reached the environmental carrying capacity). However, the severity of changes in birth rate and survival have been greater than expected, and it is not clear that the French Frigate Shoals population will stabilize in the near future. Populations at Laysan and Lisianski Islands are also declining, but at slower rates, due to mobbing rather than to limits imposed by their environments. Contrary to the trend at these three sites, populations at Kure Atoll and Pearl and Hermes Reef appear to be growing at approximately 3 percent and 6 to 7 percent per year, respectively.

Chapter IV. Conservation and Recovery Plans, and Other Species Management Actions

The MMPA authorizes NMFS to initiate management actions for species or stocks whose survival is in jeopardy. Section 115 of the 1988 MMPA amendments requires the status review of marine mammal species or stocks to determine whether they are depleted, and directs NMFS to prepare conservation plans for depleted species or stocks as soon as possible unless such a plan would not promote conservation of the species or stock. Section 115 also provides specific deadlines for completing plans for North Pacific fur seals and Steller sea lions.

The ESA offers similar management authority to NMFS for most endangered and threatened marine species or stocks. Section 4(f) of the ESA requires that recovery plans be developed for endangered and threatened species unless the Secretary finds that such a plan will not promote the conservation of the species. Section 4 of the ESA and 50 CFR part 424 contain provisions that allow the Secretary to change the listed status of a species when necessary. If the Secretary determines that there is substantial scientific or commercial information that indicates that a change in status may be warranted, a status review is conducted. ESA Section 4 also directs the Secretary to designate critical habitat to the "maximum extent prudent and determinable" at the time a species is listed. The ESA defines critical habitat as:" (i) the specific areas within the geographical area occupied by the species, at the time it is listed . . ., on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed . . . upon a determination by the Secretary that such areas are essential for the conservation of the species . . ." Critical habitat designation contributes to species conservation primarily by identifying critically important areas and describing the features within these geographic areas that are essential to the species. Through the designation, private and public entities are alerted to the importance of these habitats to the listed species.

NMFS is in the process of developing guidelines for recovery programs that will ensure that ESA recovery plans also meet the conservation plan requirements of the MMPA. Of the 14 marine mammal species listed as endangered or threatened, recovery plans are needed for 9 of these species. NMFS recently developed plans for humpback whales, right whales and the Steller sea lion. A recovery plan for the Hawaiian Monk Seal was completed in 1983.

This chapter summarizes species management activities undertaken by NMFS and pursuant to the MMPA during 1992 and 1993. It discusses the Steller Sea Lion Recovery Plan, Humpback and Right Whale critical habitat, and an Hawaiian Monk Seal Recovery Plan update. The chapter also describes activities related to species designation decisions for the eastern stock of spinner dolphin, and the northern stock of offshore spotted dolphin (ETP), the Gulf of Maine population of the harbor porpoise, the coastal migratory stocks of Atlantic bottlenose dolphin. The final Northern Fur Seal Conservation Plan and NMFS' determination to delist the eastern North Pacific stock of gray whale are also discussed in this report.

Steller Sea Lion

In April 1990, coincident with the emergency rule to list species as threatened under the ESA, NMFS appointed a Steller Sea Lion Recovery Team to draft a plan for the species' recovery. The final Steller Sea Lion Recovery Plan was signed in December 1992, and published in January 1993. The Plan discusses the natural history and cur-

rent status of Steller sea lions, outlines the known and potential impacts on the species, and recommends management and research actions to aid the species.

The overall goal of this Recovery Plan is to promote recovery of the Steller sea lion population to a level where listing under the ESA would no longer be necessary. Immediate Plan objectives are: (1) to identify factors that are limiting the population, (2) develop management actions to minimize the effects of human activities that may be detrimental to population recovery, and (3) to determine appropriate actions to reverse the population decline. The Recovery Team recognized that the factors that have contributed to the Steller sea lion population decline are not well understood, and that information vital to the effective management and conservation of the species is lacking. The Plan outlines an intensive research program to elucidate the causes of the population decline, and recommends management actions to reduce the adverse effects of human actions, such as commercial fisheries, on the population.

The Plan also defines a monitoring program to ensure a continuing evaluation of Steller sea lion population status and trends. Steller sea lion population monitoring focuses primarily on aerial surveys of adult and juvenile animals on rookeries and haulouts, and on-land counts of pups at selected rookeries during the breeding season. The Plan calls for annual population censuses in Alaska, and a range-wide population census every 5 years. Results from research and monitoring programs identified in the Plan will be essential to defining effective conservation measures, and will be useful in subsequent revisions of the Recovery Plan.

In November 1992, NMFS convened the Steller Sea Lion Recovery Team to review the Steller sea lion management and research program for 1992, and to develop recommendations for program direction in 1993. The Recovery Team will continue to serve as an advisory body to NMFS in future years. NMFS will reconvene the Team to consider specific research and management questions, as needed.

Critical Habitat

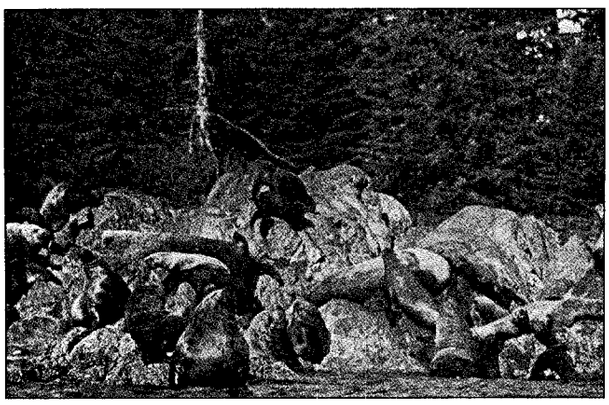
On April 1, 1993, NMFS published a proposed rule to designate critical habitat for the Steller sea lion. The designation became final on August 27, 1993. Critical habitat for Steller sea lions includes all rookeries within United States boundaries, major haulouts in Alaska, aquatic, aerial, and terrestrial zones associated with designated rookeries and haulouts, and specific aquatic foraging habitats in the Bering Sea, Aleutian Islands, and Gulf of Alaska. Specifically, NMFS designated the following geographic areas:

- In Alaska, all Steller sea lion rookeries and major haulouts and a 3000 foot zone extending landward, seaward, and skyward from each site. For rookeries and major haulouts west of 144° W longitude, the associated aquatic zone extends 20 nautical miles seaward from the site boundary.

- In California and Oregon, Steller sea lion rookeries and a 3000 foot zone extending landward, seaward, and skyward of each site.

- Three aquatic foraging areas in waters off Alaska: Shelikof Strait (Gulf of Alaska), Bogoslof Island area (southeastern Bering Sea shelf), and Seguam Pass (Aleutian Islands). Aquatic foraging sites were selected based on their geographic location relative to Steller sea lion abundance centers, their importance as Steller sea lion foraging areas, their present or historical importance as habitat for large concentrations of Steller sea lion prey items, and the need for special consideration of the effects of commercial fisheries that occur in these areas.

The critical habitat designation encompasses the known essential breeding, pupping, resting, refuge, and feeding habitats of Steller sea lions that require special management consideration. This designation is consistent with the recommendations of the Steller sea lion Recovery Team although the size of aquatic zones associated with rookeries and haulouts in Alaska and the Bogoslof Island foraging area is greater than the Team recommended. The designation includes geographic areas and sites that had previously been protected under ESA and Magnuson Fishery Conservation and Management Act regulations promulgated by NMFS.



Steller sea lion (*Eumetopias jubatus*) numbers continue to decline throughout much of Alaska. *Photo credit: NMFS/FPR.*

Status Review

Steller sea lion monitoring data indicate a continuing population decline. From 1989-1992, counts of adult and juvenile Steller sea lions at Kenai Peninsula to Kiska Island index sites declined by 11 percent. From 1990-1993, pup counts declined at 10.7 percent per year from southeastern Alaska to the eastern Aleutian Islands, and by 12.7 percent per year from Kenai Peninsula to the eastern Aleutian Islands.

On February 22, 1993, NMFS completed a Population Viability Analysis (PVA) for Steller sea lions in Alaskan waters. The PVA evaluated the probability of extinction in Alaska, as well as criteria against which the population's status could be measured. Three models were developed based on a model of growth rate and the 1985-1992 population trend. Additionally, NMFS's modelling efforts indicate that if the 1985-1992 decline rate continues, the Alaska Steller sea lion population will be reduced to levels approaching extinction within 100 years.

In light of these factors, NMFS initiated a formal status review of the Steller sea lion population to determine whether reclassification as an endangered species is warranted. Results from the planned 1994 range-wide Steller sea lion survey will be included in the status review. Notice of the status review was published in the *Federal Register* on November 1, 1993. To ensure that the review is comprehensive and is based on the best available data, the notice requested the public to submit any information and comments concerning the status of the Steller sea lion, or any distinct population stock or segment.

Protective Regulations

Coincident with the ESA listing, NMFS implemented regulations at 50 CFR 227.12 to reduce sea lion mortality, minimize unintentional and intentional harassment of sea lions, and to restrict disturbance of essential sea lion life functions, particularly at rookeries. Subsequent to the listing, additional regulations have been established under the Magnuson Fishery Conservation and Management Act to ensure that Federally-managed fisheries do not jeopardize the continued existence of the Steller sea lion population or deter population recovery (50 CFR 672.24 and 675.24). These regulations were developed during Section 7 consultation on the Gulf of Alaska and Bering Sea and Aleutian Island groundfish fisheries, and are intended to reduce the possible adverse effects of these fisheries on sea lions, their habitats, and the availability of prey. Fishery regulations provide for spatial and temporal

dispersion of the Gulf of Alaska walleye pollock catch, establish year round 10 nautical mile (nm) no-trawling zones around Steller sea lion rookeries west of 144º W longitude, and expand 10 nm zones around six rookeries to 20 nm during the Bering Sea and Aleutian Islands winter pollock fishery. All fishery management actions are reviewed for possible adverse effects to Steller sea lions; fishery regulations will be modified as necessary to ensure adequate protection to sea lions.

Public Education

Public education has been an essential part of the Steller sea lion recovery program during 1992 and 1993. Communication efforts have included distribution of posters, press releases, presentations of research and management activities at Fishery Management Council meetings, at symposia, and at public hearings in affected communities. Mass mailings to vessel operators, other affected parties, and government agencies have accompanied each rulemaking. In early 1993, NMFS published and distributed a Steller sea lion newsletter, which described management and research activities in 1991-1992. The newsletter will be produced annually.

Humpback Whale

Humpback whales were heavily exploited by commercial whalers until the middle of this century. Non-subsistence hunting of humpbacks in the North Atlantic was prohibited by the International Whaling Commission in 1955. Protection in the North Pacific came after the 1965 hunting season. The humpback whale was listed as endangered on June 2, 1970. NMFS published the Humpback Whale Recovery Plan in 1991.

The Recovery Plan delineated actions required to support recovery of the species. The plan identifies problems that may interfere with recovery and recommends research or management actions to restore and maintain the humpback whale as a viable member of the ecosystem. The plans long-term goal is to increase the species' population to at least 60 percent of the number that existed prior to commercial exploitation. The interim goal is to double current population within 20 years. To achieve these goals, the plan established the following primary objectives: (1) maintain and enhance habitat, (2) reduce human related mortality, (3) measure and monitor key population parameters, and (4) promote coordinated administration and implementation of the Plan.

North Pacific

Glacier Bay National Park and Preserve in Southeast Alaska is a summer feeding area for humpback whales. The effect of interactions between vessels and humpback whales in Glacier Bay has been a controversial topic. The National Park Service is presently developing a management plan to regulate vessel use of marine waters in Glacier Bay. The NMFS reviewed the potential impacts of NPS' Proposed Vessel Management Plan, which includes increasing the level of vessel traffic currently allowed by 72 percent, and concluded that this increase is not likely to jeopardize the continued existence of any threatened or endangered species. NPS has not finalized the Vessel Management Plan or implemented proposed changes in vessel traffic levels.

In November 1991, NMML convened the first part of a two-part Workshop on the Estimation of Calf Mortality in North Pacific Humpback Whales. The major goal of the workshop was the integration of humpback whale reproductive data from a number of research groups. A second workshop will be convened to provide a direct estimate of migration-related calf mortality, and to provide better estimates of reproductive intervals in North Pacific humpback whales. Results of the workshop will aid NOAA's Humpback Whale Recovery

effort under the ESA, and will also provide information to assist in the IWC's Comprehensive Assessment of Protected Whale Stocks.

A meeting of the humpback whale researchers based in Maui, Hawaii, was held in January 1992 to discuss: (1) proposed research and future research; (2) identification of possible harmful research practices; (3) identification and avoidance of unnecessarily duplicative research; (4) ongoing and planned studies with respect to the priorities outlined in the Humpback Whale Recovery Plan; and (5) reviewing the research permit process and permit conditions. One recommendation developed at this meeting was for NMFS to conduct a field workshop to assist researchers in improving cooperation and collaboration, facilitating the sharing of data, improving data collection techniques, and demonstrating and sharing field techniques used in approaching and observing whales. A field workshop to address these issues will be held in January 1994.

Section 7 consultations under the ESA for humpback whales around the Hawaiian Archipelago were completed on amendments to the pelagics FMP with the Western Pacific Fishery Management Council (WPFMC). Conservation recommendations, including a mandatory observer program for the Hawaii-based longline fishery, were provided to the WPFMC. No jeopardy opinions were issued for humpback whales in the NWHI.

In November 1992, Congress designated the Hawaiian Humpback Whale National Marine Sanctuary (Sanctuary). NMFS initiated discussions with the Sanctuary and Reserves Division (SRD) of the Office of Coastal Resource Management, National Ocean Service, regarding the Sanctuary. Since NMFS has many existing authorities and programs that protect and manage humpback whales, close coordination with SRD will be essential during the development of the Sanctuary management plan and draft environmental impact statement.

North Atlantic

The NMFS Northeast Region has been moving forward on implementation of the right whale and humpback whale recovery plans in the Northeast since 1990. One of the main tools used in recovery plan implementation within the Northeast is the Conservation Recommendation provision of Section 7 (ESA/ESA) Biological Opinions. These recommendations identify actions that the federal action agency may take to meet its requirements under Section 7(a)(1) of the ESA, e.g., the Biological Opinions involving the original Multispecies Fishery Management Plan and Amendment 5 to that plan have also contained measures that address Recovery Plan actions such as closed fishing areas during the right and humpback whale high use periods and a call for support to ongoing disentanglement efforts in the Region.

A Biological Opinion issued to the U.S. Army Corps of Engineers (ACOE) on the Central Artery Third Harbor Tunnel a major ten-year dredge project in Boston, Massachusetts, requires all dredged material to meet a strict testing protocol before it can be approved for ocean disposal. That Opinion also established, through Conservation Recommendations, a ACOE dredge observer program that has been used as a template for others in this region.

A Biological Opinion was also issued to the Environmental Protection Agency (EPA) for designation of the Massachusetts Bay Disposal Site (MBDS), located in Massachusetts Bay near Stellwagen Bank, as a final ocean disposal site. This disposal site is the only one in the Massachusetts Bay area. This Opinion also contained major Conservation Recommendations that reflect tasks identified in the recovery plans for the humpback and norther right whales. These included incorporation of the dredge material

testing protocol in all dredge operations where disposal at the MBDS was proposed, as well as use of dredge disposal observers.

A Biological Opinion was also issued to the EPA for the Boston Harbor Sewage Treatment plant, which involves discharge of treated sewage through an outfall pipe, nine miles into Massachusetts Bay. The Conservation Recommendations in that Opinion require significant monitoring of the discharge and analysis of the potential effects of several key contaminants to endangered species, specifically the right whale, inhabiting the area.

As a result of meetings regarding these opinions, the EPA has prepared a "Status Report and Plan for Action: Protecting Right and Humpback Whales in Massachusetts and Cape Cod Bays." The plan contains a summary of several items, common to each recovery plan, that could easily be accomplished in the New England area. Several of the following recovery plan items listed in the above-mentioned plan have been instituted.

1. Mariners are informed of the possibility of right whale and other endangered whales in the area during the spring months through the United States Coast Guard Notice to Mariners. They are further advised to monitor NOAA Weather Radio and a special NMFS fishery broadcast frequency for updated locations provided to us by whale researchers and other interested boaters. This system will be implemented again in the spring of 1994.

2. The EPA has also established a cooperative program with the NMFS permit monitoring and stranding network to collect tissues from right whales and other endangered species. The tissues will be obtained either through strandings or biopsy darts and will be analyzed for the presence of contaminants.

3. The NMFS-EPA group put together a one page flyer, funded by EPA, to inform fishermen and other vessel operators who ply the Massachusetts Bay waters about the need to be aware of large whales and avoid collisions where possible.

4. The NMFS-EPA group is also seeking funding for a video to inform large vessel operators of the danger of whale collisions.

5. The Stellwagen Bank Sanctuary has set aside funding to hold a workshop this spring to identify further needs for whale disentanglement efforts within the Region.

Northern Right Whale

The northern right whale is one the most endangered large whales in the world. The most recent estimate places the North Atlantic population at 300-350 individuals. Threats to the survival and recovery of this species include ship strikes, net entanglement, habitat degradation, and possible population depression due to inbreeding.

Critical Habitat

Northern right whales are known to use five primary habitats during their annual migration: including the following three areas off the eastern coast of the United States: (1) a winter calving ground in the coastal waters of the southeastern United States (SEUS), (2) a late winter/spring feeding and nursery area for a small portion of the population in Cape Cod Bay (CCB) and (3) and a spring/early summer feeding and nursery area for a majority of the population in the Great South Channel (GSC). These high-use areas may comprise the minimal space required for normal foraging behavior that will support a viable northern right whale population. On May 19, 1993,

NMFS proposed these three areas as critical habitat for the northern right whale.

Great South Channel. The Great South Channel (GSC) is a large funnel-shaped bathymetric feature at the southern extreme of the Gulf of Maine between Georges Bank and Cape Cod, Massachusetts, and is one of the most densely used cetacean habitats off the northeastern United States. It is likely that a significant proportion of the western North Atlantic right whale population uses the GSC as a feeding area each spring, aggregating to exploit exceptionally dense copepod patches. Given that not all of the 300-350 right whales in the northwest Atlantic population are seen each season, it is very likely that most, if not all, of the population in United States Atlantic shelf waters use the GSC within any given season, and that over the course of every 2-3 years the entire population in the northwest Atlantic may pass through the GSC.

The area proposed to be designated as critical habitat in these waters is bounded by the following coordinates: 41°40'N, 69°45'W; 41°00'N, 69°05'W; 41°38'N, 68°13'W; 42°10'N, 68°31'W.

Cape Cod Bay. Northern right whales were "rediscovered" in the CCB in the early 1950s. The CCB is a large embayment on the United States Atlantic Ocean off of the State of Massachusetts that is bounded on three sides by Cape Cod and the Massachusetts coastline from Plymouth, Massachusetts, south. To the north, CCB opens to Massachusetts Bay and the Gulf of Maine. Right whales have occurred in Massachusetts waters in most months; however, most sightings occur between February and May, with peak abundance in late March. These authors suggested that after arrival in CCB when prey is at a maximum (or at least at a consistently acceptable level) the whales employ small-scale foraging movements to select the most dense patches of copepods.

In addition to a foraging area, northern right whales use CCB as a nursery area. Schevill, Watkins and Moore (1986) reported 21 sightings of small calves in 12 or the 26 years of their CCB study, including 2 calves that may have been born in CCB. Therefore, the CCB may occasionally serve as a calving area, but it more recognized for being an important nursery for calves that enter into the area after being born in, or near, the SEUS.

The area proposed to be designated as critical habitat in these waters is bounded by the following coordinates: 42°04.8'N, 70°10.0'W; 42°12'N, 70°15'W; 42°12'N, 70°30'W; 41°46.8'N, 70°30'W; and on the south and east, by the interior margin of Cape Cod, Massachusetts.

Southeast United States (SEUS). Between 1989-1992, 31 calves were observed in the coastal waters off Georgia and northern Florida (the area described as the SEUS), representing 76 percent of the total number of calves (n = 41) reported from the North Atlantic during that period. Based on the number of calves, and females with calves in the SEUS since 1980, the SEUS considered as the primary calving area for the population.

The area proposed to be designated as critical habitat in these waters encompasses coastal waters between 31°15'N. (approximately located at the mouth of the Altamaha River, Georgia) and 30°15'N. (approximately Jacksonville, Florida) from the coast out to 15 nautical miles offshore; and the coastal waters between 30°15'N. and 28°00'N. (approximately Sebastian Inlet, Florida) from the coast out to 5 nautical miles.

Right Whale Recovery Plan Implementation

The Final Recovery Plan for the Northern Right Whale was released in the winter of 1992. Following completion of the Recovery Plan, a Science

and Management Workshop was held in April 1992, to review research and identify Recovery Plan implementation priorities. The implementation priorities established within the workshop are listed as follows:

- Coordinate Federal, state, international and private efforts to implement this plan;
- Identify and eliminate sources of human-caused mortality;
- Maximize efforts to free entangled whales and acquire scientific information from all specimens;
- Identify and protect habitats essential to the survival and recovery of northern right whales;
- Monitor size and trends of population;
- Determine and minimize any detrimental effects of aircraft or vessel interactions.

With the Recovery Plan finished, it became NMFS' intent to focus implementation effort, either through implementation teams or research initiatives, on the management and recovery issues outlined in the Recovery Plan. The high priority issues outlined are as follows:

- To reduce mortality from ship collisions and entanglement in fishing gear. Identifying those agencies and groups responsible for assisting in the implementation of mitigating measures;
- To implement seasonal/spatial regulations for fishing gear in high-use areas;
- To minimize adverse effects of whale watching through regulations to protect right whales;
- To identify genetic variability in the northern right whale population;
- To protect known high-use habitats;
- To locate unknown wintering grounds;
- To promote similar actions in Canada;
- To coordinate multiagency efforts to implement Recovery Plan-implementation teams were suggested; and
- To develop education program to increase awareness of right whale habitats, seasonal high-use areas and behavior.

In both 1992 and 1993, the NEFSC participated in a multi-investigator, multi-agency mitigation effort. NMFS convened several meetings in June and July 1993, and focused on the northern right whale in southeastern United States waters. The purpose of these meetings was to provide biological information about the right whale, and to advise Federal agencies, who authorize, fund or carry out activities that may adversely affect northern right whales, of their responsibilities under the ESA.

In 1993 NMFS also provided funding to the states of Florida and Georgia for right whale management and protection through section 6 of the ESA.

Southeast Implementation Team

NMFS considers it imperative to protect breeding right whales while on the winter calving grounds off Georgia and Florida. Several Federal agencies are already participating in research and monitoring efforts to protect the northern right whale. The ACOE for example, has worked cooperatively with the United States Department of the Navy to protect right whales on their calving grounds in the southeastern United States from shipstrikes during hopper dredging activities. NMFS convened a meeting on August 26, 1993, to discuss the monitoring program that needed to be in place prior to the arrival of northern right whales on their winter ground. The following

monitoring efforts were considered necessary to protect whales from December through March at the SEUS:

- Daily aerial surveys during the right whale calving season;
- Monitoring right whale movements, and habitat-use by mothers and calves during the right whale calving season;
- Restriction of vessel speeds when right whales are known to be in an area and visibility is limited. The actual speed reduction necessary is defined as the minimum safe speed to insure the safety of the vessel;
- Dedicated right whale observers that would accompany pilots on vessels as they enter and leave ports;
- An education program of all Federal, state and local parties that might adversely affect the species.

During the August 26th meeting, the Southeastern United States Right Whale Recovery Plan Implementation Team was formed. The team consists of representatives from the Georgia Department of Natural Resources (Chairman); Florida Department of Environmental Protection; NMFS/Southeast Fisheries Center and Southeast Regional Office; United States Navy, Naval Air Station, Jacksonville, Florida; United States Navy, Submarine Group, Kings Bay, Georgia; Georgia Ports Authority; Canaveral Port Authority; Glynn County Commission, Glynn County, Georgia; University of Georgia; United States ACOE, South Atlantic Division; United States Environmental Protection Agency; Port of Fernandina, Fernandina, Florida; and the United States Coast Guard. At this meeting several committees were established including: Education/Awareness, Early Warning Surveys/Communication; Funding of Surveys; Research; and Relocation of Ocean Disposal Sites.

A second meeting of the team occurred on December 14, 1993, and the following accomplishments of the various committees were discussed:

Awareness/Education Committee. The Canaveral Port Authority had developed an endangered species pamphlet covering whales, manatees and turtles and is being distributed regionally. As a group, the Port Authorities developed a series of posters describing the time right whales are in their waters, a phone number on who to contact if a whale is seen, and mention of right whale habitat. This poster is being distributed by the harbor pilots when they board a vessel for navigation.

A primary focus of the Right Whale Recovery Plan Southeast Implementation Team is to eliminate mortality due to collisions between large vessels and right whales on their wintering grounds. *Photo credit: NMFS/FPR.*

A standard brochure on right whales in the SEUS is being developed with input from the Georgia Department of Natural Resources (DNR), Florida Department of Environmental Protection (DEP), New England Aquarium and others. The brochure is designed for boaters (commercial and public) but is also another educational tool to be given to the ship masters by the harbor pilots. The Port Authorities, Coast Guard, Navy, Georgia

DNR and Florida DEP can use this brochure as the basis of awareness and education. Financial support for this brochure comes from the participating agencies.

The Georgia DNR and United States Coast Guard implemented a local Notice to Mariners broadcast about right whale calving grounds. This notice is broadcast four times daily by the United States Coast Guard on VHF. The first broadcast was December 6, 1993, and broadcasts will run through March 31, 1994. A slightly longer version is published in the Weekly local Notice to Mariners. This notice may also be published daily along with the tides and weather in regional newspapers.

Several press releases have occurred; the initial one occurred when the first right whales were sighted by a Savannah River Pilot Captain on December 4, 1993. A regional press release was also put out describing the implementation team, members to contact if a whale is seen, and other information on the need for protection of right whales in the SEUS.

The University of Georgia is surveying local groups and their right whale efforts, to ensure that there is no duplication in the development of educational materials and to provide a network to combine efforts.

Early Warning Committee. Daily monitoring is occurring in 1994 throughout the SEUS until March.

Communications Committee. A communication flow chart was developed to illustrate the communication network and how information should be distributed among the appropriate agencies/groups: priority/immediate notification from the air, daily notification after flights, and weekly notification. This network is considered the ideal communication scheme to relay right whale sightings from air to land-based operations, and back to the vessels. It is essential to the Early Warning System alerting mariners to the presence of right whales in the SEUS. The system is updated daily as locations of whales are sighted from the aerial surveys.

Recovery Plan and Research Committee. It was agreed that a Right Whale research initiative for the southeast needed to be reconsidered and a meeting was scheduled for January 1994.

Northeast Implementation Team

Recovery Plan implementation for the northern right whale has been ongoing at some level within the NMFS, Northeast Region (NER) since December 1990, and has involved most of the key agency staff and scientific experts in the area. NER began coordination with the Environmental Protection Agency (EPA), Region I, in April 1990. The most recent MWRA Biological Opinion (issued September 8, 1993), and associated conservation recommendations, make up a small part of the recommendations and programs that have been instituted since 1990 in the NER that address Recovery Plan tasks from both plans. NMFS is coordinating the development of a New England Right Whale and Humpback Whale Recovery Plan Implementation Team for the Northeastern United States. This team will address the possible cumulative impacts to right and humpback whales in Massachusetts Bay and Cape Cod Bay from discharge and disposal activities. The Recovery Plans also recognize that commercial fishing and large vessel traffic, through entanglement and ship-strike mortality, respectively, may potentially affect the recovery of protected whale species in these, and adjacent Gulf of Maine, waters. These issues will also be addressed by this implementation team. NMFS is planning the initial Northeast Implementation Team meeting in late June or early July 1994.

Recovery Plan Research Program

In addition to the management (monitoring) program, NMFS began developing a 3-5 year research plan that will focus on implementing those priorities in the Northern Right Whale Recovery Plan that indicate serious gaps in our present understanding of the biology of the northern right whale. The current research program is the result of several meetings that have reviewed research priorities specified in the Recovery Plan, and the management and research objectives that may have a potential effect on the rate of species recovery. One meeting took place on April 14-15, 1992, in Silver Spring; a June 18, 1993, meeting convened in Brunswick, Georgia, to discuss implementation of the Northern Right Whale Recovery Plan in the southeast United States; and a July 16, 1993, NMFS meeting was held to review the Recovery Plan priority one items relative to the implementation of the Recovery Plan over the next 3-5 year period. Based on these discussions, the following goals were identified as priorities to be accomplished within this time period:

1. To determine the wintering location(s) of most of northern right whales in the northwest Atlantic through the deployment of satellite tags in the Bay of Fundy or Scotian Shelf may lead to the "other" winter ground(s);

2. To determine daily, local movements within the wintering/calving area. Tagging with VHF tags in the SEUS could determine the daily movements of these animals. This would be useful to determine a long-term monitoring program to reduce ship strikes in the SEUS;

3. To determine where the third matriline occurs in the summer. There are 3 matrilineal stocks of northern right whales that have been recognized. One of the stocks does not visit the Bay of Fundy but is seen in the GSC and CCB during spring. Satellite tagging in the GSC or CCB in the spring of a female from the third matriline (these have already been determined from mt DNA analyses and photoidentification) might lead to the location of the other summer location of northern right whales in the North Atlantic;

4. To determine "bottlenecks" in the rate of recovery. The northern right whale has a low reproductive rate relative to southern hemisphere right whales. The possible inbreeding of males is one possibility that can be determined from the genetic/molecular identification through mtDNA biopsy sampling, and sexing using molecular techniques; and

5. To determine the best location and methods to monitor the trends (recovery) of this population. The longest time-series of counts is at the GSC. Given the variance in counts and methods that have been used, and the small population that we are studying, several questions arise: How many years of monitoring would be required before a trend could be detected, and with what level of confidence can we monitor this trend? NMFS needs to determine whether we can address the success or lack-of-success of the implementation of the recovery plan through monitoring.

Hawaiian Monk Seal

In addition to monitoring of the main populations, the NMFS Protected Species Investigation based in the Honolulu Laboratory, SWFSC conducts specific management actions designed to enhance the recovery of the Hawaiian monk seal. In 1992-93, efforts focussed on two primary recovery actions: rehabilitation and reintroduction of immature females seals from French Frigate Shoals, and studies of mobbing behavior at Laysan Island. In the spring of 1992, assessment of the population at French Frigate Shoals suggested that many juveniles were simply starving

to death due to lack of available prey. While the apparent lack of prey has not been clearly explained, it was clear that without rehabilitation, many of the animals in poor condition would perish. To minimize the loss of juvenile females, a number of seals in poor condition were taken into captivity for rehabilitation and transfer to Midway. Until 1992, all rehabilitated seals had been released at Kure Atoll, but with the closure of the Coast Guard loran station at Kure, all subsequent releases were planned for Midway. The monk seal population at Midway had declined severely in the 1960s, and recovery of this population has been a longstanding management objective. In 1992 and 1993, a total of 44 juvenile females were captured for rehabilitation. Twenty of these were released at Midway but, unexpectedly, those seals did very poorly: 18 of the 20 either died or disappeared. Because previous releases at Kure had been much more successful, all subsequent releases took place at Kure. To date, those releases have been more successful, but the disappointing results at Midway have not yet been explained.

At Laysan Island, attention was focused on reduction of mortality due to mobbing, where groups of males gather and attempt to mount and mate with a single seal. The single seal is usually an adult female, but may also be an immature animal of either sex. Mobbing frequently leads to severe injuries or death, and has prevented recovery of populations at Laysan and Lisianski Islands. In 1992, biologists conducted a field trial of a testosterone-suppressing drug to determine if the drug would reduce blood levels of testosterone or if the drug had unpredictable negative side effects. No adverse reactions to the drug were observed, and testosterone levels were reduced in nine of ten seals tested. In 1992 and 1993 (as in previous years at Laysan), extra effort was directed toward the study of male reproductive behavior. Data collected on males was returned to the laboratory for analysis of individual behaviors to determine if mobbing animals (which are rarely observed during the act of mobbing) might be identified on the basis of other behaviors. These analyses were completed and presented at a workshop in San Francisco in October 1993. The results suggested that the behavior of dominant males (seals presumed to be responsible for most of the breeding) could be distinguished from other males, but mobbers could not be distinguished. Importantly, the results also suggested that mobbing appears to result from an imbalance in sex ratio which, at certain times and certain locations on Laysan Island, can reach as high as 25 adult males per adult female. On the basis of this (and additional) information, plans were developed to remove nondominant adult males from the Laysan population to restore the sex ratio to 1:1.

Removal of males is scheduled to begin in July 1994, and rehabilitation efforts for seals from French Frigate Shoals will, in all likelihood, continue in the 1994 season.

ETP Dolphins

The status of the stocks of dolphins in the ETP has been at issue for many years. Based largely on the estimates of abundance that resulted from the 1986-1990 MOPS surveys conducted by NMFS, and the status reviews of ETP dolphin stocks that followed these surveys, NMFS was petitioned to list the eastern spinner dolphin, and the northern offshore spotted dolphin, as depleted species or populations under the MMPA on August 2, 1991, and on October 29, 1991, respectively.

The term depleted refers to a species or population stock that is below its OSP or a population stock that is listed as an endangered or threatened under the ESA of 1973. The OSP is considered to be the number of animals which will result in the maximum productivity of the population or species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of

which they form a constituent element. The definition of OSP is further defined as the population size which falls within a range from the population level of a given species or stock which is the largest supportable within the ecosystem to the population level that results in maximum net productivity level (MNPL).

The maximum productivity level is the population size which results in the greatest net annual increment in population numbers (reproduction and/or growth less losses due to natural mortality). MNPL has been expressed as a range of values (generally 50-70 percent of the carrying capacity) determined theoretically by estimating what population size in relation to the historical population size (or pre-exploitation population size) will produce the maximum net increase in the population. In the late 1970s, the midpoint of this range (60 percent) was used to determine if a stock was depleted.

Eastern Spinner Dolphin

The stock of eastern spinner dolphin (*Stenella longirostris orientalis*) a subspecies of the spinner dolphin, is endemic to the ETP. An extensive database on the distribution of this subspecies has been compiled from almost 25 years of observations by observers on tuna purse seine and research vessels. Recently, the status of the eastern spinner dolphin was revised at a workshop held in 1991 on the status of ETP dolphin stocks. Based on the best data available on abundance, kill and population dynamics, the population size of the eastern spinner dolphin was estimated to be below MNPL, within the range of 32-58 percent of its pre-exploitation population size with a best estimate of 44 percent based on available life history data. The eastern spinner dolphin was listed as depleted under the MMPA on August 26, 1993.

Offshore Spotted Dolphin

Offshore spotted dolphins (*Stenella attenuata*) have been killed in the tuna purse seine fishery since at least 1959. More than 3 million offshore spotted dolphins were killed between 1959-1972, with an average of more than 200,000 killed each year during this 14 year period. After passage of the MMPA, the kill of the northern stock fell to an average of about 46,000 per year from 1973-1975. The kill declined further in 1976 after a quota was placed on the number of dolphins killed from all species by the United States fleet. In 1977, individual quotas for each stock were first imposed, which led to a dramatic decrease in the kill, to about 6,000 northern spotted dolphin per year from 1977-1984. In 1988, the tuna purse seine fleet became increasingly composed of non-United States boats, which were not subject to the quotas, but were required to maintain mortality-per-set rates that were comparable to the United States fleet. This resulted in an increase in the number of dolphins killed, reaching a high of 52,000 offshore spotted dolphins in 1986, averaging about 32,000 per year from 1985-1990.

NMFS was petitioned in November 1991 to list the northern offshore stock of spotted dolphins as depleted. Until recently, it was thought that all offshore spotted dolphins north of 1° South were from one stock or population, the northern offshore spotted dolphin. However, based on re-examination of cranial morphology, two new geographical stocks of offshore spotted dolphin were established: the northeastern and the western/southern stocks.

On February 17, 1993, the Inter-American Tropical Tuna Commission (IATTC) stated in a letter to NMFS that information presented at a November 1991, Workshop (at DeMaster and Sisson, 1992) did not support the distinction

between a northern and a southern stock of offshore spotted dolphins as was suggested in the proposed rule. Perrin et al. (in DeMaster and Sisson, 1992) suggested that the best available evidence suggested the existence of a northeastern and a southern-western stock of spotted dolphins, rather than the previously accepted northern and southern offshore stocks. Workshop participants, therefore, recommended new stock boundaries to be used for management purposes.

The IATTC further stated that, because the scientific evidence did not support the validity of the northern offshore stock, new analyses should be carried out before any conclusions were reached regarding the status of the stocks of the offshore spotted dolphins, and requested that the comment period be extended for six months to allow: (1) indices of abundance and incidental mortality based on the new boundaries of spotted dolphin stocks to be recomputed; (2) analyses assuming current equilibrium to be conducted; and (3) new analyses of mortality estimates to be performed. Based on these studies NMFS recommended changes in the stock structure for spotted dolphins in the ETP that resulted in the northeastern and western/southern stocks replacing the old northern and southern stocks, respectively.

Northeastern Stock. On September 2, 1992, NMFS postponed the final determination on the proposed rule in order to review the new recommendations, to assess the status of the northeastern spotted dolphin stock, and to solicit additional comments on the northeastern spotted dolphin stock. During this review, the IATTC provided to NMFS the entire time series of fisheries kill data from which estimates could be derived. This information on dolphin mortality, and the recalculated estimates of abundance for the northeastern stock of spotted dolphins (based on sighting data from the MOPS surveys) provided the necessary data to determine the status of the northeastern offshore spotted dolphin.

During August 1993, NMFS published the reassessment of the northeastern stock of offshore spotted dolphin (Wade, 1993). The data from the 1986-1990 MOPS surveys were pooled to give a single best estimate of abundance for the newly defined northeastern stock, which resulted in an estimate of abundance of 730,900 animals. The population size of this new stock was much smaller than the abundance estimate made from the same data for the previously defined northern stock. Additionally, the location of dolphin sets during 1959-1972 indicated that nearly all of the kill of offshore spotted dolphin during that time period was from the northeastern stock, as the fishery did not start to move offshore substantially until 1969.

Wade (1993) determined that the present estimate of dolphin abundance was 19 to 28 percent of its estimated historical (pre-exploitation) abundance. Calculation of confidence limits for these population estimates showed that the precision of the estimates was sufficient to make a status determination. There were no combinations of parameter values such that relative population size was estimated to be above MNPL. The fisheries kill data indicate that between 1988 and 1990 it was unlikely that the population experienced any significant recovery. The results indicated that, as of 1988, the stock of northeastern offshore spotted dolphin was depleted as defined by the MMPA. Therefore, the northeastern stock of the offshore spotted dolphin was designated as depleted under the MMPA on November 1, 1993.

Western/Southern Stock. The northern offshore spotted dolphin stock consisted of animals from the current northeastern spotted dolphin stock and, to a lesser extent, the current western/southern stock of offshore spotted dolphin. The listing considered only the current northeastern stock of spotted dolphin. However, at the end of 1993, NMFS was continuing to examine data collected within the range of the west-

ern/southern stock of spotted dolphin to determine whether it also should be considered for listing under the MMPA.

Conservation Plans. NMFS does not plan to develop a conservation plan for either the eastern spinner dolphin, or the northeastern spotted dolphin, because it was determined that implementation of a plan at this time would not promote the conservation of the species. Existing regulatory mechanisms protecting ETP dolphins under the MMPA preclude the immediate need for a conservation plan. In a series of intergovernmental meetings convened under the auspices of the Inter-American Tropical Tuna Commission (IATTC) in 1991 and 1992, nations harvesting tuna in the ETP agreed to limit dolphin mortality to levels approaching zero. The nations have committed to (1) achieving 100-percent observer coverage; (2) identifying alternative fishing methods that would not involve the encirclement of dolphins and, therefore, would not result in dolphin mortality associated with purse-seine techniques; (3) reducing dolphin mortality; and (4) developing and implementing a dolphin conservation program in 1992 and subsequent years.

The International Dolphin Conservation Act (Public Law 102-523) was enacted on October 26, 1992. This act amended the MMPA, authorizing the United States to enter into an international agreement to establish a global moratorium for at least 5 years beginning on March 1, 1994, to prohibit harvesting of tuna through the use of purse-seines deployed on or encircling dolphins.

In summary, United States and international efforts to reduce dolphin mortality in the purse-seine fishery for tuna, and promote dolphin conservation, have been, or are being, implemented. These protective measures are considered adequate to protect the species from further declines within the foreseeable future.

North Atlantic Harbor Porpoise

NMFS convened a workshop on May 5-8, 1992, to evaluate the status of the Gulf of Maine (GME) population of harbor porpoise. Information was reviewed on population structure, reproductive rates, population size, and the level of bycatch in this population. The information received during the workshop provided the scientific information necessary to complete a status review of the species that was initiated on February 12, 1991.

Based on information reviewed at the workshop, the best estimate of the average annual bycatch of harbor porpoise in the GME gillnet fishery was 2,000 (95-percent CI = 1,200-2,800). This estimate was based only on data for the multispecies sink-gillnet fishery in the GME, and did not include known bycatch from this population which occurs in the Bay of Fundy, Canada, or in United States waters below the GME (during the winter-spring range of the GME harbor porpoise population).

The best estimate of the size of the GME harbor porpoise population from a survey completed in 1991 was 45,000. Therefore, the minimum bycatch of the GME population was estimated to be approximately 4.5 percent of the best estimate of its abundance. Harbor porpoises have a limited capacity for population increase; therefore, the best available information indicated that the bycatch of the GME population of harbor porpoise must be reduced by more than 50 percent to be sustained by the present GME population.

One the strongest recommendations from the May 1992 harbor porpoise assessment workshop was that the present level of bycatch of porpoise

in the GME sink-gillnet fishery needs to be reduced. The workshop results determined that the bycatch levels may "have a significant adverse impact over a period of time longer than one year". Therefore, independent of the ESA, NMFS, under section 114(g)(3) of the MMPA, proceeded to address the bycatch problem. Pursuant to the MMPA, NMFS requested, in a letter dated October 15, 1992, that the New England Fishery Management Council (NEFMC) introduce measures in Amendment 5 to the Northeast Multispecies Fishery Management Plan (FMP), or through development of an alternative bycatch reduction plan, that will reduce harbor porpoise mortality to acceptable levels. The bycatch reduction program will be structured to progressively reduce total harbor porpoise bycatch in the gillnet fishery to an amount not exceeding 2 percent of the best estimate of population abundance within a period of time not to exceed 4 years from the effective date that the plan is implemented.

Proposed Listing under the ESA

On January 7, 1993, NMFS proposed to list the GME population of harbor porpoise as threatened under the ESA, and provide for a 90-day comment period. This proposed ESA listing was largely based on the level of bycatch in several gillnet fisheries, and the lack of a regulatory mechanism to reduce this mortality in these commercial fisheries. Due to numerous requests for public hearings, NMFS announced that on April 5, 1993, the comment period would be extended until August 7, 1993, to allow for a series of public hearings at several locations in Massachusetts, New Hampshire and Maine, and allow individuals to comment on the materials discussed at these hearings.

Prior to the end of the comment period, the NEFSC, completed the analyses of the 1992 abundance survey and bycatch estimates for harbor porpoise in the GME. The estimate of total abundance from the 1992 survey was 67,500 (95 percent CI 32,900-104,600). An estimate for the harbor porpoise population was obtained by combining the sighting data for both surveys, resulting in a best estimate of approximately 47,200 individuals. The bycatch estimate decreased to approximately 900 (95 percent CI 700-1200) in 1992. The 1992 bycatch was significantly lower than the 1991 estimate due primarily to the significantly lower bycatch rate in the winter of 1992 in the southern GME.

The NEFMC forwarded a letter to NMFS requesting that the agency delay making a determination on the ESA listing of harbor porpoise for six months, due to notable disparities between the 1990-1991 and 1992 estimates of harbor porpoise bycatch in the gillnet fishery and because of questions regarding whether the GME population is distinct from other western North Atlantic populations.

Under Section 4(b)(6) of the ESA, if there is substantial disagreement regarding the sufficiency or accuracy of the available data relevant to the determination or revision concerned, NMFS may extend the 1-year period of determination (final rule publication deadline) for not more than six months, for purposes of soliciting additional data. In accordance with this provision, NMFS extended the period required to make a final determination on whether or not to list harbor porpoise as threatened under the ESA until July 7, 1994.

During this period NMFS also began reviewing data on harbor porpoise strandings in the Mid-Atlantic including the states of Rhode Island, New York, New Jersey, Maryland, Virginia and North Carolina. Between January and June 1993, 53 harbor porpoise strandings were reported in those states. The majority of them were reported from New Jersey, Virginia and North Carolina (Haley and Read, 1993) from March through May 15, 1993. The widespread occurrence of harbor porpoise strandings in 1993, and in previous years (58 FR 3108, January 7, 1993), along the

mid-Atlantic coast have suggested that fisheries interactions are occurring outside the GME and the Bay of Fundy, Canada. Initial reports indicated that fisheries or other human interactions contributed to the mortality of many of these harbor porpoises.

The GME population of harbor porpoise is also taken by gillnetters in the Canadian waters of the Bay of Fundy at a potentially excessive level. The United States will be addressing this bycatch problem with Canada during 1994, separate from the ESA listing process.

At present, harbor porpoise bycatch is being addressed only by the NEFMC, and only in the GME sink gillnet fishery. The NEFMC is implementing strong new measures to reduce fishing effort and bycatch of porpoise in the groundfish fishery off New England. Among the measures proposed are a series of gillnet time/area closures designed to reduce the harbor porpoise mortality level below the two percent target goal.

The NEFSC held a gillnet gear modification workshop in September 1993 that explored various ways to modify a gillnet that may reduce harbor porpoise mortality. The fishermen, with assistance from Memorial University in Newfoundland, Canada and the NMFS, are experimenting with acoustical devices designed to increase the likelihood of harbor porpoise detecting the gillnets.

The NEFSC will hold a harbor porpoise assessment workshop in the spring of 1994 to analyze the 1993 mortality data. Following that workshop NMFS will gather all data on the status of the species, the effectiveness of all experimental approaches to reducing the mortality, and the expected reduction in mortality that may come from NEFMC and Canadian measures, and make a decision on whether to list the harbor porpoise under the ESA.

Mid-Atlantic Coastal Bottlenose Dolphin

In 1987-1988, more than 740 Atlantic bottlenose dolphins died and stranded along the United States east coast from New Jersey to Florida. Based upon the best scientific information available, NMFS concluded that this stock of dolphins had declined by more than 50 percent and was below OSP. NMFS proposed listing this stock as depleted in August 1991.

During the comment period that followed the August 1991 proposed listing, several questions were raised about the model that was employed in making the depleted determination. Therefore, NMFS organized a panel, and conducted a risk analysis based on the model initially used in making the determination for the proposed rule, but incorporated more recent information that provided for a range of values for the model parameters. The re-analyses were reviewed by NMFS throughout May 1992, and comments were suggested back to the panel conducting the analyses. On January 20, 1993, the re-analyses were completed and approved by NMFS.

Based on the results of the best available data, it was determined that the stock had declined by more than 50 percent as a result of the 1987-1988 mortality event, and that the stock was below a level that can maintain maximum net productivity, and therefore depleted under the MMPA. On April 6, 1993, NMFS designated the migratory stock of mid-Atlantic coastal bottlenose dolphins as depleted.

Dolphin Conservation Plan

On September 13-14, 1993, NMFS convened a workshop to discuss the status and the management of the migratory stock of mid-Atlantic coastal bottlenose dolphin at the Duke Marine Lab, Beaufort, North Carolina. This meeting

focused on the results of current research that has been conducted since the 1987-1988 die-off, what is known regarding the distribution of this stock, on deficiencies in our understanding of this stock that may require additional research, and on management needs required to protect coastal bottlenose dolphins. The workshop resulted in a cooperative discussion between NMFS, researchers, and representatives from state agencies that manage marine resources and fisheries in their waters. A workshop report is being prepared by NMFS.

NMFS considers this meeting to have been an important first step towards developing, at a Federal and state level, a conservation plan to manage and conserve all stocks of coastal bottlenose dolphin, the listed mid-Atlantic coastal migratory stock, as well as non-listed resident stocks. A draft conservation plan, incorporating information from the workshop, is being prepared and scheduled for completion and NMFS review in 1994.

Gray Whale

On March 7, 1991, NMFS received a petition from the Northwest Indian Fisheries Commission and others to remove the eastern North Pacific (California) stock of gray whales from the List of Endangered and Threatened Wildlife (the List) under the ESA (ESA). On November 22, 1991, NMFS published a proposed rule that the California stock should be removed from the List.

After public comment on the proposal, on January 7, 1993, NMFS published a final determination that the California stock of gray whale has recovered to near its estimated original population size and, while individual and cumulative impacts may have the potential to affect adversely the eastern stock, that stock is neither in danger of extinction throughout all or a significant portion of its range, nor likely to again become endangered within the foreseeable future throughout all or a significant portion of its range. NMFS determined therefore, that this stock should be removed from the List under the ESA.

NMFS made this determination based on evidence that the California stock's population size of 21,113 (+/- 688) in a 1987/88 survey, exceeded the pre-exploitation estimate of 15,000 to 20,000 individuals. In addition, the data indicate that the California gray whale population, while below estimated historic carrying capacity of ≈24,000, is within OSP and increasing at that time at an annual rate of 3.2 percent (+/- 0.5 percent). NMFS also determined that the western Pacific gray whale stock, which is geographically isolated from the eastern stock, has not recovered and should remain listed as endangered.

Bowhead Whale

On March 10, 1993, NMFS received a letter from the Marine Mammal Commission (MMC) regarding the development and implementation of a recovery plan for the bowhead whale. NMFS agrees with the MMC that a recovery plan might facilitate the development, coordination, implementation, and funding of programs that are necessary to protect and encourage the recovery of the western Arctic stock of bowhead whale population. However, NMFS also believed that it would be preferable to develop a plan after completion of the following ongoing efforts:

- The IWC is to undertake a population assessment of bowhead whales in its 1994 meeting;

- To date, the IWC has not reviewed its management scheme for aboriginal whaling, as it has for commercial whaling. The present level of subsistence take from the western Arctic stock of bowhead whales approaches or exceeds the "significant" criteria as currently defined within the NMFS' proposed regime to govern interactions between marine mammals and commercial fishing operations (0.5 percent of the

population estimate, or approximately 37 animals per year). Efforts have been initiated within the United States IWC delegation to evaluate the implications of applying any modified management scheme to subsistence whaling. This issue is to be addressed at the 1994 IWC meeting; and

- A current population model for the western stock of bowhead whales is to be presented at the 1994 IWC meeting.

The western Arctic bowhead whale population is increasing, albeit at a slow rate. In May 1991, the IWC's Scientific Committee estimated that the population was approximately 7,500 individuals, and increased at a rate approaching 3 percent per year between 1978 and 1988. These estimates may have been optimistic as current assessments indicate an increase much closer to 1.5 percent per year. This is a recovery rate lower than that expected for large whales, and activity in the western Beaufort, as well as subsistence, have been implicated as inhibiting the maximum growth potential for this population.

Given the information that is scheduled for discussion at the 1994 IWC meeting, NMFS believes that the possible development of a recovery plan following the 1994 IWC meeting may be more scientifically based, and result in a more significant contribution to the recovery of that species.

Northern Fur Seal

In June 1988, NMFS declared the Pribilof Islands stock of northern fur seals depleted under the MMPA. Amendments to the MMPA that passed into law in November 1988, directed the Secretary of Commerce to develop a conservation plan for the northern fur seal. The Pribilof Islands Northern Fur Seal Conservation Plan was published by NMFS in 1993.

Conservation Plan

The Pribilof Islands Northern Fur Seal Conservation Plan was prepared by NMFS and is intended to serve as a guide that delineates and schedules those actions believed necessary to restore the northern fur seal to pre-depleted levels of abundance. The overall goal of this Conservation Plan is to promote recovery of the fur seal population on the Pribilof Islands to a level appropriate to justify removal from listing under the MMPA, and towards this end, take actions to promote the recovery of northern fur seals. The population level at which maximum productivity would occur, and the level at which NMFS would reconsider the depleted classification, would occur at a sustained population level (total abundance estimate) and/or a sustained level of annual pup production which are 60 percent of the peak historical estimates.

Northern fur seals were possibly near their carrying capacity between 1940 and 1956 when peak numbers of animals were seen on the Pribilof Islands. However, the present abundance estimate of 982,000 is approximately 47 percent of its carrying capacity, and therefore below OSP, based on a population level of 2.1 million during the late 1940s and early 1950s. The 1992 estimate of the number of pups born (218,000) is approximately 41 percent of the peak in estimated pup production in the late 1940s and early 1950s.

Furthermore, the Pribilof Islands are currently experiencing a very rapid commercial expansion associated with crab and groundfish fisheries in the Bering Sea. In addition to expanded operations at the existing shore plant, three new processing plants (one shore plant and two floating plants) are scheduled to be on line at St. Paul by January 1, 1994 Processing waste discharges from these plants will exceed one million gallons per day. Similar activities are occurring on St.

George Island. The commercial development of the islands promises increased vessel and plane traffic, and hundreds of new residents to the islands. The impacts of this development on the management and protection of the northern fur seal population are unknown, but will warrant careful consideration as NMFS implements its research and conservation priorities.

Two objectives are proposed to restore and maintain the Pribilof Islands fur seal population at its OSP level as mandated by the 1988 amendments to the MMPA. Research and management actions are included in these objectives as follows:

1. Continue and, as necessary, expand research or management programs to monitor population trends and detect natural or human-related causes of changes in the Pribilof Islands northern fur seal population and habitats essential to its survival and recovery; and

2. Assess and avoid or mitigate possible adverse effects of human-related activities on or near the Pribilof Islands and other habitat essential to northern fur seals throughout their range.

The Conservation Plan recommends continuation of ongoing research and development of new programs designed to improve our understanding of fur seal management and conservation needs. Specific management actions designed to help understand the fur seal population have been recommended. Continuing results from monitoring programs on St. Paul and St. George Islands (Pribilof Islands), and subsequent research activities, will be considered in subsequent revisions and modifications to this Conservation Plan.

Harbor Seal

Recent evidence of declines in the population of harbor seals in the Gulf of Alaska and the eastern Bering Sea have underscored the need for a better understanding of the species' population dynamics and the factors affecting them. The MMC updated its account in 1992 of the status of harbor seals in Alaska, including research and management recommendations. The NMFS, NMML reviewed the status of harbor seals in Alaska (Sease, 1992) and, at the same time, recognized that a conservation plan for harbor seals would be consistent with section 115(b) of the MMPA. Therefore, in July, 1992, NMFS contracted for a review of harbor seals abundance in Alaska, and report of management recommendations. NMFS also convened an agency working group to assist with plan development. A draft plan was completed and reviewed by the working group in late 1993. NMFS will finalize the review in 1994.

On January 28, 1993, NMFS convened a small workshop to review the current status of harbor seals in Alaska based on the previous reports. This meeting first discussed a conservation and/or management plan; and whether the species should be considered depleted in light of the declines since the early 1980s. It was generally agreed that a cooperative management of harbor seals in the areas where declines have been most serious was necessary. The group will convene again following the completion of the harbor seal status review and management recommendations report. The draft report was completed and forwarded to NMFS on October 28, 1993.

The report reviewed the materials presented in previous reviews of abundance but also attempted to place the status of harbor seals in Alaska in reference to the MMPA, and to the status of the Pacific harbor seal population as a whole. The draft report also attempted to delineate required management activities and responsibilities. Some of the recommendations in the draft report included that NMFS give consideration to: (1) involving Alaskan Native subsistence hunters in the management of harbor seals in Alaska; (2) determining the boundaries, if any, between separate stocks of

seals in the Pacific; (3) continuing to monitor the status and trends of the harbor seal population throughout portions of Alaska; (4) protecting the harbor seal population from further detrimental human activities, and subsequent declines; and (5) coordinating local, state, federal, and international efforts to implement effective management of harbor seals in the State of Alaska.

A second meeting was convened on December 10, 1993, to review the results of 1993 research conducted by NMFS and by ADFG, and others, and to discuss the management measures that should be taken based on the new data. The meeting was in general agreement that NMFS should initiate a status review to determine the extent of the declines of harbor seals throughout the Gulf of Alaska relative to a potential depleted status under the MMPA, and that the conservation/management group should review the recommendations in the report, and further recommend management actions that should be undertaken given the extent of the declines, independent of the status review.

Chapter V. Tuna-Dolphin Issues; International Dolphin Conservation Act of 1992

Overview

Efforts to reduce dolphin mortality in the ETP have been a central focus of the MMPA since it was enacted in 1972. The 1992-93 efforts include the implementation of regulations, amended in 1988 with a final rule for implementation passed in 1990, limiting the import of yellowfin tuna from nations exporting tuna into the United States as an incentive for those nations to adopt dolphin saving programs equivalent to the United States program, to achieve an incidental mortality rate comparable to that of the United States fleet, and to identify and develop new methods of locating and catching yellowfin tuna without the incidental capture of dolphins. In addition, in 1990 and 1991, as a result of pressure from environmental groups urging a boycott of tuna caught in association with dolphins, United States canners announced that they would no longer purchase tuna caught in this manner. The Dolphin Consumer Protection Act (DCPA) was then enacted in 1992, defining the term "dolphin safe." NMFS Strategic Plan established research projects to assess the effectiveness of fish aggregating devices (FADs), laser technology (LIDAR) and other measures to detect the aggregation of tuna.

Fishing Operations and Tuna-Dolphin Interactions

The most widely known interaction between marine mammals and commercial fisheries is the incidental take of dolphins by yellowfin tuna purse seiners in the ETP. For reasons not fully understood, schools of large yellowfin tuna (25 kg or larger) tend to associate with ETP dolphins. In the late 1950s, fishermen began exploiting this association by deploying large purse seine nets around the more readily observed dolphin schools to catch the tuna swimming below. Despite the fishermen's efforts to release the dolphins, many became trapped in the nets and drowned.

Recent efforts to reduce fishery-related dolphin mortality in the ETP have focused on improving domestic fishing operations, increased monitoring of foreign fleets, actions to encourage reduction of foreign dolphin mortality, research on methods for harvesting large yellowfin tuna that are not associated with dolphins, and international meetings and workshops.

During 1992-1993, many changes occurred which affected yellowfin purse seine fishing in the ETP, including: (1) amendments to the MMPA; (2) Federal Court decisions; and (3) international agreements. Most importantly, a significant reduction in dolphin mortality was achieved. For example, in 1992 and 1993, NMFS placed observers on 35 and 40 trips aboard United States purse seine vessels, respectively. Mortality for the United States fleet was 439 dolphins in 1992 and 115 in 1993, down from 20,692 dolphins in 1986. This represents a reduction in dolphin mortality of over 99 percent. Dolphin mortality reductions are the result of strict operator-performance standards and training, a reduction in the number of vessels that continue to deploy nets to encircle dolphins, and the interest of the fishermen in reducing the incidental mortality. Further, the number of dolphins killed per set for dolphin-associated fishing has been reduced to 0.58 kill/set. This represents a substantial decline from 1986 when approximately 12.0 dolphins were killed during each set.

Legislation

International Dolphin Conservation Act

The International Dolphin Conservation Act of 1992 (IDCA) (Public Law 102-523), focuses on ways to eliminate rather than merely reduce dolphin mortality. The Act authorizes the Department of State to enter into an international agreement which would establish a 5-year moratorium on setting purse seine nets on marine mammals to harvest tuna. It also amends the general permit held by the American Tunaboat Association (ATA), on behalf of United States tuna fishermen, by reducing the take quota from an annual kill of 20,500 dolphins to 1,000 for 1992 and to 800 for the 14-month period from January 1, 1993, to March 1, 1994. The ATA general permit is scheduled to expire on March 1, 1994. However, if no major tuna fishing nation commits to the 5-year purse seine moratorium, the general permit will continue in effect until December 31, 1999, with an additional requirement to reduce incidental dolphin mortality by statistically significant amounts each year to levels approaching zero by 1999. Under the condition that no other nation enters into the moratorium agreement, United States fishermen operating under the general permit will be able to take marine mammals incidental to their purse seine operations until 1999. As of the end of 1993, no nation had yet committed to the moratorium.

Under the IDCA, an "intermediary nation" is defined in MMPA Section 3(17) as a nation that exports yellowfin tuna or yellowfin tuna products to the United States and that imports yellowfin tuna or yellowfin tuna products that are subject to a direct ban on importation into the United States. Based on this statutory definition, NMFS was able to lift the intermediary nation embargoes imposed by the United States District Court in January 1992 against six nations. The Court originally had ruled that an intermediary nation was any nation that imported yellowfin tuna and also exported yellowfin tuna to the United States and that all yellowfin tuna from an intermediary nation must be prohibited. The IDCA provides a mechanism whereby the government of any intermediary nation can certify and provide reasonable proof that it has not imported within the preceding six months any yellowfin tuna or yellowfin tuna products that are subject to direct ban on importation into the United States. This certification process has resulted in the lifting of the yellowfin tuna embargo on several other nations.

At the end of 1993, only three nations, Italy, Japan, and Costa Rica, remained under intermediary nation embargo. Four nations (Mexico, Venezuela, Panama, and Colombia), were under primary embargo. All yellowfin tuna and yellowfin tuna product imports are prohibited from the intermediary nations, while only those yellowfin tuna and yellowfin tuna product imports derived from yellowfin tuna harvested in the ETP by purse seine are prohibited from the harvesting nations under primary embargo.

NMFS continues to monitor the activities of the foreign tuna purse seine fleets operating in the ETP by reviewing the annual reports of those harvesting nations that request a finding that will allow them to import their yellowfin tuna. Affirmative findings, meaning those findings that would allow the import of tuna, were made for Vanuatu and Ecuador in 1992, and Vanuatu, Ecuador, and Spain in 1993.

Inter-American Tropical Tuna Commission

The United States is a member of the Inter-American Tropical Tuna Commission (IATTC). NMFS, along with representatives from the Department of State, participates in IATTC meetings. The IATTC's original mission was to maintain the populations of yellowfin and skipjack tuna taken by tuna fishing vessels in the ETP at a level which

would permit maximum sustainable catches. Since the late 1970's, however, the IATTC has also taken on the additional responsibility of addressing problems arising from the tuna-dolphin relationship in the ETP. At the June 1992, IATTC Annual Meeting, representatives of Colombia, Costa Rica, Ecuador, Mexico, Nicaragua, Panama, Spain, the United States, Vanuata, and Venezuela agreed on a mechanism to implement an April 1992, IATTC resolution to progressively reduce dolphin mortality in the ETP tuna purse seine fishery to levels approaching zero through the setting of annual limits. The resolution imposed a 1993 dolphin mortality limit (DML) of 19,500 on the international tuna fleet in the ETP, which would be lowered over a 7-year period to less than 5,000 in 1999.

The IATTC also initiated a multilateral agreement through its international dolphin conservation program (IDCP) to reduce marine mammal mortality in the fishery while sustaining the yield of tuna. Compliance with the IDCP agreement is being accomplished through the implementation of individual vessel DMLs. To monitor vessel compliance with the new program, an International Review Panel (IRP), comprised of government and private sector representatives, was established by international agreement in 1992 to review the performance of each vessel in the international fleet that is participating in the fishery and intentionally deploying nets to encircle dolphins.

Foreign nations participating in this multilateral approach to reducing dolphin mortality have taken it very seriously. In the first year of the program (1993), IATTC scientists estimate the total number of dolphin mortalities to be approximately 3,900 for the international fleet in the ETP — substantially lower than the total DML of 19,500 scheduled by the IDCP for the year. This mortality is about 30 percent less than the goal of 5,000 dolphins for 1999. Because of this success, participating governments resolved at the June 1993 IATTC Annual Meeting to revise the schedule of global annual DMLs downward to maintain the credibility of the program. They subsequently revised the 1994 global DML downward from the existing DML of 15,500 to 9,300, a 40 percent reduction. The Parties also agreed that in each successive year covered by the DML schedule, they will review the schedule for future years with the objective of determining whether further reductions in the schedule can be achieved.

Four harvesting nations (Mexico, Venezuela, Panama, Colombia) involved in the international agreement remained embargoed under the MMPA at the end of 1993. Although these nations are cooperating with the IDCP agreement, they have either had dolphin mortality rates or dolphin mortality programs not comparable to the United States dolphin mortality rate or program.

Regulatory Actions

NMFS published regulations in 1992 and 1993 implementing portions of the IDCA. According to the regulatory amendments and as indicated earlier, if no conservation agreement is reached with a foreign nation, NMFS will be prepared to issue regulations that will establish lowered quotas for 1994 and beyond.

In addition, NMFS published a proposed rule to define "import" as it pertains to tuna products affected by the MMPA. This is required to make consistent the treatment of tuna products that are entered into a country's Customs territory, rather than merely entering the country's territory for purposes of storage or transshipment. A final rule will be published in early 1994.

Dolphin-Safe Research

In 1988, the United States Congress amended the MMPA and directed NMFS to develop methods of reducing or eliminating the incidental take of

dolphins involved in the ETP tuna purse seine fishery. The most direct method of eliminating the mortality of marine mammals during fishing operations is to avoid encircling dolphins with the seine. Other possible methods for eliminating dolphin mortality include aggregating tuna, separating the tuna associated with dolphins, locating tuna when they are not associated with dolphins, or investigating fishing procedures other than purse seining. Recent refinements and/or modifications of fishing procedures involving the intentional capture of tuna and dolphins have resulted in dramatic reductions of dolphin mortalities, but are not likely to eliminate them entirely. Research efforts to date have focused on the use of Fish Aggregating Devices (FADs) to aggregate tuna, the adaptation of laser technology (LIDAR) to locate tuna not linked to dolphin schools, an investigation into the tuna-dolphin bond (oceanography, food habits and tuna/dolphin tracking), additional research planning, and bycatch estimation.

Fish Aggregating Devices

Limited results with FADs vessels that were designated for short time deployment (27 days or less) from purse seine vessels indicate little promise for this approach. On the other hand, the study involving drifting FADs deployed for the long term was considered successful because the FADs remained afloat, the electronics packages functioned over a long period of time, and were moderately effective in attracting tuna.

The size range of yellowfin tuna caught in association with FADs is similar to the size range of tuna historically caught in association with logs. Generally, the majority of yellowfin caught in association with floating objects are under 60 cm in length and weigh less than 6.5 kg. Larger fish were occasionally caught in association with FADs, but the majority of the yellowfin catch was immature fish. Efforts to deploy FADs in traditional dolphin-fishing grounds where mature yellowfin are caught have not yielded catches of large yellowfin, although the number of sets was small and not sufficient to warrant any final conclusions.

The by-catch of non-commercial species in association with FADs is also representative of log fishing in general. While at times highly successful, fishing on floating objects clearly has more direct impact on a greater variety of species than does fishing on dolphin-associated tuna. The consequences of a large-scale shift to FAD fishing in terms of harvesting greater quantities of immature fish and associated non-commercial species deserves consideration.

Laser Technology (LIDAR)

The majority of tuna located by purse seine vessels are detected by visual cues that fishermen observe at or near the surface. Tuna are often attracted to floating objects; they swim in association with various species of whales, sharks, and dolphins. Birds are commonly associated with the surface schooling behavior exhibited by tuna and provide one of the most reliable cues indicating a feeding aggregation that includes tuna. Tuna are sometimes found alone, as free-swimming schools, occasionally seen finning at the surface, disturbing the water by swimming close to the surface, or actively breaking the surface while feeding.

When these schools are beneath the surface, however, they can not be detected by the normal visual cues. Since the advent of the laser, efforts have been made to develop techniques for probing the environment with lasers. Airborne LIDAR systems have potential application in profiling sub-surface schools of pelagic fish and may be useful for species identification as well.

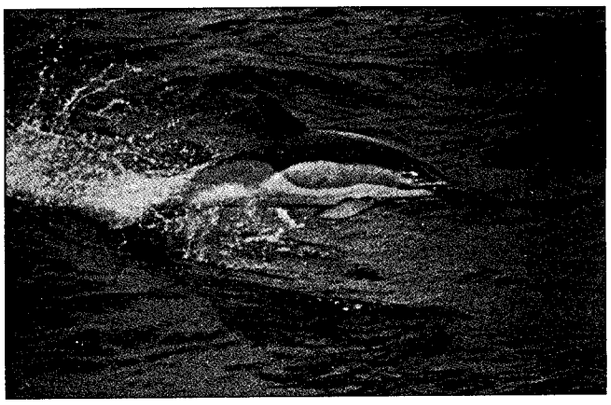
During 1992, research was initiated during normal tuna purse seining operations to test a downward-directed laser on a helicopter which

repeatedly emitted short flashes of light to illuminate subsurface water with columnar areas of light. It was proposed that as each light pulse passed through the water, objects suspended in the water reflected a small amount of the laser light back to the aircraft. This light could then be collected by a small telescope, detected by an appropriate photodetector and digitized, recorded and analyzed in real time with a computer. The system proved successful in detecting subsurface fish during these at-sea trials, and a number of modifications were identified which may make the system more useful.

Tuna-Dolphin Bond

Substantial progress was made on three projects initiated with the IATTC in 1992. These focused on correlating oceanographic characteristics with catches of large yellowfin tuna in the ETP, comparing food habits of top predators in the tuna-dolphin food webs, and tracking associated tunas and dolphins. The oceanographic correlates and food habits studies are ongoing. Results from these two-year projects will be forthcoming at the end of 1994.

Two Dolphin Safe Charters have been completed during 1992 and 1993. The NOAA Research Vessel McARTHUR and a chartered fishing vessel (the U.S. Vessel NICOLE K. in 1992 and the Mexican Vessel CONVEMAR in 1993) conducted a research project to study the relationship between yellowfin tuna and spotted dolphins by capturing, tagging, and simultaneously tracking the dolphins and tuna. Both tuna and dolphin tags were equipped with pressure sensing devices which would transmit (tuna) and store (dolphin) dive data and permit analysis of the vertical distribution of each species. The value of these data are two-fold. Primarily, understanding tuna and dolphin movements and interactions, in conjunction with food habits studies being conducted by the IATTC and NMFS, should help establish the dynamics and duration of the tuna-dolphin bond and the degree that it is food based. From a management perspective, it may be possible to determine if the bond weakens at particular times which may make the tuna vulnerable to dolphin-safe fishing methods; preliminary results show that tuna and dolphins do separate at night.



Common dolphin (*Delphinus delphis*). *Photo credit: NFMS/FPR.*

Dolphins were tracked for periods of one to more than four days. Tunas were tracked for periods up to 30 hours. Distinct day-night differences in behavior were observed in both tunas and dolphins, and tracking indicated that the tuna-dolphin bond can be very weak. Detailed results will be available through peer-reviewed scientific articles.

A preliminary research planning contract was awarded in 1993 and a second research planning workshop is scheduled for March 1994 at the Southwest Fisheries Science Center. The first research planning workshop defined the initial research priorities for the NMFS Dolphin-Safe Research Program. The five top rated projects from that first meeting were funded and completed or are nearing completion. The objective for the second workshop, which will include representatives from Mexico, is to develop a subsequent hierarchy of research projects directed toward locating large yellowfin tunas not associated with

Table 8
Annual Catch of Dolphins in the United States Yellowfin Tuna Purse Seine Fishery in 1992 and 1993.

Species	Stock	1992	1993
Spotted Dolphin			
	Northern Offshore	242	33
	Southern Offshore	10	0
	Coastal	0	0
Spinner Dolphin			
	Northern Whitebelly	18	26
	Southern Whitebelly	44	0
	Eastern	51	0
Common Dolphin			
	Northern Tropical	0	0
	Central Tropical	62	50
	Southern Tropical	0	0
Striped Dolphin			
	Northern Tropical	0	0
	Central Tropical	0	5
	Southern Tropical	0	0
Other Dolphins		12	1
Total		438	115

dolphins, prioritized by probability of success under a range of potential funding levels.

Preliminary data are available to estimate the amount of immature and unusable tuna discarded by the United States purse-seine fishery in the ETP during 1989 through 1992. These limited bycatch data from the United States fishery indicate that sets on logs and other floating debris ("log set") produce by far the greatest amount of tuna discard, both in terms of tons per set, and in terms of total discards, even though log sets comprised only about one quarter of the total effort. Dolphin sets, while comprising by far the majority of effort during the study period, produce very little tuna discards either in terms of tons per set or total tons during the observation period. Schoolfish sets during the study period were about as common as log sets, but produced only small amounts of bycatch.

The estimated probability of tuna discard for log sets is 100 percent, for sets on schoolfish is 12-27 percent (depending on geographic location), and sets on dolphin is 1.8 percent. Estimated average tons of tuna discarded per log set (9.8 tons per set) is an order of magnitude larger than estimated discard for schoolfish sets (1.14 tons per set), and two orders of magnitude larger than discard for dolphin sets (0.06 tons per set).

Chapter VI. Subsistence 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 regulation. 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

NMFS works cooperatively with the State of Alaska, the Alaska Eskimo Whaling Commission, the North Slope Borough, and the Minerals Management Service to manage bowhead issues. Catch limits for the subsistence take of bowhead whales are established by the International Whaling Commission (IWC). A 3-year quota of 54 strikes per year with no more than 41 animals landed was set by the IWC for the years 1992 - 1994. The actual take of bowhead whales in 1992 and 1993 is presented in Table 9.

Northern Fur Seals

Since 1985, an annual subsistence harvest of juvenile male northern fur seals has taken place on the Pribilof Islands, Alaska. The northern fur seal subsistence harvest is governed by regulations found in 50 CFR part 215 subpart D — Taking for Subsistence Purposes, published under the authority of the Fur Seal Act, 15 U.S.C. 1151 et seq., and the MMPA, 16 U.S.C. 1361 et seq. NMFS' regulations establish dates for an annual harvest and limit the seal take by both age and sex to protect the herd and to meet the needs of the Island residents. In 1992 the provision (§215.32(f)(2)) to extend the harvest through September 30, of each year was removed, and the duration of the season was reduced (§215.32(c)(1)). As a result, the harvest must now be carried out between June 23 and August 8 of each year.

Subsistence Harvest Totals for 1992 and 1993

Each year NMFS publishes an estimate of the number of fur seals needed for subsistence by the Aleut communities of St. Paul Island and St. George Island for that year. Regulations governing the subsistence taking of northern fur seals require NMFS (1) to publish a summary of the previous year's fur seal harvest and (2) to project the number of seals expected to be taken in the current year to meet subsistence needs of the Aleut residents of the Pribilof Islands, Alaska.

On May 28, 1992, and on August 3, 1992, NMFS published a proposed and final estimate of subsistence need for that year. The range of subsistence need estimates for 1992 for the Pribilof Aleuts was as follows: St. Paul Island: 1,645-2,000; St. George Island: 281-500. Those estimates represented the results of household

Table 9
The Take of Bowhead Whales in 1992 and 1993.

Year	Landed	Lost	Strikes
1992	38	12	50
1993	41	11	52

surveys conducted by the Aleut communities of St. Paul and St. George to estimate minimum subsistence need for the residents of the islands during 1992. The actual number of seals taken during the 1992 harvest was 1,676 seals: 1,482 on St. Paul Island and 194 on St. George Island.

The proposed estimates of subsistence need for 1993 were published on June 14, 1993. NMFS proposed that the harvest estimates for northern fur seals on St. Paul Island in 1993 should be the same as the estimates for 1992, until such time that an increased need be substantiated. NMFS also estimated that the 1993 subsistence needs on St. George Island were in the same range as the estimates for 1992: 281-500 fur seals. The final estimates of subsistence need were published on August 6, 1993. The actual takes of Northern Fur Seal during the Subsistence harvest on the Pribilof Islands in 1990-1993 are presented in Table 10.

Steller Sea Lions and Harbor Seals

The Alaska Department Fish and Game, Division of Subsistence, was contracted in 1992 to collect information on the Alaska Native subsistence take of harbor seals and Steller sea lions during 1992 and 1993. A summary technical report describes the subsistence takes of harbor seal and Steller sea lion by Alaskan Natives in 1992, and documents the number, seasons, geographic distribution, and age and sex of the animals harvested (ADFG, 1993). Harvest information was derived, at the state, region and community levels, from systematic interviews with hunters and users of marine mammals in 2,105 households in 65 coastal communities within the geographic ranges of the two species. During 1992, the estimated subsistence take of harbor seal by Alaska Natives was 2,867 seals, with a 95 percent confidence range of between 2,317 to 3,677 seals. Of the take, 11.9 percent were struck and lost (342 seals) and 88.1 percent (2,525 seals) were harvested. In addition, there were 437 seals taken in North Bristol Bay that were classified as spotted seal based on ecological evidence, and 34 fresh water harbor seals taken by two communities from Lake Iliamna that were excluded from the statewide estimate. Harbor seals were taken in 60 of 65 surveyed communities. The largest takes (58.3 percent of the take) were by Tlingit and Haida hunters in the Southeast region. Harbor seals were taken in all months of 1992, with seasonal peaks during October-December and a low during June. Hunters reported taking male harbor seals over females about 2 to 1, and reported taking primarily adult harbor seals.

During 1992, the estimated subsistence take of Steller sea lions by Alaska Natives was 548 animals, with a 95 percent confidence range of

Table 10
Subsistence Harvest Levels for Northern Fur Seals on the Pribilof Islands, 1990-1993.

	YEARS			
	1990	1991	1992	1993
St. Paul	1,077	1,645	1,482	1,518
St. George	164	281	194	319
TOTAL	1,241	1,926	1,676	1,837

between 452 to 711 sea lions. Of the take, 32.7 percent (179 sea lions) were struck and lost and 67.3 percent (369 sea lions) were harvested. Sea lions were taken in all months of 1992, with seasonal peaks during September and October and lows during June-August. Hunters reported taking males over females about 3 to one, and reported taking twice as many juvenile sea lions as adults or pups. Data for 1993 takes will be reported by mid-1994. This project is expected to continue through at least 1995.

Beluga Whales

The Alaska and Inuvialuit Beluga Whale Committee (IABWC) was formed in 1988. Since that date the IABWC has met annually to provide harvest information on takes by Alaskan and Canadian Natives. Most animals are taken from western Alaska stocks. Reported Alaskan takes have ranged from 163 animals in 1992, to 402 animals in 1988. Western Canadian takes in the Mackenzie River area have ranged from 106 animals in 1990 to 171 animals in 1986. Reported Alaskan takes for 1992 were 151 animals landed and 52 struck and lost. Canadian takes in were 110 animals taken and 11 struck and lost. In 1993, the ADFG was contracted to determine numbers of whales being taken by Alaska Natives in areas where significant interactions with commercial fishing may also be occurring (Bristol Bay and Cook Inlet). These data will be available in mid-1994.

Chapter VII. Permit Programs

The MMPA authorizes NMFS to issue permits for taking or importing marine mammals for public display, scientific research, and species enhancement. The Act also allows NMFS to authorize incidental/unintentional takes related to activities other than commercial fishing. This chapter discusses NMFS permit and authorization programs and describes notable permit and authorization requests.

Scientific Research, Public Display and Enhancement Permits

NMFS administers provisions within the permit program, pursuant to the MMPA, the ESA, and the Fur Seal Act of 1966, 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, and enhancement), to take, import, export, or conduct an otherwise prohibited activity involving such protected species. Currently, NMFS monitors 273 permits for scientific research and public display.

The permit application review process for scientific research, public display, or species enhancement projects comprises four steps: (1) the receipt and initial review of the application by either the Department of Commerce or the Department of Interior; (2) publication in the *Federal Register* of a notice of the application, inviting public review and comment; (3) review of the application by the Commission, in consultation with its Committee of Scientific Advisors, and transmittal of its recommendation to the Department; and (4) final Departmental action on the application, including consideration of comments and recommendations received during the public comment period allocated in the *Federal Register* notice of application.

During the period from January 1, 1992, through December 31, 1993, NMFS reviewed 112 permit applications. Of these, 53 permits were issued for scientific research and 6 were issued for public display. Two applications for permits were denied, 30 applications were returned or withdrawn, and 21 applications were awaiting final action at the end of 1993.

NMFS also processes permit amendments or other permit-related authorizations if the proposed modifications meet the appropriate regulatory standards. A modification is usually subject to the same notice, review, and comment procedures as a permit application. During 1992 and 1993, 237 permit modifications and authorizations were processed. Tables D-1 through D-5 in Appendix D provide an overview of major permit-related activities during the reporting period.

Marine Mammal Identification Study

A study to determine the feasibility of individual identification methods for public display animals was initiated in the fall of 1993 and will be completed in the spring of 1994.

Swim-with-the-Dolphin Programs

A veterinary medical criteria study to assess the impact of Swim-with-the-Dolphin (SWTD) Programs was designed in 1993 on the basis of a workshop held by the Marine Mammal Commission in 1991 concerning the relative risks and benefits of SWTD programs. A senior ethologist and two observers were contracted to conduct a comparative study of the four facilities authorized to operate experimental SWTD programs. NMFS expects the results of the study to be completed early in 1994.

Permit Program Review

During the 1988 reauthorization of the MMPA, NMFS began a comprehensive review of the permit program. Following the enactment of the 1988 amendments of the Act, the scope of this review was broadened to include implementation of the amendments. As a result of the permit program review and the 1988 amendments to the MMPA and because of numerous issues and questions arising from approximately 18 years of administration of the permit program, a review needed to be conducted of all aspects of public display and scientific research permits. A full scale review of the permit program was formally initiated in March 1989, with the distribution of a Discussion Paper for public comment.

The review focused on the lack of consistent policies, the need for appropriate NEPA application, closing loopholes, improving all aspects of captive and research use of marine mammals, and establishing a more effective, efficient, and defensible permitting program. This comprehensive review involved extensive discussions with representatives of the public display industry, the animal welfare/protection community, the scientific research community, and environmental/wildlife conservation groups, as well as coordination with the Marine Mammal Commission, the Animal and Plant Health Inspection Service (U.S. Department of Agriculture), and the U.S. Fish and Wildlife Service (U.S. Department of the Interior).

The difficulties associated with the existing permit program were determined to be fundamental and extensive. This assessment led to concerns regarding whether the existing permit program was consistent with applicable law. Thus, in addition to identifying several measures to improve permit program efficiency, consistency, and predictability, several interdependent corrective actions were also identified:

- Development of revised permit regulations
- Assessment and revision of permit policy
- Improvements in permit administration/processing
- New Permit Program Information Management System
- Improved permit program organization/internal management

Proposed Permit Regulations

NMFS published a proposed rule in the *Federal Register* on October 14, 1993, to revise regulations for public display, scientific research, and enhancement permits under the MMPA, the ESA, and the Fur Seal Act. The proposed revisions would provide a comprehensive regulatory foundation for the major aspects of the permit program and are intended to make administration of the permit program more efficient, consistent, and predictable. The following are major issues addressed in the proposed rule:

General

- Establish standard permit requirements for applicants and permit holders; the requirements will include those common to all permit applicants/holders and those specific to public display, scientific research, and enhancement permits;
- Provide for a smooth transition from the current regulatory scheme to the proposed regulatory scheme.

Public Display

- Define the term "public display."
- Clarify that captive holding is a form of "take" under the MMPA. Define the scope of NMFS' jurisdiction and authority under the MMPA for the captive maintenance of marine mammals. Explain how the MMPA and the Animal Welfare Act apply to captive maintenance. Delin-

eate the authority of the MMPA and jurisdiction of NMFS concerning captive-born marine mammals, including "pre-Act progeny."

- Establish a system to periodically review and renew facility-specific permits that can be implemented fairly and consistently for purposes of public display.

- Explain that marine mammals held in captivity by permit may be transported/transferred as authorized under the terms and conditions of that permit; a separate permit for each transport/transfer of such marine mammals is not required under the MMPA.

Scientific Research

- Define "bona fide" scientific research. In 1992, NMFS held three meetings to review complications associated with scientific research permits for humpback and killer whales. These meetings were convened to explain, in depth, the permit process and statutory requirements of the permit program and to solicit input from the scientific community on issues specific to research activities in the eastern North Pacific. As part of a third meeting, NMFS established a panel to review and comment on these permits with specific attention paid to whether the proposed research was bona fide, humane and not duplicative of other research in the area.

- Develop objective standards for potential applicants to use as guidelines in determining whether an activity conducted in the wild is likely to involve a "take" of a protected species, thus requiring a permit; to facilitate reporting; and to categorize various types of "takes" of protected species, particularly regarding activities conducted in the wild.

- Separate authorized research activities from unauthorized commercial and recreational activities.

The proposed rule addresses other supplemental issues and encompasses improvements to the regulatory foundation of NMFS permit program. The comment period on the proposed rule was extended twice, and closed in January 1994.

Notable Permit Requests

Permit Request to Feed Wild Dolphins

On October 20, 1993, NMFS received a permit application from the Dolphin Connection, a commercial cruise operation out of Corpus Christi, Texas, to feed wild dolphins in the Corpus Christi area. This application sought to feed wild dolphins for the purpose of public display.

Permit Request to Conduct (ATOC) Off the California Coast

NMFS received two permit applications for scientific research from Scripps Institution of Oceanography, La Jolla, CA, requesting authorization to harass several species of marine mammals by two sound sources moored at 850-900 m, one to be located 14 km north of Haena, Kauai, HI, and the second 40 km off Point Sur, CA, in the Monterey Bay Sanctuary. The former application was received on October 26, 1993, the latter on December 10, 1993. The proposed projects are 2-year feasibility projects developed to investigate the potential effects of Acoustic Thermometry of Ocean Climate (ATOC) transmissions on marine mammals. ATOC is an international research project to determine long-term ocean climate changes on a global scale using deep ocean acoustic thermometry. This technique measures the transmission time of acoustic sounds from a source to a receiver, with temperature derived along the transmission path based on the speed of sound. ATOC is funded by the Strategic Environmental Research and Development Program

(SERDP) and sponsored by the Advanced Research Projects Agency (ARPA).

The proposed research involves the transmission of low frequency sound (peak frequency 70 Hz, 20 Hz bandwidth; 195 dB level (re 1 µPa at 1 m)) for 20 minutes every 4 hours (8% duty cycle) beginning in early 1994, and continuing for approximately 2 years. Continued review, public comment, and analysis of environmental effects were planned for 1994.

Small Take/Incidental Taking of Marine Mammals

The MMPA provides a mechanism for allowing, upon request, for periods of not more than 5 consecutive years each, the incidental, but not intentional, taking of marine mammals by United States citizens who engage in a specified activity (other than commercial fishing). Before issuing regulations that allow the activity, NMFS must determine that the activity will not have more than a 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 sponsors of the activity to monitor the taking of marine mammals during the activity and to report the results to NMFS.

Currently, three specific activities have authorization to incidentally take marine mammals under this provision of the Act. The authorized activities include (1) the taking of ringed seals incidental to seismic activities on the ice in the Beaufort Sea; (2) the taking of six species of marine mammals incidental to energy exploration in the Beaufort and Chukchi Seas and; (3) the taking of seals and sea lions incidental to launches of Titan IV space rockets from Vandenberg Air Force Base (VAFB), California. Since 1991, the Air Force has monitored the effects of each launch from VAFB. Monitoring efforts include: (a) measurement of launch noise near pinniped haulout and breeding areas on San Miguel Island (SMI), California, (b) observations of pinniped behavior and breeding areas on SMI and VAFB, and (c) hearing studies of pinniped ear structures, and (d) exposure of test animals to varying sound levels in the laboratory.

Proposed rules were issued in 1993 to allow two additional activities, (1) the taking of marine mammals incidental to removing oil and gas platforms in the Gulf of Mexico and (2) marine mammal taking incidental to shock testing United States Navy vessels off the coast of southern California, to be authorized for unintentional takes.

Feeding Marine Mammals in the Wild

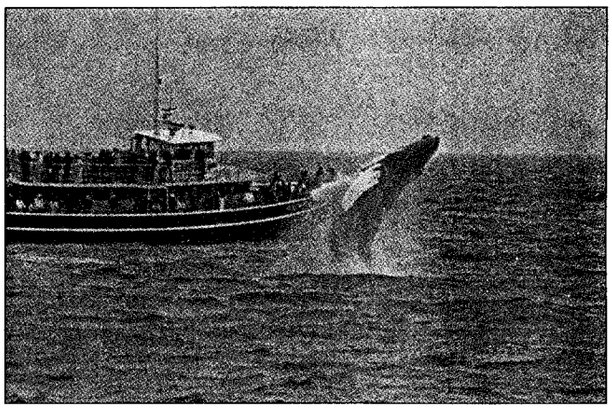
A regulatory amendment, clarifying that feeding marine mammals in the wild is a form of "take" prohibited under the MMPA, became effective in March 1991 (56 FR 11693). In October 1992, however, a Texas district court, ruling in favor of a Corpus Christi couple running a dolphin feeding operation, issued an injunction against NMFS's feeding regulations, as it applied to bottlenose dolphins. In October 1993, the Fifth Circuit Court of Appeals in New Orleans lifted the injunction, stating that it was reasonable for NMFS to prohibit feeding as a potential hazard to dolphins, thus, clearing the way for NMFS to begin enforcing this regulation.

NMFS proceeded to notify all boat operators in the southeast United States, who were known to include dolphin feeding as part of their commercial sightseeing operations, that NMFS would begin enforcing this regulation immediately. In addition, NMFS produced a brochure, which is being distributed in coastal areas of the United States, that discusses the harm of feeding and approaching marine mammals in the wild. (For more details, see Litigation Chapter).

Approach Regulations for Marine Mammals

On August 3, 1992, NMFS proposed regulations to encourage responsible viewing of whales, dolphins and porpoises to provide greater protection to these marine mammals by not allowing people to approach them closer than a specified distance (57 FR 34101) and drafted guidelines for how seals and sea lions should be approached by people, vessels and aircraft that included a limit on how close these marine mammals should be viewed or approached (57 FR 34121). The intent of these actions was to provide greater protection for marine mammals by specifying, among other actions, minimum distances that people, vessels and aircraft should maintain from these animals to avoid harming them. The proposed regulations for approaching whales, dolphins and porpoises (1) set a minimum approach distance of 100 yards (91.4 meters) for all whales and 50 yards (45.7 meters) for dolphins and porpoise, and prohibited aircraft from operating within 1,000 feet (304.8 meters) of these animals; (2) removed the interim rule for approaching humpback whales in Hawaii (50 CFR 222.31) that has been in effect since December 1987, and incorporated it into the rulemaking; and (3) include procedures that should be followed by vessel operators to protect whales, dolphins and porpoise and to reduce the likelihood of a "take" of these animals including precautions that should be taken when an animal approaches a vessel that is underway and when a vessel approaches a whale, dolphin or porpoise.

In addition to the general minimum approach distance of 100 yards (91.4 meters) for whales, a minimum distance of 300 yards (274.2 meters) has been set for approaching cow/calf pairs of humpback whales in Hawaii. The description of cow/calf pair boundaries is consistent with that used by the State of Hawaii in its Ocean Recreation Management Plan. Also, a minimum distance of 100 yards (91.4 meters) has been set for approaching Hawaiian monk seals on land or in the water. Also, the proposed regulations would



A humpback whale (*Megaptera novaengliae*) breaches alongside a whalewatching vessel. *Photo credit: Cetacean Research Unit, Gloucester, MA.*

not have prohibited research conducted from whale, dolphin or porpoise watching vessels as long as the vessels follow the regulations and do not harass the animals. Research that may result in harassment or that involves approaches closer to the animals than the regulations allow would require a research permit.

The draft guidelines for approaching pinnipeds included (1) a limit on how close pinnipeds should be approached in the water, land and on man-made fixed structures (i.e., buoys, piers, etc.); (2) the altitude at which an aircraft should be flown over pinnipeds; and (3) general procedures for operating a vessel near pinniped in the water, or a pinniped haulout or rookery.

NMFS provided opportunity for public response to these proposals and conducted 10 public hearings. The comment period was also extended from the usual period of 60 days to December 31, 1992, (57 FR 47606).

Extensive comments were received on these proposed actions draft guidelines. After further consideration, NMFS announced that it intended to conduct a comprehensive evaluation of the numerous comments received and that the final determination on proposed regulations, and that any final guidelines for approaching marine mammals would be delayed at least until after the end of 1993.

Chapter VIII. Marine Mammal Health and Stranding Response Act

Overview

In late 1992, the United States Congress enacted the Marine Mammal Health and Stranding Response Act (Public Law 102-587). This act creates a new title under the MMPA and establishes three basic programs: the National Marine Mammal Tissue Bank, Regional Marine Mammal Stranding Networks, and the Marine Mammal Unusual Mortality Event Working Group.

Sections 302 and 303 of the Act codify existing Stranding Network procedures. Section 302 directs NMFS to improve information flow to the Stranding Networks and to upgrade their capabilities by developing protocols for response to strandings and collection of tissues from dead marine mammals. Pursuant to section 302, NMFS is also directed to develop standards, by November 1994, for determining whether rehabilitated animals are releasable to the wild.

Section 304 of the Act sets up procedures for response to unusual mortality events. It requires that an onsite coordinator be appointed within 48 hours of determining the occurrence of an unusual mortality event. The onsite coordinator is responsible for mobilizing the response team, collecting information and tissues to determine the cause of an event, and making provisions for live animals that may be affected.

A Marine Mammal Unusual Mortality Event Working Group has also been established, pursuant to section 304 of the Act. Similar to the more informal Task Group that NMFS set up in 1991, the Working Group is to be consulted when an unusual mortality event is suspected. The Working Group is charged with determining whether a mortality event is occurring and providing advice as to specific actions that should be taken in response to the event. The Working Group has also been established to provide assistance in developing a national contingency plan for response to unusual mortality events. The contingency plan is to be in place by November 1994 and must contain the following: (1) a list of people at local, regional, and national levels who can assist in responding to and determining the cause of a mortality event; (2) a list of analyses necessary to assist in diagnosis of causes; (3) mobilization and training procedures; and (4) provisions to minimize the deaths of marine mammals.

Following the 1987-1988 die-off of bottlenose dolphins along the mid-Atlantic United States coastline, NMFS determined that researchers lacked adequate baseline data on anthropogenic contaminants to determine the significance of contaminant levels in animals associated with this event. In response, NMFS initiated steps to develop a national tissue bank. A number of activities have been undertaken in association with the tissue bank, including a rulemaking regarding the disposition of tissues, preliminary studies, and the development of quality assurance (QA) procedures. Section 307 of the Act formally establishes the National Marine Mammal Tissue Bank and requires NMFS to provide protocols for collection, preparation, and preservation of the tissues. It also directs NMFS to issue a formal policy on access to the tissues contained in the Tissue Bank.

Marine Mammal Health and Stranding Response Program

To implement the provisions of the Act, NMFS has established the Marine Mammal Health and Stranding Response Program (MMHSRP) which consists of four major components: Stranding Networks (including unusual mortality response); National Marine Mammal Tissue Bank; Monitoring; and Quality Assurance.

Stranding Networks

Most of the members of the Marine Mammal Stranding Networks are volunteers who respond to strandings of both live and dead cetaceans and pinnipeds. Volunteers must satisfy minimum requirements in terms of marine mammal experience in order to be issued letters of authorization by the appropriate Regional Office allowing them to respond to strandings. Network members are required to collect certain basic biological data such as species, sex, length, location, and any evidence of human interaction. They are encouraged to collect other data and tissues for analysis.

Although Network members receive no compensation, they provide important information that helps in the management of marine mammals. In 1992, Network members responded to 3082 pinniped strandings and 1192 cetacean strandings. The corresponding figures for 1993 were 2558 pinnipeds and 1078 cetaceans. In addition, each year several hundred live stranded marine mammals are successfully rehabilitated and returned to the wild.

As part of a continuing effort to improve administration of the program, NMFS standardized the stranding report forms and the Letters of Authorization so that there is consistency among the Regions. During the last two years, seven training sessions on necropsy and collection of tissues were held for Network members. A special training session on detection of human interactions with cetaceans was held for Atlantic coast Network participants at the Smithsonian Institution. A Field Guide was produced in cooperation with the Texas Sea Grant program and distributed to all Stranding Network members to provide basic protocols. The Field Guide contains information on species identification, initial first aid and rehabilitation of live marine mammals, basic necropsy techniques, and collection of tissues from dead animals.

Overall network coverage has improved in the last two years, and more information is being collected on a routine basis. Several times the network has been responsible for exposing potential problems. One measure of success has been the detection of specific problems affecting marine mammals. In early 1992, a Network member reported that they had found antibodies to phocine distemper in seals on the east coast. Another stranding network member performed a gross necropsy on a dolphin that stranded in June 1993, in Panama City, Florida and forwarded tissues to the Armed Forces Institute of Pathology (AFIP) for analysis. Histopathology indicated that morbillivirus might be present and immunohistochemistry confirmed it.

Another indication of the program improvement that has taken place is the number of stranding network members that are working beyond the minimum reporting requirements described above. More network members are performing necropsies and collecting tissues for scientific analysis. The AFIP has agreed to perform histopathology analysis for Network members and has received an increasing number of tissue samples. It was this arrangement that was responsible for the detection of the first recorded case of morbillivirus in bottlenose dolphins from the Gulf of Mexico.

Stranding network participants responded to 50 harbor porpoise strandings in the mid-Atlantic region (New York-North Carolina) between February 23 and May 15, 1993. On the basis of preliminary reports that recovered carcasses exhibited evidence of human interactions, NMFS Northeast Region convened a workshop on harbor porpoise mortalities and human interactions to train participants in identification of human interactions and to establish a protocol (details on pg. 84).

NMFS and the stranding networks twice detected what appear to be human interaction/enforcement problems involving pinnipeds in the

State of Washington. During the first week of October 1992, 29 harbor seals stranded near the mouth of the Columbia River. Stomach contents were tested for paralytic and amnesiac shellfish poisoning, and the results were negative. Tissues were analyzed for anthropogenic contaminants, and the values that were obtained were consistent with previous results from animals in the same area. Gross necropsy and histopathology did indicate a common pathology. There were indications of trauma in the muscles and internal organs of the animals. The trauma was not inconsistent with expected damage caused by submerged explosions. NMFS concluded that disease, natural toxins, and pollutant contamination were not related to the mortality event; there were indications of trauma caused by human interaction. In March 1993, 58 dead pinnipeds stranded on the central Washington coast including 9 Steller sea lions, 17 California sea lions, 31 harbor seals, and 1 unidentified sea lion. A number of the animals were too decomposed for analysis, however, 32 of 34 animals that were examined or had specimens collected and analyzed using x-rays exhibited wounds described as gunshots or contained bullets or bullet fragments.

Harbor seals (*Phoca vitulina*) are one of the most frequently live-stranded species of marine mammals. *Photo credit: NFMS/NER.*

Mortality Event Activities

In accordance with §304 of the Marine Mammal Health and Stranding Response Act, the Unusual Marine Mammal Mortality Event Working Group has been set up. The Working Group held its first meeting in April 1993. It contains individuals from a range of scientific disciplines such as veterinary pathology, veterinary medicine, epidemiology, environmental contaminants, and marine mammal science. The Working Group named Dr. Joseph Geraci of the University of Guelph as Chair. In addition to setting up procedures, the Working Group issued an advisory opinion on release of rehabilitated pinnipeds exhibiting antibodies to phocine distemper and prepared a detailed outline for the national contingency plan for response to unusual marine mammal mortalities. A draft of the plan should be available for public comment by mid-1994, and it will be finalized by the end of the year.

In January 1992, the New England Aquarium notified NMFS that a number of live stranded seals had tested positive in serum neutralization tests run against canine distemper virus. Seals exhibiting signs consistent with the distemper virus were observed by the Northeast Marine Mammal Stranding Network in February 1992. Postmortem histological examination of tissues collected from these seals supported this initial diagnosis. These reports raised concern because phocine distemper virus (PDV) had been responsible for the deaths of over 17,000 seals in Europe in 1988. In April, the specific disease was identified as PDV. As a result of these findings, NMFS mandated distemper testing for all live stranded seals on the east coast and required receipt of negative distemper test results prior to release of any rehabilitated seals.

Despite the presence of the disease, an epizootic similar to that in Europe did not develop, raising the possibility that the disease is endemic in North American seals and the populations has a degree of immunity. In order to test this hypothesis, NMFS contracted for the examination of banked blood serum in addition to testing currently stranded animals. Blood serum from 337 seals stranding from 1971 through 1993 was analyzed for distemper antibodies. Although the majority of the animals were harbor seals, the total includes figures for gray seals, harp seals, and hooded seals. Virus neutralizing antibodies were found in 5 percent of gray seals, in 16 percent of harbor and hooded seals and in 41.9 percent of harp seals. Significantly, the earliest seropositive results were from four harbor seals in 1986. This predated the European epizootic by two years. The seropositive results were 25 percent of 47 animals in 1991 and 30 percent of 85 animals tested in 1992. The investigators confirmed that the virus was PDV. They concluded that the disease is endemic in pinnipeds along the east coast. Monitoring of antibody levels in live stranded seals suggests that infection confers long-term immunity.

In March 1992, abnormally high levels of bottlenose dolphin mortality occurred in several bays of Texas. Ultimately, 112 bottlenose strandings were reported. The SEFSC conducted toxicological analyses of soil, water, and tissue samples collected in conjunction with these mortalities and established that low levels of some commonly used pesticides were found in some of the environmental samples. The testing of water samples for toxic chemicals showed traces of the carbamate insecticide, aldicarb, which is rated at category 1 toxicity for mammalian species. There was no way of confirming that exposure to aldicarb had been responsible for the dolphin deaths because the test to confirm impacts, acetylcholinesterase inhibition, can only be performed on very fresh animals. Advanced decomposition precluded definitive analyses of dolphin tissues, and the cause of death could not be determined for any of the carcasses examined.

Unable to reach a conclusion as to the cause of the event, NMFS conducted two follow-up studies. First, water in the area was monitored for aldicarb again in 1993. No traces of the insecticide were found. In a second follow-up investigation conducted in July 1992, 36 bottlenose dolphins in the Matagorda Bay, Texas, area were captured alive, sampled, marked, and released. Each dolphin received a thorough veterinary physical examination and diagnostic ultrasound examination, vital signs were monitored and recorded, extensive body condition data were collected, tissue biopsies were collected, a tooth was pulled from each animal for aging,and body fluids sampled. Blood samples from live-captured Texas bottlenose dolphins were analyzed for serum chemistry and hematology. Genital, anal, and blowhole swabs were cultured for microorganisms. Similar data were collected under contract to SEFSC from live-captured dolphins from Sarasota Bay, Florida, and blood samples were analyzed, all to provide baseline profiles from apparently healthy free-ranging populations.

In 1992, an El Niño event affected pinniped populations on the California coast. When an El Niño occurs, ocean temperatures rise and fish populations shift, and prey becomes less available. In 1992, 2,617 stranded pinnipeds were reported in California. The total for the previous year was 1,494. Stranding rates in 1992 for California sea lions and harbor seals were double previous rates. The rates for elephant seals which feed at greater depths did not have a corresponding increase in the number of strandings. The majority of stranded animals were emaciated pups and yearlings. The El Niño continued into 1993, and the number of stranded pinnipeds remained elevated.

In September 1993, NMFS received confirmation of a case of morbillivirus in a bottlenose dolphin from the Gulf of Mexico. A similar virus

was responsible for the deaths of over 1,000 striped dolphins in the Mediterranean in 1990-91. NMFS worked with Stranding Network members to step up tissue collection from dead animals. By the end of 1993, there was confirmation of morbillivirus in six additional dolphins. The investigation is continuing.

National Marine Mammal Tissue Bank

In response to the requirements of the Act, the National Marine Mammal Tissue Bank (NMMTB) has been established and tissue access policy and protocol for collecting tissues for the Bank have been developed and made available for public comment. The NMMTB, which is located at and maintained by the National Institute of Standards and Technology (NIST), is designed to cryogenically archive tissue samples that have been collected from representative animals using rigorous protocols in order to provide a source of specimens for future retrospective analysis. Specimen sources include stranded, incidentally caught, and subsistence harvested animals. The NMMTB collection protocols emphasize consistent well-documented procedures, use of non-contaminating equipment, and collection of the freshest possible samples.

Specimens from Alaska are collected and banked through the Alaska Marine Mammal Tissue Archival Project (AMMTAP), which has been funded by the U.S. Department of the Interior, Minerals Management Service (now funded through the National Biological Survey). Specimens archived through the NMMTB/AMMTAP include tissues from 24 animals of 4 species as part of the Tissue Bank proper and from 94 animals of 8 species from AMMTAP (see Table 11).

Several organizations are cooperating in the collection of samples for both the NMMTB/AMMTAP and the contaminant monitoring component of the Program. These organizations are listed in the Table 12.

Contaminant Monitoring

The NWFSC is routinely analyzing tissues for selected chemical contaminants and, in specific cases, is analyzing samples for biotoxins in order to establish a baseline of information for marine mammals in United States waters. Currently, methods are available for domoic acid and paralytic shellfish poison (PSP). Sources of tissues include stranded animals, incidentally caught animals, and animals taken in Alaska native subsistence hunts. To date, hydrocarbon and metal analyses have either been completed or are currently being conducted on 283 marine mammals of 11 different species. Samples from 107 bottlenose dolphins taken in the Gulf of Mexico, 75 of which are at the NWFSC, have either been analyzed or are currently being analyzed. Tissue samples from 22 gray whales have been analyzed and show a broad spectrum of anthropogenic contaminants at relatively low levels. Relatively high concentrations of aluminum were found in stomach contents, but the source appeared to be geologic rather than anthropogenic. A report discussing these findings has been published (Varanasi et al., 1993). NMFS will continue to analyze gray whale tissues as part of its monitoring responsibilities for species removed from the list of endangered species. NMFS is also analyzing samples from the bowhead whale in Alaska, collected by the AMMTAP in order to establish a base of information for this important Alaska native subsistence species. See Table 13.

NWFSC is conducting research which can be used to develop guidelines for minimizing tissue sample variability. A study on contaminant distribution in the blubber and liver of harbor porpoise indicated no effect on variability of analytical results due to collecting samples from different anatomical locations (Stein et al., 1992). Similar work is being conducted on additional species, and a study to evaluate the effect of degradation of tissues on contaminant measurements is being

Table 11
Inventory of species sampled for the Banking Component of the MMHSRP

	Dates	Location	No. of Analytical Animals[1]	Data
NMMTB:				
Harbor Porpoise	90-93	North Atlantic	9	TEs
	93	North Pacific	1	
Pilot Whale	90-92	North Atlantic	9	TEs
Atlantic White-Sided Dolphin	93	North Atlantic	4	
California Sea Lion	93	Central Pacific	2	
AMMTAP:				
Bowhead Whale	92-93	Arctic	20	TEs
Beluga Whale	89-90	Arctic	14	CHs, TEs
	92	North Pacific	1	TEs
Ringed Seal	88-91, 93	Arctic	32	CHs, TEs
Bearded Seal	89, 93	Arctic	5	TEs
Spotted Seal	91	Arctic	1	TEs
Walrus	93	Arctic	2	
Northern Fur Seal	87,90	North Pacific	15	CHs, TEs
Harbor Seal	90	North Pacific	3	
Steller Sea Lion	90	North Pacific	1	
		TOTAL	*119	

1 CHs = Chlorinated Hydrocarbons
TEs = Trace Elements

* 317 duplicated samples consisting of liver, kidney, blubber, and muscle are banked from these animals. Duplicated samples are two subsamples of ~ 150 g. (wet weight), each.

planned. A new screening technique developed by NWFSC is being used to rapidly determine concentrations of several PCB congeners and DDT metabolites (Krahn et al., 1994). The method is quantitative for several specific compounds, and, because it can be rapidly performed, has distinct advantages when there is a need for a quick turn around in the analysis of samples, which can often be the case with a mass stranding. NWFSC is also evaluating methods for measuring methylmercury in marine mammals, ^{32}P-post labeling for DNA adduct research, and improvements for coplanar PCB separation and analysis.

Quality Assurance

In response to the requirement of the Act that guidance be issued for analyzing marine tissue samples through the use of the most effective and advanced techniques, the Office of Protected

Table 12
Locations where arrangements have been made for routine sample collections.

Cooperating Institution	Region	Species	Status
New England Aquarium, Boston, MA	**North Atlantic**	Harbor Porpoise	Ongoing
		Pilot Whale	Ongoing
		Atlantic White-Sided Dolphin	Ongoing
		Harbor Seal	Planned
Marine Mammal Center, Sausalito, CA	**Central Pacific**	California Seal Lion, Steller Sea Lion,	Ongoing
		Harbor Seal	
NMFS/NMML, Seattle, WA NMFS/AKR, Juneau, AK NMFS/NMML, Seattle, WA	**North Pacific**	Harbor Porpoise	Ongoing
		Northern Fur Seal	Intermittent
NMFS, Western Alaska Field Office, Anchorage, AK; MMS, Anchorage, AK		Beluga Whale	Ongoing
Marine Advisory Program Alaska Sea Grant, Kodiak, AK		Steller Sea Lion, Harbor Seal	Ongoing
North Slope Bureau, Dept. of Wildlife Management, Barrow, AK	**Arctic**	Bowhead Whale	Ongoing
		Ringed Seal	Intermittent
		Bearded Seal	
Kawerak, Inc. & Eskimo Walrus Commission Nome, AK; MMS, Anchorage, AK		Bearded Seal	Ongoing
		Ringed Seal	Ongoing
		Walrus	Ongoing
		Beluga Whale	Planned
USFWS, Marine Mammal Management Office Anchorage, AK		Walrus	Planned

Resources has initiated the Quality Assurance Program (QA Program) for the contaminant analysis of marine mammal tissues. The QA Program, which is coordinated by NIST, is designed to assess the accuracy, precision, level of detection and comparability of results among laboratories analyzing marine mammal tissues. The program consists of (1) preparation, analysis and distribution of marine mammal control materials; (2) interlaboratory comparison exercises; and (3) development of Standard Reference Materials (SRMs) for use in the analysis of marine mammal tissues. Six laboratories, including one in Canada and one in Germany, are regular participants in this program.

SRMs are samples containing known levels of specific contaminants; they can be used for

Table 13
Inventory of Species Sampled for the Contaminant Monitoring Component of the MMSHRP.

	Dates	Location	No. of Analytical Animals	Data
Harbor Porpoise	90-93	North Atlantic	9	CHs
	92-93	North Pacific	4	
Atlantic White-Sided Dolphin	92-93	North Atlantic	6	
Bottlenose Dolphin	92	North Atlantic	4	
	90-93	Gulf of Mexico	107	CHs
Pilot Whale	86, 90-92	North Atlantic	27	CHs TEs
Gray Whale	88-92	North Pacific	25	CHs TEs
Bowhead Whale	92-93	Arctic	20	CHs
California Sea Lion	92-93	Center Pacific	9	
Steller Sea Lion	89-90	North Pacific	15	CHs
	92-93	Central Pacific	2	
Northern Fur Seal	90	North Pacific	9	CHs
Harbor Seal	89-90	North Pacific	35	CHs
Ringed Seal	88	Arctic	11	
		TOTAL	*283	

1 CHs = Chlorinated Hydrocarbons
TEs = Trace Elements

* 885 samples consisting of liver, kidney, blubber, muscle, heart, lung, brain, gonads, and stomach contents were collected from these animals for contaminant measurements.

calibration or as controls. NIST has developed a whale blubber SRM for use in measuring PCBs and chlorinated pesticides in marine mammal tissue; SRM 1945, Whale Blubber, is presently available for distribution. A whale liver SRM will be developed over the next two years. In addition to the regular participants in the QA Program, six additional laboratories (two in Canada, two in Germany, one in Vienna, and one in Sweden) have indicated an interest in obtaining SRMs and tissue control materials.

Regional Stranding Networks

The following descriptions of Regional stranding activity presents significant accomplishments and summarizes stranding reports. All strandings are reported in Appendix E.

Northeast Stranding Network

The Northeast Stranding Network reported 196 cetacean strandings in 1992 and 179 in 1993. Long-finned pilot whales represented 19 percent of cetacean strandings in 1992 and 4 percent in 1993. These numbers were largely a reflection of a mass stranding occurred during a storm on December 12, 1992 on Cape Cod. Other storm-related strandings on that day included one common dolphin, one Atlantic white-sided dolphin, and 4 bottlenose dolphins. Bottlenose dolphins represented 24 percent of the stranded cetaceans in 1992 and 26 percent in 1993. Harbor porpoise strandings increased from 18 percent (n=36) in 1992 to 30 percent (n=54) in 1993.

The network reported 208 pinniped strandings in 1992 and 241 in 1993. Harbor seals represented 76 percent of the strandings in 1992 and 69 percent in 1993. Harp seal strandings increased from 9 percent (n=19) in 1992 to 14 percent (n=35) in 1993. Hooded seal strandings also increased from 2 percent (n=5) in 1992 to 6 percent (n=15) in 1993.

The Northeast Region continues to coordinate and provide assistance to the marine mammal stranding network (MMSN). Annual meetings of the Northeast MMSN were held in both 1992 and 1993. The Virginia Marine Science Museum (VMSM), in cooperation with the Virginia Institute of Marine Science, James Madison University, and Blacksburg State College, hosted the annual regional network meeting on April 3 and 4, 1992. The papers presented at the meeting were very informative, and the technical sea turtle and dolphin necropsy sessions helped to standardize the methods by which biological data are collected from the stranding events. The 1993 meeting was held in Plymouth, Massachusetts, April 16-18, 1993. The meeting was co-hosted by NMFS and the International Wildlife Coalition, a group active in coordinating response to mass stranding events on Cape Cod. Agenda items included MMSN member reports from the past year, routine MMSN business, presentations on stranding-related research, and a cetacean necropsy hosted by the New England Aquarium.

Unusual Events. Four bottlenose dolphins that appeared to belong to the coastal population remained in the Shrewsbury River in northern New Jersey through December of 1993. These dolphins were first reported in the river in July. They were observed actively feeding in late November, and were believed to be in good condition at that time. Public pressure resulted in consideration of removal of the animals from the river, but the wide, irregular character of the river presented obstacles to corralling and collection techniques. Despite icy conditions which developed at the end of December, the dolphins did not leave the river. They were last observed on December 29, 1993. Anecdotal accounts of a few dolphins off Sandy Hook, New Jersey, were received in early January, though re-sightings of these individuals were never confirmed.

Harbor Porpoise Workshop. Sixty-four harbor porpoise (*Phocoena phocoena*) strandings occurred from Maine to North Carolina between January and June 1993. Fifty of these harbor porpoises stranded in the mid-Atlantic region (New York - North Carolina) between February 23 and May 15, 1993. The majority of strandings were reported from Virginia in April. Based on preliminary reports that recovered carcasses incurred strange cuts and unusual bodily damage, the NMFS Northeast Regional Office convened a workshop to arrive at consensus opinions concerning the cause of the harbor porpoise mortalities and to establish suitable protocol for determining human interaction. The workshop was held at the Smithsonian Institution in Washington, D.C., on May 19 and 20, 1993.

Twenty-one harbor porpoise carcasses from the mid-Atlantic strandings were used as workshop specimens. Thirteen carcasses and eight harbor porpoise heads were examined during the workshop. Five animals exhibited signs of human

interaction including blunt trauma to the head, apparent net marks, missing appendages, and a severed carcass.

Although initial reports indicated that fisheries or other human interactions may have contributed to many of the harbor porpoise mortalities, few animals examined during this workshop exhibited definitive signs of human interaction. Most of the animals examined during this workshop were in an advanced state of decomposition. The poor condition of most specimens precluded a full necropsy of all specimens and impeded the ability to assess ultimate cause of death. Potentially, bird predation and/or decomposition could have removed any signs of human intervention. (Haley and Read, 1993)

Southeast Stranding Network

There are 29 institutions which are currently operating in cooperation with the southeast stranding network under a Letter of Authorization (LOA) from the Region. In addition, there are at least 5 governmental organizations also participating in the network issues. Over 200 individuals from these institutions and organizations contribute to the stranding network efforts.

In 1992 there were 889 documented marine mammal strandings in the Southeast Region. Bottlenose dolphins accounted for 70 percent of the strandings. Seventeen other species constituted the remaining 30 percent of the strandings; five of these strandings were harbor seals (See Appendix B).

In 1993, there were 775 documented marine mammal strandings Table 14. Bottlenose dolphins comprised over 81 percent of the total and 24 species comprised the remainder including two strandings of hooded seals and six strandings of harbor seals. Five spotted dolphins (*Stenella attenuata*) stranded near Pensacola, Florida in September 1993. Four out of the five dolphin died; the fifth, a one to two month old infant, survived and is currently being held in captivity to wean and continue undergoing medical care.

In 1992, 26 (4.3 percent) of the total of 609 *Tursiops truncatus* strandings within the Southeast Region were suspected fishery interactions. Reported *T. truncatus* strandings totaled 506 in 1993, and 34 of these (6.7 percent) were suspected fishery interactions. There were 625 cetacean strandings reported through the NMFS SEFSC Marine Mammal Stranding Reporting System and 37 of these, or 5.9 percent, were suspected fishery interactions. North Carolina had the highest incidence of fishery-related mortalities within the southeast region; over 9 percent in 1992 and over 15 percent in 1993 were believed to have involved fisheries or some other human interaction.

The SEFSC sponsored a workshop in September 1993, to examine a bottlenose dolphin health parameter database collected by Dolphin Biology Research Institute (DBRI) at Sarasota, Florida, since 1987. The purpose of the workshop was to develop a method for evaluating the health of dolphin populations. The tasks of the workshop were as follows: to develop a grading system for the health of individual animals; to develop a system to extrapolate individual animal grades to a seasonal population grade; to relate trends in grades to population parameters such as mortality, natality, and fecundity; to identify indicators having the greatest value for individual or population health assessment; and to compare health evaluations with other bottlenose dolphin populations. A team of marine mammal veterinary professionals and biologists examined the existing long-term data set and considered a suite of various clinical and life history data to evaluate the health of individual dolphins and the population. A median age class-stratified health score was calculated for each year. These scores were examined for correlations with population parameters such as mortality, natality, fecundity, and recruitment, and compared with those from the SEFSC 1992 Matagorda Bay study.

The SEFSC continued to monitor marine mammal strandings in the southeast region on a near real-time basis through the stranding network area representative system first implemented in 1991.

A newsletter produced by the SEFSC was sent to Southeast United States stranding network (SEUS network) participants to foster information exchange, provide feedback to participants, and enhance the quantity and quality of data collected from stranded marine mammals. The newsletter contained information about the SEUS network and NMFS, and provided a suggested protocol for sample collection from stranded marine mammals. Workshops were held throughout the Southeast Region to provide training in marine mammal necropsy procedures and stranding data collection.

The SEFSC closely monitors bottlenose dolphin strandings in the northern Gulf of Mexico as a result of the discovery in the summer of 1993 that several dolphin apparently died from morbillivirus infection. The stranding network in the Florida panhandle was the first to recognize the presence of morbillivirus in dead stranded dolphins in the Gulf of Mexico.

Tissue from all stranded cetaceans in the northern Gulf has been checked for the virus since this discovery. SEUS network state coordinators have been provided with materials and instructions regarding tissue sampling for morbillivirus, and arrangements have been made for examination of the tissues by the United States Armed Forces Institute of Pathology.

Western Pacific Stranding Network

A workshop for veterinarians authorized to participate in the Hawaii Stranding Network was conducted by the Southwest Region in 1993. Recent advances in emergency marine mammal treatment, response capabilities, new data and tissue collection requirements under the MMPA, and planning for unusual or mass stranding events were discussed and reviewed. Stranding reported in 1992 & 1993 are presented in Table 15.

California Stranding Network

A total of 2,698 marine mammal strandings was reported to the California Marine Mammal Stranding Network (CMMSN) in 1992, including 2,617 pinnipeds and 81 cetaceans. Pinniped strandings of interest included 38 northern fur seals and 7 northern sea lions. Cetacean strandings of interest included 1 Stejneger's beaked whale and 1 Hubbs' beaked whale (See Appendix B).

A total of 2,079 marine mammal strandings was reported to the CMMSN in 1993, including 2,002 pinnipeds and 77 cetaceans, see Appendix B. Pinniped strandings of interest included 7 northern fur seals, 4 Guadalupe fur seals, 2 unidentified fur seals, and 4 northern sea lions. Cetacean strandings of interest included 2 pygmy sperm whales and 1 Cuvier's beaked whale.

Northwest Stranding Network

The Northwest Region maintains a network of biologists and volunteers from 25 state, federal and independent institutions that respond to reports of beached and stranded marine mammals.

In 1992 the Northwest Marine Mammal Standing Network responded to 431 reported strandings, of which 92.6 percent were pinnipeds and 7.4 percent were cetaceans. In 1993 the Northwest Network responded to 428 reported strandings, of which 93.6 percent were pinnipeds and 6.3 percent were cetaceans. In 1993, 63 pinnipeds were reported taken for treatment by network participants. The majority (60) were harbor seals, of which 30 were later released to the wild. Two northern fur seals which were

stranded alive and taken for treatment were found not suitable for release following treatment and were placed in permanent captivity. One female California sea lion was found injured on the outer coast of Washington, was treated and later released. This sea lion had been previously taken for rehabilitation in California and released.

Alaska Stranding Network

In 1992, the Alaska Region Stranding Network investigated 30 cetacean stranding events. Gray whales were the most commonly reported; 13 were found from Kuiu Island in southeast Alaska, Kodiak, the Alaska Peninsula, Bristol Bay and Seward Peninsula. Other species included killer whales (6), beluga whales (5), humpback whales (2), and one each of harbor porpoise, Dall's porpoise, Stejneger's beaked whale, sperm whale and minke whale.

With the exception of a beluga whale in Cook Inlet and the Stejneger's beaked whale found near Atka in the western Aleutian Islands, most strandings were reports of dead animals. Both of the live stranded animals eventually died. Although the beluga whale did not have any overt signs of injury, the beaked whale had four bleeding cuts that may have been caused by a boat propeller. One of the humpback whale strandings was reported as an entanglement in a southeast Alaska drift gillnet. However, this animal was never relocated after the initial sighting by the fishermen. One spotted seal and three harbor seals were rehabilitated by network volunteers in 1992.

The Alaska Region sponsored a stranding workshop in 1993 to demonstrate data collection procedures on four marine mammal specimens. Veterinarians, biology students and representatives from state and federal agencies and state universities attended.

The Alaska Region Stranding Network also investigated 33 cetacean stranding events. As in 1992, gray whales were the most commonly reported; 14 were reported from the Copper River Delta to St. Lawrence Island. Other species included beluga whales (11), harbor porpoise (7), killer whales (5), unidentified large whales (7), humpback whales (3), Dall's porpoise (2) and Pacific white-sided dolphin (2).

The majority reports were of dead animals, except for 10 beluga whales that live stranded in Turnagain Arm in July 1993, 5 killer whales live stranded Turnagain Arm in August 1993, and a harbor porpoise calf was observed in Glacier Bay National Park & Preserve. All the animals from the Turnagain Arm strandings refloated alive with subsequent tides with the exception of one young male killer whale whose death was likely caused by compression on internal organs as a result of stranding and/or stress brought on by human onlookers as well as close overflights of aircraft.

One harbor porpoise was reported as an entanglement from a drift gillnet off the south side of Kodiak Island. Two other harbor porpoise from the Prince William Sound/Copper River Delta area had net marks on their bodies and likely died from entanglement. Two of the humpback whales were also reported as entanglements, one in a southeast Alaska drift gillnet and one in a line, possibly from a crab pot.

In 1993 a number of Steller sea lion stranded along the Alaskan coastline, including Kodiak, Homer, Seldovia, Ketchikan and Juneau. Steller sea lion strandings received priority response whenever possible because of the species threatened status. One ringed seal and five harbor seals were sent for rehabilitation by network volunteers in 1993. Although, the ringed seal and one harbor seal died, the remaining harbor seals were rehabilitated and released. A northern fur seal pup, found in the Pribilof Island city of St. George after apparently wandering off the rookery, was sent to Anchorage for rehabilitation, but the animal ultimately died.

Chapter IX. International Programs and Activities

The Department of Commerce furthers the protection and conservation of marine mammals through participation in existing international agreements, and, when necessary, negotiation of new agreements. This chapter describes NMFS involvement in international programs and activities during 1992 and 1993.

The Commission for the Conservation of Antarctic Marine Living Resources

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) and its Scientific Committee were established in 1982. The group meets annually to consider issues related to Antarctic marine living resources. The Scientific Committee regularly reviews the status of marine mammal populations, and, as necessary, makes recommendations to the Commission. The Commission also reviews annual reports by member nations concerning population assessments and steps taken to avoid the incidental mortality of Antarctic marine living resources.

Marine Mammal Populations

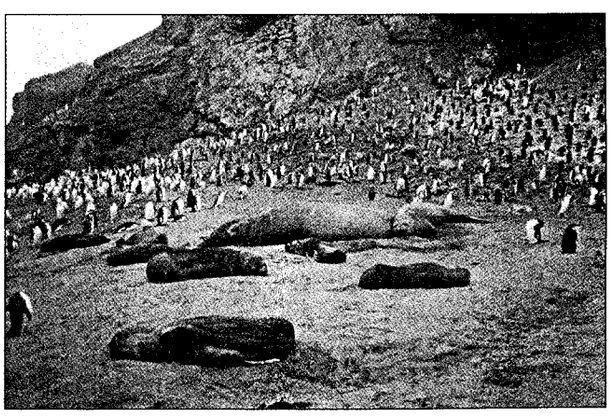
In 1992 the CCAMLR Scientific Committee undertook its first comprehensive review, since its initial review in 1987, of the status and trends of Antarctic pinniped populations. The most current review was based upon analyses, interpretations, and summaries of available population data provided by the Scientific Committee for Antarctic Research (SCAR) Group of Specialists on Seals. Antarctic fur seal populations continue to increase in most areas. Sub-antarctic fur seal populations are increasing rapidly. Southern elephant seal populations are declining in the Indian Ocean and Pacific Ocean sectors in the Antarctic, while the status of the South Georgia stock is uncertain. Nonetheless, there is a suggestion of a trend towards population stability.

In contrast to the land-breeding Antarctic pinnipeds, there are relatively few data available to estimate size or trends of ice-breeding populations. As a result, the SCAR Group of Specialists on Seals has developed a prospectus for the Antarctic Pack-Ice Seals (APIS) Program, a coordinated, multi-national research effort. The CCAMLR Scientific Committee will maintain close coordination with the APIS Program. As a part of the program, the United States will conduct aerial censuses of pack-ice seals during the 1993/1994 austral summer.

No additional information on the status and trends of Antarctic whales was considered by the Scientific committee in 1992 or 1993.

Working Group on the CCAMLR Ecosystem Monitoring Program (WG-CEMP)

The primary focus of this Working Group has been the study of krill and predator/prey relationships. Krill is the primary prey species for large number of marine mammals in the Convention area. The Scientific Committee welcomed the continuation of the fine-scale hydroacoustic



A primary focus of the CCAMLR ecosystem monitoring program is the relationship between southern hemisphere predators, such as Antarctic fur seals, southern elephant seals and penguins, and their prey. *Photo credit: NMFS/FPR.*

surveys of krill being conducted by the United States in the vicinity of the Seal Island CEMP site. These are currently the only surveys for krill being conducted in accordance with the standard methodology for krill developed by the Working Group.

The Scientific Committee continued, in 1992 and 1993, to explore the use of precautionary measures to ensure that krill catches are not concentrated in areas close to predator colonies, particularly during breeding seasons. The committee directed the CCAMLR Secretariat to conduct a simulation study to explore more fully the potential and consequences of different extents and locations of closed areas, encouraging very fine-scale analyses of catch and effort data. In 1993, the Commission endorsed a management plan that accords protection to the Cape Shireff and San Telmo Islands CEMP site.

Assessment and Avoidance of Mortality Incidental to Fishery Operations

Over the last few years, CCAMLR has adopted and implemented a set of steps to monitor and evaluate the impact of anthropogenic debris and waste on marine living resources in the Convention Area. Members' reports on the assessment and avoidance of incidental mortality and the impacts of marine debris and lost or discarded fishing gear were submitted at the Commission's 1992 and 1993 meetings.

In 1993, the Commission approved standard guidelines for conducting surveys of beached marine debris and recommended that Members use them. The guidelines will be reviewed in two years time. The Commission also agreed on a conservation measure, scheduled to go into effect in the 1995 and 1996 fishing season, prohibiting the use of plastic packaging bands on fishing vessels to secure bait boxes. The use of plastic packaging bands in general on vessels without on-board incinerators will be prohibited beginning in the 1996/97 season. These measures were adopted in order to reduce the entanglement and death of marine mammals in the packaging bands.

High Seas Driftnet Fishing

At their apex in the late 1980s, large-scale high seas driftnet fisheries for squid, tuna, and billfish in the North Pacific Ocean employed nearly 1,000 licensed foreign vessels. As a result of United States concern about the impact of these driftnet fisheries on living marine resources of the North Pacific Ocean, particularly their interception of the United States-origin salmon, the Congress passed and the President signed the Driftnet Impact Assessment, Monitoring, and Control Act of 1987 (hereafter referred to as the "Driftnet Act").

The Driftnet Act called for the Secretary of Commerce, through the Secretary of State, to negotiate cooperative agreements with those countries conducting high seas driftnet fisheries that take United States marine resources in the North Pacific Ocean. Specifically, the Driftnet Act called for negotiation of (1) adequate monitoring and assessment programs involving the deployment of scientific observers on driftnet vessels, and (2) adequate enforcement programs with particular emphasis on the control of fishing in areas and seasons where significant United States marine resources, particularly salmon, may be taken. The United States annually negotiated such programs with Japan, Taiwan, and the Republic of Korea (ROK) from 1989 to 1992.

The 1992 scientific monitoring agreements expired on June 30, 1992. No further scientific monitoring agreements were negotiated after this date because all three countries reduced high seas driftnet fishing effort in the North Pacific by 50 percent for the remainder of 1992. In addition, all three countries pledged to end such driftnet fishing operations after December 31, 1992, the date of the global moratorium on large-scale

pelagic driftnet fishing pursuant to United Nations General Assembly (UNGA) Resolution 46/215. Bilateral enforcement agreements, however, were extended through December 31, 1992.

Details on the 1989-1992 scientific monitoring and enforcement agreements can be found in the 1990-1992 annual reports to the Congress available from NMFS.

Global Implementation of UNGA Resolution 46/215

As of December 31, 1993, the United Nations global moratorium on high seas driftnet fishing has been in force for one year. International implementation of the moratorium in most of the world's oceans and semi-enclosed seas has been generally successful. In the North Pacific Ocean, the high seas driftnet fishing countries — Japan, the ROK, and Taiwan — took positive action to end their large-scale driftnet fisheries by the moratorium date. The United States did encounter some unauthorized activity in the North Pacific in 1993 by three vessels equipped for driftnet fishing flying the flag of the People's Republic of China (PRC). Two of the vessels were ordered back to the PRC and the third was escorted to Shanghai by a United States Coast Guard cutter.

During 1993 and until January 1, 1994, French albacore driftnet fishermen were allowed to operate in the eastern North Atlantic, principally the Bay of Biscay, under a European Community (now called the European Union or EU) special exemption (Article 9 of Council Regulation 345/92) that allowed them to use driftnets no longer than 5 kilometers. The EU Council of Fisheries Ministers met on December 21, 1993, to discuss a possible extension of the exemption. They preliminarily decided against such an extension. Effective January 1, 1994, France must comply with the UN moratorium, including the provision in Council Regulation 345/92 that prohibits the use of driftnets longer than 2.5 kilometers. There is some speculation that French fishermen may again seek an extension of the driftnet derogation in early 1994.

The United States is also aware of reports of unauthorized high seas driftnet fishing activity in the eastern North Atlantic by Irish and United Kingdom vessels and in the Mediterranean Sea by Italian and perhaps other flag vessels. These reports have been made by the press and various non-governmental organizations. The United States Department of State is currently investigating these reports.

United States Driftnet Actions

The United States remains concerned that some driftnet vessels may continue to conduct unauthorized large-scale driftnet fishing operations beyond the date of the United Nations moratorium. On November 2, 1992, to respond to potential violations of the moratorium, the President signed Public Law 102-582, the High Seas Driftnet Enforcement Act (HSDFEA). Among other things, the Act is intended to enforce implementation of UNGA Resolution 46/215.

The HSDFEA was enacted to help eliminate the use of large-scale driftnets, a practice that has been determined to be highly destructive to living marine resources and ocean ecosystems. The HSDFEA has the authority to impose sanctions against those nations that continue the practice of fishing with large-scale driftnets after December 31, 1992, as a method of discouraging their use. The Assistant Administrator for Fisheries recently determined that all nations have ceased this practice. Nevertheless, NMFS, in cooperation with the United States Coast Guard and the State Department, continues to investigate reports of large-scale driftnet usage.

To further encourage compliance with the UNGA Resolution 46/215, United States port privileges will be denied to driftnet vessels continuing to fish beyond the December 31, 1992, moratorium date. In addition, the Act (HSDFEA)

requires the President to impose a mandatory import ban on fish and fish products and sport fishing equipment from any country violating the moratorium and refusing to agree to an immediate termination (after December 31, 1992) of its high seas driftnet fishing operations. If the above two measures fail to persuade a country to cease high seas driftnet fishing within 6 months, the Secretary of Commerce is required to certify that fact to the President. Such a certification by the Secretary is deemed to be a certification under the Pelly Amendment (Section 8(a) of the Fishermen's Protective Act of 1967 (22 U.S.C. 1978(a), as amended by Public Law 102-582). This allows the President the discretion to restrict imports of "any products from the offending country for any duration" to achieve compliance with the driftnet moratorium, so long as such action is consistent with United States obligations under the General Agreement on Tariffs and Trade (GATT).

On March 8, 1993, the United States announced a policy to enforce UNGA Resolution 46/215, specifically, the boarding procedure it intends to follow if United States enforcement authorities have reasonable grounds to believe that a foreign flag vessel encountered on the high seas is conducting, or has conducted, large-scale pelagic driftnet fishing operations inconsistent with UNGA Resolution 46/215. Additionally, on December 3, 1993, the United States and the PRC signed a Memorandum of Understanding (MOU) on effective cooperation and implementation of UNGA Resolution 46/215. The MOU allows enforcement officials of either country to board and inspect vessels flying either the United States or PRC flag found using or equipped to use large-scale driftnets. It also provides for enforcement officials of either country to ride on board high seas driftnet enforcement vessels of the other country. The agreement will be in force for 1994, and may be extended by the two countries.

International Whaling Commission

Overview: 1992 Annual Meeting

The 44th Annual Meeting of the International Whaling Commission (IWC or Commission) was held in Glasgow, Scotland from June 29 to July 3, 1992.

The Commission accepted its Scientific Committee's unanimous recommendation for a sustainable procedure with which to calculate quotas, a procedure that the Committee had been developing and testing for 5 years.

In a surprise move, Norway announced at the start of the meeting that it would resume whaling in 1993, regardless of any future IWC decisions. On the same day, Iceland's withdrawal from the Commission became effective.

A French proposal to create a sanctuary for whales in the Southern Ocean was deferred for a year, on France's request. The Commission passed resolutions which established that Norwegian and Japanese research whaling programs did not fulfill all the applicable criteria. A Russian proposal for scientific whaling was withdrawn.

Resolutions were also passed urging Japan to consider the recommendation of the Scientific Committee for a temporary halt to the killing of striped dolphins in its waters. A Japanese request for an allowance to take fifty minke whales in its coastal small-type whaling operations was denied, and the Commission raised concerns regarding the beluga hunt in eastern Canada.

Moratorium on Commercial Whaling. The IWC has taken no action to lift the moratorium on commercial whaling.

Revised Management Procedure. The Commission passed a resolution which accepted a scientifically tested, conservative, mathematical formula for calculating catch quotas for baleen whales. Referred to as the Revised Management Procedure (RMP), the resolution:

1. Accepted the advice of the Scientific Committee, which had been working for 5 years on the development of the revised management procedure, and which unanimously endorsed the formula.

2. Affirmed its agreement that whaling would not be permitted unless catch limits have been calculated by the Scientific Committee and approved by the Commission.

3. Set forth a series of additional steps which need to be taken before any catch quotas are calculated.

4. Considered that no quotas would be calculated until these additional steps are completed.

The United States stated that its support of this resolution should not be taken to imply that the United States favors the resumption of commercial whaling. It made clear, however, that if one or more nations should at some future date resume commercial whaling with or without IWC approval, the United States wished to insure, insofar as it can, that such whaling would be conducted under the conservative guidelines carefully designed by the IWC'S Scientific Committee and enshrined in the resolution. The United States stated categorically that it would not condone a resumption of commercial whaling that is not authorized by the IWC.

Whale Sanctuaries. Two proposals were submitted regarding whale sanctuaries. The first was a proposal to continue the current sanctuary in the Indian Ocean, scheduled to expire in October 1992. The Commission agreed to extend this sanctuary and to review this decision in the year 2002. The boundaries of the sanctuary will remain the same.

France proposed creating a new sanctuary in the Southern Ocean, including all waters south of 40° South latitude. The proposal advocated an indefinite sanctuary, which would not be reviewed for a least 10 years.

There were numerous comments on this proposal. Many delegations welcomed the proposal, while others opposed it strongly. The Scientific Committee was unable to provide much advice on the matter, however, due in part to its high priority work on the revised management procedure. France proposed to postpone discussion of this matter for a year, until the Scientific Committee makes a fuller review of the proposal.

Scientific Whaling. Japan, Norway, and Russia submitted proposals for scientific whaling in the 1992/93 season. Russia withdrew its proposal during the course of the meeting.

Norway proposed a three year program in which 110 minke whales would be taken in 1992 and 136 minkes would be taken in both 1993 and 1994. The IWC passed a resolution inviting Norway to reconsider the proposal.

Japan's research proposal sought renewal of its past program, with some modifications. The IWC passed a resolution which acknowledged the efforts Japan had made to improve its program, but, nevertheless, concluded that the proposal did not meet the criteria established by the IWC for lethal whale research. The IWC invited Japan to continue to reconsider and improve its proposed research.

Small-type Coastal Whaling. Both Japan and Norway presented information on the cultural value of whaling to small, traditional whaling communities. They stressed the cultural disruption which the moratorium had caused these communities and also noted the difficult economic situation of

the zero-catch quotas. At the end of the plenary session, Japan requested a relief quota of 50 minke whales for its "small-type whaling communities." This request was denied on the grounds that, despite its cultural aspects, the small-type whaling is a form of commercial whaling. The Commission was unwilling to allow any commercial whaling until the "Catch Limit Algorithm" (CLA) and associated package of additional procedures were adopted by the IWC.

Aboriginal Subsistence Whaling. The United States presented a paper documenting the subsistence and cultural needs of Little Diomede. While the paper received favorable comments, Brazil noted that the paper described the need for a village quota based solely on cultural and population needs. Brazil noted that future allocations must proceed to consider all factors, including the bowheads' needs. Other Commission members perceived the allocation of any bowhead quota between villages as a domestic matter for the United States. The United States clarified for the Commission that it was not requesting an increase in the existing three-year bowhead subsistence quota.

Non-governmental officials from Canada confirmed the take of one bowhead in September 1991. Several delegations expressed concern that this whaling had not been approved by the IWC and that Canada was whaling without being a member of the Commission.

Small Cetaceans. The question of whether the IWC has authority to manage dolphins, porpoises, and other small cetaceans has been contentious for nearly two decades. A number of countries, including the United States, believe that the Convention clearly stipulates that the IWC may manage all whales, which would include small ones like dolphins and porpoises. Other countries adamantly oppose this perception. Although the Commission has been deadlocked on the principle of whether it has the competence to manage small cetaceans, it has been willing to provide advice to governments about the conservation and management of small cetaceans.

The IWC is making progress on the conservation of small cetaceans. An initiative proposed by Brazil is calling for the establishment of a working group, to be convened prior to next year's annual meeting, to consider a mechanism to address small cetaceans in the IWC passed by consensus. New Zealand introduced another resolution recognizing the need for further international cooperation with regard to small cetaceans conservation.

A resolution was passed which acknowledged the Scientific Committee recommendation for an interim halt in directed kills of striped dolphins in the coastal drive fishery in Japanese waters. The resolution also invited Japan to take appropriate action to allow for recovery of the population and to consider appropriate action regarding other species of small cetaceans taken in the drive fishery.

A resolution was passed inviting range states of white whales ("beluga" whales) and narwhals to provide further scientific information about these species to the Scientific Committee. Range states are: United States, Denmark (Greenland), Russia, and Canada.

A resolution was passed concerning the killing of pilot whales in the Faroe Island Drive fishery. The resolution requested information about methods used in the killing of these animals, including methods of humane killing.

Humane Killing. A technical workshop on the humane killing of whales was held from June 20-22. A working group met on June 26, 1992, to review the workshop report.

There was general praise for the efficacy of the penthrite grenade. The use of rifles and electric lances was specifically criticized. The workshop also made a number of recommendations for

further research on the problems of determining the humaneness of killing. The question of humane killing will continue to receive attention at the IWC, especially from the United Kingdom.

Infractions. The United Kingdom presented a paper describing a large piece of whale blubber which washed ashore on West Falkland in October 1991. The blubber had clearly been flensed from some very large whale, most likely a finback (a species which has been protected since the early 1970's). The United Kingdom noted that the West Falkland coastline is well patrolled and that it was unlikely that the whale was killed in United Kingdom waters. It also pointed out that the possibility of pirate whaling in the Antarctic served to highlight the need for an adequate system of observation and inspection.

Much of the discussion in the Subcommittee focussed on whether the IWC should review the observation and inspection system. The United States and most other delegations expressed the view that the CLA formed part of a package which must not only calculate catches but also establish adequate standards for data and requirements for supervision and control. Norway, Japan, and Denmark felt that as soon as catch limits could be calculated, quotas should be set. They conveyed that linking the resumption of commercial whaling to the review and possible revision of the system of observation and inspection was introducing a new hurdle just when the CLA was about to be implemented.

UNCED and Sustainable Development. The United States issued a statement explaining its interpretation of how the relevant sections of the UNCED Agenda 21 reflect on the whaling issue: "Agenda 21 of the U.N. Conference on Environment and Development constitutes a strong commitment to the conservation and sustainable use of living marine resources, both on the high seas and in areas under national jurisdiction. In this statement, however, UNCED makes it clear that marine mammals are a special case, and recognizes that the sustainable use of whales does not imply that whales need to be harvested. We believe that non-consumption uses of whales, such as whale-watching, are among the best examples of the sustainable use of a marine resource."

Norway. In an opening statement that caught the IWC by surprise and heightened tensions at the meeting, Norway announced that it would resume commercial whaling in 1993 irrespective of any decisions made by the IWC.

Seventeen Commissioners (including the United States) issued a statement expressing their deep disappointment with the Norwegian announcement. The statement expressed concern about the effect of this action on the IWC and stated the belief that Norway's decision may undermine the Commission. It further expressed the view that Norway's unilateral decision cast doubts upon whether the IWC could continue to make orderly progress towards developing a Revised Management Scheme (RMS).

Overview: 1993 Annual Meeting

The 45th annual meeting of the IWC was held in Kyoto, Japan from May 10-14, 1993. The meeting was preceded by 14 days of Scientific Committee meetings and 4 days of working group meetings.

The Commission did not change the moratorium on commercial whaling, which remains in place. Although the Scientific Committee completed developing the specifications for a Revised Management Procedure (RMP), the Commission deferred its adoption. A resolution was passed endorsing the concept of a Southern Ocean whale sanctuary.

The IWC recognized the socioeconomic and cultural distress of Japan's small-type whalers and agreed to work expeditiously to alleviate this distress. However, the Japanese request for a quota of 50 minke whales was denied.

The IWC again decided that the scientific whaling programs of Norway and Japan do not fulfill all the applicable criteria that the Commission has established for scientific whaling. The Commission agreed to reconvene in 1995 the Workshop on Humane Killing Methods which was first held in 1992.

Resolutions were passed concerning the conservation of striped dolphins, harbor porpoise and pilot whales. The Commission also unanimously adopted resolutions on whale watching and on environmental threats to whales, thus reshaping the Commission's future agenda.

In response to Norway's announced intention to begin a commercial hunt of North Atlantic minke whales, 14 Commissioners (including the United States) signed a letter to the Norwegian Commissioner expressing their deep disappointment.

Moratorium on Commercial Whaling. Although recommendations have been made to revise, even lift, the moratorium on commercial whaling, contrasting opinions regarding the most appropriate approach to take have prevented this from happening. The Commission has taken no action to change the moratorium on commercial whaling, which remains in effect.

Revised Management Procedures. The Scientific Committee completed its work on the development of the RMP and guidelines for conducting surveys and analyzing data within a Revised Management Scheme (RMS). The Committee offered language to the Commission for adoption of both the RMP and these additional scientific aspects of the RMS. A resolution was proposed by Norway and Japan which would have adopted the RMP and endorsed the guidelines for conducting surveys and analyzing data. However, the Commission deferred the adoption of the RMP. Several nations, including the United States, expressed concerns that the RMS did not yet include an international observation and inspection scheme as required by the resolution adopted last year. Further concerns were expressed by the United States and other countries about the need to monitor the performance of the RMP, should it ever be implemented. Collection of supplementary data to augment the data required for the RMP and to provide a check on the RMP's performance would also be necessary.

Antarctic Whale Sanctuary. The French proposed the establishment of a whaling sanctuary south of 40° South latitude. Several countries opposed the proposal, while others suggested more time was needed to study it. Because the creation of a sanctuary requires an amendment to the Schedule of the Convention, the French proposal required a three-quarters majority to be accepted, according to IWC rules. In the Technical Committee, the proposal was supported by a simple majority, but there were not sufficient votes to adopt the Sanctuary proposal in the Plenary Session. However, a resolution was passed endorsing the concept of an Antarctic sanctuary, calling for an intersessional meeting, and agreeing to review the issue at the 1994 IWC meeting.

Scientific Whaling. The IWC reviewed proposals for lethal research submitted by Norway and Japan. Resolutions were passed which established that neither program fulfills the applicable criteria instituted by the IWC in 1987 which requires that each program contribute significantly to assessing the status of the affected whale stocks. Both resolutions invited the respective governments to reconsider their lethal research programs. A proposal for lethal scientific research by Russia was withdrawn prior to the IWC meeting.

Small-type Coastal Whaling. Noting a population estimate of 27,000 minke whales in the North Pacific, Japan proposed an amendment to the Schedule allowing for a take of 50 minke whales this year for Japanese "community-based whaling," provided that there is no commercial distribution of any whale products. This request was denied. However, the IWC did recognize the socio-

economic and cultural needs of the four small coastal whaling communities in Japan and the distress to these communities which has resulted from the cessation of minke whaling. The Commission resolved to work expeditiously to alleviate the distress to these communities.

Aboriginal Subsistence Whaling. The Commission discussed the possible revision of the procedure whereby quotas for aboriginal subsistence whaling are calculated. Most delegations favored waiting until work on the Revised Management Scheme for commercial whaling is completed. Others believed that discussions could proceed in parallel. The United States made clear its view that the current guidelines for setting aboriginal subsistence catches have been effective in managing the stocks of whales under this category of whaling. It pointed out that under the current procedures for calculating aboriginal subsistence quotas, stocks of bowhead whales, gray whales, and North Atlantic humpback whales are increasing in number, and that there is no evidence that any stock harvested for aboriginal subsistence use is declining.

The Commission continued to express concern about the possibility that Canada might allow its natives to land or strike bowhead whales. A Canadian observer in attendance at the IWC meeting informed the Commission that there had been no requests for the required Canadian permit to take bowhead whales, and that no take had occurred in 1992. Furthermore, the number of gray whales previously authorized to be taken by the Russian Federation for Siberian Eskimos and the number of fin and minke whales authorized to be taken by Natives in Greenland remained unchanged.

Small Cetaceans. The IWC continued its practice of providing advice to countries on the conservation and management of small cetaceans. It recommended that range states of the north Atlantic harbor porpoise take action to meet the Scientific Committee's request for the collection and analysis of additional data on population distribution and abundance, stock identities, pollutant levels, and by-catch mortality level. It particularly urged that Range States give high priority to reducing by-catches of harbor porpoise. IWC Range States are: United States, Denmark, Norway, Sweden, Finland, Germany, Netherlands, United Kingdom and France.

This year the Scientific Committee reiterated its longstanding concern regarding the status of the striped dolphin take in the coastal waters of Japan. The Committee believes that the striped dolphin population cannot support continued direct exploitation at the current level and urges (as it had last year) that Japan declare a moratorium on the taking of striped dolphins. The IWC invited Japan to consider the advice of the Scientific Committee as a matter of urgency and to take action as soon as possible that will allow the recovery of the population.

Humane Killing. The Commission decided to reconvene the 1992 Workshop on Humane Killing Methods in 1995. The terms of reference for the 1995 Workshop will be the same as in 1992.

In the Plenary Session, the Commission also discussed a Resolution on the Faroese Pilot Whale Hunt, sponsored by New Zealand, the United Kingdom and the United States, calling for additional information on the hunt and expressing concern about adequate enforcement of Faroese legislation. This Resolution passed, over strong objections from Denmark (12 in favor (including the United States), 8 opposed, 11 abstentions).

Observation and Inspection. At the Infractions Subcommittee meeting, Norway and Japan presented a proposal for a system of national inspection and international observers. Most delegations felt, as did the United States, that if commercial whaling were to resume, there should be observers from foreign governments on every whaling vessel in order to ensure transparency in the operation. There was also a general sense that the

nations engaging in whaling should pay for the observers. Norway and Japan felt, however, that if the IWC insisted on an observer scheme, the IWC member nations should all pay. Denmark and the United States made it clear that a universal observer scheme would not be feasible for aboriginal whaling. Some delegations, however, felt that aspects of a new observer scheme might be applied to aboriginal whaling as well as to commercial whaling.

An *ad hoc* Working Group met during the IWC meeting and identified the following concerns about commercial whaling observation and inspection which needed timely resolution: (1) the level and type of observer and inspector coverage; (2) qualifications and training of observers; (3) responsibility for costs; (4) real-time reporting; (5) vessel registration, measures to monitor trade; and (6) the role of the IWC and member states in ensuring compliance.

Environmental Issues. The Commission has expressed concern about the effects of environmental degradation on whales for more than a decade. In 1981, for example, it noted the serious threat to whale stocks caused by increasing levels of heavy metals, PCB's and other organochlorines in cetaceans. This year the Commission adopted, by consensus, a Resolution concerning research on the environment and its effects upon whale stocks. The Commission decided that, in order to provide the best scientific advice and determine appropriate response strategies, the Scientific Committee should give special priority to research about the effects of environmental change on cetaceans. To advance this task, the Commission decided to convene a workshop before the 47th Annual Meeting.

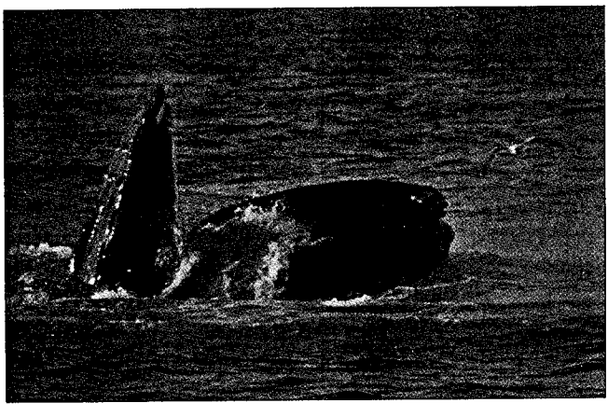
In addition, Norway proposed a Resolution on the preservation of the marine environment based on the commitments set out in Agenda 21 of the 1992 U.N. Conference on Environment and Development. The Resolution, which passed by consensus, calls on Contracting Governments to take all practical measures to remove existing threats to the marine environment and adopt policies for the prevention, reduction and control of degradation of the marine environment.

Whale Watching. Despite the apprehensions of several governments, particularly Japan, concerning the ability of IWC to deal with whale watching issues, the Commission adopted, by consensus, a resolution which established a Working Group to evaluate whale watching. The Resolution invited Governments to undertake a preliminary assessment of the extent and scientific value of whale watching activities in their countries to be reviewed by the Working Group.

Norwegian Proposed Commercial Whaling. Responding to Norway's plan to resume commercial whaling, the United States joined 13 other Commissioners on a joint statement which expressed concern and regret for Norway's position and urged Norway to reconsider its decision to take unilateral action. Three additional Commissioners supported the statement when it was read into the record. Norway stated that it would forward these views to its Government.

Non-IWC Whaling Activities

Norway resumed commercial whaling on June 16, 1993. Out of a quota established by the Norwegian Government of 160 animals, there were 157 minke whales killed in the commercial hunt in 1993. On August 5, 1993, Secretary of Commerce Ronald Brown certified under the Pelly Amendment that nationals of Norway were diminishing the effectiveness of the conservation program of the IWC by engaging in commercial whaling despite the IWC moratorium on such whaling. This certification authorizes the President to impose trade sanctions against Norway. On October 4, 1993, the President informed Congress that Norway's commercial whaling is serious enough to justify sanctions as authorized under the Pelly Amendment but that he was



Feeding humpback whale. *Photo credit: Whale Research Unit, Gloucester, MA.*

delaying the imposition of sanctions until all good faith efforts to persuade Norway to follow agreed conservation measures were exhausted. The President also stated in his report that the United States is deeply opposed to commercial whaling, that it supports the proposed whale sanctuary in the Antarctic, and that the United States has an equally strong commitment to science-based solutions to global conservation problems.

In August 1993, Canada announced that it had issued a permit to its Inuvialuit people to take one bowhead whale, despite the fact that Canada is not a member of the International Whaling Commission. No bowhead whale was taken, however, by Canadian natives in 1993.

U.S.-Russia Marine Mammal Project

Following the major political upheaval in the second half of 1991, and the subsequent disintegration of the Soviet Union, joint research on marine mammals continues at a high level. As noted in the project title, however, the United States-Russia Environmental Protection Agreement was renamed in 1992 (from the United States-USSR agreement - this was formalized in 1994) to more accurately reflect the scope of participation on the Russian side. Additionally, we have seen a great deal more autonomy develop among the regional Research Institutes for Fisheries and Oceanography (e.g., TINRO-Vladivostok, KOTINRO-Petropavlovsk-Kamchatskiy, MOTINRO-Magadan, etc.), although the Project leadership on the Russian side still resides in VNIRO (Moscow) and works through the Ministry of Protection of the Environment and Natural Resources.

The goal of this cooperative research program is to study the biology, ecology, and population dynamics of marine mammals of interest to both countries, and to foster effective management of these animals. In 1992, the Project facilitated the scientific exchange of five American researchers to Russia in two separate studies, and nine Russian scientists to the United States in five studies. The work included ecological studies of *p. larga* seals in Kamchatka, sea otter community studies in the Commander Islands, and tooth structure and morphology in the United States, research on Steller Sea Lions and harbor seals in Alaska, data analysis and manuscript preparation of joint work conducted on walrus in 1990 and 1991, and the first international northern fur seal workshop in the United States.

In 1993, the economic situation in Russia continued to be quite chaotic but, nevertheless, we were able to conduct two joint studies including three United States scientists in Russia for larga seal and tooth structure studies and 16 Russians involved in four major activities in the U.S. The latter included the 4th International Sea Otter Workshop and the 12th Project meeting in Anchorage. Additionally, four of the scientists participated in the Biennial Marine Mammal Conference in Galveston, and two of them presented papers there.

Cooperative research with Russian scientists in 1992 and 1993 included the first international northern fur seal workshop on population monitoring and evaluation of factors influencing population change (April 1992, Seattle, WA) that included representatives from VNIRO (Moscow) and KOTINRO (Kamchatka). Subsequently, a Russian scientist from KOTINRO carried out

extensive fur seal data analysis and manuscript preparation during 2 visits in February and November of 1993.

In 1994, the Project has tentatively agreed on more than 24 joint activities, including eight studies on sea otters, four on Steller sea lions, five on larga and other seals, two on walrus, and five activities on cetaceans (primarily work on gray whales, but also right and bowhead whales, and review of past whaling records).

Convention on International Trade in Endangered Species of Wild Fauna and Flora

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was drafted and initially signed in 1973 in Washington. It entered into force in 1975, upon ratification by 10 countries; the treaty now has 122 Parties.

The treaty's structure is similar to the ESA, in that species are listed according to conservation status. In addition, listed species must meet the test that trade is at least in part contributing to their decline. Appendix I species, for which there is no international trade, are "threatened with extinction." Appendix II species are "not necessarily threatened with extinction," but may become so unless trade is strictly regulated. This regulation usually takes the form of a requirement for documentation from the country of export, monitoring of imports and, in some cases, export quotas. Countries may list species subject to their own jurisdiction on Appendix III, in effect requesting the cooperation of other member countries to prevent or restrict exploitation of that species.

The ESA designates the Fish and Wildlife Service (FWS) of the Department of Interior as the lead agency for implementation of the Convention and the bulk of CITES-listed species are under FWS jurisdiction. However, many species under the jurisdiction of NMFS, including marine mammals, such as all the great whales, all the dolphins, six seal species, are listed on Appendix I or II of the Convention.

The Eighth Conference of the Parties to the Convention was held March 2-13, 1992 in Kyoto, Japan. At the recommendation of NMFS, the United States proposed at that meeting that the northern elephant seal be removed from Appendix II. The proposal was adopted by the Conference of the Parties.

A resolution was also adopted in 1992 directing the Standing Committee of CITES to undertake a revision of the criteria for amending the Appendices. The Standing Committee contracted with IUCN-The World Conservation Union for recommendations. IUCN often supplies CITES with scientific information on which to base decisions.

On March 17, 1993, IUCN submitted draft recommendations for biological and trade criteria to the CITES Standing Committee. The draft was forwarded to NMFS by the FWS. The draft criteria set quantitative standards to define suitability for listing on Appendix I and Appendix II. They formed a matrix combining the number of mature individuals left in a species with other factors, such as limited range, fragmented population structure and evidence of continued decline to make the determination. On June 30, 1993, NMFS submitted comments on the draft to FWS's Office of Scientific Authority, opposing the criteria as they were constituted. NMFS recognized the need for objective criteria for listing species on the CITES appendices, but pointed out that many of the proposed criteria were not appropriate for many marine species, and would, therefore, disadvantage the chances of those species to be afforded or retain CITES protections. These concerns were incorporated in the comments of the United States to the CITES Standing Committee of July 26, 1993, which opposed the adoption of the IUCN draft.

A meeting of countries in leadership positions in CITES was convened August 30 - September 3, 1993, in Brussels to discuss the draft criteria. Draft documents developed at the Joint Criteria Meeting were distributed to all the Parties in mid-October for their comments to be received by December 31, 1993.

In order to highlight the effects of proposed criteria on marine species, NMFS Office of Protected Resources organized a CITES Criteria Task Force, composed of scientists from NMFS Regional Offices, Science Centers and Headquarters Offices. A schedule was developed to not only review forthcoming drafts from the CITES Standing Committee, but also to explore possibilities for an entirely new approach to criteria for CITES listing.

On December 14, 1993, NMFS submitted to FWS's Office of Scientific Authority comments on the second draft of proposed criteria as developed by the CITES Criteria Task Force. NMFS again opposed the criteria as written and reiterated concerns expressed in previous comments. These comments were used by FWS in the comments of the United States to the CITES Standing Committee, which again opposed the current proposal for criteria as not acceptable from scientific, managerial and practical perspectives.

Chapter X. Law Enforcement

NMFS employs 117 Special Agents and 8 uniformed Enforcement Officers to enforce the provisions of the MMPA. Assisting these officials are enforcement officers from several states who act under agreements authorized by the MMPA.

The number of alleged violations of the MMPA that were investigated by NMFS and State enforcement personnel during 1992 and 1993 dropped sharply with respect to 1990-1991 levels. Improved compliance with Certificate of Exemption requirements within the commercial fishing industry may have prompted this reduction. In addition, greater public awareness of the provisions of the MMPA may have contributed to fewer incidents of unlawful human/marine mammal interactions and unlawful importation of marine mammal parts and products.

NMFS and State enforcement personnel investigated 52 alleged violations of the MMPA during 1992 and 1993. Of these alleged violations, 22 involved infractions by commercial fishermen regarding Certificate of Exemption and/or marine mammal observer requirements under the Marine Mammal Exemption Program (MMEP). There were 18 investigations of unlawful taking (including harassment), 5 cases of illegal importation of marine mammal parts and products, 3 incidents involving improper fishing practices in the yellowfin tuna purse seine fishery, and 4 miscellaneous violations.

Regional Trends

A major focus of Regional enforcement efforts has been the interaction between commercial fisheries and marine mammals. The Northeast, Northwest and Southwest Regions accounted for the 22 detected MMEP violations. The Southwest Region accounted for all but one of the alleged violations involving unlawful importation of marine mammal parts and products.

Interactions between humans and marine mammals in the Northwest and Southwest Regions have persisted as pinniped populations continue to expand, primarily due to their protection under the MMPA. Human and marine mammal interactions were far less common on the East Coast. The taking by harassment of marine mammals such as gray and humpback whales continued to be a leading focus of marine mammal enforcement activities in the Southwest Region. Other continuing problems throughout the regions included random shootings of marine mammals.

Nevertheless, a marked decline in MMPA infractions has been evident since the 1990-1991 accounts. Increased public awareness of the provisions of the law with respect to human and marine mammal interaction is likely to be partially responsible for the continuing decrease in these types of violations. The decline in violations against the MMEP requirements since 1990 and 1991 (737 violations) suggests the general acceptance of those requirements by the commercial fishing industry.

Noteworthy Enforcement Cases

In January 1992, NMFS Special Agents working in conjunction with the U.S. Fish and Wildlife Service, intercepted a shipment of 215 harp seal skins at Newark (NJ) International Airport. NMFS seized the skins which originated in Norway and were on their way to Canada for processing.

In February 1992, Northeast Region Special Agents seized over 6,000 pounds of falsely labeled yellowfin tuna from Venezuela. The false labeling was an apparent attempt to circumvent the embargo on tuna entering the United States from Venezuela.

In March 1992, two commercial glass-bottom boat tour companies on Catalina Island, CA were cited for repeated violations of the MMPA. Both companies were hand feeding mackerel to sea lions. The feeding operation has ceased and both companies have now switched to a grain/pellet type of food that is too small for the sea lions to eat but are large enough to attract fish to the vessel for passengers to view.

In March 1992, Special Agents in San Diego, CA investigated a complaint alleging the illegal use of a "seal bomb." An individual on board a sport fishing vessel had deliberately placed a seal bomb inside a mackerel and fed the fish to a California sea lion. The sea lion, upon ingesting the fish, was killed when the seal bomb exploded. The suspect in the case pleaded guilty to criminal charges and received a $525 fine, 100 hours of community service, and 3 years probation.

In the Southeast Region, three investigations were made during the reporting period into alleged violations by facilities that conduct swim-with-the-dolphin programs under permits issued by NMFS. These investigations were initiated following reports that members of the general public had been injured and/or assaulted by dolphins while participating in these programs. Prosecution was declined in one of the cases due to a lack of evidence to show that an actual permit condition was violated. The other two cases remain under review by the NOAA Office of General Counsel.

In October 1992, the Office of Enforcement investigated the death of two beluga whales that were held by a Chicago facility under a public display permit. The investigation disclosed that the two whales died after receiving injections of a worming agent administered by a veterinarian who was unlicensed in the State of Illinois. The permit holder was assessed $5,000 in penalties.

During the reporting period, Northeast enforcement personnel initiated several investigations involving the taking of endangered whales incidental to commercial fishing operations. None of these cases resulted in prosecution either because the fishermen involved possessed the appropriate marine mammal Certificate of Exemption, or because the difficulty in establishing ownership of a piece of fishing gear in which a whale had become entangled.

In 1992, a fisherman on the island of Hawaii reported to the Coast Guard that a humpback whale had become entangled in his fishing gear. The fisherman was using a type of buoyant drifting gear known locally as kaka line. One end of this gear is attached to shore and the other extends about 200 yards out to sea. The Coast Guard cutter dispatched to the scene was successful in freeing the entangled whale. The violator was issued only a written warning, as he had voluntarily reported the incident and had cooperated with authorities during the subsequent investigation.

In November of 1992, off the coast of Kona, HI, two individuals, one a commercial photographer, pursued a pod of short-finned pilot whales with a vessel until the whales were exhausted and congregated near the surface. Although the individuals were aware that the whales' behavior was highly agitated, they entered the water and continued to pursue the animals. While the photographer filmed the incident, the other person approached one of the whales and began stroking it. Another whale charged, biting the swimmer on the thigh and pulling her down about 60 feet. The swimmer was able to break free and returned to the surface. NMFS cited both persons for pursuit and harassment of the animals and assessed penalties totalling $12,000. A hearing before an Administrative Law Judge was held in the summer of 1993, his decision is pending.

Over a 2-month period in mid-1993, approximately 100 harbor seals, California sea lions and Steller sea lions were unlawfully killed along the

central Washington coast. Although the shootings have ceased, the investigation into these violations remains open, and the identity of the person or persons responsible for the killings is still unknown.

In July 1993, a Monterey, CA commercial fishing vessel was assessed a $40,000 penalty for violations involving unlawful shooting at marine mammals. Agents set up various surveillance points on shore and at sea to document multiple shots being fired at numerous California sea lions over a period of several hours. The vessel was not engaged in any fishing activity at the time of the shootings. A hearing was held before an Administrative Law Judge whose decision in the matter is still pending.

In the Spring of 1993, Southwest Region Special Agents began investigating several incidents in the San Diego area in which 8 California sea lions were found dead or alive impaled with arrows or homemade harpoon shafts. The situation drew considerable public attention, and eventually a $28,500 reward was offered through the San Diego Mayor's office for information leading to the conviction of the person(s) involved. Agents are working closely with the United States Attorney's office to bring the investigation to a successful conclusion.

In July 1991, a judgement was rendered by the United States District Court in Hawaii, finding David Hayashi guilty of violating the MMPA by taking a marine mammal with a rifle. Hayashi had shot at dolphins while fishing from a vessel. He was placed on one year's probation and assessed penalties totalling $26,000. This decision was upheld on appeal to the United States District Court, and was subsequently appealed to the Ninth Circuit Court of Appeals. On September 27, 1993 the Ninth Circuit reversed the findings of the lower courts based upon their interpretation that the term "harassment" was not clearly defined by the regulations. The opinion stated that harassment is defined in the dictionary as disturbance of "normal" behavior. Since feeding on a fisherman's bait is "abnormal" behavior, the regulations do not apply. The government petitioned the ninth circuit for rehearing or other appropriate relief. (See Litigation Chapter).

Chapter XI. Litigation

Ongoing Legal Actions

Animal Protection Institute v. Mosbacher and International Wildlife Coalition v. Franklin. As discussed in the previous Annual Report, API v. Mosbacher was brought challenging the issuance of a permit authorizing Shedd Aquarium in Chicago to import false killer whales (pseudorcas) from Japan. On Nov. 29, 1991, NMFS issued to Shedd Aquarium another permit to import beluga whales from Canada. On January 24, 1992, International Wildlife Coalition (IWC) filed a complaint challenging issuance of this permit. The issues raised in the two cases were identical, and the court consolidated the cases into API, et al. v. Franklin, et al., Civil No. 89-1696 TPJ (and consolidated Civil No. 92-0223 TPJ). Essentially, the plaintiffs made three assertions: (1) that the MMPA requires NMFS to certify that the country from which the marine mammals to be imported originate has a marine mammal program that the Secretary of Commerce certifies is consistent with the provisions of the MMPA, and that neither Japan nor Canada have such programs; (2) that no animals can be imported unless the populations from which they are taken are found to be within optimum sustainable population levels (OSP); and (3) that the Secretary must assure that animals imported are not pregnant, lactating, nursing or less than eight months old. The parties filed cross motions for summary judgment, and a hearing was held on July 2, 1992.

On July 31, 1992, the court granted the government's motion for summary judgment, holding that certification of foreign nations' programs and OSP determinations are not necessary in the case of imports for public display, and that it is the permit holder's responsibility to ensure that animals imported are not pregnant, lactating, nursing or less than eight months old. The plaintiffs filed a notice of appeal with the District of Columbia Circuit Court of Appeals on August 3, 1992.

While the appeal was pending, Shedd Aquarium agreed to allow its permit to import pseudorca whales from Japan expire on December 31, 1992, without exercising its permit rights, and instead imported four beluga whales from Canada under the other permit. In light of these developments, plaintiffs filed a motion to dismiss their appeal since the issues had essentially become moot. On Sept. 10, 1993, the Court of Appeals issued a order vacating its briefing schedule and holding the cases in abeyance until December 31, 1993, at which time the parties were to report back to the court as to whether Shedd Aquarium's pseudorca permit had expired without being exercised.

Earth Island Institute, et al. v. Brown, et. al, and American Tunaboat Association, et al., No. 88-1380 (N.D.Cal.); No. 92-15387 and 92-15126 (9th Cir.). This case, which has been reported in several previous Annual Reports to Congress, remained active during 1992 and 1993. Plaintiffs have alleged various failures of NOAA to enforce the MMPA with respect to yellowfin purse seine fisheries in the eastern tropical Pacific Ocean (ETP). In earlier phases of the litigation, the plaintiffs challenged procedures for making affirmative findings that foreign nations involved in the ETP yellowfin purse seine fishery meet U.S. dolphin mortality, observer coverage and regulatory requirements. The plaintiffs also challenged NOAA's implementation of the MMPA tuna embargo provisions. In 1992 and 1993, the MMPA's foreign tuna embargo provisions were at issue, as was the question regarding setting purse seine nets on depleted stocks of dolphin.

On February 3, 1992, the district court for the Northern District of California granted the plaintiffs' motion for preliminary injunction, but denied their motion for a permanent injunction

and summary judgment, ordering NOAA to prohibit the importation of yellowfin tuna and products from any intermediary nation until that nation's government provides certification and proof that it has acted to prohibit the importation of tuna that is barred from direct importation into the United States under the MMPA. The government requested an emergency stay of the injunction pending appeal. On Feb. 13, 1992, the stay pending appeal was denied. The government then filed an appeal of the preliminary injunction order. Due to the consideration of legislation concerning secondary embargoes that could have resolved or mooted the issues on appeal, the parties sought from the Ninth Circuit and received on August 13, 1992, a stay of proceedings. On January 6, 1993, an order granting a continuation of the stay was granted. On July 21, 1993, the district court put the case into the court's mediation program and during the summer and fall of 1993, the parties had several meetings with the court-appointed mediator, but progress toward resolving outstanding issues in the case was elusive.

On Nov. 19, 1993, the plaintiffs filed a motion for preliminary injunction to force NOAA to prohibit the U.S. ETP yellowfin purse seine fleet from setting its nets on northeastern offshore spotted dolphins. NMFS had recently designated this stock as "depleted" under the MMPA, and the plaintiffs argued that the MMPA prohibited takes of depleted stocks for any purpose other than scientific research. The government opposed this motion, asserting that Congress in 1984 had set the parameters of the levels of take and the species which could be taken by the U.S. tuna fleet when it codified into section 104(h) of the MMPA the American Tunaboat Association's general permit, and that the NOAA had no authority to prohibit takes of northeastern offshore spotted dolphins by the U.S. tuna fleet. The district court for the Northern District of California had not ruled on this issue by the end of 1993.

Kama, et al. v. New England Aquarium, et al., C-91-11634-WF (D.Mass.). As reported in the last Annual Report, this case was brought in 1991 by Citizens to End Animal Suffering and Exploitation (CEASE), Animal Legal Defense Fund (ALDF) and Progressive Animal Welfare Society (PAWS) challenging the 1987 transfer of Kama, a captive-born dolphin, from the New England Aquarium in Boston to the Navy. The plaintiffs challenged the use of letters of agreement instead of permits to effect transfers of marine mammals between permit holders, the use of letters of agreement to authorize takes of beached and stranded marine mammals, and extending the valid time period of permits, compensating permit holders that voluntarily postponed captures of dolphins from the Gulf of Mexico after a die-off. The plaintiffs further alleged violations of the National Environmental Policy Act (NEPA) for failing to analyze the consequences of transferring marine mammals under letters of agreement instead of permits.

In 1992, the parties filed cross motions for summary judgment. The government argued that: Kama, as an animal, lacked standing to be named as a plaintiff; that, since the plaintiffs waited until 1991 to challenge a 1987 transfer, their claims were barred by the MMPA 60 day statute of limitations and the equitable doctrine of laches; that there is no requirement in the MMPA that permits must be used to authorize transfers or that the public must be given prior notice and opportunity to comment before transfers are authorized; that there is no requirement under the MMPA for permits to authorize the taking of beached and stranded marine mammals; that transfers are within a categorical exclusion to the requirement to analyze the consequences under NEPA; and that all the plaintiffs lacked standing because they had suffered no harm. Co-defendant New England Aquarium made similar arguments, and the plaintiffs made contrary arguments.

A hearing on the cross motions for summary judgment was held in federal district court in Boston on Sept. 20, 1993. On Oct. 26, 1993, the

court entered an order granting the defendants' motion for summary judgment. The court held that Kama, being an animal, did not have standing as a plaintiff. The court also held that none of the plaintiff organizations had standing because, since Kama had never been on display at the New England Aquarium and had never been captured from the wild, none of the plaintiffs' members could establish that they had suffered or would suffer any harm by virtue of Kama's transfer to the Navy. Moreover, the court held that the plaintiffs had failed to establish they had been harmed by the practice of authorizing rescue of beached and stranded marine mammals without permits and had failed to sufficiently demonstrate why authorizing transport of marine mammals without a separate permit either resulted in a decrease in wild populations of marine mammals or harmed plaintiffs' members. While the court found that the plaintiff organizations themselves had suffered some harm by infringement on their ability to gather information and disseminate it to their members, it held that "informational harm" alone is insufficient to confer standing. Since the court found the plaintiffs did not have standing, it did not reach the merits of the substantive issues.

Strong v. Mosbacher, Civil No. 91-083 (S.D. Tex.). The previous Annual Report described this case as a challenge by a commercial dolphin feeding cruise operator in Corpus Christi, Texas, to a NMFS regulatory definition of the MMPA term "take", which includes feeding marine mammals in the wild. The effect of that regulatory definition is to make feeding marine mammals in the wild a prohibited activity under the MMPA, absent agency authorization. The federal district court for the Southern District of Texas, Corpus Christi Division had entered a temporary restraining order on April 19, 1991, enjoining the government from enforcing its regulations.

On October 1, 1992, the trial court granted the plaintiffs' motion for summary judgment. The court held that feeding marine mammals in the wild could not be equated with "harassment" and thus could not be considered a prohibited "take" under the MMPA. The court opined that the MMPA was clear on its face with respect to "harassment" leaving no discretion to the agency to interpret the term. The court stated that, to constitute "harassment," an activity would have to be "an annoyance sufficiently disturbing to cause flight from concern for self-preservation." Since dolphins are often attracted to persons offering food, the court concluded that the animals have not been harassed.

The court also found that the agency's reliance on expert scientific opinion in issuing its regulatory definition was arbitrary and capricious, stating that "the record does not contain an adequate amount of the best scientific evidence available..." Finally, the court held that NMFS' issuance of a policy statement that it would not consider permit applications for feeding marine mammals in the wild violated the Administrative Procedures Act because it constituted rulemaking without notice and comment.

The government filed a notice of appeal with the Fifth Circuit Court of Appeals on December 21, 1992. Due to many reports being received from the public of disturbing incidents involving feeding marine mammals, the government in the summer of 1993 requested that the trial court stay its order and allow NMFS to enforcement of its regulations since the Fifth Circuit Court of Appeals had not yet heard the government's appeal. On Sept. 13, 1993, the trial court denied the motion for a stay, finding that "a stay would permit enforcement of a regulation and rule adopted without following administrative procedures and imposed beyond the statutory grant of authority to regulate the conduct of feeding dolphins."

Oral argument before the Fifth Circuit Court of Appeals was held on October 4, 1993, and on October 29, 1993, the Court vacated the trial court's ruling, reinstating NMFS' regulatory prohibition on feeding marine mammals in the

with whales, by "permitting, funding and engaging in the construction of the [sewage outfall tunnel] and its ultimate use..." and section 101(a)(5) of the MMPA "by failing to protect the Northern Right whale as a result of its failure to stop the incidental taking of the Northern right whales." [Note: the regulations at 50 CFR 230.50 were issued under the Whaling Convention Act, not the MMPA]. In May of 1993, the plaintiffs filed a motion for a preliminary injunction to halt construction of the outfall tunnel.

At a hearing held on July 2, 1993, the federal district court for the District of Massachusetts combined the Greenworld suit with a suit filed by the Bays Legal Funds; the court also treated the preliminary injunction motion and the government's opposition to that motion as cross-motions for summary judgment. The court denied the motion for preliminary injunction and ruled in favor of the federal defendants, entering summary judgment that, among other things, found no violations of the MMPA.

Marine Mammal Fund, et al. v. Brown, et al., Civil No. C93-4155 MHP (N.D. Cal.). On Nov. 23, 1993, the plaintiffs sought a temporary restraining order to enjoin NMFS from allowing Chicago's Shedd Aquarium to capture three pacific white-sided dolphins off southern California pursuant to a MMPA public display permit issued by NMFS. The plaintiffs alleged that the permit was invalid for failing to adequately describe a specific capture location and because it was modified without a 30 day public notice and comment period. At a TRO hearing on Nov. 23, 1993, the court allowed Shedd Aquarium to intervene as a co-defendant. At another hearing on Nov. 24, the court heard the merits of the case and denied the TRO, finding that the MMPA's 60 day statute of limitations within which a challenge to a MMPA permit must be brought had expired.

On Dec. 9, 1993, the plaintiffs filed an application for leave of the court to file a motion asking the court to reconsider its decision denying the TRO. Shedd Aquarium had captured three dolphins between the time the TRO was denied on Nov. 24 and the time the plaintiffs sought reconsideration from the court, and the plaintiffs now alleged that Shedd Aquarium had captured the dolphins outside the area authorized in the permit and that one of the animals was pregnant. The plaintiffs asked the court for a TRO enjoining Shedd Aquarium from transporting the dolphins to Chicago, ordering NMFS to determine whether the dolphin alleged to be pregnant was actually pregnant, and prohibiting Shedd from capturing additional dolphins from outside the Santa Catalina Channel. At a hearing held on the plaintiffs' motion on Dec. 17, 1993, the court denied the motion. The dolphins were then moved to Shedd Aquarium in Chicago, but at the end of 1993, the plaintiffs' amended complaint was still pending.

Mirage Resorts v. Franklin, Civil No. CV-S-92-759-PMP.LR. On August 31, 1992, the Mirage, a Las Vegas resort holding a MMPA public display permit to exhibit dolphins, sued NMFS over the agency's decision to defer consideration of the Mirage's request to begin a "swim-with-the-dolphin" (SWTD) program. A SWTD program involves allowing members of the public to enter the water and swim with dolphins. At the time the Mirage made its request, there were only four SWTD programs authorized to operate on an experimental basis while the effects of the programs on dolphins and human participants were being evaluated. The Mirage's suit alleged that NMFS had no statutory jurisdiction under the MMPA to regulate the captive maintenance of marine mammals in general and the content of public display programs in particular, arguing that the MMPA's definition of "take" applies only to activities in the wild and that NMFS' authority is limited to regulating takes in or from the wild.

The parties filed cross motions for summary judgment, and a hearing was held in federal district court in Las Vegas on Nov. 5, 1993. On Nov. 24, 1993, the court granted the plaintiffs'

motion for summary judgment and denied the agency's cross motion for summary judgment. The court found that the MMPA only gives NMFS jurisdiction over marine mammals in the wild because the statutory term "take," the moratorium on which forms the basis for much of NMFS' authority to regulate activities under the MMPA, applies only to activities conducted in the wild; once such animals are in captivity, according to the court, NMFS' jurisdiction ends and their care and maintenance are subject only to regulation by the Department of Agriculture's Animal and Plant Health Inspection Service pursuant to the Animal Welfare Act. At the end of 1993, the government was considering its options, including whether to appeal the trial court's ruling.

United States v. Hayashi, No. 92-10044 (Ninth Circuit Court of Appeals). On January 24, 1991, David Hayashi, a part-time commercial fisherman and his son were fishing for tuna off the coast of Waianae, Hawaii. Hayashi fired a rifle into the water with the intent of deterring four dolphins that had begun swimming around his fishing gear from eating his bait or fish that had been caught on the lines. The shots did not hit the dolphins. Hayashi was a commercial fisherman allowed by regulation promulgated under the MMPA interim exemption for commercial fisheries (section 114) to engage in this kind of deterrent action in the course of his commercial fishing operations.

A state enforcement officer reported the incident to National Marine Fisheries Service enforcement officers, who referred the matter to the local U.S. Attorney in Honolulu. In April 1991, the local U.S. Attorney in Honolulu charged Hayashi with criminal violations of the MMPA for "taking" marine mammals by shooting at, and thereby "harassing," them and he was convicted before a Magistrate Judge in July 1991. Hayashi appealed to the District Court, and in December 1991, the District Court affirmed the conviction. Hayashi appealed again to the Ninth Circuit Court of Appeals, which on September 27, 1993, overturned Hayashi's conviction.

The Ninth Circuit noted that the government had initially charged Hayashi with violating a regulation issued by the U.S. Fish and Wildlife Service under the Endangered Species Act which defined "harassment," instead of a NMFS regulation issued under the MMPA. Both the Magistrate Judge and the District Court applied this incorrect regulation, with the result, according to the Ninth Circuit, that "Hayashi's conviction and its affirmance rest[ed] upon application of the wrong regulatory definition." Moreover, the court found that, while a criminal conviction can occur only for "knowing" violations of the MMPA, the government never charged Hayashi with or presented evidence of a knowing violation of the MMPA, but instead charged him with criminally violating the MMPA for a negligent act. Both the Magistrate and District Court Judges went along with this mistake.

These errors alone would have been sufficient to overturn Hayashi's conviction, but the Ninth Circuit went on to find that Hayashi's conduct did not violate the MMPA because it did not constitute "harassment." The court noted that the MMPA failed to define "harass" in the statutory definition of "take," and so the court created its own definition. According to the Ninth Circuit, only "sustained and serious disruptions of normal mammal behavior" constitute "harassment" under the MMPA. After supplying its definition of "harassment," the Ninth Circuit overturned Hayashi's conviction.

Due to an apparent breakdown of communications between the local U.S. Attorney and NMFS enforcement agents in Hawaii and Justice Department and NOAA officials in Washington, this entire sequence of events did not come to the attention of the Department of Justice, NOAA and Dept. of Interior officials who have particular knowledge regarding the MMPA until after the Ninth Circuit published its opinion. Concerned

that the Ninth Circuit's construction of "harassment" in the MMPA could cause significant problems for the agencies responsible for administering and enforcing the statute, the government on Nov. 9, 1993, petitioned the Ninth Circuit for rehearing or other appropriate relief.

In its petition, the government agreed that Hayashi had been improperly charged, that his activities were permissible under the MMPA and that Hayashi's conviction should have been overturned, but that the court did not need to address the issue of "harassment" to overturn the conviction. The government pointed out that the court's new construction of "harassment" as requiring "sustained and serious disruptions of normal mammal behavior" was contrary to long-standing agency interpretation and administrative enforcement proceedings; as such, it would cause substantial problems for the agencies attempting to implement the MMPA. At the end of 1993, the government's petition for rehearing or other appropriate relief was still pending.

Chapter XII. Publications

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Appendix A

Table A-1
1992-1993 List of Category I and Category II Fisheries

FISHERY	CATEGORY
AK Prince William Sound - drift gillnet	II
WA marine set gillnet in Areas 4, 4A, and 4B	I
WA, OR Lower Columbia River Region, Willapa Bay, Grays Harbor (includes rivers, estuaries, etc.) drift gillnet	I
AK Copper River and Bering River Districts salmon - drift	I
WA, OR, CA thresher shark and swordfish drift gillnet	I
CA halibut - set gillnet	I
CA angel shark - set gillnet	I
SNE, MDA Foreign mackerel - trawl	I
Atlantic Ocean, CB, GMX tuna, swordfish, shark - pair trawl	I
Atlantic Ocean, CB, GMX swordfish, tuna, shark - longline	II
GME groundfish/mackerel - sink gillnet	I
AK Prince William Sound - set gillnet	II
AK South Unimak (False Pass and Unimak Pass) drift gillnet	II
AK Peninsula (other than South Unimak) drift gillnet	II
AK Southeast Alaska - drift gillnet	II
AK Yakutat - set gillnet	II
AK Cook Inlet - drift gillnet	II
AK Cook Inlet - set gillnet	II
AK Kodiak - set gillnet	II
AK Peninsula - set gillnet	II
AK Peninsula - drift gillnet	II
AK Bristol Bay - drift gillnet	II
AK Bristol Bay - set gillnet	II

Table A-1 (cont'd)
1992-1993 List of Category I and Category II Fisheries

FISHERY	CATEGORY
WA Puget Sound Region, incl. Hood Canal, Strait of Juan de Fuca (estuaries and lower river areas subject to tidal action) - set and drift gillnet	II
WA coastal river - gillnet	II
CA Klamath River - gillnet	II
AK - gillnets (except salmon and herring)	II
CA - gillnets for white sea bass, yellow tail, soupfin shark, white croaker, bonito/flying fish - set gillnet	II
AK South Unimak (False Pass and Unimak Pass) - purse seine	II
AK South Unimak (False Pass and Unimak Pass) - drift gillnet	II
WA, OR, CA salmon - troll	II
CA herring - purse seine	II
CA anchovy, mackerel, tuna - purse seine	II
CA sardine - purse seine	II
CA squid - purse seine	II
AK Prince William Sound - longline/setline	II
AK Southern Bering Sea, Aleutian Islands, and Gulf of Alaska (Unimak Pass and westward) - longline/setline	II
AK Metlakatla fish trap	II
CA squid -dip net	II
WA, OR salmon - net pens	II
OR salmon - ranch	II
New England Multispecies - sink gillnet	I
Gulf of Maine small pelagics - surface gillnet	I
Mid-Atlantic (includes Atl.crkr, mack, sturg., herring, perch wkfish, strped bass, etc.) - coastal gillnet	II
AK (except salmon, herring, and sunken gillnets for groundfish) - gillnet	II

Table A-1 (cont'd)
1992-1993 List of Category I and Category II Fisheries

FISHERY	CATEGORY
AK groundfish -sunken gillnet	II
Atlantic, CB, GMX swordfish, tuna, shark - gillnet	I
SNE, MDA Atlantic mackerel - trawl	II

Appendix B

Exhibit B-1
National Marine Fisheries Service Marine Mammal Exemption Program
Archive Year 1992 Fishery Registration and Logbook Interaction Information
Data current as of June 6, 1994

Table I - Atlantic Ocean Fisheries:

Fishery (Number)	Estimated Number of Vessels	Vessels Registered	Vessels Reporting	Gear Interactions			Deterrence Actions			Total Hours Fished	Mean Effort (/day)	Take Rate[1] (/day)	Take Rate (/20 days)
				Involved	Injured	Killed	Harassed	Injured	Killed				
Category I													
Mid-Atlantic Foreign Mackerel Trawl Fishery (01) *(inactive)*	0	2	2	0	0	0	0	0	0	11	5.5	N.A.	N.A.
Gulf of Maine Groundfish/ Mackerel Sink Gillnet Fishery (02)	19	350	118	36	0	29	2	0	0	5080	19.79	0.1128	2.256
Category II													
Mid-Atlantic Mackerel Trawl Fishery (04)	250	216	123	3	0	3	0	0	0	10,558	11.03	0.0031	0.062
Atlantic, Caribbean, and Gulf of Mexico Tuna, Shark, and Swordfish Longline Fishery (05)	250	355	214	64	1	0	112	0	0	137,846	13.599	N.A.	N.A.

1: Daily take rate is calculated according to the following equation:

$$\frac{\text{N(Gear Interaction Kills)} + \text{N(Deterrence Action Kills)}}{\text{Total Hours Fished}} \times \text{Mean Effort (/day)}$$

Exhibit B-1 (cont'd)
National Marine Fisheries Service Marine Mammal Exemption Program
Archive Year 1992 Fishery Registration and Logbook Interaction Information
Data current as of June 6, 1994

Table II - Pacific Ocean Fisheries:

Fishery (Number)	Estimated Number of Vessels	Vessels Registered	Vessels Reporting	Gear Interactions			Deterrence Actions			Total Hours Fished	Mean Effort (/day)	Take Rate[1] (/day)	Take Rate (/20 days)
				Involved	Injured	Killed	Harassed	Injured	Killed				
Category I													
Alaska Prince William Sound Drift Gillnet Fishery (06)	820	548	482	20,260	6	9	8,457	5	5	250,532	15.335	0.0009	0.018
Alaska Prince William Sound Set Gillnet Fishery (07)	536	29	27	415	1	1	166	2	1	18,575	19.19	0.0021	0.042
Alaska Peninsula Drift Gillnet Fishery (08)	30	258	146	3,612	10	7	1,243	5	5	87,924	17.348	0.0024	0.048
Washington Marine (Areas 4, 4A, and 4B) Set Gillnet Fishery (09)	0	2	2	23	0	1	0	0	8	1,992	24	0.108	2.16
WA, OR Lower Columbia River Salmon Drift Gillnet Fishery (10)	19	828	0	18,635	25	41	6,493	21	14	68,382	7.439	0.006	0.12
WA, OR, CA Thresher Shark and Swordfish Drift Gillnet Fishery (11)	0	150	76	80	1	71	1	0	0	26,619	11.031	0.029	0.580
California Halibut Set Gillnet Fishery (12)	224	155	85	1,979	0	465	305	3	17	76,145	21.724	0.137	2.74

Exhibit B-1 (cont'd)
National Marine Fisheries Service Marine Mammal Exemption Program
Archive Year 1992 Fishery Registration and Logbook Interaction Information
Data current as of June 6, 1994

Fishery (Number)	Estimated Number of Vessels	Vessels Registered	Vessels Reporting	Gear Interactions			Deterrence Actions			Total Hours Fished	Mean Effort (/day)	Take Rate[1] (/day)	Take Rate (/20 days)
				Involved	Injured	Killed	Harassed	Injured	Killed				
California Angel Shark Set Gillnet Fishery (13)	273	74	36	71	0	0	13	0	0	3,371	21.136	N.A.	N.A.
Category II													
Southeast Alaska Salmon Drift Gillnet Fishery (15)	0	430	377	6,227	5	17	2,023	5	3	235,668	14.779	0.0013	0.026
Alaska Yakutat Salmon Set Gillnet Fishery (16)	468	129	91	5,579	5	26	909	5	27	74,178	16.681	0.0119	0.238
Alaska Cook Inlet Salmon Set and Drift Gillnet Fishery (17)	164	738	656	1,154	1	1	304	1	3	200,215	13.881	0.0003	0.006
Alaska Kodiak Salmon Set Gillnet Fishery (18)	0	115	111	891	0	2	253	0	0	99,990	21.041	0.0004	0.008
Alaska Peninsula Set Gillnet Fishery (19)	187	70	66	1,927	1	2	934	3	0	31,398	16.931	0.0011	0.022
Alaska Bristol Bay Salmon Set and Drift Gillnet Fishery (20)	113	2,001	1,688	29,472	54	7	7,089	59	43	428,352	13.228	0.0015	0.030
Washington Puget Sound Region and Inland Waters S. of the Canadian Border Salmon Set and Drift Gillnet Fishery (21)	0	1,899	914	18,217	40	6,530	56	27	376	99,692	11.939	0.827	16.54
Washington Coastal River Salmon Set Gillnet Fishery (22)	3,900	2	1	0	0	0	0	0	0	0	0	N.A.	N.A.

Exhibit B-1 (cont'd)
National Marine Fisheries Service Marine Mammal Exemption Program
Archive Year 1992 Fishery Registration and Logbook Interaction Information
Data current as of June 6, 1994

Fishery (Number)	Estimated Number of Vessels	Vessels Registered	Vessels Reporting	Gear Interactions			Deterrence Actions			Total Hours Fished	Mean Effort (/day)	Take Rate[1] (/day)	Take Rate (/20 days)
				Involved	Injured	Killed	Harassed	Injured	Killed				
California Klamath River Salmon Gillnet Fishery (23)	23	325	0	1	0	0	0	0	0	30	10	N.A.	N.A.
Alaska Gillnet Fishery (except salmon and herring) (24)	504	49	21	42	0	0	37	0	0	544	11.1	N.A.	N.A.
California White Sea Bass, Yellow Tail, Soupfin Shark, White Croaker, Bonito/Flying Fish Gillnet Fishery (25)	0	206	78	264	0	25	40	0	0	12,188	16.318	0.0335	0.67
Alaska South Unimak (False Pass and Unimak Pass) Salmon Purse Seine Fishery (26)	0	106	94	184	0	0	18	0	0	6,829	10.737	N.A.	N.A.
WA, OR, CA Salmon Troll Fishery (28)	0	2,918	2,157	5,158	18	5	2,147	19	13	12,392	9.112	0.0132	0.264
California Herring Purse Seine Fishery (29)	0	48	29	1,502	0	1	118	0	0	1,385	8.147	0.0059	0.118
California Anchovy, Mackerel, and Tuna Purse Seine Fishery (30)	100	105	60	1,445	1	1	262	0	0	6,543	4.805	0.0007	0.014
California Sardine Purse Seine Fishery (31)	160	83	48	1,923	0	0	427	0	1	2,183	7.815	0.0036	0.072
California Squid Purse Seine Fishery (32)	120	93	50	9,404	0	8	1,487	0	1	4,485	7.45	0.0149	0.298

Exhibit B-1 (cont'd)
National Marine Fisheries Service Marine Mammal Exemption Program
Archive Year 1992 Fishery Registration and Logbook Interaction Information
Data current as of June 6, 1994

Fishery (Number)	Estimated Number of Vessels	Vessels Registered	Vessels Reporting	Gear Interactions			Deterrence Actions			Total Hours Fished	Mean Effort (/day)	Take Rate[1] (/day)	Take Rate (/20 days)
				Involved	Injured	Killed	Harassed	Injured	Killed				
Alaska Prince William Sound (Area 649) Sablefish Longline/ Setline Fishery (33)	145	236	146	251	0	0	58	0	0	3,529	13.488	N.A.	N.A.
Alaska Southern Bering Sea and Aleutian Islands (Areas 610 W of 165 W) Sablefish Longline/ Setline Fishery (34)	270	308	206	1,813	0	0	0	0	0	28,269	17.699	N.A.	N.A.
Alaska Metlakatla Fish Trap Fishery (35)	226	5	3	0	0	0	0	0	0	720	24.0	N.A.	N.A.
California Squid Dip Net Fishery (36)	4	51	28	24	0	0	24	0	0	96	12.0	N.A.	N.A.
WA and OR Salmon Net Pen Fishery (37)	115	9	7	1,117	0	1	946	0	0	58,395	23.991	0.0004	0.008
OR Salmon Ranch Fishery (38)	21	1	0	0	0	0	0	0	0	0	0	N.A.	N.A.

1: Daily take rate is calculated according to the following equation:

$$\frac{N(\text{Gear Interaction Kills}) + N(\text{Deterrence Action Kills})}{\text{Total Hours Fished}} \times \text{Mean Effort(/day)}$$

Appendix C

Appendix C. ETP Dolphin Mortalities Incidental to Commercial Tuna Operations. Approximately 1,317,975 eastern tropical Pacific dolphins have been killed in commercial tuna purse seine fishing operations from 1973 through 1993. Data from Smith (1979, 1983), Wahlen (1986), and Punsley (1983) for the years 1973-1978, Inter-American Tropical Tuna Commission Annual Reports (1989, 1991, 1992, 1993) for years 1979-1990, in addition to Hall and Boyer (1990, 1992) for the years 1989-1990.

Year	Incidental Mortality
1973	144,000
1974	129,400
1975	129,900
1976	127,000
1977	29,600
1978	20,200
1979	21,426
1980	31,970
1981	35,089
1982	29,104
1983	13,493
1984	40,712
1985	58,847
1986	133,174
1987	99,187
1988	78,927
1989	96,979
1990	52,531
1991	27,292
1992	15,539
1993	3,605

Appendix D

Table D-1
Summary of Permit Applications
January 1, 1992 to December 31, 1993

	Scientific Research	Public Display	Scientific Research & Public Display	Totals
NUMBER OF APPLICATIONS SUBMITTED	**80**	**28**	**3**	111
No. of Animals Requested (Total)	7,787,491	137	52	7,787,680
OF THESE:				
Taken by Killing	20	0	0	20
Taken and Kept Alive	0	0	0	0
Killed in Captivity	0	0	0	0
Taken and Released	33,822	0	0	33,822
Found Dead	300	0	0	300
Stranded/Exchanged	19	106	2	127
Imports	0	1	0	1
Harass	7,753,330	30	50	7,753,410
ACTION TAKEN ON APPLICATIONS:				
No. Forwarded to Marine Mammal Commission	65	12	0	77
No. Reviewed by Marine Mammal Commission	63	12	0	75
No. Withdrawn	4	1	0	5
No. Referred to Fish and Wildlife Service	0	0	0	0
No. Referred to States	0	0	0	0
No. Referred to Regions	0	0	0	0
No. Resolved through Agreement	0	0	0	0
No. Returned Due to Insufficient or	13	14	3	30
No. Denied	2	0	0	2
No. Approved	58	8	0	66
No. Pending	3	5	0	8

Table D-1 (cont'd)
Summary of Permit Applications
January 1, 1992 to December 31, 1993

	Scientific Research	Public Display	Scientific Research & Public Display	Totals
NO. OF ANIMALS APPROVED	**1,491,346**	**25**	**0**	**1,491,371**
OF THESE:				
Taken by Killing	10	0	0	10
Taken and Kept Alive	0	0	0	0
Killed in Captivity	0	0	0	0
Taken and Released	26,922	0	0	26,922
Found Dead	0	0	0	0
Stranded/Exchanged	3	24	0	27
Imports	0	1	0	1
Harass	1,464,411	0	0	1,464,411

Table D-2
Number of Cetaceans in Scientific Research/Public Display Permit Requests
January 1, 1992 to December 31, 1993

	Taken / Imported and Kept Alive	Tagged or Taken and Released	Found Dead / Stranded	Total Requested
Atlantic Bottlenose Dolphin	0	45	0	45
Atlantic White-Sided Dolphin	0	40	0	40
Atlantic Spotted Dolphin	0	10	0	10
Bottlenose Dolphins	0	333	0	333
Bowhead Whale	0	130	0	130
Common Dolphin	0	2885	0	2885
Dall's Porpoise	0	5	0	5
Dwarf Sperm Whale	0	5	0	5
False Killer Whale	0	20	0	20
Harbor Porpoise	0	10	0	10
Hourglass Dolphin	0	40	0	40
Killer Whale	1	10	0	11
Long-Finned Pilot Whale	0	20	0	20
Pacific White-Sided Dolphin	0	120	0	120
Peale's Dolphin	0	40	0	40
Pygmy Killer Whale	0	20	0	20
Pygmy Sperm Whale	0	5	0	5
Risso's Dolphin, Grampus	0	320	0	320
Rough-Toothed Dolphin	0	320	0	320
Short-Finned Pilot Whale	0	20	0	20
Spinner Dolphin	0	7,270	0	7,270
Spotted Dolphin	0	10,850	0	10,850
Clymene Dolphin or Short-Snouted Spinner Dolphin	0	10	0	10
Striped Dolphin, Streaker	0	330	1	330
Unspecified Cetaceans	0	324	0	324
White Whale, Beluga	0	175	0	175
White-Beaked Dolphin	0	40	0	40
TOTAL	1	23,397	1	23,399

Table D-3
Number of Pinnipeds in Scientific Research/Public Display Permit Requests
January 1, 1992 to December 31, 1993

	Taken By Killing	Taken / Imported and Kept Alive	Tagged or Taken and Released	Found Dead/ Stranded	Total Requested
Atlantic Harbor Seal	0	0	3	0	3
Bearded Seal	0	0	100	0	100
California Seal Lion	0	0	2,553	3	2,556
Crabeater Seal	0	0	90	0	90
Gray Seal	0	0	3	0	3
Harbor Seal	0	0	3	250	253
Hawaiian Monk Seal	0	0	1250	0	1250
Kerguelen Fur Seal	0	0	90	0	90
Largha Seal, Spotted Seal	0	0	100	0	100
Leopard Seal	0	0	90	0	90
North Elephant Seal	0	0	4702	4	4706
Northern Fur Seal	0	0	350	0	350
Northern Sea Lion/Steller	20	0	3033	50	3103
Pacific Harbor Seal	0	0	100	0	100
Ringed Seal	0	0	100	0	100
Ross Seal	0	0	90	0	90
Southern Elephant Seal	0	0	90	0	90
TOTAL	20	0	12,747	307	13,074

Table D-4
Number of Cetaceans Authorized in Scientific Research/Public Display Permits
January 1, 1992 to December 31, 1993

	Taken/Imported and Kept Alive	Tagged or Taken and Released	Found Dead/ Stranded	Total Requested
Atlantic White-Sided Dolphin	0	40	0	40
Bottlenose Dolphin	0	330	0	330
Bowhead Whale	0	100	0	100
Common Dolphin	0	2,880	0	2,880
False Killer Whale	0	20	0	20
Hourglass Dolphin	0	40	0	40
Killer Whale	1	0	0	1
Pacific White-Sided Dolphin	0	120	0	120
Peale's Dolphin	0	40	0	40
Pygmy Killer Whale	0	20	0	20
Risso's Dolphin, Grampus	0	320	0	320
Rough-Toothed Dolphin	0	320	0	320
Spinner Dolphin	0	7,260	0	7,260
Spotted Dolphin	0	10,040	0	10,040
Striped Dolphin, Streaker	0	330	0	330
Unspecified Cetaceans	0	324	0	324
White Whale, Beluga	0	100	0	100
White-Beaked Dolphin	0	40	0	40
TOTAL	**1**	**22,324**	**0**	**22,325**

Table D-5
Number of Pinnipeds Authorized in Scientific Research/Public Display Permits
January 1, 1992 to December 31, 1993

	Taken By Killing	Taken / Imported and Kept Alive	Tagged or Taken and Released	Found Dead/ Stranded	Total Requested
Bearded Seal	0	0	122	0	122
California Sea Lion	0	0	550	0	550
Crabeater Seal	0	0	90	0	90
Harbor Seal	0	0	2,500	0	2,500
Hawaiian Monk Seal	0	0	1,250	0	1,250
Kerguelen Fur Seal	0	0	90	0	90
Largha Seal, Spotted Seal	0	0	100	0	100
Leopard Seal	0	0	90	0	90
Northern Elephant Seal	0	0	2	0	2
Northern Fur Seal	0	0	100	0	100
Northern Sea Lion, Steller	10	0	230	0	240
Pacific Harbor Seal	0	0	100	0	100
Rined Seal	0	0	100	0	100
Ross Seal	0	0	90	0	90
Southern Elephant Seal	0	0	90	0	90
Weddell Seal	0	0	3600	0	3600
TOTAL	**10**	**0**	**9,104**	**0**	**9,114**

Appendix E

Table E-1
Marine Mammal Strandings in 1992 and 1993

Species	1992					1993				
	NE	SE	SW	NW	AK	NE	SE	SW	NW	AK
Beaked Whale		3	1				7			
Blainville Beaked Whale							2			
Cuvier's Beaked Whale		6				1	1	1		
Gervais' Beaked Whale	1						2			
Stejneger's Beaked Whale			1		1					
True's Beaked Whale						1				
Beluga Whale					5					11
Bryde's whale		3					2			
Dwarf Sperm Whale	4						7			
Pygmy Sperm Whale		46		1		6	25	2		
Pyg. or Dwf. Sperm Whale		8	1				35	2		
Blue Whale			1					1		
Fin Whale	3	2				3		1		
Gray Whale			16	3	13			11	2	13
Humpback Whale	11	11	5		2	5	7	6		3
Killer Whale			1		6					5
Melon Headed Whale							1	1		
Minke Whale	6	2	2	1	1	10	1	2		
Northern Right Whale							2			
Pilot Whale		4					10			
Long-finned Pilot Whale	38					8	1			
Short-finned Pilot Whale	4	14					9	7		
Pygmy Killer Whale		9					1			
Sperm Whale	5		4				1	4		
Unidentified Whale			3				4	3	1	7
Bottlenose Dolphin	47	670	9			46	636	8		
Common Dolphin	16		21			7	2	28		
Northern Right Whale Dolphin										
Pacific White-sided Dolphin			7					1	3	2
Atlantic White-sided Dolphin	4					21	2			

Table E-1 (cont'd)
Marine Mammal Strandings in 1992 and 1993

Species	1992					1993				
	NE	SE	SW	NW	AK	NE	SE	SW	NW	AK
Risso's Dolphin	8	2	3			6	2	1		
Rough Toothed Dolphin				1						
Spinner Dolphin		1					1			
Atlantic Spotted Dolphin		4					14			
Spotted Dolphin	1					1	8			
Striped Dolphin	10	1		1		9	1	2	1	
Unidentified Stenella sp.							28			
Unidentified Dolphin	6	34	3				16	8		
Dall's Porpoise			1	7	1			1	3	2
White-Beaked Dolphin	1									
Harbor Porpoise	36		8	18	1	54	11	4	16	7
Unidentified Cetacean	4	53				1	21		1	
TOTAL CETACEAN	**205**	**873**	**87**	**32**	**30**	**179**	**860**	**94**	**27**	**50**

Table E-1 (cont'd)
Marine Mammal Strandings in 1992 and 1993

Species	1992					1993				
	NE	SE	SW	NW	AK	NE	SE	SW	NW	AK
California Sea Lion			1685	58				1201	62	
Northern (Steller) Sea Lion			7	2				4	5	14
Gray Seal	19					21				
Guadalupe Fur Seal								4		
Harbor Seal	157	5	390	294	3	166	6	319	303	20
Harp Seal	19					35				
Hooded Seal	5					15	2			
Northern Elephant Seal			354	26				329	10	
Northern Fur Seal			38					7		1
Ringed Seal	3									1
Unidentified Pinniped	5		143	4	1	4		138	4	
TOTAL PINNIPED	**208**	**5**	**2617**	**384**	**4**	**241**	**8**	**2002**	**384**	**36**
TOTAL MARINE MAMMALS	**413**	**878**	**2704**	**416**	**34**	**420**	**868**	**2096**	**411**	**86**

Appendix F

Table 1 - Population Estimates: Cetacea

Species Name Order Cetacea	Estimated World Total	Status of Population Data [1]	Arctic Circum-polar	Pacific Asia	Pacific Alaska	Pacific North America	Pacific South America	Atlantic North America	Atlantic Europe	Atlantic Africa	Atlantic South America	Southern Ocean New Zealand	Southern Ocean Australia	Southern Ocean Sub-Antarctic	Southern Ocean Antarctic
Suborder: Mysticeti Family: Eschrichtiidae Gray whale (*Eschrichtius robustus*)	20,869	Best		200?	<----------20,869---------->			<----------Extinct---------->							
Family: Balaenopteridae Minke whale (*Balaenoptera acutorostrata*)	>825,000	Incomplete		25,000	+	+		+	100,000			<----------700,000---------->			
Sei Whale (*Balaenoptera borealis*)	>36,000	Incomplete		<----------9,100---------->				<----------10,300---------->				<----------17,000---------->			
Bryde's whale (*Balaenoptera edeni*)	30,200/ 55,500	Incomplete		14,600/ 39,900		+	15,600	+		+	+	+	+		
Fin whale (*Balaenoptera physalus*)	>63,000	Incomplete		<----------16,625---------->				<-----34,588----->				<----------12,000---------->			
Blue whale (*Balaenoptera musculus*)	>10,000	Incomplete		<----------3,747---------->				<-------555------->		+	+	<----------6,400---------->			
Humpback whale (*Megaptera novaeangliae*)	>28,000	Incomplete		<----------2,000---------->				5,500	1,000		+	<----------20,000---------->			
Family Balaenidae Right whale (*Balaena glacialis*)	>2,800	Incomplete		100/ 200		>265		350	+	1,200	1,190				
Bowhead whale (*Balaena mysticetus*)	>8,000	Incomplete	+	+	7,500			<-------500?------->							
Suborder: Odontoceti Family: Delphinidae Atlantic white-sided dolphin (*Lagenorhynchus acutus*)															
Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)	No data	Incomplete		+	<-----125,000----->										
Northern right whale dolphin (*Lissodelphis borealis*)	No data	Incomplete		+	+	19,835									
Southern right whale dolphin (*Lissodelphis peronii*)															
Risso's dolphin (*Grampus griseus*)															
Melon-headed whale (*Peponocephala electra*)															
Pygmy killer whale (*Feresa attenuata*)															

Table 1 - Population Estimates: Cetacea (Cont'd)

Species Name	Estimated World Total	Status of Population Data [1]	Arctic Circum-polar	Pacific Asia	Pacific Alaska	Pacific North America	Pacific South America	Atlantic North America	Atlantic Europe	Atlantic Africa	Atlantic South America	Southern Ocean New Zealand	Southern Ocean Australia	Southern Ocean Sub-Antarctic	Southern Ocean Antarctic
Family: Delphinidae (cont'd)															
False killer whale (*Pseudorca crassidens*)		Incomplete	+	+		+	+	+	+	+	+	+	+		
Long-finned pilot whale (*Globicephala malaena*)															
Short-finned pilot whale (*Globicephala macrorhynchus*)															
Killer whale (*Orcinus orca*)	No data	Incomplete	+	+	717	+	+	+	+	+	+	+	+	+	+
Rough-toothed dolphin (*Steno bredanensis*)															
Bottlenose dolphin (*Tursiops truncatus*)															
Spinner dolphin (*Stenella longirostris*)															
Spotted dolphin (*Stenella attenuata*)															
Atlantic spotted dolphin (*Stenella plagiodon*)															
Striped dolphin (*Stenella coeruleoalba*)															
Common dolphin (*Delphinus delphis*)															
Fraser's dolphin (*Lagenodelphis hosei*)															
Family: Phocoenidae															
Harbor porpoise (*Phocoena phocoena*)	No data	Incomplete	+	12,000	19,400				+						
Dall's porpoise (*Phocoenoides dalli*)	1,2000,000	Complete		<---------1,200,000--------->											
Family: Monodontidae															
Beluga, belukha, white whale (*Delphinapterus leucas*)	62,000/ 80,000	Complete	62,000/ 80,000		+										
Narwhal (*Monodon monoceros*)															

Table 1 - Population Estimates: Cetacea (Cont'd)

Species Name	Estimated World Total	Status of Population Data [1]	Arctic Circum-polar	Pacific: Asia	Pacific: Alaska	Pacific: North America	Pacific: South America	Atlantic: North America	Atlantic: Europe	Atlantic: Africa	Atlantic: South America	Southern Ocean: New Zealand	Southern Ocean: Australia	Southern Ocean: Sub-Antarctic	Southern Ocean: Antarctic
Family: Physeteridae Sperm whale (*Physeter catodon*)	1,810,000	Complete			<---------930,000--------->			<-----100,000----->				<----------780,000---------->			
Pygmy sperm whale (*Kogia breviceps*)															
Dwarf sperm whale (*Kogia simus*)															
Family: Ziphiidae Baird's beaked whale (*Berardius bairdii*)															

[1] Best = the most comprehensive estimates throughout the range of the species.
Complete = good population estimates throughout the range of the species.
Incomplete = population estimates only in parts of the range of the species.

÷ = although a population occurs in this area, the numbers are either unknown or the data are not available.

Table 2 - Population Estimates: Pinnipedia

Species Name Order: Carnivora Suborder: Pinnipedia	Estimated World Total	Status of Population Data [1]	Arctic	Pacific				Atlantic				Southern Ocean			
			Circum-polar	Asia	Alaska	North America	South America	North America	Europe	Africa	South America	New Zealand	Australia	Sub-Antarctic	Antarctic
Family: Otaridae															
California sea lion (*Zalophus californianus*)	230,000	Complete				210,000	20,000								
Northern seal lion (*Eumetopias jubatus*)	48,000	Complete		3,000	35,000	(Incl. CAN) 10,000									
South American sea lion (*Otaria flavescens*)															
Australian sea lion (*Neophoca cinerea*)															
Hooker's (N. Zealand) sea lion (*Phocarctos hookeri*)															
Alaska or Northern fur seal (*Callorhinus ursinus*)	1,346,000	Best		360,000	982,000	4,000									
Guadalupe fur seal (*Arctocephalus townsendi*)	>5,000	Complete				5,000/ 7,000									
Juan Fernandez fur seal (*Arctocephalus philippii*)															
Galapagos fur seal (*Arctocephalus galopagoensis*)															
South American fur seal (*Arctocephalus australis*)															
Cape (South African) and Australian fur seals (*Arctocephalus pusillus*)															
New Zealand fur seal (*Arctocephalus forsteri*)															
Antarctic (Kerguelen) fur seal (*Arctocephalus gazella*)	1,542,000	Complete												1,000	1,541,000[2]
Subantarctic fur seal (*Arctocephalus tropicalis*)	322,000	Complete												322,000	
Family: Phocidae															
Largha seal (*Phoca largha*)	Unknown	Incomplete		Unknown											
Harbor (common) seal (*Phoca vitulina*)	325,000/ 373,500	Incomplete		10,000/ 15,000	100,000	137,000/ 162,000		30,000/ 45,000	48,000/ 51,500						

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