Marine Mammal Protection Act of 1972

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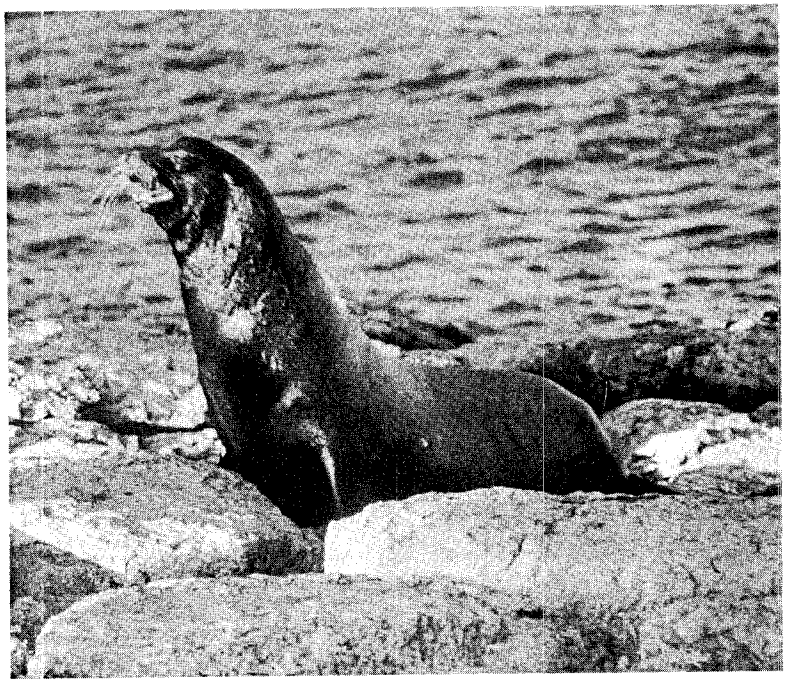

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

Office of Protected Resources

Report to Congress

Marine Mammal Protection Act of 1972

Annual Report

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Prepared by
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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Silver Spring, MD 20910

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II. REAUTHORIZATION AND AMENDMENT OF THE MARINE MAMMAL PROTECTION ACT

Since it was enacted in 1972, the Marine Mammal Protection Act has been amended several times. In reauthorizing the Act in 1988, Congress adopted a number of additional amendments which were signed into law by the President on November 23, 1988. Among the more substantive amendments are a provision to exempt, for an interim five-year period, most commercial fishermen from the incidental take provisions of the Act; inclusion of a new section setting forth procedures for carrying out status reviews of marine mammal populations and preparation of conservation plans for depleted species and stocks; changes to the program governing the take of marine mammals in the eastern tropical Pacific Ocean by the U.S. tuna fishery and the importation of yellowfin tuna taken by foreign fleets; and changes to criteria for issuing permits for scientific research and public display and the creation of a new permit category. During 1989, NMFS made significant progress toward implementing the 1988 amendments. These activities are discussed here.

Interim Exemption for Commercial Fisheries

The 1988 amendments to the Marine Mammal Protection Act, among other things, established an interim five-year exemption program to (a) allow the incidental taking of marine mammals by commercial fishermen until October 1, 1993, and (b) collect information regarding marine mammal/fishery interactions. The primary objective of the interim exemption program is to provide a means to obtain reliable information about interactions between commercial fishing activities and marine mammals while allowing commercial fishing to continue. The information collected in conjunction with the exemption system and information on the sizes and trends of marine mammal populations will be used to develop a long-term program to govern the taking of marine mammals associated with commercial fisheries.

List of Fisheries. As a preliminary step to establishing the exemption program, the amendments required the Secretary to compile a list of fisheries that operate in the exclusive economic zone waters of the United States, determine which of those fisheries were involved in interactions with marine mammals, and determine the number of vessels or persons involved in each fishery. The fisheries were then to be classified into one of three categories. Category I fisheries are those in which there is a frequent incidental taking of marine mammals; Category II fisheries are those in which there is an occasional incidental taking of marine mammals; and Category III fisheries are those having a remote likelihood of, or no known incidental taking of marine mammals.

The amendments required that the Secretary, within 60 days of enactment, publish a notice in the *Federal Register* and provide an opportunity for comment on the proposed list of fisheries. A final list of fisheries was to be made public within 120 days of the date of enactment.

Marine Mammal Exemption Program. Section 114 (b)(2)(A) of the Act gives the Secretary of Commerce authority to issue most commercial fishermen an annual exemption from the incidental taking provisions of the MMPA, provided that certain conditions are met. The 1988 amendments required that, as of July 21, 1989, vessel owners must be registered, have proof of an exemption, and fulfill certain reporting requirements in order to engage lawfully in any Category I or II fishery.

The regulatory requirements established by the interim and final regulations for registration, re-

porting, and observation, as well as the information management system developed to compile, process, store, and analyze the data received from the fishermen and observer reports comprises NMFS' Marine Mammal Exemption Program (MMEP). Generally, in order to engage lawfully in fisheries in Categories I and II, owners of vessels must register with the Secretary to obtain an Exemption Certificate to take marine mammals incidentally, must display or possess physical evidence of the exemption (*i.e.*, annual sticker) and must submit periodic reports to NMFS. In addition, vessels engaged in Category I fisheries must take onboard a natural resources observer, if requested by the Secretary. Fishing in a Category I or II fishery without an exemption is a violation of the MMPA, and owners and masters of commercial fishing vessels are subject to penalties under this provision of the law. Owners of vessels in Category III fisheries are not required to register with the Secretary to obtain an Exemption Certificate, but they are required to: (1) make all reasonable efforts to release animals unharmed; (2) use all practical non-injurious methods before any lethal intentional take of a marine mammal to protect gear, catch or lives; and (3) report all lethal incidental takings within ten days of the return from the fishing trip during which the lethal taking occurred.

Marine Mammal Exemption Registration Requirements. All fishing vessel owners, or their authorized representatives, must register to obtain an Exemption Certificate and decal for each vessel that will be engaged in any Category I or II fishery. The initial registration covered the period from July 21, 1989, through the end of 1990. After December 31, 1990, Exemption Certificate renewals are required each calendar year.

To register, vessel owners must complete a Commercial Fisheries Exemption Registration Form and mail it with a $30.00 fee to any of the five NMFS Regional Offices or the Office of Protected Resources in Silver Spring, MD.

Upon receipt of a completed registration form, the information is entered into the MMEP data base and an Exemption Certificate is issued to the registrant with the required decal, Vessel Owner Fishing Log and other information on how to comply with the MMPA amendments of 1988.

Currently, more than 15,000 fishing vessels have been registered in the MMEP. Approximately 90 percent of the registered fishing vessels are on the west coast and 10 percent on the east coast.

Marine Mammal Reporting Requirements. To fulfill the reporting requirements under the MMPA, Exemption Certificate holders are required to maintain accurate daily logs of fishing effort and incidental takes of marine mammals. Fishermen must complete a daily entry in the Vessel Owner Fishing Log provided to them. If a fisherman participates in more than one fishery during a single day, a separate entry must be completed for each fishery whether or not marine mammals were taken. A current Vessel Owner Fishing Log must be kept onboard during every fishing trip and must be available for inspection upon request by any State or Federal enforcement agent authorized to enforce the MMPA or a designated agent of NMFS.

All completed log sheets must be submitted to NMFS no later than December 31 of each year for a fisherman to obtain a current exemption certificate. Fishermen are encouraged to submit log sheets at the conclusion of each fishing season or on a regular basis throughout the year. If not previously submitted, Exemption Certificate renewal requests must include these reports. If a fishing vessel is not used in a Category I or II fishery during an exemption period for which it was registered, a report to that effect is required.

Marine Mammal Vessel Owner Fishing Log forms require information on the fishery, fishing effort, gear type, and fish species involved; 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 of any intentional takes such as efforts to deter animals to

protect gear, catch, or human life by any lethal or non-lethal means; and any loss of fish or gear caused by marine mammals.

As noted above, vessel owners engaged in Category III fisheries, while not required to maintain a daily log, must report all lethal incidental takings of marine mammals by contacting the nearest NMFS Regional Office within 10 days of the return from the fishing trip during which the incidental take occurred. A report of a lethal incidental take in a Category III fishery must include information on the fishery, fishing effort, gear type, and fish species involved; the marine mammal species or a description of the animal(s) if the species is not known; number, date, and location of all lethal incidental takes of marine mammals; a description of any intentional lethal takes such as efforts to deter animals to protect gear, catch, or human life; and any loss of fish or gear caused by marine mammals.

NMFS has developed an information management system to compile, store, process, and analyze data received from fishermen's reports and observer verification programs. Information will be made available to the public only in an aggregate form which does not directly or indirectly disclose the identity or business of any person. Such information is available upon request and, depending on the nature of the requested information, appropriate user fees may be charged for the information.

Marine Mammal Observer Program. Section 114 (e) of the MMPA requires the Secretary to place observers on Category I vessels to monitor between 20 and 35 percent of the fishing operations by vessels in the fishery. The purpose of the observer coverage is (a) to obtain statistically reliable information on the species and number of marine mammals incidentally taken in a fishery, (b) to verify the adequacy of self-reporting by fishermen, and (c) to identify possible means for reducing such takes. The extent of observer coverage is determined as a percentage of the fishing effort or activity rather than as a percentage of the number of vessels engaged in the fishery.

When determining the distribution of observers among fisheries and vessels in a particular fishery, NMFS will be guided by the following standards: (1) the requirements to obtain the best available scientific information; (2) the requirement that assignment of observers is fair and equitable among fisheries and among vessels in a fishery; (3) the requirement that no individual person or vessel, or group of persons or vessels, be subject to excessive or overly burdensome observer coverage; and (4) where practicable, the need to minimize costs and avoid duplication.

NMFS is not required to place an observer on a Category I vessel if (1) statistically reliable information can be obtained from observers on processing vessels to which Category I fishing vessels deliver a catch that has not been taken onboard the fishing vessel; (2) the facilities of the vessel for housing an observer or for carrying out the functions of the observer are so inadequate or unsafe that the health or safety of the observer or the safe operation of the vessel would be jeopardized; or (3) an observer is not available.

The first exception contemplates the situation where a Category I fishing vessel does not bring the catch onboard, but rather delivers it directly to a floating processor on which an observer is placed.

With respect to exception 2, the adequacy of fishing vessels to take an observer onboard, NMFS will make the necessary determinations on a case-by-case basis.

Exception 3, unavailability of observers, includes situations where NMFS may have inadequate funds to cover a full observer program or may not be able to employ or contract for sufficient qualified personnel to fully staff an observer program. To minimize these situations, NMFS intends to use, to the maximum extent possible, observers placed under other authorities, such as the Magnuson Fishery Conservation and Management Act to fulfill the observer requirements of the MMPA.

If NMFS is unable to meet the required observer level, observers will be allocated among Category I fisheries according to the following list of priorities as specified in Section 114 (e)(3) of the MMPA: (1) fisheries that incidentally take marine mammals from population stocks designated as depleted; (2) fisheries that incidentally take marine mammals from population stocks that are declining; (3) fisheries other than those described above, in which the greatest incidental take of marine mammals occur, and (4) any other Category I fisheries.

If observers cannot be placed on Category I vessels at the required level, NMFS must establish alternative observation and verification programs to supplement or replace the statutorily mandated onboard observer program. Any alternative observer program may include direct observation of fishing activities from vessels, airplanes, or points on shore. Provided sufficient resources are available, an alternative program may also be established in any fishery for which reliable information is not otherwise obtainable. Voluntary observer programs for Category II and III fisheries may be considered, provided they meet the safety and scientific information criteria set forth for Category I fisheries observer programs and that the observer requirements for Category I fisheries have been met.

The Tuna-Dolphin Program

On January 6, 1989, NMFS published in the *Federal Register* an interim final rule implementing the following changes to the tuna-dolphin regulations as mandated by the 1988 amendments to the Marine Mammal Protection Act.

Sundown Sets. Mortality rates in so-called "sundown" sets, purse seine sets that extend into darkness, are substantially higher than in sets completed during daylight hours. An experiment conducted by the Inter-American Tropical Tuna Commission (IATTC) and the Porpoise Rescue Foundation showed that the use of high-intensity lights reduced mortality rates in sundown sets. Based on this study, NOAA issued a regulation, effective July 1, 1986, requiring the installation and use of high-intensity lighting systems by certificated tuna vessels. A review of all sets between July 1, 1986, and June 30, 1988, showed that the kill rate in sets extending into darkness was still significantly higher (3.7 times) than in daylight sets. The interim final rule requires U.S. tuna fishing vessels setting on marine mammals to complete the process of backdown to remove dolphins from the net no later than 30 minutes after sundown. The backdown procedure is the best and safest means of releasing mammals from the net once they are encircled. If this part of a set takes place in darkness, the effectiveness of the release is compromised because of the reduced visibility. In 1989, dolphin mortality was 36 percent lower than the 1988 level. Most of this reduction was attributable to the prohibition on sundown sets.

Experimental Fishing Permit. The interim final rule introduced an experimental fishing permit provision that allows NMFS to waive certain procedural regulations to encourage the development of new dolphin-saving techniques in the purse-seine fishery.

Use of Explosives. Since the early 1980s, the U.S. tuna fleet had been using a variety of explosive devices to herd dolphins during fishing operations. In the 1988 amendments to the MMPA, Congress prohibited the use of explosive devices in tuna purse-seine operations that involve marine mammals, with one exception. That exception allowed the continued use of Class C explosive devices, approved by the U.S. Department of Transportation, pending the outcome of a study to determine whether the use of such devices would cause physical impairment or increased mortality of marine mammals. The interim final rule prohibits the use of all but Class C explosive devices.

In November 1989, the Service's Southwest Fisheries Center initiated a research program on seal-control devices (SCDs), which are used to herd dolphins during yellowfin tuna purse-seine fishing

operations in the eastern tropical Pacific Ocean. The study included open-water experiments, analysis of the chemistry and explosive energy of SCDs used in the purse seine fishery, review of pertinent literature and analysis of observer logs documenting purse seine sets on dolphins.

On November 27-29, 1989, a workshop was held to attempt to determine whether the use of SCDs results in physical impairment or increased mortality to dolphins involved. Participants included representatives of the fishing industry and the environmental community and experts in pertinent scientific fields. Based on the results of the workshop and related background documents, the Secretary extended the ban on use of explosives to include Class C seal-control devices. A rule prohibiting the use of explosives will be published by April 1, 1990, as mandated by Congress.

Observer Accommodations. In April 1989, NMFS published a final rule setting out the minimum living accommodations for government observers placed on U.S. tuna purse-seine vessels. Provisions were also included to permit placement of female observers. The action followed the Service's determination that it was necessary to address problems relating to accommodations for male observers and to avoid problems that may arise with the placement of female observers on tuna vessels with all-male crews. The terms "harassment" and "sexual harassment" are defined.

Operator Performance Standards. In the 1988 MMPA amendments, Congress mandated the Secretary to develop and implement a system of performance standards to identify, train, and, if necessary, remove certificate holders with consistently and substantially higher incidental marine mammal mortality rates. To meet this requirement, NMFS considered a variety of performance systems. These included individual vessel quotas; vessel or operator performance ratings based on the kill of marine mammals per ton of yellowfin tuna caught in association with marine mammals; and a multiple-standard system for rating operator performance. In November 1989, NMFS published proposed regulations to implement a performance system, along with an environmental assessment of the possible effects of the proposed action.

The proposed performance system will track individual operators and measure their performance against a kill-per-ton standard. A mortality rate that exceeds the fleet average rate by more than 50 percent will be considered as failing to meet the performance standard. The NMFS Regional Director will then request that the general permit holder review the trip records and provide counsel to the vessel operator. If the operator's certificate is suspended, remedial training to review marine mammal release and safety techniques will be required before making another trip. Vessel certificate holders will continue to be responsible for ensuring that the vessel has the required marine mammal safety gear and that it is maintained in seaworthy condition.

Final regulations on the performance standard are expected to be published in 1990 after review of public comments.

Importation of Yellowfin Tuna and Tuna Products. In March 1989, NMFS published an interim final rule amending marine mammal regulations on the importation of yellowfin tuna from nations with purse seine vessels fishing in the eastern tropical Pacific Ocean. For the first time, as required by the 1988 MMPA amendments, the import regulations cover intermediary nations, that is, nations that may or may not fish in the area but that import yellowfin tuna and subsequently offer tuna or tuna products for importation into the United States.

As in previous rules, nations purse seining for yellowfin tuna in the eastern tropical Pacific Ocean that wish to export tuna to the United States must have a marine mammal protection program for their purse seine fishery that is comparable to that of the United States. They also must achieve an incidental mortality rate no greater than twice that of the United States by the end of 1989 and no greater than 1.25 times that of the U.S. fleet by the

end of 1990. They must also limit eastern spinner and coastal spotted dolphin mortalities to no more than 15 and 2 percent, respectively of their total mortalities.

The definition of a comparable regulatory program governing the incidental taking of marine mammals in the fishery has been expanded to include (1) the same prohibitions as are applicable to U.S.-flag vessels or may become applicable in the future, including a prohibition on setting on schools of single species of dolphins, a prohibition on sundown sets and a prohibition on the use of explosives; (2) a system to identify and provide training for vessel operators with a high dolphin mortality rate; and (3) an observer sampling level that will provide a reliable estimate of the mortality rate of that nation's fleet. Tuna imports from a nation that fails to comply with the import regulations will be banned. This expanded definition will take effect at the beginning of the 1990 fishing season.

Any nation from which yellowfin tuna or tuna products will be imported into the United States must certify that it has acted to ban importation of yellowfin tuna and tuna products from any nation which is banned from directly importing them into the United States. Failure to do so will result in a ban of that intermediary nation's yellowfin tuna and tuna products. Should a ban persist for six months, the Secretary is required to certify that fact to the President. Sanctions imposed as a result of the certification are at the discretion of the President.

A final import rule will be published early in 1990. Mortality rate comparability standards are being reviewed and may be revised.

Discussions with Foreign Governments. Congress mandated in the 1988 MMPA amendments that the Secretary initiate discussions with foreign governments whose vessels participate in the eastern tropical Pacific Ocean yellowfin tuna fishery for the purpose of concluding international arrangements for the conservation of marine mammals taken incidentally in the course of harvesting tuna. Agreements should include provisions for (1) cooperative research into alternative methods of locating and catching yellowfin tuna which do not involve the taking of marine mammals;(2) cooperative research on the status of affected marine mammal populations stocks; (3) reliable monitoring of the number, rate, and species of marine mammals taken by vessels of harvesting nations; (4) limitations on incidental take levels based upon the best scientific information available;and (5) the use of the best marine mammal safety techniques and equipment that are economically and technologically practicable to reduce the incidental kill and serious injury of marine mammals to insignificant levels approaching a zero mortality and serious injury rate.

Annual Tuna-Dolphin Review Meeting. The first of three annual meetings to examine progress made by the international tuna fleet toward reducing the killing and serious injury of dolphins incidental to tuna fishing operations in the eastern tropical Pacific was held in December 1989. Attending were representatives of the National Academy of Sciences, the Marine Mammal Commission, environmental and conservation organizations, the U.S. tuna industry, foreign tuna fishing nations, congressional staff members, and other Federal government officials. NMFS, IATTC, and the Porpoise Rescue Foundation presented information on the status of dolphin population research, recent technological developments to reduce marine mammal mortality, and the performance of the U.S. and foreign tuna fleets.

The consensus of the meeting was (1) dolphin stocks in the eastern tropical Pacific are not in danger of extinction or depletion; (2) efforts should continue to reduce dolphin mortality to insignificant levels approaching a zero mortality and serious injury rate; (3) alternate fishing methods should be found that do not involve dolphins; and (4) foreign nations may require more time to meet U.S. import standards for yellowfin tuna, even though substantial progress has been made in reducing dolphin mortality.

NMFS will convene additional tuna-dolphin review meetings, in 1990 and 1991. Under the 1988 amendments, the Service must report back to Congress in 1992 on the results of efforts to reduce the killing of dolphins in the eastern tropical Pacific tuna fishery.

Alternative Fishing Methods. A contract study to evaluate alternative fishing methods was initiated with the National Academy of Sciences in September 1989. The Academy appointed a committee of technical experts to review scientific and technical information relevant to promising new techniques for finding and catching yellowfin tuna. NMFS has requested that the committee give special consideration to techniques that do not directly involve dolphins. The committee will examine the biology and ecology of the yellowfin tuna and dolphins with which they commonly associate, as well as the nature of the "tuna-dolphin bond." They will also identify currently available and promising new techniques for reducing the incidental drowning of dolphins in nets.

The committee held its first meeting in December 1989, during which participants agreed on a working outline for the report, assigned tasks, and developed a work plan and tentative schedule for subsequent meetings. A final report is expected in March 1991.

Access to Observer Data. An agreement was concluded in 1989 with the IATTC that ensured NMFS access to data collected by IATTC observers placed on U.S. tuna vessels and which permitted use of such data for enforcement purposes. This landmark agreement provided the regulatory mechanism to allow foreign nations to have access to observer data for their tuna fleets in order to enforce marine mammal regulations.

Tuna-Dolphin Workshop. A review of the international tuna-dolphin program was held in March 1989 in San Jose, Costa Rica, under the joint sponsorship of the NMFS and IATTC. Eighty-three government and industry delegates from 14 nations attended. Discussions focused on research on the status of dolphin stocks, efforts to monitor and enumerate dolphin mortality, the international observer program, and future cooperative efforts to continue the reduction of dolphin mortality in the tuna fishery.

At the workshop, NMFS officials presented information on the effects of the 1988 MMPA amendments on tuna import regulations. Nations present expressed concern about their ability to (1) achieve a dolphin mortality rate of two times the U.S. rate in 1989; (2) stay within the required maximum limit of 15 percent eastern spinner and two percent coastal spotted dolphins as a proportion of the total take; and (3) establish 100 percent observer coverage in 1989. Observer coverage for the years 1986, 1987, and 1988 are shown below in Table 1.

Table 1. Percent Observer Coverage

Country	1986	1987	1988
Ecuador	7.9	9.5	35.9
Mexico	26.1	27.0	38.2
Panama	42.8	13.3	30.0
Vanuatu	31.6	34.5	30.0
Venezuela	21.7	21.5	31.0

Research, Public Display, and Enhancement Permits

In its 1988 amendments to the MMPA, Congress amended the provisions governing scientific research and public display permits and added a new permit category to allow authorization of activities aimed at enhancing the survival or recovery of marine mammal populations. However, a permit may be issued for this new purpose only under limited conditions.

The amendments require that applications for public display permits open their facilities to the public on a regularly scheduled basis and that access to the facilities not be limited or restricted other than by the charging of an admission fee. Additional amendments require that applicants for scientific research permits provide information indicating that the scientific purpose of the permit is *bona fide* and does not involve unnecessary duplication of research. Essentially, these amendments codify existing regulatory criteria for scientific research permits. Other amendments add to these basic requirements for scientific research permits by prohibiting research involving a lethal take of a marine mammal if a nonlethal method for conducting the research is feasible. And, where a research permit would involve the lethal take of a species or stock designated as depleted, issuance of a permit is prohibited unless the research will directly benefit that species or stock or unless the research fulfills a critically important need.

During1989, NMFS has considered and included the requirements of the 1988 amendments in processing permit applications. However, full implementation of the amendments will only be complete at the time the permit regulations are revised. In recognition of the long-standing need to update its marine mammal permit regulations, and at approximately the same time the Congress was considering the 1988 amendments to the Act, NMFS initiated a comprehensive review of its permit program. The issues which arise from the 1988 amendments, particularly those which affect public display and scientific research permits, are being addressed as a part of this review (See page 27).

III. STATUS REVIEWS AND CONSERVATION PLANS

The 1988 amendments to the MMPA established a new section (section 115) which sets forth procedures under which status reviews of marine mammal populations are to be conducted. In addition, NMFS is directed to prepare conservation plans as soon as possible for all depleted species or stocks unless it is determined that such a plan will not promote the conservation of the species or stock. NMFS is specifically required to complete conservation plans for the North Pacific fur seal by December 31, 1989, and for the Steller sea lion by December 31, 1990.

NMFS has developed draft guidelines for developing and implementing coordinated recovery programs for endangered and threatened marine mammals. Although preparation of recovery plans is required under the Endangered Species Act (ESA), not the MMPA, recovery plans will be developed under the ESA so that they meet the conservation plan requirements of the MMPA. These guidelines discuss the role of recovery teams, the content of recovery plans, and monitoring and tracking of recovery actions. These guidelines were available for public review through April 1989. On May 30, 1989, NMFS published a proposed priority system for developing recovery plans and implementing tasks in recovery plans. Final guidelines will be published in mid-1990. This system will be used as a guide to set priorities for funding and performance of individual recovery tasks.

Of the 24 endangered and threatened species under NMFS jurisdiction, 14 are marine mammals. Recovery plans are needed for 13 of these species. A recovery plan completed in 1983 for the Hawaiian monk seal is being implemented and will be updated based on new information. NMFS is currently developing recovery plans for the right whale and the humpback whale.

North Pacific Fur Seal

In the late 1970s and early 1980s, the estimated size of the Pribilof Islands northern fur seal (*Callorhinus ursinus*) population declined to less than 50 percent of its estimated size in the early 1950s. As noted earlier, the 1988 amendments to the MMPA require that the Service complete a conservation plan for the species by December 31, 1989. A draft conservation plan for northern fur seals has been written outlining the research and management measures needed to assess the status and recovery of the population. The draft plan reviews the status of the Pribilof Islands population, possible causes of past declines of northern fur seals, current threats to the population and its habitat, and gaps in critical information, and recommends research and management actions to evaluate whether the population is recovering. Highest priority is placed on obtaining data to determine why fur seals, especially juveniles, are dying at sea, the survival and recruitment rates for females, and the causes of pup mortality on and near the rookeries. At the end of 1989, the draft plan was being reviewed within the Service.

Steller Sea Lion

Available information indicates that the number of Steller sea lions (*Eumetopius jubatus*) has declined substantially since the late 1970s in several areas. In response to the decline in sea lion numbers, on May 6, 1988, the Service published an advanced notice of proposed rulemaking to designate the species as "depleted" under the MMPA. The conservation plan is due by December 31, 1990. In view of the continuing population decline, the Environmental Defense Fund petitioned NMFS on November 21, 1989, for an emergency listing of

Steller sea lions as "endangered" under the Endangered Species Act. At the end of 1989, the Service was reviewing the petition and preparing a response.

Humpback Whale Recovery Plan

Humpback whales (*Megaptera novaeangliae*) have been severely reduced in number as a result of commercial whaling. Prior to commercial whaling, the worldwide population is thought to have been in excess of 125,000. Today, perhaps no more than about 10,000 to 12,000 exist, about 10 percent of the estimated initial numbers.The humpback whale has been on the endangered species list since June 2, 1970. Under section 4 of the Endangered Species Act of 1973, a recovery plan is required if it is determined that development of a plan would help the species to increase in abundance. In July 1987, the Service appointed a humpback whale recovery team to assist in preparing a recovery plan. During 1988 and 1989, the recovery team developed the draft recovery plan which was distributed for comments to the public in October 1989. Comments were received from Federal and State government, academia, scientific and environmental communities, and the public. The recovery team is using these comments to compile the final plan.

The draft plan reviews the natural history of the humpback whale, concentrating on the reproductive stocks or feeding aggregations which regularly spend portions of the year in waters under the jurisdiction of the United States. It identifies a series of recommended goals and actions for (1) maintaining and enhancing the habitats of humpback whales; (2) identifying and reducing death, injury or disturbance to the whales caused by humans; (3) performing research to evaluate progress toward recovery goals; and (4) implementing the plan through improved administration and coordination.

Right Whale Recovery Plan

The northern right whale (*Balaena glacialis*) is considered to be the world's most endangered large whale. In July 1987, the Service appointed a recovery team to help develop a recovery plan for right whales. In May 1988, the Service asked the team to review a draft recovery plan which the Service had developed. At its initial meeting, the recovery team concluded that the draft plan would require substantial revisions and additions. The team agreed to develop and submit to the Service a revised draft recovery plan. At the end of 1989, it was expected that a draft plan would be available for review early in 1990.

Hawaiian Monk Seal Recovery Plan

During the 19th century, the Hawaiian monk seal (*Monachus schauinslandi*) population came close to extinction as a result of harassment and overexploitation. A modest comeback during the first half of this century appeared to reverse itself in subsequent years. The species is listed as endangered and depleted. In 1983, the Service adopted a recovery plan for the species, but this quickly became outdated. NMFS has appointed a new recovery team to update the earlier plan.

IV. STOCK ASSESSMENTS

Dolphin Stock Assessment Program

The Southwest Fisheries Center is responsible for identifying trends in the relative abundance of dolphin stocks taken incidentally by tuna purse seiners in the eastern tropical Pacific. The status of the spotted dolphin (*Stenella attenuata*) is of special concern because it is the principal species taken by the fishery. On July 29, 1989, two NOAA ships, the *David Starr Jordan* and the *McArthur*, departed San Diego to conduct the fourth year of research in the eastern tropical Pacific Ocean. The *Jordan* was equipped with a Hughes 500D helicopter.

The primary objective of the survey was to collect information on the density, size, and species composition of dolphin schools in the eastern tropical Pacific. Populations of five target species are impacted by tuna purse seining in the area: spotted dolphin (*Stenella attenuata*), spinner (*S. longirostris*), striped (*S. coeruleoalba*), common (*Delphinus delphis*) and Fraser's (*Lagenodelphis hosei*) dolphins. A second research objective was to collect information on the physical and biological environments where dolphins were found. The vessels returned to San Diego on December 7, 1989.

The vessels surveyed along predetermined tracklines during the four-month survey. The tracklines are devised for line transect applications, and distribution of effort between regions was calculated using density estimates from earlier surveys. The *Jordan* and the *McArthur* traveled 18,196 nm and 20,488 nm, respectively, in the study area. Preliminary results indicate that within the study area, 38 percent of the effort was in the inshore region and 28, 15, and 19 percent in the middle, western, and southern regions, respectively.

The cetacean survey was conducted by maintaining a visual watch using two 25-power binoculars mounted on the port and starboard sides of the flying bridge of each vessel. Binoculars were mounted on pedestals at a height of 10m above the water, giving a maximum ship-to-horizon sighting distance of approximately 10 km. Daily watch for marine mammals was maintained during daylight hours (approximately 0600 to 1800 hours local). Watch was stood by two teams of three observers on each vessel (six observers per vessel), with each team rotating every two hours.

On sighting a marine mammal school, observers recorded information on such factors as time and position of the vessel, sighting cue and bearing and distance to the cue, and values of environmental parameters at the time of sighting. The bearing from the vessel to the sighted school was read from an azimuth ring on the binocular mount. Distance to the sighted school was recorded as a reticle distance read from a reticle mounted in the binocular eyepiece. When necessary to confirm species identification, researchers photographed the school. Simultaneously, the Computer Assisted Sighting Technology (CAST) system continuously recorded bearing information. Data collected from the CAST system on this and previous cruises will be analyzed for reliability in estimating distance between the trackline and a sighted school of dolphins.

Preliminary calculations indicate that 1,418 schools of marine mammals were sighted. Forty percent of all schools sighted (569 schools) contained target species. Preliminary results of sightings by species for both vessels combined are presented in Table 2 on page 13.

The dolphin stock assessment program has prepared a detailed set of results for the 1989 data. Estimates of relative abundance for all stocks of spotted, spinner and Fraser's dolphins were substantially higher than 1988 estimates. Estimates of relative abundance for all stocks of common and striped dolphins were lower than in 1988, but

Table 2. Preliminary results of cetacean sightings collected from NOAA ships David Starr Jordan and McArthur during the 1989 eastern tropical Pacific dolphin survey.

	Leg 1	Leg 2	Leg 3	Leg 4	Total
Spotted dolphin	53	58	12	46	169
Spinner dolphin	45	47	9	26	127
Common dolphin	11	15	17	18	61
Striped dolphin	57	30	53	72	212
Rough-toothed dolphin	9	11	8	11	39
Bottlenose dolphin	20	16	17	14	67
Risso's dolphin	4	18	10	12	44
White-sided dolphin	1	-	-	3	4
Fraser's dolphin	-	2	2	2	6
Unidentified dolphin	68	38	56	54	216
Pygmy killer whale	2	1	3	3	9
False killer whale	2	1	-	4	7
Pilot whale	2	10	29	17	58
Killer whale	5	5	1	4	15
Sperm whale	3	11	18	13	45
Dwarf sperm whale	9	12	4	6	31
Melon-headed whale	-	1	1	1	3
Beaked whale	10	9	9	21	49
Mesoplodon whale	9	15	6	10	40
Rorqual whale	-	1	4	4	9
Bryde's whale	2	8	3	6	19
Blue whale	3	3	1	8	15
Humpback whale	2	-	2	2	6
Bottlenose whale	-	-	-	2	2
Unidentified small whale	15	11	8	12	46
Unidentified large whale	7	13	11	12	43
Unidentified whale	7	7	21	10	45
Unidentified cetacean	5	6	10	11	32

Table 3. 1989 estimates of relative population size (N_{ij}) (in thousands of animals), standard error ($SE(N_{ij})$), and coefficient of variation $CV(N_{ij})$ by stock for target dolphin species in total study area of the eastern tropical Pacific.

Dolphin Species and Stock	N_{ij}	$SE(N_{ij})$	$CV(N_{ij})$
Spotted			
Coastal	36.3	6.5	0.178
Northern Offshore	2838.3	505.8	0.178
Southern Offshore	721.4	128.6	0.178
Total	3596.0	640.9	0.178
Spinner			
Costa Rican	35.1	7.4	0.212
Eastern	1200.1	254.0	0.212
Northern Whitebelly	713.9	151.1	0.212
Southern Whitebelly	456.2	96.6	0.212
Total	2,405.3	509.1	0.212
Common			
Northern Tropical	411.2	93.3	0.227
West Central Tropical	735.9	167.0	0.227
East Central Tropical	825.1	187.2	0.227
Southern Tropical	613.5	139.2	0.227
Total	2,585.7	586.7	0.227
Striped			
Northern Tropical	210.5	32.5	0.154
West Central Tropical	338.4	52.2	0.154
East Central Tropical	543.9	83.9	0.154
South Tropical	763.1	117.7	0.154
Total	1855.9	286.3	0.154
Fraser's	375.8	172.7	0.460
Total of all target species	**10,818.7**	**2,195.7**	**0.203**

Table 4. Number of schools of small cetaceans photographed during dolphin surveys in 1987, 1988, and 1989. The number of helicopter hours is given in parentheses.

	Leg 1	Leg 2	Leg 3	Leg 4	Total
1987	24 (36)	35 (29)	26 (48)	21 (47)	106 (159)
1988	7 (11)	19 (34)	29 (46)	20 (43)	75 (134)
1989	18 (27)	9 (11)	18 (22)	29 (58)	74 (118)

higher than 1986 or 1987. Trend analysis for the first three years indicates no significant trends in population abundance for any of the target stocks. It should be realized that the power of the trend analysis will only be acceptable after a minimum of six surveys, and even then the power of the trend analysis will be unacceptable for some stocks because of the limited number of sightings per year. Table 3, on page 14, lists the relative estimates of population abundance, standard error, and coefficient of variation by stock for target dolphin species in the total study area of the eastern tropical Pacific.

Aerial Photography To Estimate School Size. For the third year, aerial photographs were taken during surveys to calibrate observers' estimates of dolphin school size. Typically, it is difficult to estimate the size of dolphin schools from a ship, especially for schools of several thousand individuals. Systematic errors in estimates of dolphin school size result in biases in estimation of dolphin abundance. To resolve the question of bias, a helicopter-based aerial photography program was incorporated into the design of the dolphin surveys. The helicopter operates from a specially-constructed platform on the *Jordan*. Two high-resolution aerial reconnaissance cameras are mounted below the helicopter fuselage. Large-format 5-inch photographs are taken of dolphin schools. From these photographs an estimate can be made of the number of dolphins in a school and individual observer estimates can be calibrated against the more precise photo estimates.

The helicopter flew a total of 118 hours (including 11 hours devoted to pinniped and bird surveys and maintenance flights) during the survey. A total of 41 days were spent photographing small cetaceans and whales, averaging three hours per day. Seventy-four small cetacean schools and 10 whale schools were photographed from the helicopter. The number of schools photographed during each of the four legs of the 1987, 1988, and 1989 cruises are given in Table 4, above. Researchers are examining photographs taken during the 1989 survey to determine which can be used to estimate school size. The Southwest Fisheries Center will complete a report of school size estimates and shipboard observer calibrations before the end of the 1990 field season.

Fishery Dependent Assessment Programs

Patterns of intra- and inter-annual variability in cetacean distribution are currently being examined in relation to environmental variability. The work is part of a six-year study monitoring trends in abundance of eastern tropical Pacific dolphin populations affected by the tuna purse-seine fishery. The staff of the Fishery Dependent Assessment Program is monitoring the physical and biological environment to interpret distribution changes in dolphin abundance and ultimately help interpret apparent changes in cetacean abundance. Preliminary results show that these inter-annual changes are correlated with nutrient availability and phytoplankton abundance.

The eastern tropical Pacific supports a diverse and abundant cetacean fauna, including species that feed on plankton, cephalopods, and fish. Geographic distributions and multivariate statistical analyses indicate at least two basic patterns of cetacean habitat in the eastern tropical Pacific. The first type (which includes spotted and spinner dolphins [*Stenella attenuata]* and *[S. longirostris]*) is characterized by warm, oligotrophic tropical surface water over thermocline depths intermediate for the region. The second type (*e.g.*, which includes common dolphins [*Delphinus delphis*], pilot whales [*Globicephala macrorhyncha*] and blue whales [*Balaenoptera musculus*]) is characterized by cool and productive upwelling-modified water along the equator, coastal shelves and near the Costa Rican Dome.

Inter-annual changes were observed in the distribution of common, spotted, and spinner dolphins during 1986-1988. During the 1987 El Niño event, with warm surface temperatures and unusually deep thermocline and low chlorophyll concentrations in equatorial waters, common dolphins contracted their range to the east of 90° W, and spotted dolphins were unusually abundant along the equator. During La Niña in 1988 (with low surface temperatures and shallow thermocline along the equator and in tropical waters east of about 95° W), common dolphins were observed along the equator to 110° W, while spotted dolphins were relatively less abundant near the equator and in the easternmost part of the region north of the equator. The inter-annual changes in the environment were larger in absolute magnitude during 1986-1988 than they were before, during and after the extreme 1982-1983 El Niño. Consequently, the changes in annual distribution during 1986-1988 should be among the most extreme inter-annual changes that occur in response to climatic variability.

From the field data collected on vessel surveys, the Center is now investigating associations of cetacean sightings with mesoscale patterns of environmental indices, including comprehensive strip transects of pelagic bird abundance and community composition. Goals include developing a simple process to use information on the physical and biological environment to interpret inter-annual changes in relative abundance of the cetaceans of the eastern tropical Pacific, as indicated by the line transect surveys.

One of the goals of the NMFS research program on eastern tropical Pacific dolphins is to evaluate the use of observer data for estimating trends in abundance of dolphin populations. This led to development of a computer model to simulate the tuna vessel observer data (TVOD) collection process. The model was completed during 1988. The first set of simulation experiments showed clearly that small scale non-randomness in dolphin school distribution, coupled with non-random searching by tuna vessels and computational problems with current methods for interpolating TVOD in areas not visited by tuna boats, can lead to extreme overestimates of dolphin abundance. The second set of simulations, planned for early 1990, will test the effect of small scale non-randomness in the distribution of dolphin schools on estimates of abundance derived from research (vs. commercial) vessel line transect surveys.

During 1989, the Southwest Fisheries Center staff has conducted a number of studies relating to the estimation of dolphin mortality in the eastern tropical Pacific tuna fishery. The nearly 100 percent

observer coverage of the U.S. tuna fleet fishing "on dolphins" in the eastern tropical Pacific during 1987 made it possible to conduct a simulation study of the effect of less than 100 percent coverage on cumulative mortality estimates for dolphins. Two studies were conducted, one based on sampling the 33-boat U.S. fleet at coverage of 25, 33, 50, 75, and 96 percent to derive within-year estimates of cumulative mortality. The second study involved selecting 5, 10, or 20 boats from the total of 33, then sampling these "small fleets" at 25, 50, and 75 percent observer coverage in order to ascertain the appropriate levels of observer coverage on non-U.S. fleets (which tend to be small) that seek to export tuna caught on dolphins to the United States.

The first set of simulations showed that, for most dolphin groups, observer coverage of 50 percent or greater achieved coefficients of variation less than 20 percent by December and mortality estimates were relatively unbiased (less than five percent by December). The small fleet simulations showed that for fleets with 10 or more vessels and mortality of greater than 2,500 dolphins per stock per year, coefficients of variation less than 20 percent can be achieved at coverage of 50 percent or greater. The simulations also showed that for small fleets, coverage of dolphin groups exhibiting heterogenous and relatively infrequent kill/trip must be much higher to achieve the same coefficient of variation as for larger fleets.

A third study relating to dolphin mortality in the eastern tropical Pacific fishery evaluated the effects on annual mortality estimates of changing the assumptions regarding the fate of animals recorded as "seriously injured" or of "unknown status." Including all animals recorded as "seriously injured" would have increased the annual mortality estimates by an average of 4.2 percent for the entire period 1975-1989, but by only 1.8 percent for years since 1981. Including "status unknown" animals would have increased annual mortality rates by 2.7 percent a year, on average, for 1975-1988, and 1.6 percent since 1981. The occurrence and magnitude of these additional numbers varied between species and years.

Biological Assessment Program

During 1989, the Southwest Fisheries Center continued to examine age-dependent life-history parameters of female spotted dolphins (*Stenella attenuata*). The initial phase of the project involved investigating northern offshore spotted dolphins collected from the eastern tropical Pacific Ocean. Using parameters such as (1) age at sexual maturation (ASM), (2) transition layer formation, and (3) calcium resorption, the Center hopes to identify biological changes in life history parameters that may have occurred as a result of the fishery, as well as those resulting from stock-specific differences.

The project uses teeth collected from individual spotted dolphin taken incidentally during tuna fishing since 1968. The investigations of transition layer formation and calcium resorption examine specific events recorded in the teeth. In baleen whales, the transition layer is characterized by a sudden decrease in the thickness of layers in ear plugs and is thought to occur at the time of sexual maturation. A similar pattern has been noted in teeth of bottlenose dolphins *(Tursiops truncatus)* and in the spotted dolphin. Calcium resorption, as recorded in teeth, is seen as a potential indicator of stress phenomena related to fishery activities. The degree of the response may be directly related to the severity of the stress.

Most progress to date has been in the calcium resorption portion of the study. Preliminary investigation of the phenomena has focused on a sample of 50 northern offshore spotted dolphins and 50 southern offshore spotted dolphins. The teeth were used to investigate reliability and repeatability of the staging technique for recording observed calcium resorption phenomena and whether resorption differences distinguish northern and southern stocks.

Once the staging criteria were developed and shown to be reproducible, a comparison of northern and southern spotted dolphin stocks demonstrated that calcium resorption seems to occur at an earlier age in the northern offshore stock. In the sample of southern offshore spotted dolphins, calcium resorption is not evident until the animals are sexually mature and, even then, the resorption is less severe than in the northern offshore stock. Although these results are intriguing, the sample size used for the preliminary investigation has proven inadequate for statistical analyses of stock comparison. A larger sample is being prepared to test whether observed differences are statistically significant.

Additional life history studies include investigations of the causes of variation in life history parameters due to sampling, measurement, or estimation error rather than natural variation. The emphasis has been on error in age estimation and in methods used to estimate the average age at attainment of sexual maturation. Calibration of growth layers in teeth of captive and wild dolphins has provided data on correct methods of estimating age and likely errors when age is estimated incorrectly. Four methods used to estimate ASM were compared in a simulation study and found to produce very different results, both between methods and at different sampling levels within some of the methods. Future work will examine how the various techniques compare under different circumstances.

Coastal Marine Mammal Program

Harbor Porpoise (U.S. West Coast). During the first few months of 1989, approximately 30 harbor porpoise (*Phocoena phocoena*) are known to have died in Monterey Bay, based on counts of stranded animals and on direct observation of fishing boats. In response to the high level of incidental takes of harbor porpoise in California gill net fisheries, annual aerial surveys have been undertaken in collaboration with California Department of Fish and Game. The surveys are designed to monitor the abundance of porpoise along the coastline from Point Conception to the mouth of the Russian River in California. In previous years, an estimated 200-300 porpoise died annually in fishing nets in this area. Currently there is little monitoring of fishing nets due to lack of cooperation by fishermen, but porpoise mortality has probably decreased due to fishing area closures. It is hoped that significant decreases in the population can be detected from the aerial monitoring program. Analyses are currently being conducted to determine the power of statistical tests to detect population changes given the level of variability found in the first four years of monitoring.

Results of the first comprehensive ship and aerial surveys for harbor porpoise on the U.S. west coast were published in two companion papers in the *U.S. Fishery Bulletin.* Porpoise density estimates were based predominately on results of four ship surveys. Because porpoise visibility was highly dependent on weather and because of uncertainty in the fraction of time that porpoise are near the surface, the two aerial surveys were most useful for corroborating ship survey results and for extrapolating density estimates made from the ship surveys to waters that were too shallow to be surveyed by ship. The average porpoise density was estimated as 1.33 (s.e., 0.30) porpoise km^2 along the 18m isobath. The estimated population sizes are 1,667 (s.e., 895) for central California (where most gill net mortality has been observed) and 45,713 (s.e., 7,865) for California, Oregon, and Washington combined.

Past research has revealed significant variations in the polychlorinated pollutants in harbor porpoise from different locations along the U.S. west coast. Although sample sizes from central California were too small to be definitive, there was an indication that differences exist between areas within California. Additional samples from California may help to define stock structure. Crude estimates of exchange rates may be calculable from animals with pollutant levels typical of those found in another area. The planned coastal observer program may provide additional specimen material for these studies.

Genetic differences based on mitochondrial DNA offers an alternative approach to stock identification in harbor porpoise. To assess within and between population genetic diversity, the Southwest Center is examining the displacement-loop, or D-loop, region within the mitochondrial genome. The D-loop from 11 harbor porpoise (five from California, three from Washington State, and three from the Black Sea) were amplified using the polymerase chain reaction (PCR). Genetic comparisons were performed by restriction fragment length frequency analysis on the amplified product using both 4 and 6 base restriction enzymes. Few genetic differences have been found to date between the three populations. Of the 15 restriction enzymes tested, only one has yielded any differences between the California and Black Sea populations of harbor porpoise. Future work will include the sequencing of a 300 base pair region within the D-loop to look for genetic differences on a finer scale.

Harbor Seal (California). The harbor seal (*Phoca vitulina)* population on the U.S. west coast is thought to be increasing. Assessing the status of harbor seals is based on annual changes in the maximum number of animals hauled out using the technique that is referred to as dynamic response assessment. The west coast harbor seal population has been divided into three stocks: the outer coasts of Washington and Oregon, and California. In California, harbor seals are abundant along the entire coast. The 1989 mainland count was 20,190 seals and the count for eight Channel Islands was 4,279 seals. Combining these counts produces a minimum population estimate for the California stock of 24,469. This is thought to be a minimum population size because a substantial fraction of the population is not hauled out during the census. Work is currently underway to determine the fraction of animals not counted during the census in order to obtain a more accurate population estimate.

Eighteen harbor seals were radio-tagged as part of a long-term monitoring program to estimate the fraction of time seals spend hauled out and to determine the patterns of movements of the seals. The tagging took place in early June 1989 and will be repeated in June 1990 on several beaches between Santa Barbara and Point Conception. Haul-out data are needed to correct survey data which account for seals in the water when estimating population abundance. Movement data are used to determine stock structure. Several radio receiving stations were set up along the coast to monitor the hauling behavior of seals on nearby beaches.

Results from this radio-tagging study have already provided useful information for the management of seal populations. Movements of harbor seals between the mainland and the Channel Islands had been observed previously, but were not thought to be common. Although the disturbance of being captured and tagged may affect movement patterns, the observation of two seals moving from different mainland locations to San Miguel Island over such a short time is surprising. This may indicate that the island and mainland populations are not independent.

This study has also shown the feasibility of radio-tagging seals during their molting season. In the past, radio tags have been attached to harbor seals by directly gluing the tag to the pelage. This could not be done during the molt because the pelage is constantly being lost. This study has shown that a radio attached to a flipper tag can be used to monitor the presence of seals on a beach. Additional work is being planned using these types of tags.

California Sea Lion (California). In 1988, the California sea lion (*Zalophus californianus)* population in California was estimated to be 87,000 (67,000 to 107,000). On the basis of pup counts, the population of California sea lions in California has been growing at approximately 6.4 percent per year during the period 1971-1986. Because of a lack of information on movement patterns between the United States and Mexico, the California population has been assumed to be a separate stock for the purpose of assessing the status. It was concluded that the California sea lion population in California is near the lower limit of its optimum sustainable

population (OSP) level. This assertion was made on the basis of results of a dynamic response analysis.

Northern Elephant Seal (California). Northern elephant seals (*Mirounga angustirostris)* have grown from an estimated population size of several hundred individuals at the turn of the century to an estimated population of 50,800 seals in 1988 in California. The population size for northern elephant seals is estimated by counting pups and applying a multiplication factor to estimate the number of non-pups. New rookeries have been established on most of the larger islands in California and most recently on the California mainland. Annual population growth has been estimated at 8.75 percent from 1980 to 1986. Given a lack of information on northern elephant seals in Mexico, the California population has been assumed to be a separate stock for the purpose of assessing status. Given an apparent slowing of population growth, the population is thought to be near the lower bound of its OSP level.

Atlantic Bottlenose Dolphin. Low-level monitoring studies of Atlantic bottlenose dolphins (*Tursiops truncatus*) continued in two areas in southeastern U.S. waters. These are being carried out under contracts with Dolphin Biology Research Associates (DBRA) and Mote Marine Laboratory. These contracts were scheduled for three years, beginning September 1987, and have been extended an additional two years.

These studies are designed to detect major changes in the bottlenose dolphin populations within a limited geographic area. DBRA is using small-boat surveys and photo-identification to monitor the bottlenose population in the Sarasota-Tampa Bay area in Florida. During the 1989 field season, researchers completed a total of 45 boat-days of effort on the low-level monitoring studies. They observed 324 schools of bottlenose dolphins (about 1,900 animals) and collected approximately 10,000 photographs for photo-identification analysis.

Mote Marine Laboratory is conducting aerial surveys on a quarterly schedule to provide information on the status of the population of bottlenose dolphins in the Indian-Banana Rivers area of Florida. The Southeast Center is responsible for the analysis of the aerial survey data.

As part of their contract, DBRA provides an annual summary of survey results. In its most recent report, it noted that there did not appear to be any change in abundance of bottlenose dolphins in the study areas between 1988 and 1989 based on sightings per unit effort. However, abundance estimates will be derived from mark-recapture analysis from photographs. The surveys showed an apparent 21 percent increase in abundance of all age classes of calves, accompanied by a 35 percent decline in the number of young-of-year between 1988 and 1989 (young-of-year are not included in the calf classes). The researchers noted that the increase in calves and the decrease in young-of-year may be due to unusually high calf recruitment during 1988. The determination of community structure and home ranges will be made from photo-identification analyses.

Depleted Marine Mammals

Hawaiian Monk Seal. Hawaiian monk seal (*Monachus schauinslandi.*) population monitoring, including tagging of weaned pups, was conducted in 1989 at four of the five major breeding sites in the Northwestern Hawaiian Islands. Lisianski Island was not visited in 1989.

The number of births at Kure Atoll continued to rise as more female graduates of the Head Start project (temporary captive maintenance of female pups to enhance survival) were recruited into the breeding population. Eleven pups were born in 1989, a dramatic change from the one birth in 1986. Five 1989 female pups were collected at weaning for maintenance in the Head Start enclosure and three rehabilitated yearling females (collected at

French Frigate Shoals) were released at Kure Atoll. Three underdeveloped female pups were collected at French Frigate Shoals for rehabilitation and release in 1990.

Four captive adult male seals held in California were returned to Hawaii for experimental work related to "mobbing" behavior (adult male attacks on female seals). There were 21 known mortalities from mobbings at Laysan Island in 1988 and 1989. Of 16 newly recruited females at Laysan in this two-year period, five were attacked and three of these died.

Field personnel sampled and removed beach debris capable of entangling seals at all islands visited. Data indicate the amount of debris is increasing, along with the number of entanglements observed and the number of deaths.

In December 1989, the Hawaiian monk seal research program was reviewed by the Marine Mammal Commission and the Hawaiian Monk Seal Recovery Team. It was agreed that (1) the program was being funded at an insufficient level to accomplish all critical research activities; (2) research directed at understanding and resolving the mobbing problem warranted immediate priority attention; (3) recovery activities (Head Start and reintroduction of rehabilitated females) at the west end of the archipelago should be continued; and (4) population monitoring should be conducted annually at all five major breeding locations. The Commission and the Recovery Team recommended development of a minimum three-year work plan outlining a research and recovery activity schedule and associated costs. This was scheduled for completion in early 1990.

Bowhead Whales. Low-altitude aerial photographs were taken of bowhead whales (*Balaena mysticetus*) from April 15 to June 4, 1989, as they migrated into the Chukchi and Beaufort Seas near Barrow, AK. The purpose of this study is to measure lengths and identify individual whales to help determine calf production, calving intervals, and juvenile survival, and to estimate abundance. Approximately 10,000 photographs have been taken since 1985 for use in measuring, calibrating, and identifying individual whales, and to carry out systematic matches of photographs.

Other workers analyzed the photogrammetric database and estimated that approximately 40 percent of the bowhead population is sexually mature (>13 m). A comparison of re-identified whales between years suggests that yearly growth for adult whales may be only 0.25-0.33 m per year. This means that a 13 m animal might be greater than 10 years of age. Further analysis of estimating historical population size from current population size suggests that age at sexual maturity is nine years old or greater. The initial population size (prior to 1848) is estimated to be 14,000-27,000 and is not sensitive to current population size estimates. The level of reduction of the current population compared to its initial size ranges from 24 to 66 percent (mean = 40.9 percent, 95 percent CI = 39.9-42.0 percent) with 94 of the 96 simulation runs (98 percent) falling below the presumed maximum net productivity level of 60 percent of the 1848 population size.

Two baleen plates (30 test samples from each) were analyzed for their 14C and /13C carbon isotopic ratios, an experimental method to age bowhead whales. Intervals of 14C appeared in mature animals as if /13C was being laid down in an approximately annual basis. However, there is considerable scatter in the data, especially for animals less than 9 m in length, suggesting that this method of ageing is uncertain.

Steller Sea Lion. The National Marine Mammal Laboratory (NMML) conducted a range-wide survey of Steller sea lions (*Eumetopias jubatus*) in June and July 1989. A total of 24,953 adult and juvenile sea lions were counted from the western Gulf of Alaska to the western Aleutian Islands. In 1985, a count of 67,617 sea lions was made for the same area; thus, the population declined 63 percent (more than 42,000 animals) in four years. Pup production declined 66 percent at the five major rookeries in the study area (from 10,593 in 1985-1986 to 3,625

in 1989). The combined adult and juvenile population in Alaska (except southeast Alaska) has declined about 77 percent since 1960, and, in the eastern Aleutian Islands, levels have fallen 94 percent. The greatest rate of change in the Gulf of Alaska and western Aleutian Islands has occurred since 1985, whereas in the eastern Aleutian Islands the decline was greatest in the 1970s.

Northern Fur Seal. Field studies on northern fur seals (*Callorhinus ursinus*) in 1989 consisted of monitoring pup production and counting adult males on the Pribilof Islands (St. Paul and St. George) and Bogoslof Island, AK, and San Miguel Island, CA. On St. Paul Island, scientists also documented the rate of debris entanglement of juvenile seals and changes in rookery space utilization, and radio-tagged pups to determine their timing and migration through the eastern Aleutian Islands after the breeding season. A comparison of several population parameters between the 1950s and 1980s demonstrates that the Pribilof Islands population of fur seals has declined about 60 percent. For example, on St. Paul Island, both the amount of space used by fur seals on rookeries and pup production declined 62 percent, and the number of territorial (harem) males counted declined by 59 percent. Between 1976 and 1981, pup production on St. Paul Island declined by 40 percent, but from 1981 to 1989 no significant trend is apparent. Pup production on St. George Island continues to decline about six percent per year. The entanglement rate of juvenile fur seals in 1989 was about 0.3 percent (the same as in 1988), a 25 percent decrease from the period 1976-1986. In October and November 1989, 80 pups and 10 mother-pup pairs were fitted with radio transmitters to monitor their migration out of the Bering Sea. Six radio receivers were stationed in the eastern Aleutian Islands to record and store the radio receptions. A study of tooth weights and body lengths of juvenile fur seals showed a density dependent relationship during population declines. Other work showed that aquatic copulations occur in fur seals, something surmised but not previously documented. Also, NMML staff found that non-breeding fur seals do not avoid prolonged airborne construction sounds (peak of 85 dB at source) or ground vibrations from heavy equipment within 100 m.

Marine Mammal Sighting Surveys

Systematic sighting surveys for marine mammals, seabirds, and sea turtles have been conducted for several years aboard Northeast Fisheries Center (NEFC) vessels in conjunction with fishery resource surveys. The area covered is from Nova Scotia to Cape Hatteras, seaward to roughly the 100-fathom depth contour. The sighting effort continued in 1989, but at a reduced level because of fewer fishery resource surveys and loss of the R/V *Albatross* from the NEFC fleet. Additional effort was spent in 1989 to analyze the data that have been collected, and several manuscripts are anticipated in 1990.

Marine Mammal Diet

The need to understand the diet of marine mammals can be met in part by utilizing biological samples from animals killed incidental to fishing operations. Increased observer coverage of fishing trips has allowed access to samples, and observations of stomach contents are being made at sea as well as in the laboratory. Initial work in 1989 focused on organizing this data collection program, cataloging existing samples, and summarizing existing information for use in developing a mathematical model of trophic relationships of pelagic species.

North Atlantic Right Whale Program

Since 1986, the endangered North Atlantic right whale population has been the subject of an intensive, coordinated, multi-institution study which focuses on detecting changes and causes of changes in the population size.

The overall coordination of this study has facilitated the organization of individual identification

and sighting survey data that had been collected by numerous groups over the past decade, and the integration of that data into comprehensive data bases. In 1990, the two data bases that have been created will be transferred into a single data base to facilitate analyses which utilize both the sightings and the individual identification data simultaneously.

Sighting Data and Habitat Use. This project of the North Atlantic Right Whale Program maintains a comprehensive database of all sighting data from cooperating institutions, conducts analysis of these data relative to habitat usage, conducts sighting surveys, and conducts oceanographic studies of habitat requirements. In 1989, the organization and entry of the historical sighting data into computer data bases was completed, including all data through 1988. Sighting surveys were conducted in the Great South Channel, partly in cooperation with a separately funded study of the oceanography of that region.

Habitat Requirements. The focus of this project is to measure the prey concentrations in Cape Cod Bay that are exploited by right whales. The goal is to develop a model of habitat requirements of these animals. Additionally, the studies provide an opportunity to identify individual animals and monitor their use of the bay.

In 1989, efforts were made to improve fine-scale monitoring of plankton densities and patchiness. The vertical depth of surface patches along slicks or frontal areas, which are used by right whales feeding on the surface, appears to be less than 20 cm. The horizontal width of these patches are on the order of meters to tens of meters. A model of feeding patterns based on detailed observations of the movement of individual whales feeding at the surface is under development.

Individual Identification. As part of this project, program researchers maintain an archive of individual identification data and photographs from all cooperating institutions, establish individual identities using a reference catalog of known individuals, and collect additional individual sighting data, primarily from the Bay of Fundy and the southeastern United States.

The archiving and analysis of all available historical photographs through 1988 has been completed, along with a data base of these data, keyed to the sighting survey data base maintained by the University of Rhode Island.

Population Dynamics. The population dynamics project was initiated in 1989 to assist the overall research effort by utilizing the data being collected to develop a comprehensive mathematical model of the dynamics of the North Atlantic right whale population. Preliminary modeling studies conducted as part of the development of the Right Whale Recovery Plan suggest that such models could help interpret data collected to date. These studies also suggest areas where additional data need to be collected.

Currently, geographical information system software is being used to improve interpretation of existing data. This will be expanded to utilize the comprehensive linked databases and to examine alternate population models, especially those that would describe spatial distributions.

Large Cetacean Distribution and Habitat Usage

The habitat requirements of humpback and fin whales that seasonally use areas around Cape Cod are not well known. Such high-use habitats may be extremely important to some populations of large cetaceans, necessitating the identification of factors that attract and maintain seasonally high concentrations in order to understand the dynamics of such populations.

Studies conducted during 1989 included sighting surveys, photo-identification, oceanographic sampling for physical and biological water column characteristics, and behavioral observations. Data collected will be compared to similar data col-

lected since 1978 to determine longer term changes. Sighting surveys conducted over a larger area in 1989 resulted in identification of some animals that had not been seen near Cape Cod in recent years, suggesting that the size of the study area needs to be reconsidered.

Humpback Whale Individual Identification

The archiving and identification of individual humpback whales from photographs collected throughout the northeastern United States has been centralized at the College of the Atlantic for several years. Individual scientists contribute to this archive, and the photographs that are submitted are compared to the catalog of known individuals for identification. The resulting data are useful for determining information such as reproductive rates and for estimating total population size.

Since 1988, expansion to areas outside the Gulf of Maine has resulted in a substantial improvement in coverage and better tracking of individual animals using other ranges. The use of electronic approaches to handling the photographic archive and catalog has been explored jointly with staff of the National Marine Mammal Laboratory in Seattle.

Sighting Survey Methods

The use of shipboard sighting surveys to determine the abundance of cetaceans has become routine, but many of the underlying assumptions of this approach have not been adequately tested. The seasonal high density of harbor porpoise in the Bay of Fundy provides a setting that allows testing of some of the underlying assumptions.

As a result of initial field studies in 1987 and 1988, two sighting teams of observers at different heights were placed aboard the same vessel. Preliminary results using this approach suggest that while the usual line transect analysis methods reveal predictable differences between two sighting teams, more detailed comparison shows that fewer animals were sighted by both teams than might be expected.

V. SUBSISTENCE TAKE OF MARINE MAMMALS

Bowhead Whales in the Beaufort and Chukchi Seas

Although bowhead whales are listed as an endangered species, both the Marine Mammal Protection Act and the Endangered Species Act provide for a subsistence take of endangered or depleted species by Alaska natives. Catch limits for the subsistence take of bowhead whales and other endangered cetaceans are set by the International Whaling Commission (IWC). Regulations for management of the harvest are implemented under the Whaling Convention Act of 1949.

The bowhead quota set for 1989 was 44 strikes or 41 whales landed, whichever comes first (Table 5 on page 26). During the hunt, 18 animals were landed and eight were struck and lost. At the 41st IWC meeting it was agreed that, for each of the years 1989, 1990, and 1991, the total number of whales struck should not exceed 44 and the total number of whales landed should not exceed 41, except that up to three strikes not used in 1988, 1989, or 1990 could be reallocated to the following year.

NMFS is the federal agency with primary responsibility for bowhead whales, but the State of Alaska and several other agencies, including the Alaska Eskimo Whaling Commission, the North Slope Borough, and the Minerals Management Service, are also involved. Each year, staff from the NMFS Alaska Region participate in monitoring the fall bowhead migration as the animals pass through the Beaufort Sea. Studies of population size and recruitment, seasonal distribution and migration, and behavior relative to the availability of food or human disturbance are carried out by NMFS and the North Slope Borough, a group representing Alaska natives.

Northern Fur Seals on the Pribilof Islands

In 1986, NMFS issued final regulations that govern the subsistence harvesting of fur seals by residents of the Pribilof Islands in Alaska. These regulations establish dates for an annual harvest and limit the take of animals by sex in order to protect the seal herd. Each year, estimated harvest levels are set to ensure that subsistence needs of Pribilof Islands residents are met. In 1988, the harvest was carried out by volunteers organized by the Traditional Aleut Council on each island. The take totaled 1,145 fur seals, mostly two- and three-year-olds, on St. Paul Island and 113 fur seals on St. George Island. During the 1989 harvest, 1,340 seals were taken on St. Paul Island and 181 on St. George Island. No female seals were taken on either island.

Table 5. Annual Quotas and Catch of Bowhead Whales, 1978-1989

	Quota[1]		Actual Take		
Year	Landed	Strikes	Landed	Lost	Strikes
1978	14	20	12	6	18
1979	18	27	12	15	27
1980	18	26	16	18	34
1981[2]	17	32	17	11	28
1982	--	--	8	11	19
1983	18	18	9	9	18
1984	--	27[3]	12	13	25
1985	--	18	11	6	17
1986[4]	--	32	20	8	28
1987	--	32	22	9	31
1988	--	35	23	6	29
1989	41	44	18	8	26

[1] Quotas were first set for this population in 1978. Since 1982, a landed whale counts against the strike quota. Hunting is to cease when the quota of total strikes, including landed whales, is reached.

[2] IWC quotas dictated that the combined take during 1981, 1982 and 1983 could not exceed 45 whales landed or 65 struck.

[3] A two-year quota for 1984-1985, not to exceed 43 strikes, was put into effect at the July 1983 IWC meeting. A domestic limit of 27 strikes was set for 1984 consistent with the IWC decision. Of these, 25 strikes were used in 1984, allowing a possible total of 18 strikes in 1985.

[4] The strike limit for 1986, set at the 1985 IWC meeting, was 26; however, those strikes not used in 1985 could be added to the 1986 limit so long as the total number of strikes did not exceed 32. Because the total number of whales that could be struck in 1985 was raised from 18 to 26 at the IWC 1985 meeting, and because only 17 whales were struck in 1985, the full 32 strikes were available in 1986.

VI. PERMIT PROGRAMS

Scientific Research, Public Display, and Enhancement Permits

Under the MMPA, NMFS issues permits for taking or importing marine mammals for public display, scientific research, or enhancing the survival or recovery of a species or stock. NMFS reviews applications and decides whether to issue the requested permits, monitoring the animals as long as they are maintained under the authority of a permit. Currently, NMFS is monitoring 400 permits for scientific research and public display.

During the period from April 1, 1988, through December 31, 1989, NMFS considered 76 applications for permits. Of these, 32 permits were issued for scientific research and nine for public display. Three permits were denied, 20 applications were returned or withdrawn, and 12 applications were pending final action at the end of the period.

NMFS also processes requests for permit modifications or authorizations of activities under permits. During this period, 100 permit modification/authorization requests were processed. See Tables 10 through 15 in the Appendix for an overview of major permit-related actions during the period from April 1, 1988, through December 31, 1989.

Permit Program Review. In the years since the MMPA was enacted, the permit program has become increasingly complex and controversial. Amendments to the MMPA have established additional permit requirements, but program regulations, policies, and administrative procedures have not kept pace with these changes. As a result, in 1988, NMFS initiated the first comprehensive examination of the permit program since permit regulations were issued in 1974. This review has been conducted in consultation with the scientific community, the public display industry, environmental groups, and other interested parties. Regulatory and policy changes resulting from this review will make the program more efficient, more consistent with applicable law and regulations, and more responsive to the concerns of applicants and other interested parties, as well as the needs of marine mammals. The objectives of this permit program review are to

- streamline and speed up the permit process;
- ensure consistency in permit procedures;
- develop a policy framework governing permit decisions; and
- ensure compliance with the MMPA, the Endangered Species Act (ESA), and the National Environmental Policy Act (NEPA).

A number of actions have been undertaken as a part of this review. For instance, a discussion paper describing the permit program and summarizing issues relevant to the review was distributed to interested parties, and a notice was published in the *Federal Register* on March 30, 1989, requesting public comment. Comments were received through September 1989.

Pursuant to the 1988 amendments, an interim policy was published in the *Federal Register* on May 22, 1989, describing the manner in which NMFS will implement the requirement that an applicant for a public display permit offer a program for education or conservation purposes, providing guidance to applicants, and soliciting public comment.

In July 1989, a status report on the review was presented to representatives of the aquarium community at a Marine Mammal Interest Group meeting in Baltimore. During August 1989, NMFS marine mammal scientists met with permit program staff to discuss concerns with research permit applicants. The Service also worked with the U.S. Navy, the International Wildlife Coalition, the Florida Department of Natural Resources, the Brookfield Zoo, and the California Marine Mammal Center to co-sponsor a series of working sessions on aspects

of the permit program review. Working sessions were held at various locations throughout the United States. The topics of these working sessions included the definition of public display , scientific research permits for marine mammals, and care and maintenance of marine mammals in captivity. An average of 70 persons attended each working session. Participants included representatives of the public display industry, the scientific research community, the offshore oil and gas industry, Federal and State agencies, animal welfare groups, environmental and conservation organizations, the professional zoo/aquarium/museum education community, marine mammal professionals (marine mammal veterinarians, trainers, collectors, etc.), and the general public.

A presentation on the permit program review, particularly as it may affect scientific research permits, was given to approximately 300 persons from scientific research and public display communities during a special session of the Biennial Conference of the Society of Marine Mammalogy in Pacific Grove, CA, on December 9, 1989.

Two technical meetings were scheduled to be held in Washington, D.C., and Seattle, WA, during January 1990 on administrative and legal aspects of the role of NEPA in the conduct of the permit program.

NMFS will use the information from these working sessions and extensive public comments to develop proposed revised permit regultations, improved administrative procedures, and revised policy guidance.

Swim-With-The-Dolphin-Programs. In 1988, NMFS began an environmental review of the use of marine mammals in swim-with-the-dolphin (SWTD) programs. Four public display facilities were authorized to use Atlantic bottlenose dolphiins in SWTD programs on an experimental basis until December 31, 1989. These programs allow a member of the public to enter the water with a captive dolphin for recreational swimming, snorkeling or scuba diving activities. NMFS must decide whether the use of marine mammals in these or additional programs should be allowed, whether additional taking for use in such programs should be authorized, and, if authorized, what permit conditions may be appropriate.

On May 10, 1989, NMFS published a Notice of Intent to Prepare an Environmental Impact Statement on SWTD programs and requested public comments on the scope of the issues that should be addressed in a Draft Environmental Impact Statement (DEIS). The DEIS, published November 1, 1989, considered four alternatives: (a) allow SWTD program authority to expire on December 31, 1989; (b) continue existing SWTD programs on an experimental basis; (c) authorize SWTD programs after December 31, with new conditions; and (d) authorize SWTD programs after December 31, with existing special conditions. In addition, the DEIS discussed cumulative effects of possible increased demand for dolphins for aquaria, zoos, amusement parks, and hotel/resort facilities, and health and safety issues, including possible disease transmission and injury.

In November and December 1989, four public hearings were held on the DEIS: two in Florida, one in Hawaii, and one in Washington, D.C. A Final Environmental Impact Statement and a decision on these permits was expected in early 1990.

Bottlenose Dolphin Quotas. During 1989, a number of questions arose regarding the use of a quota system developed during the 1970s to regulate the capture of bottlenose dolphins in the Gulf of Mexico. New quota recommendations were developed by the Southeast Fisheries Science Center and the Southeast Regional Office in March 1989. In April 1989, a public hearing was held on an application for a public display permit by a zoo in The Netherlands to capture four bottlenose dolphins for shipment to The Netherlands. Several environmental groups opposed the application because of concerns over the status of bottlenose dolphins and conditions at the zoo. Some groups argued that NMFS was not considering the possibility that other factors, including human-induced

mortalities, were adversely affecting these populations. The Marine Mammal Commission recommended a review of the assumptions underlying the current dolphin quotas and the Southeast Fisheries Science Center began a series of reviews of the population status and vital rates for bottlenose dolphin management areas from Texas to Florida. Based on these reviews, interim quotas were expected to be published in early 1990. An environmental review of the entire quota system and its effects on wild bottlenose populations is expected to continue through 1990.

Whale Watching and Feeding Animals in the Wild. In November 1988, NMFS and the Center for Marine Conservation sponsored a workshop in Monterey, CA, to review and evaluate whale watching programs and management needs. The recommendations of the Workshop focus on actions that can be taken by the whale watching industry, researchers, the conservation community, and the Federal Government to protect marine mammals from potentially harmful activities associated with whale watching. The specific workshop recommendations to NMFS are as follows:

(1) Each NMFS region should issue regulations on whale watching. The primary focus of new regulations should be minimum approach distances based on regional considerations. The regulations should: 1) include restrictions on related activities including thrill craft and swimming and diving with whales; 2) address behavior such as how to operate a vessel if it is approached by a whale; 3) provide special restrictions for particular areas such as feeding or calving grounds, or special situations such as whale watching on mating pairs or cow/calf pairs; and 4) prohibit activities that involved feeding wild populations of cetaceans.

(2) While reviewing its system for issuing public display and research permits, NMFS should examine the use of scientific permits for commercial whale watching including photography. Specifically, NMFS should investigate whether scientific research that requires a permit is being conducted concurrently with commercial whale watching trips and whether the privileges of a permit (which usually allow a closer approach to whales than whale watching guidelines or regulations) are being abused to benefit the permit holder monetarily. NMFS should clarify under what circumstances it is acceptable to combine research with commercial activities.

(3) By January 1, 1990, each NMFS region shall have met with affected constituencies and drafted proposed regulations on whale watching for that region.

NMFS is implementing the recommendations in the workshop report. Regulations heve been proposed that would prohibit feeding marine mammals in the wild, and regulations are being drafted that would set limits on approaching marine mammals.

Dolphin Feeding. In February 1989, NMFS received a request for a public display permit to feed dolphins from a tour boat. Subsequently, the Southeast Regional Office prepared a report, completed in October 1989, which detailed the extent of activities to feed marine mammals in the wild and the effects these activities have on the animals. It stated that there were eleven known commercial cruises in the Southeast Region that offered "feed the dolphin" activities and that feeding of pinnipeds took place in California and Oregon. According to the report, it is the opinion of scientists in the regional office and other marine mammalogists that feeding marine mammals in the wild could alter their normal behavior and place the animals at a higher risk to injury or death. The report recommended against issuing public display permits for these types of activities.

Incidental/Unintentional Take Authorizations

Section 101(a)(5) of the MMPA allows an incidental, but not intentional, take of marine mammals (other than commercial fishing) if NMFS makes a finding that the impact on the species will be "negligible" and if there is not an "unmitigable

adverse impact" on the availability of the species for subsistence uses. Amendments to the MMPA in 1986 expanded section 101(a)(5) to include depleted species.

The final rule implementing the 1986 amendments was published September 29, 1989. Before NMFS can issue an authorization under this section of the MMPA, it must make the findings noted above and issue regulations that include requirements for monitoring the effects of the activity on marine mammals.

NMFS published a proposed rule that would allow a take by harassment of six species of marine mammals incidental to oil and gas exploration in Alaska (October 3, 1989). A group of oil companies petitioned NMFS for this authorization, and NMFS found that the taking will have a negligible impact on the species and will not have an unmitigable adverse impact on the availability of species for subsistence uses.

The proposed rule allows the harassment of beluga whales, bowhead whales, gray whales, bearded seals, ringed seals, and spotted seals during exploration for oil and gas in the Chukchi and Beaufort Seas for a five year period. Any taking that results in more than harassment would be a violation of the MMPA. The regulations do not permit the actual activities associated with exploration, but rather allow incidental harassment during exploration. The proposed rule includes requirements for monitoring and reporting, and cooperating with the native subsistence communities.

In the past, NMFS has issued authorizations under section 101(a)(5) for the harassment of ringed seals incidental to seismic work on the ice in Alaska and for the harassment of marine mammals incidental to the launching of the space shuttle from Vandenberg Air Force Base in California. The authorization for ringed seals is in effect through 1991. Although the Air Force cancelled the space shuttle program at Vandenberg, and the authorization was not used, it has requested a similar authorization for a take of marine mammals incidental to the launching of Titan rockets from Vandenberg.

VII. COMMERCIAL FISHERY/MARINE MAMMAL INTERACTIONS

Tuna-Dolphin Interactions

In 1988 and 1989, regulations required that observers be placed on 33 percent of all non-U.S. tuna fishing vessels operating in the eastern tropical Pacific Ocean (ETP). In December 1989, NMFS published a proposed rule that would continue 33 percent observer coverage for fleets of 10 or more vessels during 1990. For fleets comprising five to nine vessels, observer coverage would be increased to 50 percent. This level of coverage will allow reliable estimates of the average dolphin mortality rate for each participating harvesting nation.

Observer coverage of U.S. tuna boats fishing in the eastern tropical Pacific continued at the 100 percent level throughout 1989. This level of coverage will be continued at least through 1991. Observers made 59 trips in 1988, of which 31 were NMFS trips and 28 were Inter-American Tropical Tuna Commission (IATTC) trips. In 1989 observers made 121 trips (72 NMFS trips and 49 IATTC trips). The estimated 1989 mortality of 12,643 dolphins resulting from the U.S. purse-seine fishery in the eastern tropical Pacific remained below the quota of 20,500 animals (Table 6).

NMFS commitment to reduce the incidental take of cetaceans in the eastern tropical Pacific tuna purse-seine fishery extended beyond 100 percent observer coverage of the U.S. tuna fleet and participation in the IATTC tuna/dolphin research program. The Service offered workshops to train vessel operators in the use of the best marine mammal safety techniques and to provide them with up-to-date information on gear design. NMFS observers inspected nets and gear to ensure that required dolphin safety equipment was being used and maintained in good working order. Table 7 summarizes each activity for the reporting period.

Countries that wanted to export tuna products to the U.S. are required to conform to the same kill per ton regulations imposed on the U.S. fleet. Findings of conformance were made for Ecuador, Panama, Vanuatu, Venezuela and Mexico for 1988, each of which submitted information that demonstrated that their regulatory programs and the marine mammal mortality rates of their tuna purse seine vessels were in conformance with U.S. regulations.

Table 6. Incidental Mortality of Small Cetaceans during ETP Yellowfin Tuna Purse-Seine Operations

Year	#U.S. Vessels	U.S. Kill	#Non-U.S. Vessels	Non-U.S. Kill	Total Kill
1985	36	19,205	105	36,032	55,297
1986	34	20.692	101	103,095	124,597
1987	34	13,992	126	78,497	92,489
1988	37	19,712	95	65,165	84,881
1989	29	12,643	93	84,336	96,979

Table 7. Summary of Domestic Activities

Activity	Year 1988	1989
Operator Workshops	6	6
Net and Gear Inspections		
At sea	33	71
In port	3	1
Certificates Issued		
Operator	77	65
Vessel	37	28

California Sea Lion/Steelhead Conflict

The sea lion/steelhead salmon conflict in the Lake Washington ship channel, known as the "Herschel Problem," continues to be a well-publicized marine mammal issue. Numerous non-lethal control methods have been attempted under a cooperative program involving NMFS, the Washington Department of Wildlife, the Army Corps of Engineers, and the Muckleshoot and Suquamish Indian Tribes.

A number of methods have been attempted to discourage predation of sea lions on the winter steelhead run, including harassment using vessels, underwater firecrackers, and taste aversion conditioning. In spite of these efforts, predation rates have continued to increase. During the 1988/1989 run, 65 percent of returning steelhead were consumed by sea lions.

During the 1987/1988 winter steelhead run, an experimental barrier net was deployed to provide a area free from predation for returning steelhead near the entrance to the fishway. Information was collected during the season on predation rates, predation location, sea lion behavior, fish behavior at the barrier, and fish passage. Resulting data analysis indicated that the experimental barrier had not significantly reduced sea lion predation on steelhead, but had shifted the principal predation area downstream.

During the 1988/1989 winter steelhead run, a sea lion capture/relocation program was undertaken. A floating trap consisting of a welded mesh cage secured to a moored float previously used as a sea lion haul-out was deployed in Shilshole Bay, adjacent to the ship canal/locks area. Thirty-nine sea lions were captured using the floating trap. After capture, the sea lions were tagged, marked, affixed with radio transmitters, and transported to the outer coast of southern Washington for release. During the initial phase of the program, two animals died while recovering from anesthesia used during the tagging and examination process. The use of anesthetics was abandoned after these mortalities, and no more animals died. Of the 37 sea lions released on the outer coast 260 miles away, 29 returned to Puget Sound in an average of 10 to 15 days. Even though 39 animals were removed during the season, the few remaining animals which could not be captured kept predation levels high. The results of the effort showed that, in order to protect the peak of the fish run from predation, virtually all "chronic offender" sea lions would have to be removed and taken to a release point significantly farther away.

Other Marine Mammal/Fishery Interactions

Fishery conflicts with pinnipeds have been reported from all the northwest fisheries. There are increasing problems in all salmonid fisheries resulting in losses of catch and gear, as well as fishing time. Examples include: gillnet fisheries in the lower Columbia River, which are experiencing increased predation by harbor seals; salmon gillnet fisheries in Puget Sound where predation by harbor seals and sea lions is increasing and reported as particularly heavy in Northern Puget Sound; and with Puget Sound steelhead gillnet fisheries where sea lion conflicts have increased dramatically.

Marine Mammal/Resource Conflicts

Other marine resources are also being affected by the growing pinniped populations. In Puget Sound, harbor seal feces has been implicated as a major contributing factor in the closure of a number of shellfish beds historically used for commercial and recreational harvests. At one clam bed located on the Dosewallips River delta, bacterial contamination from a harbor seal haul-out there has become so acute that the area was ordered closed to shellfish collection by the health department. A study is underway to determine if the harbor seals can be encouraged to use alternative manmade haul-out habitat a short distance away in order to allow the bacterial contamination to dissipate and restore the clam bed to harvestable condition.

Commercial Fishery Monitoring

Analysis of existing data on the incidental take of harbor porpoise and harbor seals in gillnets fished in the Gulf of Maine suggested that the rate of capture exceeds 1 per 20 days fishing, and further that the incidental takes may be significant for the harbor porpoise population. Research was initiated to estimate the total number of marine mammals killed annually. Analyses of existing commercial fishing data have been initiated, and preliminary results suggest that gillnet fishing is increasing (perhaps by 10 percent per year), and that there are pronounced seasonal and spatial patterns to fishing activity that overlap in part with the seasonal distribution patterns of harbor porpoise. Systematic observer sampling of commercial fishing vessels was initiated late in the fiscal year. Analyses of existing commercial data and observer sampling will both be continued in 1990. Additionally, monitoring of a drift gillnet fishery for swordfish was initiated.

Observer sampling of the domestic fishing fleet, especially focused on the Gulf of Maine gillnet fishery, but also including other fleets, is handled under this data collection contract. The data are collected using standardized forms and computer software, and made available to the NEFC for analysis.

Analysis of existing data confirmed that the rate of take of several species of marine mammals in foreign fishing operations for marine mammals exceeds 1 per 20 days fishing. Data collected by observers in recent years were summarized and the distributions of pilot whales and Atlantic mackerel was analyzed. One hundred percent observer coverage (one observer per fishing trip) was continued, and an increased number of biological samples was collected. Preliminary experiments were conducted by scientists from the German Democratic Republic on methods of reducing the incidental take of cetaceans. Observer coverage will continue in 1990.

VIII. MARINE MAMMAL STRANDING NETWORKS

Each year, approximately 1,400 pinnipeds and 600 cetaceans strand along U.S. shorelines. To respond to incidents involving those species under its management authority, NMFS has established a series of marine mammal stranding networks. The networks are operated independently out of the Service's regional offices and are staffed primarily by volunteers. As network members, the volunteers are issued Letters of Authorization under sections 109(h) and 112(c) of the Marine Mammal Protection Act.

The networks respond to strandings of both live and dead marine mammals. Network members rescue and rehabilitate live stranded animals. After treatment, these animals are restored to the wild or used for public display, thus avoiding the need to take an animal from the wild. Dead stranded animals are useful in advancing scientific information in such areas as marine mammal morphology, life history, disease and parasites, population dynamics, and effects of human interactions.

NMFS requires that certain basic information be collected from all strandings. This includes the name of the person responding to the stranding alert, the location of the stranding, and the species, length, sex, condition, and disposition of the animal or carcass.

Since the networks were established in the early 1980s, there has not been a comprehensive review to determine whether any changes are needed. Recognizing this, in 1989 NMFS initiated such a review. The expected completion date is the end of 1990. The results will guide NMFS in efforts to improve the Stranding Networks and to gain a maximum amount of scientific information from stranded marine mammals.

Investigation of the 1987-1988 East Coast *Tursiops* Die-off

During 1987-1988, an historically unprecedented mortality of bottlenose dolphins (*Tursiops truncatus*) occurred along the east coast of the United States. More than 740 carcasses were recovered. It is estimated that 50 percent or more of the coastal migratory stock between Florida and New Jersey may have died. With the assistance of the Marine Mammal Commission, the Department of Agriculture, the Environmental Protection Agency, and the U.S. Navy, the National Marine Fisheries Service mounted an investigation to determine the cause of the mortality.

In April 1989, a report of the investigation was released. The report found that no single bacterial or viral agent could be identified as the cause of the mortality. A number of different illnesses were detected. Levels of organochlorines in the dolphins' blubber were among the highest ever recorded. Such substances were carried for some time in the animals and it would not be likely that there would be a synchronized mortality unless something else triggered the release of the chemical compounds from the blubber.

Brevetoxin, a biotoxin produced by the dinoflagellate that causes red tide, was found in the livers of eight of the 17 animals tested, and no brevetoxin was detected in the control animals. It is hypothesized that brevetoxin alone, or in combination with other factors, was responsible for the unusual mortality event.

Table 8. Cetacean Strandings During 1989

Species	Southwest	Alaska	Southeast	Northeast
Bottlenose dolphin	4		326[1]	24
Harbor porpoise	47	12	1[2]	14
Gray whale	13	43		
Common dolphin	27			3
Pygmy sperm whale	2		24	5
Unidentified delphinid			24	2
Risso's dolphin	15		2	4
Long-finned pilot whale				11
Striped dolphin			2	7
Atlantic white-sided dolphin			6	
Pacific white-sided dolphin	6			
Sperm whale	2		6	
Spotted dolphin	1		5	1
False killer whale			4	
Minke whale	3	4		2
Right whale			4	
Unidentified cetacean	4			
Unidentified whale	4			
Beluga whale		3		
Dwarf sperm whale			3	1
Dall's porpoise	3			
Gervais' beaked whale			3	1
Killer whale		3		1
Unidentified beaked whale	3			
Blainville's beaked whale			2	1
Cuvier's beaked whale	1		2	
Fin whale		2	2	1
Humpback whale	1		2	1
Unidentified baleen whale			2	
Bowhead whale		1		
Blue whale	1			
Clymene dolphin			1	
Dall's porpoise		1		
Pygmy killer whale			1	
Northern right -whale dolphin	1			
Short-finned pilot whale	1			
True's beaked whale				1
Unidentified odontocete			1	1
Unidentified pilot whale				1
Totals	139	69	417	88

[1] Includes 28 unconfirmed identifications

[2] Unconfirmed identification

Table 9. Pinniped Strandings During 1989

Species	Southwest	Northeast
California sea lion	418	
Northern. elephant seal	116	
Harbor seal	82	116
Unidentified pinniped	90	
Gray seal		13
Northern sea lion	6	
Northern fur seal	4	
Harp seal		3
Hooded seal		2
Ringed seal		1
Totals	716	135

Regional Stranding Network Activities

Southwest Region. In California, a total of 847 strandings were reported in 1989; these include 716 pinnipeds and 139 cetaceans (see Tables 8 and 9). Pinniped strandings of interest included six northern sea lions and four northern fur seals. Cetacean strandings of interest included three unidentified beaked whales, one pygmy sperm whale, one spotted dolphin, and three strandings of Risso's dolphins involving two, three and five animals, respectively.

Along with the stranding network, the Service's Southwest Region oversees a whale entanglement network. This network consists of five rescue teams located throughout California, and a number of participants who notify the network whenever an entangled whale is encountered. In 1989, 10 whale entanglements were documented; of these, two animals were released alive, four stranded, and the status of four animals was unknown. The majority of entanglements involved gray whales although one minke whale and one sperm whale were also involved.

In Hawaii, a total of four cetaceans were reported to the Hawaii Stranding Network in 1989: one humpback whale, one short-finned pilot whale, one pygmy sperm whale, and one Cuvier's beaked whale.

Southeast Region. A total of 417 strandings were reported in the Southeast Region during 1989. These included 298 bottlenose dolphins and 28 others that were likely bottlenose dolphins. Eighteen cetacean species were reported.

Actions in two areas should expand network coverage. In the Caribbean area, a network coordinator was appointed, and a program was initiated to recruit and train participants in Puerto Rico. In addition, seven veterinarians in and around Ft. Myers, FL, joined the network and have established areas of coverage to step up the response to strandings in that area.

Northwest Region. A total of 390 strandings were reported to the Northwest Marine Mammal Stranding Network in 1989. Reports included 336 pinnipeds and 54 cetaceans. The stranding network is working to educate the public on the nature of pinniped haul-out behavior and pupping in order to reduce the possibility of pup abandonment due to human intervention.

In the northwest, the general public is advised to report strandings to the Washington State Patrol or the Oregon State Police who relay the information to one of five stranding network response centers. The response centers coordinate the appropriate action, which varies from providing advice to dispatching a team of scientific investigators.

Alaska Region. Because of the length of the Alaska coast and a dearth of personnel, coverage by the Alaskan Marine Mammal Stranding Network is less complete than in other areas of the country. No attempt is made to quantify pinniped strandings. In 1989, 73 cetacean strandings were reported. Of those, 43 were gray whales. Five whale entanglements were reported, and two gray whales and one humpback whale were released alive.

IX. INTERNATIONAL PROGRAMS AND ACTIVITIES

The Department of Commerce furthers the protection and conservation of marine mammals under existing international agreements and, when necessary, takes the initiative to negotiate additional agreements required to achieve the purposes of the Marine Mammal Protection Act. To carry out this intent, the National Marine Fisheries Service participates in many international programs and activities. Efforts carried out during 1989 are discussed below.

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 groups meet annually to consider issues related to Antarctic 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. At its 1987 meeting, the Scientific Committee agreed to periodically review the status of marine mammal populations in the Antarctic, with particular attention to those populations whose numbers were significantly increasing or declining. The Commission endorsed this recommendation. Subsequently, a format was devised for use in summarizing the status of a given species at a particular breeding locality. To obtain current information, the format was provided to the Group of Specialists on Seals of the Scientific Committee on Antarctic Research (SCAR) and to the Scientific Committee of the International Whaling Commission. The responses from the two groups were discussed at the Scientific Committee's 1988 meeting.

The SCAR Group of Specialists observed that the Antarctic fur seal (*Arctocephalus gazella*) is continuing to increase in abundance throughout its range. The focal point of this expansion is around South Georgia, where the consumption of fish by wintering male fur seals may be affecting the population dynamics of these fish.

The group also noted that, based on available data, the South Georgia population of southern elephant seals (*Mirounga leonina*) appears to be stable although populations in the Indian Ocean are presently declining. In the Patagonia and South Shetland Islands regions, fluctuations in elephant seal numbers may be linked to the *el Nino* event.

The SCAR Group of Specialists considered survey data from the Antarctic pack ice, noting in particular declines in the population density of crabeater seals (*Lobodon carcinophagus*) based on comparison of census data from the late 1960s and from 1983. The Scientific Committee endorsed the recommendation of the SCAR Group of Specialists for periodic surveys of seals in selected areas of the pack ice to establish the basis for assessing trends over a number of years. Members were urged to set up national programs to take advantage of opportunities to census ice seals from ships cruising through pack ice areas.

At its 1989 meeting, the Scientific Committee agreed that a comprehensive review of Antarctic seal populations should be undertaken every five years. It was noted that this schedule did not preclude addressing issues related to the status of populations any time discussion was warranted. The Committee also agreed to seek the advice of the SCAR Group of Specialists when significant seal population declines are identified, specifically

requesting guidance concerning the likely or possible causes of particular declines and steps that might be taken to reverse the trend.

Assessment and Avoidance of Incidental Mortality. The Commission at its 1987 meeting approved a brochure to inform fishermen, researchers, and others working in the Convention Area about potentially hazardous marine debris. The Commission also approved a placard for display aboard ships operating in the Convention area detailing the "do's and don'ts" of handling, storing, and discarding refuse. Members were urged to distribute the brochure widely among their nationals working in Antarctica and to ensure that all vessel operators were provided with the placard.

Members also agreed to request that nationals working in the Convention Area report observations of lost or discarded fishing gear and periodically survey beaches and seal colonies near coastal stations for accumulation of debris. The reports presented by member nations indicated, among other things, that the debris collected contained a high percentage of plastic. In addition, the reports noted fur seals on Bird Island, South Georgia, were becoming entangled in marine debris of human origin to such an extent that 5,000 to 10,000 animals may be affected. Argentina and the United States reported on efforts to assess and minimize the effects of oil released into the marine environment following the wreck of the *Bahia Paraiso* near Palmer Station on January 28, 1989.

To ensure that the loss or disposal of nets, net fragments, and other potentially hazardous debris do not threaten marine resources in the Convention Area, members agreed to maintain a complete record of lost fishing gear; to collect where feasible derelict marine debris; to periodically survey beaches and seal and penguin colonies near coastal stations; to ask nationals to report observations of derelict marine debris; to attempt to determine practical methods for marking fishing gear; and to maintain an inventory of the types and quantities of netting used in the Convention Area.

At its 1988 meeting, the Commission asked the chairman of the Scientific Committee to correspond with the SCAR Group of Specialists on Seals prior to the 1989 meeting concerning incidental mortality, ingestion of plastics, and entanglement in marine debris. In reply, the SCAR Group suggested steps be taken to standardize a sampling scheme at breeding colonies to monitor the incidence of entanglement of pinnipeds in marine debris. The SCAR Group also identified a need to acquire more detailed information on seal entanglement at sea in order to assess the magnitude of the problem. The Commission asked the Scientific Committee to continue to consult with the SCAR group to assist in identifying, designing, and implementing programs to assess and monitor the effects of marine debris and incidental catch on marine mammal populations in the Convention Area.

At its 1986 meeting, Commission members agreed to take necessary steps to ensure that operators of vessels operating in the Convention Area record and report the number, species, and, where appropriate, the age or sex and reproductive status of any marine mammals taken incidentally during fishing operations. At its 1989 meeting, the Commission called upon its members to review measures taken to date and to take additional measures to ensure record-keeping and reporting as agreed to in 1986. The Commission asked the Scientific Committee to provide advice on steps that could be taken to better assess and minimize the incidental take of marine mammals during fishing operations.

At the 1989 meeting, the United States sought and received confirmation of its understanding that gill nets are not being used by Commission members in the Convention Area and that members have no plans to use them in the future. In this regard, Japan noted that there are no resources in the Convention Area that could be caught more effectively with gill nets than with any other types of fishing gear.

Convention for the Conservation of Antarctic Seals

The Convention for the Conservation of Antarctic Seals (CCAS) was signed in London on February 11, 1972. Under the convention, contracting parties were to meet within five years of entry into force of the Convention, and at least every five years thereafter, to review the operation of the Convention. In 1983, the United Kingdom, as depository government, offered to host a meeting of parties. However, because no commercial sealing had been carried out in the Antarctic since the Convention entered into force, a meeting was not considered necessary and the offer was declined.

The current population of Antarctic seal stocks is estimated at 15 million. During the 1986/1987 fishing season, the Soviet Union conducted a commercial sealing expedition and research cruise in the Antarctic area. During this cruise, 4,802 crabeater, leopard, Ross, and Weddell seals were taken. Prior to the Soviet expedition, there was no reported commercial seal harvest. However, during the period covering the 1978/1979 through 1984/1985 seasons, 2,138 seals were reported killed or captured in the Antarctic for scientific research purposes.

As a result of the Soviet sealing expedition, the first meeting of convention parties took place September 12-16, 1988. Delegations to the meeting agreed only to changes in the operation of the Convention which could be accomplished without amendment of the agreement itself. In part, this decision was based on the Parties' judgment that Antarctic seal stocks are healthy, abundant, and unlikely to be subject to commercial exploitation any time in the foreseeable future. The latter perception was based on the indication by the Soviet delegation that it has no plans to resume commercial sealing in the Antarctic.

In part, the Parties' decision reflected the concern that amendment of the Convention would require domestic legislation by the Party governments, which might have repercussions on the 1991 deliberations on the Antarctic Treaty. Thus, the CCAS meeting limited its recommendations to amendments to the Annex to the Convention or other institutional action independent of the terms of the Convention. The most notable of these recommendations were:

Special Permits. The Meeting agreed that Contracting Parties should restrict the number of seals killed or captured by special permit (*i.e.*, to provide food for men or dogs, to provide for scientific research, or to provide specimens for museums and educational or cultural institutions) to the minimum number necessary. It further agreed to encourage cooperative planning among holders of special permits for scientific research and indicated the kinds of scientific information that Contracting Parties must report.

Exchange of Information. The Meeting recommended that Section 6 of the Annex be amended to change the reporting period and date for submission of reports to the Scientific Committee for Antarctic Research (SCAR) so that SCAR could provide advice to Contracting Parties prior to the next sealing season. It also identified information to be included in these reports.

Commercial Sealing. The Meeting further recommended that Section 6 of the Annex be amended to increase from 30 to 60 days the advance notification that a Contracting Party must give other Contracting Parties prior to leaving home port for a commercial sealing expedition. The Meeting directed that the Contracting Parties consider two factors when determining if commercial sealing had begun and in proposing future meetings of the Contracting Parties: (a) whether the number of seals of any species taken exceeded what could reasonably be required for special permit purposes; and (b) the number of seasons in which the taking of seals in such numbers has occurred.

Sealing Zones and Catch Concentrations. The Meeting recommended that Contracting Party scientists and SCAR continue to review appropriate boundaries for sealing zones. It also agreed that

SCAR should carry out studies, propose measures to avoid over-concentration of catches, and report to the Convention if harvesting activities appear to be having significantly harmful effects.

Protected Species. The Meeting recommended that Section 2 of the Annex be amended to prohibit the taking of Weddell seal pups during the breeding season.

The Driftnet Impact Monitoring, Assessment, and Control Act

Large-scale pelagic driftnet fisheries have rapidly expanded in the North and South Pacific Oceans and elsewhere during the past decade. About 600 driftnet vessels from Japan, Taiwan, and the Republic of Korea fish in the North Pacific Ocean for flying squid. Several hundred driftnet vessels from Japan and Taiwan also fish in the North Pacific for albacore and billfish. The driftnets used in these fisheries are typically 20-50 km long and are deployed nightly in the upper 10-15 m of the ocean in areas and months where the target species are concentrated near the sea surface. Various living marine resources of interest to the United States, including marine mammals, seabirds, marine turtles, and numerous species of fish and cephalopods, are killed in these fisheries, either as target species or incidentally. The United States is concerned that mortality levels resulting from driftnet fishing may be threatening some populations of these resources as well as their ecosystems.

There are no known driftnet fisheries that do not incidentally take marine mammals, but little is known about the population status of the marine mammal species affected by large-scale pelagic driftnet fisheries. In May 1989, the Secretary of Commerce advised Congress that the expected annual bycatch of marine mammals in the North Pacific high-seas squid fishery alone may be in the tens of thousands. The relatively slow rate of recruitment typical of populations of large marine mammals and the cumulative effects of driftnet operations make it likely that some populations in the North Pacific are being adversely affected. Possible impacts on the threatened northern fur seal are of particular concern. It is the view of the United States that marine mammal populations impacted by large-scale pelagic driftnet fishing should be protected until reliable assessments are made.

In addition, Japan conducts a high-seas driftnet fishery for salmonids in the North Pacific under the International North Pacific Fisheries Commission (INPFC) and the U.S.S.R./Japan Treaty of 1956. The INPFC, to which the United States and Canada also belong, regulates the Japanese high-seas salmonid driftnet fishery and serves as a forum for cooperative research on high-seas salmonid matters. Although this fishery is sanctioned under the INPFC, the United States is concerned that high-seas driftnet fishing for immature salmonids is inefficient and indiscriminate. Further, there is uncontested evidence that some driftnet vessels ostensibly fishing for flying squid have instead targeted salmonids, in violation of international law.

In 1987, as a result of concern over the high-seas salmon fishery, the illegal take of salmon on the high seas, and incidental mortality to marine mammals and seabirds, Congress passed the Driftnet Impact Monitoring, Assessment, and Control Act. The Act required that the Secretary of Commerce, through the Secretary of State and in cooperation with the Secretary of the Interior, negotiate cooperative agreements with those countries whose nationals conduct North Pacific high-seas driftnet fisheries and take marine resources of interest to the United States. Specifically, the Act called for the negotiation of: (1) monitoring and assessment programs involving the deployment of scientific observers on driftnet vessels, and (2) enforcement programs with particular emphasis on the control of squid driftnet fishing in seasons and areas where salmon might be taken.

In response to the Act, the United States successfully negotiated agreements with Japan, Korea, and representatives of Taiwan to establish monitoring and enforcement programs.

Japanese Program. On June 23, 1989, the United States, Canada, and Japan reached an agreement for the monitoring and regulation of the Japanese squid driftnet fishery in 1989. The pilot monitoring program carried out during 1989 involved placement of 46 observers (nine from the United States, five from Canada, and 32 from Japan) on 32 Japanese squid vessels. Data collected during the pilot program are currently being analyzed and a summary report is expected by July 1990.

Taiwanese Program. On August 25, 1989, the American Institute in Taiwan (AIT), representing the American people, concluded a two-year driftnet agreement with the Coordination Council for North American Affairs (CCNAA), the representative of the authorities on Taiwan. The two-year cooperative program established under the agreement for the North Pacific Ocean calls for: 14 AIT and 10 CCNAA scientific observers to be placed on 24 Taiwanese driftnet vessels operating in the North Pacific in 1990; vessel location-fixing satellite transmitters to be installed on all Taiwanese large- and small-mesh driftnet and transport vessels; and verification by AIT enforcement consultants that such vessels are complying with agreed fishing regulations.

Korean Program. On October 6, 1989, the United States concluded a similar two-year agreement for the North Pacific Ocean with the Republic of Korea. This agreement provides for, among other things: 13 U.S. and 13 Korean scientific observers to be placed on 26 Korean squid driftnet vessels in 1990; vessel location-fixing satellite transmitters to be placed on all Korean driftnet and transport vessels; and verification by the U.S. Coast Guard that such vessels are complying with agreed fishing regulations.

Multilateral Efforts. On December 22, 1989, the United Nations General Assembly adopted by consensus a driftnet resolution co-sponsored by the United States. The resolution prohibits expansion of high-seas driftnet fishing, and calls for review of all driftnet data by June 30, 1991, a cessation of South Pacific driftnet fishing by July 1, 1991, and a worldwide cessation of driftnet fishing by July 1, 1992, unless effective conservation and management measures are taken. The determination of effective conservation and management measures is to be made by statistically sound analysis jointly undertaken by concerned parties. The United States is currently considering how best to implement the U.N. resolution.

International North Pacific Fisheries Commission

At the 1989 annual meeting of the INPFC, the subcommittee on marine mammals reviewed several reports pertaining to research on marine mammals, primarily Dall's porpoise, in the Convention area. These reports included biological studies on Dall's porpoise caught incidentally by Japan's land-based salmon fishery, studies on the reduction of incidental catch of Dall's porpoise through the use of modified driftnet gear, and estimates of abundance of Dall's porpoise stocks in the Bering Sea and North Pacific Ocean. The subcommittee also reviewed current research activities, including the numbers of marine mammals taken in Japan's mothership and land-based salmon fisheries during 1989. Finally, the subcommittee reviewed and proposed plans for marine mammal research during 1990 in the Convention area.

International Whaling Commission

The United States had two primary objectives for the 41st Annual Meeting held in 1989: to continue the commercial moratorium on whaling and to continue monitoring research proposed and con-

ducted under special permits. These objectives were achieved.

The Commercial Moratorium. The moratorium decision reached at the July 1982 IWC meeting reads as follows:

> *Notwithstanding the other provisions of paragraph 10 [which provide for otherwise allowable commercial whaling], catch limits for the killing for commercial purposes of whales from all stocks for the 1986 coastal and the 1985/86 pelagic seasons and thereafter shall be zero. This provision will be kept under review, based upon the best scientific advice, and by 1990 at the latest the Commission will undertake a comprehensive assessment of the effects of this decision on whale stocks and consider modification of this provision and the establishment of other catch limits.*

Four member governments (Japan, Norway, Peru, and the U.S.S.R.) exercised their right under the Convention to file an objection to the moratorium, thereby making it inapplicable to them as a matter of treaty law. On July 22, 1983, Peru withdrew its objection. In 1985 the Soviet Union announced that it would temporarily stop commercial whaling for the 1987-1988 Antarctic whaling season. Soviet nations did not launch a whaling expedition in 1987 and subsequently the Soviet Union announced that it had no plans to resume whaling.

In 1986, the Government of Norway announced that it would end commercial whaling following the 1987 season, and in 1988 its nationals did not conduct commercial whaling operations. Also in 1986, the Government of Japan notified the IWC that it was withdrawing its objection to take effect on May 1, 1987, with respect to commercial pelagic whaling; on October 1, 1987, with respect to commercial coastal whaling for minke and Bryde's whales; and on April 1, 1988, with respect to commercial coastal sperm whaling.

The 41st Annual Meeting did not amend the moratorium decision or take any action to modify its substance.

Special Permits. Since 1985, the Commission has focused attention on research programs by which member countries may issue special permits to take whales. In 1985, the IWC Scientific Committee formulated guidelines governing the review of such special permits. In 1986, the Commission adopted a resolution that further defined the criteria under which special permits should be issued and recommended certain actions to be taken by contracting governments regarding the issuance of permits and the disposition of the whale meat and other whale products taken under special permits.

At the 1987 IWC meeting, the United States along with five co-sponsors proposed a resolution to include additional criteria for use by the Scientific Committee when reviewing research proposed under special permits. The resolution, which was adopted by the Commission, also provided a mechanism for the Commission to recommend to member governments, when appropriate, that they refrain from issuing or revoke such permits. The Commission then adopted resolutions recommending that the Governments of the Republic of Korea, Iceland, and Japan refrain from issuing special permits or take steps to revoke permits currently in force until they had been approved by the Scientific Committee.

At the 1989 meeting, Iceland, Japan, and Norway submitted research programs involving the taking of whales. In considering these programs, the Commission noted that Iceland had announced that it would not take whales for scientific purposes in 1990, that it had no plans to do so in the following years, and that the proposed take of 10 sei whales in 1989 would no longer be necessary. Thus, the Commission invited Iceland to reconsider its proposed take of 80 fin whales in 1989. Iceland later announced that it had revised the proposed take to 68 whales.

The Commission also adopted resolutions concerning the proposal by Japan to take 400 minke whales from Area 4 of the Southern Hemisphere, and Norway's proposal to take 20 minke whales from the northeastern Atlantic stock. In both instances, the Commission concluded that the program did not satisfy applicable criteria and invited the sponsoring government to reconsider its program. The vote was 13 to 6, eight abstaining, on Japan's program, and 15 to 6, six abstaining, on Norway's proposal. Under terms of the 1987 Resolution on Scientific Permits, if all applicable criteria are not met, then the Contracting Government is recommended to refrain from issuing or to revoke permits authorizing taking under a research program. All resolutions of the Commission are non-binding but express the sense of the Commission.

Aboriginal Subsistence Whaling. No changes were made to the existing aboriginal subsistence catch limits for: (1) Bering-Chukchi-Beaufort Seas bowhead whales (1989-1991) taken by Alaskan Eskimos; (2) eastern North Pacific gray whales (1989-1991) taken on behalf of Soviet aboriginal natives and by Alaskan Eskimos; and (3) North Atlantic humpback whales (1987/1988-1989/1990) taken by Bequians of St. Vincent and the Grenadines.

The Commission established the following aboriginal subsistence catch limits: (1) Central Atlantic minke whales, taken by East Greenland residents, 12 animals in each of the years 1990-1992; (2) West Greenland minke whales, taken by West Greenland residents, 190 animals for the years 1990-1991, with a maximum of 100 in any one year; and (3) West Greenland fin whales, taken by residents of West Greenland, 42 animals for the years 1990-1991, maximum of 23 in any one year.

Comprehensive Assessment. As noted above, the moratorium decision adopted by the IWC in 1982 specified that, by 1990 at the latest, the Commission would undertake a comprehensive assessment of the effects of moratorium on whale stocks. At its 1989 meeting, the Commission noted that a comprehensive assessment of all stocks could not be completed in 1990. It therefore endorsed the recommendation of the Scientific Committee that such an assessment be completed at or before the 1990 annual meeting on: (1) Southern Hemisphere minke whales; (2) North Atlantic minke whales; and (3) eastern North Pacific gray whales.

Along with a clear understanding of the status of involved whale stocks, a competent management scheme will be needed in the future if the moratorium is modified to allow other than zero catch limits. The United States believes that past IWC management procedures failed to maintain whale stocks at desired levels and that the current moratorium is the preferred management procedure until agreement can be reached on a new one. The Scientific Committee is developing and evaluating five different management procedures according to an agreed set of protocols. The evaluation of the different management procedures will not be completed before 1991.

Humane Killing. At the 1989 meeting, the U.S. delegation discussed successful efforts undertaken during the fall 1988 and spring 1989 bowhead whale hunts to improve weapons being used in order to make the taking more humane. The delegation also addressed the possible use of acoustic pingers for recovering struck whales, the need for further work on determining the appropriate propellent charge for use in the darting gun, and the feasibility of improvements to the shoulder gun.

Members also discussed Greenland's plans to introduce a detonating grenade harpoon for fin whales, and Denmark agreed to submit information next year on the rifle hunt of minke whales in Greenland. However, Denmark refused a request by the United Kingdom to provide further information on the Faroe Islands pilot whale hunt, asserting that management of pilot whales is beyond the competence of the Commission. There was no consensus on this point. St. Vincent and the Grenadines provided information on the humpback whale hunt off Bequia. It was noted that the only remaining

harpooner is now 68 years old, and the government intends that there be no further whaling after this individual ceases whaling. Therefore, no effort is being made to improve hunting methods.

Finance and Administration. At the 1989 meeting, the Commission suspended the voting rights of several nations because of non-payment of their member contributions. Nations affected were Antigua and Barbuda, Costa Rica, Kenya, Peru, Senegal, Solomon Islands, and Uruguay.

The Commission faced critical financial circumstances this year. As has occurred frequently in recent years, the Commission received only 75 percent of the contributions from member governments, resulting in a budget shortfall of 104,886 pounds sterling. In the past, the Commission has been able to draw on reserves in the General Fund, but to do so in 1989 would have left the General Fund at a dangerously low level by the end of the financial year (August 31, 1989) and run a serious risk of insolvency by May 1990.

The Commission recognized that member contributions would have to be raised substantially this year in order for essential work to be carried out and to avert insolvency in 1990. Recognizing the urgent need to find a long-term solution, the Commission will continue its deliberations on the most appropriate method of allocating member contribution shares.

Japanese Proposal for a Small-type Whaling Category. Since adoption of a moratorium on commercial whaling in 1982, certain IWC members have attempted to draw a distinction between large-scale pelagic whaling and smaller operations which, although small, may still involve commercial sale of whale products. Japan, in particular, has sought IWC approval of a new category of whaling, referred to as "small-type whaling." This category would be similar to aboriginal/subsistence whaling in that it would permit whaling by small communities that have traditionally taken whales for social or religious purposes. It would differ from subsistence whaling in that commercial sale of whale meat is involved. As presently defined in the IWC Schedule, small-type whaling involves catching operations using powered vessels with mounted harpoon guns directed at minke, bottlenose, beaked, pilot, or killer whales. It is considered a form of commercial whaling and, as such, is included under the zero quota.

In 1989, a working group of the IWC Technical Committee met to consider small-type whaling, but neither it nor the Commission was able to refine the definition of this form of whaling beyond that already found in the IWC Schedule. Neither could the groups resolve the question of whether any particular examples of small-type whaling (situations in Iceland, Japan, and Norway were examined) can be distinguished from commercial whaling. The Commission agreed to combine the mandate of this working group with the working group on socio-economic implications of the moratorium and asked the combined group to meet prior to the 1990 annual meeting.

As it had in 1988, Japan requested an emergency interim quota of minke whales from the Okhotsk Sea-West Pacific stock in its small-type coastal whaling communities. Although sympathetic to the plight of the communities affected, the Commission did not approve the request.

U.S.-U.S.S.R. Marine Mammal Project

The primary goal of this cooperative research program is to study the biology, ecology, and population dynamics of marine mammal species of interest to both countries, and to foster effective management of these animals. The Service's National Marine Mammal Laboratory staff chairs the project for the United States and, during 1989, helped organize six major exchanges, including the second joint sea otter workshop and a series of joint walrus studies carried out by the U.S. Fish and Wildlife Service.

In 1989, Soviet researchers participated in U.S. aerial surveys of Steller sea lions in the Aleutian

Islands and western Gulf of Alaska while American scientists participated in a survey of sea lions on the Kurile Islands on the Soviet research vessel *Rubezhnoe*. Aerial surveys of sea lions on the Kamchatka Peninsula were carried out by Soviet specialists under the U.S.S.R. national program. The survey data from the Aleutians and the western Gulf of Alaska indicate the population continued to decline since the preceding survey in 1985.

X. LAW ENFORCEMENT

Law enforcement is an important part of the Service's management program. The Marine Mammal Protection Act makes it illegal to take or import marine mammals or their parts or products unless an exception has been granted. The provisions of the Act are enforced by NMFS special agents and by state enforcement officers who are deputized under agreements authorized by the MMPA. In 1988-1989, NMFS employed about 95 special agents and had cooperative enforcement agreements to enforce the MMPA with the States of Rhode Island, New Jersey, South Carolina, Florida, Alabama, Louisiana, California, Oregon, and Washington, as well as the Virgin Islands.

During the reporting period, NMFS and state enforcement personnel investigated 393 alleged violations of the MMPA. Of these, 122 were associated with the Pacific tuna purse seine fishery. Unlawful taking of marine mammals, including harassment, accounted for 107 alleged violations, 78 involved unlawful importations (primarily of marine mammal parts and products), and 36 concerned the failure of commercial fishermen to obtain certificates of exemption for their vessels. The remaining 50 incidents involved an assortment of other violations.

Effective January 1989, NMFS regulations required that official observers be placed on all fishing trips conducted by U.S. tuna purse seiners. This requirement accounts for the large number of violations documented in the tuna purse seine fishery during the period. Forty-two of those cases involved improper net safety panels, 18 were based on setting fishing gear on prohibited species or concentrations of marine mammals, 18 were related to illegal sundown sets, and 44 involved other violations.

Enforcement cases of particular interest during the reporting period include:

- In December 1988, two persons were sentenced in U.S. District Court in Los Angeles after pleading *nolo contendere* to a charge of blowing up a sea lion in Huntington Beach, CA. One defendant was sentenced to one year in jail, five years' probation and a $500 fine. The second defendant received 60 days in a treatment center, 1,200 hours of community service, and a $500 fine.

- In July 1988, a captain of a U.S. tuna seiner was convicted in U.S. District Court in San Diego of shooting a dolphin. He was sentenced to 60 days in jail and fined $1,000. This case was the first criminal prosecution of a U.S. tuna captain.

- In November 1988, a charter boat captain pled guilty in U.S. District Court in San Diego to shooting at sea lions and was sentenced to two years' probation and 240 hours of community service.

- Two incidents of dolphin harassment, one on Oahu and one on Kauai, were brought before the U.S. District Court in Honolulu in March 1989. The Kauai defendant pled guilty and was fined $250 and 200 hours of community service. In the Oahu case, the defendant was tried, found guilty, and fined $250.

- In March 1989, a native Hawaiian residing on Kauai was charged with killing a Hawaiian monk seal. The defendant subsequently pled guilty and was sentenced to one year in jail. This was the first case ever prosecuted involving a Hawaiian monk seal. The issue of native Hawaiian rights was raised by the defendant but was not supported by local Hawaiian native associations.

- In June 1989, a fisherman on the Island of Hawaii was charged with using explosives to kill dolphins that allegedly were interfering with his fishing operations. The defendant pled guilty and was awaiting sentencing at the end of 1989.

• The captain and a crew member of a Panama City, FL, shark longliner pled guilty to charges that in August 1988 they harpooned dolphins and cut them up, while alive, for bait. Both defendants were sentenced to 60 days in jail and fined $1,050. In addition, the owner of the fishing vessel paid $9,000 to settle an *in rem* seizure instituted against his vessel.

• In late 1988, a Seattle-based leather company allegedly offered for sale 18 seal hides illegally imported from Canada. NMFS special agents seized the skins and several pieces of leather apparel made of marine mammal parts from the company. The case was presented for prosecution to the U.S. Attorney's Office in Seattle. At the end of 1989, it was expected that the case would soon go before a grand jury.

• In July 1988, a crew member of a fishing vessel allegedly shot a humpback whale several times with a high-powered rifle in Bechevin Bay on the Alaska peninsula. An investigation of the incident was completed in September 1989, and the case is pending with the U.S. Attorney's Office in Anchorage.

• In September 1988, three residents of St. Paul Island, Alaska, were cited for unlawfully harvesting five fur seal pups outside the native subsistence harvest season. The case is pending with the U.S. Attorney's Office in Anchorage.

• In April 1989, a Kodiak, AK, a fisherman was cited for harassing a sea lion in Kodiak Harbor. The fisherman was photographed by an NMFS surveillance team as he repeatedly hurled rocks at the sea lion basking on the beach to provoke the animal into charging at him. These activities were apparently carried out in order to obtain video footage of the animal. The subject subsequently paid a $2,000 civil penalty.

XI. LEGAL ACTIONS

Federation of Japan Salmon Fisheries Cooperative Association *et al.* v. Baldrige (D.C. Cir. 1988): As was reported in the Service's Annual Report dated June 1988, the court ruled on this case on February 16, 1988. The court found that issuance of a permit to allow incidental taking of various species of protected marine mammals is prohibited unless it is first ascertained that the populations of those species are at the optimum sustainable population level. On April 15, 1989, attorneys for Kokechik and Qaluyaat Fishermen's Associations filed a motion pursuant to the Equal Access to Justice Act for attorney's fees and costs in the amount of $81,240.12 arising out of the Kokechik litigation. That motion was pending at the end of 1989.

Earth Island Institute v. Verity (N.D Cal. 1988): This suit brought by Earth Island Institute (EII) challenged two sets of NOAA regulations: those governing operations of U.S. tuna purse seine vessels and those governing import of yellowfin tuna. In the first instance, the complaint alleged that NOAA failed to enforce the MMPA with respect to the requirement that purse seine tuna vessels use the best marine mammal safety techniques and equipment. In the second instance, the complaint alleged that NOAA did not comply with the MMPA requirement to prohibit the importation of yellowfin tuna from nations that do not have marine mammal kill rates comparable to U.S. kill rates. By way of an ex parte application, the plaintiffs on January 5, 1989, moved for a preliminary injunction compelling NOAA to require 100 percent observer coverage on U.S. purse seine tuna vessels for 1989, under section 104(h)(2)(B)(viii) of the MMPA. The court granted plaintiffs' motion on January 5, 1989, and issued a temporary restraining order requiring 100 percent observer coverage for the U.S. tuna fleet. On January 9, 1989, NOAA filed an opposition brief to the issuance of a preliminary injunction. On January 18, 1989, the court issued a preliminary injunction requiring the placement of official observers on all U.S. purse seine vessels.

On August 14, 1989, the plaintiffs moved for partial summary judgment, asking that the court interpret section 101(a)(2)(B)(IV) of the MMPA to require that the Secretary of Commerce mandate 100 percent observer coverage on purse seine tuna vessels from foreign nations. The plaintiffs also sought a permanent injunction enjoining the Secretary of the Treasury to ban the importation of yellowfin tuna from those nations unless the harvesting nations documented that they had observers on 100 percent of their purse seine tuna vessels. On August 24, 1989, the court denied the plaintiffs' motion for partial summary judgment, holding that Congress did not intend to require 100 percent observer coverage on foreign purse seine vessels.

On November 17, 1989, NOAA filed a motion for partial summary judgment seeking a ruling that it had properly implemented provisions of the MMPA as to the best marine mammal safety techniques and equipment that are economically practicable, and that the agency had complied with the requirement to investigate alternative fishing technologies. A hearing on the motion was scheduled for February 5, 1990. As of the end of 1989, the lawsuit was still active.

Progressive Animal Welfare Society *et al.* v. Navy (W.D. Wash. 1989): On April 5, 1989, the Progressive Animal Welfare Society (PAWS) and several other environmental groups filed suit in U.S. District Court in Seattle, WA, against the Navy, the Department of Commerce, the Administrator of NOAA, and the Assistant Administrator for Fisheries. The suit concerned the take of bottlenose dolphins for use at a Navy submarine

facility in Bangor, WA. PAWS alleged that three permits issued under the MMPA and a "concurrence letter" issued by the Secretary of Commerce under 10 U.S.C. section 7524 [legislation enacted in 1986 authorizing the Navy to take up to 25 marine mammals for national defense purposes] to allow the Navy to take bottlenose dolphins from the wild violated the National Environmental Policy Act (NEPA), the Administrative Procedures Act (APA), and the MMPA.

The allegations brought under NEPA were based on NOAA's decision not to prepare an environmental assessment (EA) or an environmental impact statement (EIS) on its issuance of the permits or the concurrence letter and its failure to provide a reasoned explanation as to why it did not prepare an EA or EIS. The allegations made under APA and MMPA charged that the Commerce Department decision to issue the permits and the concurrence document in violation of NEPA was arbitrary, an abuse of discretion, and not in accordance with law. The plaintiffs also alleged that the Navy and Commerce violated all three Acts by deciding to allow bottlenose dolphins to be used by the Navy in Puget Sound. PAWS sought declaratory judgments that the issuance of the permits and the concurrence letter allowing the take of bottlenose dolphins and the Navy's decision to deploy the animals in Puget Sound were unlawful under NEPA, APA, and MMPA. PAWS also sought injunctive relief against the deployment of bottlenose dolphins anywhere in Puget Sound until the Federal defendants had complied with NEPA.

The Navy filed a motion to dismiss the complaint and, on November 3, 1989, the court denied the motion, holding that the Navy's decision to deploy bottlenose dolphins in Puget Sound was a major Federal action under NEPA and required analysis of the effects of such action on the dolphins themselves. The court also held that Commerce's letter of concurrence to the Navy was a major Federal action that could affect the environment, and thus, also required analysis under NEPA. As a result of these decisions, the parties began settlement negotiations that were continuing at the end of 1989.

Animal Protection Institute (API) v. Mosbacher and Shedd Aquarium (D.D.C. 1989): On June 12, 1989, the Animal Protection Institute (API) filed suit seeking to block the importation of two false killer whales from Japan by the Shedd Aquarium. The plaintiff alleged that the permit authorizing the importation was granted in violation of section 101(a)(3)(A) of the MMPA. This provision requires that, for purposes of waiving the requirements of the MMPA, the Secretary of Commerce must certify that the country from which the marine mammals are to be imported has a program for taking marine mammals that is consistent with the MMPA. API further alleged that: (a) Japan's program for taking marine mammals is not consistent with the MMPA; and (b) that the permit was issued without assurances required by section 102 of the MMPA that the permittee would comply with the prohibitions against importation of animals that, at the time of taking, were pregnant, nursing, or less than eight months old, or that were taken in an inhumane manner.

On August 11, 1989, NOAA filed a response denying the allegations. Subsequent to this filing, the parties and the court agreed to hold the lawsuit in abeyance while Shedd Aquarium sought modification of its permit to collect marine mammals off Hawaii. In November 1989, NOAA decided to suspend consideration of the modification requirement until more data on populations stocks of false killer whales in Hawaiian waters is provided. A status conference was held on November 6, 1989, at which time the judge ordered filing of cross motions for summary judgment in January 1990. As of the end of 1989, this lawsuit was still active.

Progressive Animal Welfare Society v. Department of Commerce, Mosbacher, Evans, Brennan, and John G. Shedd Aquarium (W.D. Wash. 1989): On **August 26, 1987**, NOAA issued a permit to Shedd Aquarium to import three beluga whales from Canada. On **August 2, 1989**, PAWS filed suit challenging the permit and seeking to

return the two beluga whales that had already been imported to their original habitat, and to block the importation of the third whale. PAWS alleged that issuance of the permit was illegal under NEPA because NOAA had not prepared an EIS or an EA on the proposed action; because NOAA had failed to consider alternatives to the importation that could reduce the environmental impact of the permit activities, and because NOAA had failed to provide a reasoned explanation for its decision not to prepare an EIS or EA prior to issuing the permit. As of the end of 1989, this lawsuit was still active.

TABLE 10 - Synopsis of Permit Applications, April 1, 1988 to December 31, 1989

	Scientific Research	Public Display	Scientific Research & Public Display	Totals
Applications Submitted:	47	28	1	76
Number of Animals Requested (Total)	81103	107	5	81215
Of These:				
Taken and Kept Alive	0	25	0	25
Taken and Released	15870	0	0	15870
Stranded/Exchanged	1	71	5	77
Imported	0	11	0	11
Harassed	65232	0	0	65232
Action Taken on Applications:				
Number Forwarded to Marine Mammal Commission	37	17	0	54
Number Reviewed by Marine Mammal Commission	37	16	0	53
Number Withdrawn	3	2	0	5
Number Returned due to Insufficient or Inappropriate Submittal	8	6	1	15
Number Denied	0	3	0	3
Number Approved	32	9	0	41
Number Pending	4	8	0	12
Number of Animals Approved (Total)	57700	44	0	57744
Of These:				
Taken and Kept Alive	0	13	0	13
Taken and Released	15830	0	0	15830
Stranded/Exchanged	0	28	0	28
Imported	0	3	0	3
Harassed	41870	0	0	41870

Table 11 - Cetaceans Requested in Permit Applications April 1, 1988 - December 31, 1989

	Taken by Killing	Taken/ Imported and Kept Alive	Killed in Captivity	Tagged or Taken and Released	Found Dead/ Stranded	Total
Atlantic bottlenose dolphin	0	21	0	150	0	171
Baird's beaked whale	0	0	0	60	0	60
Beaked whales	0	0	0	60	0	60
Blue whale	0	0	0	170	0	170
Bottlenose dolphins	0	0	0	480	0	480
Bottlenose whales	0	0	0	60	0	60
Bowhead whale	0	0	0	200	0	200
Bryde's whale	0	0	0	60	0	60
Burmeister's porpoise	0	0	0	60	0	60
Common dolphin	0	0	0	720	1	721
Cuvier's beaked whale	0	0	0	60	0	60
Dusky dolphin	0	0	0	60	0	60
Dwarf sperm whale	0	0	0	60	0	60
False killer whale	0	0	0	60	0	60
Fin whale, finback	0	0	0	70	0	70
Fraser's (Sarawak) dolphin	0	0	0	60	0	60
Gray whale	0	0	0	200	0	200
Gray's beaked whale	0	0	0	60	0	60
Harbor porpoise	0	0	0	30	0	30
Hubbs' beaked whale	0	0	0	60	0	60
Humpback whale	0	0	0	10	0	10
Killer whale	0	1	0	60	0	61
Long-finned pilot whale	0	0	0	60	1	61
Melon-headed whale, electra	0	0	0	60	0	60
Minke whale	0	0	0	140	0	140
Pacific white-sided dolphin	0	0	0	60	0	60
Pygmy killer whale	0	0	0	60	0	60
Pygmy sperm whale	0	0	0	60	0	60
Risso's dolphin, grampus	0	0	0	60	0	60
Rough-toothed dolphin	0	4	0	240	0	244
Sei whale	0	0	0	60	0	60
Short-finned pilot whale	0	0	0	60	0	60
Southern right whale	0	0	0	40	0	40
Sperm whale	0	0	0	60	0	60
Spinner dolphin	0	0	0	1200	0	1200
Spotted dolphin	0	0	0	720	0	720
Striped dolphin, streaker	0	0	0	480	0	480
Unspecified toothed whales	0	0	0	60	0	60
Totals	**0**	**26**	**0**	**6230**	**2**	**6258**

Table 12 - Cetaceans Authorized in Permit Applications April 1, 1988 - December 31, 1989

	Taken by Killing	Taken/ Imported and Kept Alive	Killed in Captivity	Tagged or Taken and Released	Found Dead/ Stranded	Total
Atlantic bottlenose dolphin	0	9	0	150	0	159
Baird's beaked whale	0	0	0	60	0	60
Beaked whales	0	0	0	60	0	60
Blue whale	0	0	0	60	0	60
Bottlenose dolphins	0	0	0	480	0	480
Bottlenose whales	0	0	0	60	0	60
Bryde's whale	0	0	0	60	0	60
Burmeister's porpoise	0	0	0	60	0	60
Common dolphin	0	0	0	720	0	720
Cuvier's beaked whale	0	0	0	60	0	60
Dusky dolphin	0	0	0	60	0	60
Dwarf sperm whale	0	0	0	60	0	60
False killer whale	0	0	0	60	0	60
Fin whale, finback	0	0	0	60	0	60
Fraser's (Sarawak) dolphin	0	0	0	60	0	60
Gray's beaked whale	0	0	0	60	0	60
Harbor porpoise	0	0	0	30	0	30
Hubbs' beaked whale	0	0	0	60	0	60
Killer whale	0	1	0	60	0	61
Long-finnned pilot whale	0	0	0	60	0	60
Melon-headed whale, electra	0	0	0	60	0	60
Minke whale	0	0	0	140	0	140
Pacific white-sided dolphin	0	0	0	60	0	60
Pygmy killer whale	0	0	0	60	0	60
Pygmy sperm whale	0	0	0	60	0	60
Risso's dolphin, grampus	0	0	0	60	0	60
Rough-toother dolphin	0	4	0	240	0	244
Sei whale	0	0	0	60	0	60
Short-finned pilot whale	0	0	0	60	0	60
Southern right whale	0	0	0	40	0	40
Sperm whale	0	0	0	60	0	60
Spinner dolphin	0	0	0	1200	0	1200
Spotted dolphin	0	0	0	720	0	720
Striped dolphin, streaker	0	0	0	480	0	480
Unspecified toothed whales	0	0	0	60	0	60
Totals	**0**	**14**	**0**	**5700**	**0**	**5714**

Table 13 - Pinnipeds Requested in Permit Applications April 1, 1988 - December 31, 1989

	Taken by Killing	Taken/ Imported and Kept Alive	Killed in Captivity	Tagged or Taken and Released	Found Dead/ Stranded	Total
California sea lion	0	8	0	0	26	34
Crabeater seal	0	0	0	120	0	120
Harbor seal	0	0	0	0	6	6
Harp seal, Greenland seal	0	0	0	0	1	1
Leopard seal	0	0	0	120	0	120
Northern elephant seal	0	0	0	10150	2	10152
Northern fur seal	0	0	0	150	0	150
Pacific harbor seal	0	0	0	300	0	300
Ribbon seal	0	0	0	10	0	10
Ross seal	0	0	0	120	0	120
South American sea lion	0	2	0	0	0	2
Southern elephant seal	0	0	0	120	0	120
Weddell seal	0	0	0	4600	0	4600
Totals	**0**	**10**	**0**	**15690**	**35**	**15735**

Table 14 - Pinnipeds Authorized in Permit Applications April 1, 1988 - December 31, 1989

	Taken by Killing	Taken/ Imported and Kept Alive	Killed in Captivity	Tagged or Taken and Released	Found Dead/ Stranded	Total
California sea lion	0	0	0	0	12	12
Crabeater seal	0	0	0	120	0	120
Leopard seal	0	0	0	120	0	120
Northern elephant seal	0	0	0	10150	0	10150
Northern fur seal	0	0	0	150	0	150
Pacific harbor seal	0	0	0	300	0	300
Ross seal	0	0	0	120	0	120
South American sea lion	0	2	0	0	0	2
Southern elephant seal	0	0	0	120	0	120
Weddell seal	0	0	0	4600	0	4600
Totals	**0**	**2**	**0**	**15680**	**12**	**15694**

Table 15 - Summary of Permits Issued April 1, 1988 - December 31, 1989 Authorizing Permanent Removal from the Wild

Species	Permits Issued	Permits Current	Animals Authorized	Animals Taken	Take Remaining
Atlantic bottlenose dolphin	5	5	41	20	21
False killer whale	3	3	16	2	14
Killer whale	1	1	1	1	0
Pacific white-sided dolphin	1	1	10	5	5
Rough-toothed dolphin	1	1	4	0	4
Hawaiian monk seal	1	1	16	0	16
South American sea lion	1	1	2	2	0

Table 16 - Population Estimates: Cetacea

Species Name Order: Cetacea Suborder: Mysteceti	Estimated World Total	Comparison of Population Data[1]	Arctic Circum-polar	Pacific				Atlantic				Southern Oceans			
				Asia	Alaska	North America	South America	North America	Europe	Africa	South America	New Zealand	Sub-Australia	Antarctic	Antarctic
Family: Eschrichtiidae Gray Whale *(Eschrichtius robustus)*	21,113	Best		+[2]	<---------21,113--------->			<----------Extinct---------->							
Family: Balaenopteridae Minke Whale *(Balaenoptera acutorostrata)*	315,800/ 331,800	Incomplete.		13,500	+	+			+		44,000/ 60,000	<----------760,000---------->			
Sei Whale *(Balaenoptera borealis)*	25,110	Incomplete		<----------9,100---------->				<---------- >4,000---------->				<---------- >12,000---------->			
Bryde's Whale *(Balaenoptera edeni)*	30,200/ 55,500	Incomplete		14,600/ 39,900		+	15,600	+		+	+	+	+		
Fin Whale *(Balaenoptera physalus)*	105,200/ 121,900	Incomplete		<---------14,600/18,600-------->				3,600/ 6,300	2,000/ 12,000			<----------85,000---------->			
Blue Whale *(Balaenoptera musculus)*	8,555	Incomplete		<----------1,600---------->				<----- >555----->		+	+	<----------6,400---------->			
Humpback Whale *(Megaptera novaeangliae)*	10,500	Incomplete		<---------- <2,000---------->				>5,500			+	<---------- >3,000---------->			
Family: Balaenidae Right Whale *(Balaena glacialis)*	3,050/ 3,250	Incomplete		100/ 200	100/ 200			350	+	<1,000	1,200	+	+		
Bowhead Whale *(Balaena mysticetus)*	>7,800	Incomplete	+	+	7,800			+	+						
Suborder: Odontoceti Family: Delphinidae Atlantic white-sided dolphin *(Lagenorhynchus acutus)*	No data	Incomplete						24,000	+						
Pacific white-sided dolphin *(Lagenorhynchus obliquidens)*	No data	Incomplete		+		30,000/ 50,000									
Northern right whale dolphin *(Lissodelphis borealis)*	No data	Incomplete		+	+	+									
Southern right whale dolphin *(Lissodelphis peronii)*	No data	Incomplete										+	+	+	
Risso's dolphin *(Grampus griseus)*	No data	Incomplete		+	+	+	+	10,000	+	+	+				
Melon-headed whale *(Peponocephala electra)*	No data	Incomplete				+	+								
Pygmy killer whale *(Feresa attenuata)*	No data	Incomplete				+	+	+	+	+	+	+			

Table 16 - Population Estimates: Cetacea (Cont'd)

Species Name	Estimated World Total	Comparison 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 Oceans: New Zealand	Southern Oceans: Australia	Southern Oceans: Sub-Antarctic	Southern Oceans: Antarctic
Family: Delphinidae (cont'd)															
False killer whale *(Pseudorca crassidens)*	No data	Incomplete		+		+	+	+	+	+	+	+	+		
Long-finned pilot whale *(Globicephala melaena)*	No data	Incomplete				+	+	+	+	+	+				
Short-finned pilot whale *(Globicephala macrorhynchus)*	No data	Incomplete				+	+	+							
Killer whale *(Orcinus orca)*	No data	Incomplete	+	+	+	+	+	+	+	+	+	+	+	+	+
Rough-toothed dolphin *(Steno bredanensis)*	No data	Incomplete				+	+	+		+	+				
Bottlenose dolphin *(Tursiops truncatus)*	No data	Incomplete		+		+	+	14,000/ 23,000	+	+	+				
Spinner dolphin *(Stenella longirostris)*	No data	Incomplete		+		900,000		+		+	+				
Spotted dolphin *(Stenella attenuata)*	No data	Incomplete		+		2.2 Million									
Atlantic spotted dolphin *(Stenella plagiodon)*	No data	Incomplete						+	+	+	+				
Striped dolphin *(Stenella coeruleoalba)*	No data	Incomplete		+		2.3 Million		+							
Common dolphin *(Delphinus delphis)*	No data	Incomplete		+		900,000		31,000	+	+	+	+	+	+	
Fraser's dolphin *(Lagenodelphis hosei)*	No data	Incomplete				+				+	+				
Family: Phocoenidae															
Harbor porpoise *(Phocoena phocoena)*	No data	Incomplete		+	+	+		18,000	+						
Dall's porpoise *(Phocoenoides dalli)*	2,150,000	Complete		<---------2,150,000---------->											
Family: Monodontidae															
Beluga, beluka, white whale *(Delphinapterus leucas)*	62,000/ 88,000	Complete	62,000/ 80,000	+	+	+		+	+						
Narwhal *(Monodon monoceros)*	30,000	Incomplete	30,000	+	+	+		+	+						

Table 16 - Population Estimates: Cetacea (Cont'd)

Species Name	Estimated World Total	Comparison 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 Oceans: New Zealand	Southern Oceans: Sub-Australia	Southern Oceans: Antarctic	Southern Oceans: Antarctic
Family: Physeteridae Sperm Whale *(Physeter catodon)*	1,900,000	Complete		<----------930,000---------->				<----------190,000---------->				<----------780,000---------->			
Pygmy sperm whale *(Kogia breviceps)*	No data	Incomplete		+		+	+	+		+	+				
Dwarf sperm whale	No data	Incomplete		+		+	+	+		+	+				
Family: Ziphiidae Baird's beaked whale *(Berardius bairdii)*	No data	Incomplete		+	+	+						+	+	+	

[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.
[2]+ = although a population occurs in this area, the numbers are either unknown or the data are not available.

Table 17 - Population Estimates: Pinnipedia

Species Name Order: Carnivoria Suborder: Pinnipedia	Estimated World Total	Comparison of Population Data[1]	Arctic Circum-polar	Pacific				Atlantic				Southern Oceans			
				Asia	Alaska	North America	South America	North America	Europe	Africa	South America	New Zealand	Australia	Sub-Antarctic	Antarctic
Family: Otariidae															
California sea lion *(Zalophus californianus)*	177,000	Complete				157,000	20,000								
Northern sea lion *(Eumetopius jubatus)*	66,000	Complete		3,000	53,000	10,000 (incl. CAN)									
South American sea lion *(Otaria flavescens)*	273,000	Complete					228,000				45,000				
Australian sea lion *(Neophoca cinerea)*	2,000/ 3,000	Complete											2,000/ 3,000		
Hooker's (New Zealand) sea lion *(Phocarctos hookeri)*	6,000	Complete										6,000			
Alaska or Northern fur seal *(Callorhinus ursinus)*	1,151,000	Best		332,000	815,000	4,000									
Guadalupe fur seal *(Arctocephalus townsendi)*	1,600	Complete				1,600									
Juan Fenandez fur seal *(Arctocephalus philippii)*	705/ 750	Complete					705/ 750								
Galapagos fur seal *(Arctocephalus galapagoensis)*	1,000/ 5,000	Incomplete					1,000/ 5,000								
South American fur seal *(Arctocephalus australis)*	346,000	Incomplete					294,000		52,000						
Cape (South African) and Australian fur seals *(Arctocephalus pusillus)*	870,000	Complete							850,000				20,000		
New Zealand fur seal *(Arctocephalus forsteri)*	58,000	Complete										25,000		33,000	
Antarctic (Kerguelen) fur seal *(Arctocephalus gazella)*	1,530,000	Complete												10,000	1,520,000[2]
Subantarctic fur seal *(Arctocephalus tropicalis)*	270,000	Complete												270,000	
Family: Phocidae															
Largha seal *(Phoca largha)*	335,000/ 450,000	Incomplete		135,000/ 200,000/ 200,000 250,000											
Harbor (Common) seal *(Phoca vitulina)*	390,000/ 413,000	Incomplete		10,000/ 260,000 42,000 15,000				30,000/ 48,000/ 45,000 51,500							

Table 17 - Population Estimates: Pinnipedia (Cont'd)

Species Name	Estimated World Total	Comparison 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 Oceans: New Zealand	Southern Oceans: Australia	Southern Oceans: Sub-Antarctic	Southern Oceans: Antarctic
Family: Phocidae (cont'd)															
Ringed seal *(Phoca (=pusa) hispida)*	6/7 Million	Best	6/7 Million												
Baikal seal *(Phoca sibirica)*	40,000/ 50,000	Complete		40,000/ 50,000											
Caspian seal *(Phoca caspica)*	500,000/ 600,000	Complete		500,000/ 600,000											
Harp seal *(Phoca groenlandica)*	1,650,000/ 3,250,000	Complete						1,050,000/ 2.1 Mil	600,000/ 1,150,000						
Ribbon seal *(Phoca (=histriophoca) fasciata)*	200,000/ 250,000	Complete	200,000/ 250,000												
Gray seal *(Haliochoerus grypus)*	101,000/ 133,000	Complete						24,000							
Bearded seal *(Erignathus barbatus)*	>500,000	Incomplete		>500,000											
Hooded seal *(Cystophora cristata)*	500,000/ 600,000	Complete							500,000/ 600,000						
Mediterranean monk seal *(Monachus monachus)*	500/ 1,500	Best							500						
Caribbean monk seal *(Monachus tropicalis)*	Extinct or near extinct	Best													
Hawaiian monk seal *(Monachus schauinslandi)*	500/ 1,500	Complete				500/ 1,500									
Southern elephant seal *(Mirounga leonina)*	193,000[3]	Complete								7,000			38,000	148,000	
Northern elephant seal *(Mirounga angustirostris)*	100,000	Best				100,000									
Crabeater seal *(Lobodon carcinophagus)*	15,000,000	Best													15,000,000
Ross seal *(Ommatophoca rossii)*	220,000	Complete													220,000
Leopard seal *(Hydrurga leptonyx)*	500,000	Complete													500,000
Weddell seal *(Leptonychotes weddelli)*	750,000	Complete													750,000

Table 17 - Population Estimates: Pinnipedia (Cont'd)

[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.
[2]Antarctic is defined as the area south of the Antarctic convergence. If defined as south of 60°S, then 20,000 fur seals in Antarctic; 1,510,000 in Subantarctic.
[3]Southern elephant seal figures are for pups only.