

ANNUAL REPORT OF THE
MARINE MAMMAL COMMISSION, CALENDAR YEAR 1984

A REPORT TO CONGRESS

Marine Mammal Commission
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CHAPTER I

INTRODUCTION

Background

This is the twelfth Annual Report of the Marine Mammal Commission, covering the period from 1 January through 31 December 1984. It is being submitted to Congress pursuant to Section 204 of the Marine Mammal Protection Act of 1972.

Established under Title II of the Act, the Marine Mammal Commission is an independent agency of the Executive Branch. It is charged with the responsibility for developing, reviewing, and making recommendations on actions and policies of all Federal agencies with respect to marine mammal protection and conservation, and for carrying out a research program.

Personnel

The Commission consists of three part-time Commissioners who are appointed by the President. At the beginning of 1984, the three Commissioners were: James C. Nofziger, Ph.D., (Chairman), Canoga Park, California; Donald K. MacCallum, Ph.D., Ann Arbor, Michigan; and Robert B. Weeden, Ph.D., Fairbanks, Alaska. On 6 April 1984, William E. Evans, Ph.D., San Diego, California, replaced Dr. Nofziger as Chairman. On 12 December 1984, the President appointed Robert Elsner, Ph.D., Ester, Alaska, and Karen Pryor, North Bend, Washington, to replace Drs. MacCallum and Weeden. These appointments, made after Congress had adjourned, are subject to Senate confirmation in 1985.

The Commission's senior staff members are: John R. Twiss, Jr., Executive Director; Robert J. Hofman, Ph.D., Scientific Program Director; Donald C. Baur, General Counsel;

JoAnn Lashley, Administrative Officer; David W. Laist, Program Officer; and L. Diane Roberts and Jeannie K. Drevenak, Staff Assistants.

The Commission Chairman, with the concurrence of the other Commissioners, appoints the nine members of the Committee of Scientific Advisors on Marine Mammals, a committee of scientists knowledgeable in marine ecology and marine mammal affairs. At the end of 1984, its members were: David G. Ainley, Ph.D., Point Reyes Bird Observatory; Douglas G. Chapman, Ph.D., (Chairman), University of Washington; Paul K. Dayton, Ph.D., Scripps Institution of Oceanography; Douglas P. DeMaster, Ph.D., National Marine Fisheries Service, Southwest Fisheries Center; Daryl P. Domning, Ph.D., Howard University; William W. Fox, Jr., Ph.D., University of Miami; James G. Mead, Ph.D., National Museum of Natural History, Smithsonian Institution; William Medway, D.V.M., Ph.D., University of Pennsylvania; and Forrest G. Wood, San Diego, California. During 1984, L. Lee Eberhardt, Ph.D., Pacific Northwest Laboratory, Battelle Memorial Institute, and Bruce R. Mate, Ph.D., Oregon State University, completed their terms of service on the Committee.

Funding

The Marine Mammal Commission came into existence during the second half of Fiscal Year (FY) 1974 and was appropriated \$412,000 for that period. Subsequent appropriations were:

FY 75:	\$750,000
FY 76:	\$900,000
FY 77:	\$1,000,000
FY 78:	\$900,000
FY 79:	\$702,000
FY 80:	\$940,000
FY 81:	\$734,000
FY 82:	\$672,000
FY 83:	\$822,000
FY 84:	\$929,000

In FY 1985, the Commission was appropriated \$929,000 by the Senate and House Appropriations Committees, which directed that nearly \$300,000 of these funds be used for research and studies to: facilitate protection and recovery of endangered and threatened species; continue efforts to define and resolve marine mammal/fishery conflicts; assist in developing and implementing regimes governing exploration for

and possible exploitation of marine living resources and non-living resources in the seas surrounding Antarctica; facilitate efforts to make reliable status of stocks determinations and return marine mammal management authority to states; and improve methods and procedures for collecting and analyzing needed data. Further discussion of Commission activities in these areas is included elsewhere in this Report, specifically in Chapter III, Research and Studies Program; Chapter IV, International Aspects of Marine Mammal Protection and Conservation; Chapter V, Marine Mammal/Fishery Interactions; Chapter VII, Species of Special Concern; and Chapter VIII, Marine Mammal Management in Alaska.

CHAPTER II

REAUTHORIZATION AND AMENDMENT OF THE MARINE MAMMAL PROTECTION ACT

The Marine Mammal Protection Act was enacted in 1972 for the purpose of protecting and encouraging the growth of marine mammal populations to the greatest extent feasible, commensurate with sound policies of resource management. The Act provides that the primary objective of their management is to maintain the health and stability of the marine ecosystem. Whenever consistent with that objective, it is the goal of the Act to obtain optimum sustainable marine mammal populations while keeping in mind the carrying capacity of the habitat.

In 1981, the Act was reauthorized, and a number of significant amendments were made to clarify certain definitions and provisions and to modify others in order to facilitate management efforts by Federal and state agencies. These included changes to the definitions of "depleted" and "optimum sustainable population," the creation of new schemes to govern both the incidental taking of marine mammals in the course of commercial fishing operations by U.S. fishermen and incidental taking caused by other non-fishing-related activities, clarification of the meaning of the "zero goal" for the incidental taking of marine mammals in the course of purse seine fishing for yellowfin tuna, and extensive revision of the provisions relating to the return of management of marine mammals to the states.

Due in part to the generally successful implementation of these amendments and other provisions of the Act in the three years since the 1981 reauthorization, less extensive changes were made during the 1984 reauthorization. The principal areas of concern identified at Congressional reauthorization hearings conducted in the spring of 1984 were related to:

renewal of the permit held by the American Tunaboat Association to take porpoise incidental to commercial fishing operations; problems posed by the incidental take of marine mammals by foreign vessels engaged in purse seine fishing for yellowfin tuna in the eastern tropical Pacific Ocean; the need to provide additional staff support for the Marine Mammal Commission; and clarification of the procedures to be followed in appointing people to serve on the Commission. While consideration was also given to the problem of marine mammal mortality as a result of net entanglement, the status of marine mammal management in Alaska, including prospects for a return of management, and options for the conservation and recovery of the southern sea otter, no Congressional action was taken on these matters.

Representatives of the Commission presented testimony on these and other issues during hearings before the House Committee on Merchant Marine and Fisheries on 15 March and the Senate Committee on Commerce, Science, and Transportation on 26 April 1984. The House bill, H.R. 4997, was introduced on 1 March, and the Senate bill, S. 2584, was introduced on 24 April. Based on the information received during the hearings, both Committees reported out bills in May. H.R. 4997 was passed by the House of Representatives and by the Senate on 27 June. On 17 July 1984, the President signed the enrolled bill into law, reauthorizing the Marine Mammal Protection Act through 1988.

The substantive amendments made to the Act are as follows:

-- Appropriations for funds were authorized for the Departments of Commerce and the Interior and the Marine Mammal Commission to carry out their responsibilities under the Act during Fiscal Years 1984-1988.

-- The requirement that the Secretary of the Treasury ban the importation of either commercial fish or fish products if those fish have been caught with commercial fishing technology which results in the incidental kill or incidental serious injury of ocean mammals in excess of U.S. standards was supplemented. The new language requires that foreign nations take more vigorous steps towards implementing a marine mammal protection program for their respective fishing fleets. This action was taken in recognition of the fact that, while the U.S. tuna fleet has made considerable progress in reducing the number of porpoise killed incidentally in the course of tuna purse seining, high levels of mortality may be resulting from the fishing practices of many foreign

flag vessels. To address this problem, the Act was amended to require each foreign exporting nation to provide documentary evidence that it has adopted a regulatory program for the incidental take of marine mammals that is "comparable" to that of the United States, and that the average rate of the incidental taking is "comparable" to that of domestic vessels.

-- The general permit issued to the American Tunaboat Association on 7 December 1980 and due to expire on 31 December 1985 was reauthorized for an indefinite period. The extension was made subject to the following conditions: (1) the permittee is required to use the best safety techniques and equipment available to provide for the safety of marine mammals; (2) all permit conditions in effect on 17 July 1984 shall apply throughout the permit's term, except that adjustments may be made with respect to fishing gear, fishing practice requirements, and permit administration, provided that such terms and conditions are based on the best scientific information available; and (3) annual quotas of 250 coastal spotted dolphins and 2,750 spinner dolphins were established, subject to the requirement that there be no "accidental taking" of either species during the period that incidental taking is allowed. These quotas are to be treated as being within, and not in addition to, the overall annual quota established by the Secretary of Commerce.

-- The Secretary of Commerce was directed to start a scientific research program to monitor the "indices of abundance and trends of marine mammal population stocks which are incidentally taken in the course of commercial purse seine fishing for yellowfin tuna in the eastern tropical Pacific Ocean by 1 January 1985." This program is to be continued for at least five consecutive years and periodically, as necessary, thereafter. If, after considering the best scientific information available, the Secretary determines that the taking allowed by the permit is having a "significant adverse effect" on a marine mammal population stock, appropriate action must be taken to modify the permit. In addition, the Secretary is required to include in each annual report to Congress a discussion of the proposed activities to be conducted in the upcoming year as part of the monitoring program.

-- Congress made two amendments that directly affect the Commission. The Act was amended to make it clear that the President's selection of the Commissioners must be made from names which have been unanimously agreed to by the Chairman of the Council on Environmental Quality, the Secretary of the

Smithsonian Institution, the Director of the National Science Foundation, and the Chairman of the National Academy of Sciences. In addition, Congress directed that no fewer than eleven full-time staff members shall be employed by the Commission at any given time.

CHAPTER III

RESEARCH AND STUDIES PROGRAM

The Marine Mammal Protection Act requires that the Commission maintain a continuing review of research programs conducted or proposed to be conducted under the authority of the Act, undertake or cause to be undertaken such other studies as it deems necessary or desirable in connection with marine mammal conservation and protection, and take every step feasible to prevent wasteful, duplicative research. To accomplish these tasks, the Commission: conducts an annual survey of Federally-funded marine mammal research; reviews and recommends steps that should be taken to prevent duplication and improve the marine mammal research programs conducted or supported by the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the Minerals Management Service, and other Federal agencies; convenes meetings and workshops to review, plan, and coordinate marine mammal research; and contracts for studies to help define and develop solutions to domestic and international problems affecting marine mammals and their habitats so as to facilitate and complement the other agencies' activities.

Survey of Federally-Funded Marine Mammal Research

Research directly or indirectly relevant to the conservation and protection of marine mammals and their habitats is conducted or supported by a broad range of Federal departments and agencies. To determine the precise nature of this research, to examine ways in which it can best be used to facilitate marine mammal conservation and protection, and to prevent wasteful duplication, the Commission annually requests and reviews information on the marine mammal research programs being conducted, supported, or planned elsewhere in the Federal Government.

In 1984, the Commission requested information from 21 Federal agencies and departments, at least twelve of which are known to be conducting or supporting research relevant to the conservation and protection of marine mammals. Those agencies and departments are the Department of State, the Minerals Management Service, the National Institutes of Health, the National Marine Fisheries Service, the National Ocean Service, the National Park Service, the National Science Foundation, the Naval Ocean Systems Center, the Office of Naval Research, the Smithsonian Institution, the U.S. Air Force, and the U.S. Fish and Wildlife Service. The Minerals Management Service, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service have the largest and most diverse marine mammal research programs.

Information from the 1984 survey is due early in 1985. After it has been compiled and verified, the Commission, in consultation with its Committee of Scientific Advisors, will evaluate the information and make such recommendations as may be appropriate to better develop, focus, and coordinate agency programs.

Research Program Reviews, Workshops, and Planning Meetings

In 1984, the Commission, in consultation with its Committee of Scientific Advisors, reviewed, commented on, and/or made recommendations concerning: the National Marine Fisheries Service's tuna/porpoise, harbor porpoise, bottlenose dolphin, Hawaiian monk seal, North Pacific fur seal, and gray whale research programs; endangered cetacean and other marine mammal studies being supported by the Minerals Management Service; the bowhead whale research programs being conducted and/or supported by the National Marine Fisheries Service and the Minerals Management Service; and the manatee and sea otter research programs being conducted by the Fish and Wildlife Service. The Commission also convened, co-sponsored, or participated in meetings and workshops to: address entanglement of marine organisms in discarded fishing gear and other debris; assess methods for making determinations relative to optimum sustainable population levels; evaluate the role of mitochondrial DNA for determining population discreteness; and better define and assess information and management needs relative to the Eastern Pacific gray whale population, the southern sea otter population, implementation of the Convention on the Conservation of Antarctic Marine Living Resources, and certain marine mammals in Alaska.

Commission-Sponsored Research and Study Projects

The Departments of Commerce and the Interior have primary responsibility under the Marine Mammal Protection Act for acquiring the biological and ecological data needed to protect and conserve marine mammals and the ecosystems of which they are a part. This responsibility has been delegated to the National Marine Fisheries Service and the Fish and Wildlife Service, respectively.

As noted earlier, the Commission convenes workshops and contracts for research and studies to identify and evaluate threats to marine mammal populations. It also supports, within its budget limitations, such other research as it deems necessary. Since it was established, the Commission has contracted for 471 projects, ranging in amounts from several hundred dollars to \$150,000. The average contract has been for about \$7,800. The total amounts in contracts awarded have been: \$258,787 in FY 1974; \$446,628 in FY 75; \$497,449 in FY 76; \$132,068 in the FY 76-77 three-month transition period; \$523,504 in FY 77; \$407,678 in FY 78; \$219,897 in FY 79; \$396,640 in FY 80; \$173,652 in FY 81; \$107,117 in FY 82; \$211,982 in FY 83; and \$327,854 in FY 84.

From time to time, the Commission's investment in research activities is in the form of transfers of funds to other Federal agencies, particularly the National Marine Fisheries Service and the Fish and Wildlife Service. When such funds are transferred, the Commission provides detailed scopes of work which describe precisely what the agency is to do or have done and the requirements for reporting on progress to the Commission. In many instances, this approach has made it possible for agencies to start needed research sooner than might otherwise have been possible and then to subsequently support the projects on their own for as long as necessary. The Commission also believes that it is valuable to maintain agency involvement to the greatest extent possible and that such transfers provide a useful means of doing so.

Contract work undertaken by the Marine Mammal Commission in 1984 is summarized below. In those cases in which the Commission has jointly supported the project with other agencies, it is so noted in the project summary. Final reports from Commission-sponsored studies completed in 1984 and earlier are available from the National Technical Information Service; they are listed in Appendix B of this Report. Papers based on Commission-sponsored research that have been published elsewhere are listed in Appendix C.

Survey of Federally-Funded Marine Mammal Research
(G. H. Waring, Ph.D., Southern Illinois University)

Each year the Commission conducts a survey of marine mammal research either conducted or supported by other Federal agencies during the past fiscal year, as well as that which is expected to be conducted or supported during the current fiscal year. At the end of 1984, the contractor was preparing the report summarizing information provided by the agencies on their FY 84 and FY 85 research programs. Early in 1985, the completed report will be sent to the agencies to assure that data concerning their marine mammal research programs were reported and described accurately. Following verification, the Commission, in consultation with its Committee of Scientific Advisors, will review the report and, as appropriate, recommend actions to better develop, orient, and coordinate agency research programs. Copies of the final report will be provided to all agencies conducting or supporting marine mammal research and will be available to all interested persons through the National Technical Information Service.

Observations of Gill and Trammel Net Fisheries in and near the California Sea Otter Range
(B. B. Hatfield and B. W. Arnold)

Observations made by California Department of Fish and Game personnel and others in 1982 indicated that significant numbers of sea otters, other marine mammals, birds, and non-target species of fish were being caught and killed in gill and trammel net fisheries in certain areas along the coast of California. The Department was unable to continue or expand its observation program in 1983 and, as noted in the previous Annual Report, the Commission contracted with several investigators to continue periodic observations of gill and trammel net fisheries in and near the Morro and Monterey Bay areas. Although the California Department of Fish and Game and the Fish and Wildlife Service both did some monitoring in 1984, the distribution and level of these efforts were insufficient to obtain reliable estimates of the species and numbers of marine mammals incidentally taken in the fisheries. Therefore, the Commission contracted with the investigators to conduct observations at times and in places not being covered adequately by the Fish and Wildlife Service or the California Department of Fish and Game. From January through November 1984, the Commission-supported observers documented the incidental take of nine southern sea otters, twenty-nine California sea lions, twenty harbor seals, six harbor porpoise,

and two elephant seals. Since only a fraction of the total net hauls were observed, the actual incidental take certainly was substantially larger. Based on these and other data, estimates of the total annual loss of southern sea otters over the past 10 years exceeded 100 animals per year.

Update Assessment of Oil Spill Risks in and near the California Sea Otter Range
(R. T. Tinney, Jr.)

In 1977, the small, remnant sea otter population in California was designated "threatened" under the Endangered Species Act, due primarily to the increasing risk of oil spills from tanker-related accidents in and near the population's range. In September 1982, the Fish and Wildlife Service initiated a five-year status review, as required by the Endangered Species Act, to determine whether changes in the population or changes in the threats to the population were such that the population should be removed from the Endangered Species List, listed as "endangered," or continue to be listed as "threatened." To assist in this review, the Commission contracted in 1982 with the investigator to provide a synthesis of existing information concerning the possible and probable sources, number, locations, trajectories, and magnitudes of potential oil spills in and near the southern sea otter range. That report was published in June 1983. In 1984, the Commission again contracted with the investigator to update the assessment, and this report is expected early in 1985. It will provide information on: the nature and extent of tanker traffic; on-going efforts to explore and develop offshore oil and gas deposits in and near the southern sea otter range; the possible indirect as well as direct effects of oil on sea otters; the nature and likely effectiveness of existing capabilities for containing and cleaning up oil spills; and an assessment of the likelihood of success in catching and rehabilitating oiled otters. The report will be reviewed by the Commission, in consultation with its Committee of Scientific Advisors, to determine what additional measures may be needed to assure that the continued existence and well-being of the California population of sea otters will not be jeopardized by exploration, development, or transport of offshore oil and gas resources. Copies of the report will be provided to the Fish and Wildlife Service, the Minerals Management Service, the California Department of Fish and Game, industry and environmental groups, and other interested persons.

Photo-Reconnaissance of Disabled Oil Tanker off the Big Sur Coast of California

(Pacific Western Aerial Surveys, Santa Barbara, California)

In April 1984, the 587-foot tanker Sea Lift Pacific, with 143,000 barrels of marine diesel fuel aboard, became disabled off the Big Sur coast of California. Had the tanker run aground and broken up in this part of the southern sea otter range, the resulting oil spill could have seriously affected the California population of sea otters and its habitat. With the possibility of a break-up imminent, the Commission decided to contract for mapping quality aerial photography to: document the situation at that time; carefully record the size, direction, and rate of movement of any spill which might occur; photographically map the relationship of any spill to sea otters; and provide a historically accurate record from which lessons might be later learned. Fortunately, the tanker's anchors held after it had drifted to within about 1-1/2 miles of the coast and repairs were made which allowed the ship to get underway. Such aerial reconnaissance in this and similar situations would assist in determining the focus for containment and clean-up efforts, assessing the validity of existing oil spill trajectory models, and evaluating the effectiveness of response plans. Copies of the photographs were provided to the U.S. Coast Guard.

Accumulation of Heavy Metals and Chlorinated Hydrocarbons in Sea Otters

(R. W. Risebrough, Ph.D., Bodega Bay Institute, California)

Accumulation of heavy metals, chlorinated hydrocarbons, and other environmental contaminants could kill or affect the health of sea otters. In the past 10 to 15 years, investigators from the California Department of Fish and Game and several academic institutions have periodically collected and analyzed tissues from beach-cast sea otter carcasses to determine contaminant levels. The contractor is compiling and analyzing these data to determine whether any contaminants are present in potentially harmful quantities, whether there have been increases in the level of any contaminants since sampling began, and whether the systematic evaluation of tissues from beach-cast sea otters provides an effective means for detecting and monitoring potentially harmful levels of environmental contaminants. The report, to be completed early in 1985, will be reviewed by the Commission, in consultation with its Committee of Scientific Advisors, to determine what measures the Fish and Wildlife Service or other agencies might take to better assure that recovery of the

California population of sea otters is not adversely affected by environmental contaminants. The report will be provided to the Fish and Wildlife Service, the Minerals Management Service, the California Department of Fish and Game, industry and environmental groups, and others who may have use for it.

Mapping and Monthly Surveys of Kelp Canopies in the California Sea Otter Range

(R. F. Van Wagenen)

The distribution and behavior of sea otters are related to the distribution, density, species composition, and seasonal changes in kelp canopies. The purpose of this survey, begun in 1983, is to better describe the relationship between seasonal changes in kelp canopies and seasonal changes in the distribution and behavior of sea otters, to assess the effects of seasonal changes in kelp canopies on the effectiveness of various techniques used to estimate sea otter abundance, and to document seasonal and annual changes in kelp distribution throughout the range of the California population of sea otters. To meet these objectives, the contractor conducted monthly aerial photographic surveys of kelp canopies between Point Lobos and Point Sur and between Ragged Point and Point San Simeon, California. In August 1984, the contractor conducted a photographic survey of kelp canopies in the entire sea otter range from Pigeon Point to Pismo Beach. Photographs and flight reports have been provided to Fish and Wildlife Service scientists who are analyzing them. Results will be used to help design future sea otter censuses and to better determine the effects of sea otters, storms, and other environmental factors on kelp distribution and dynamics.

Effects of Sea Otter Foraging on Kelp Forest Communities

(M. S. Foster, Ph.D., Moss Landing Marine Laboratories, California)

In 1977, the Commission contracted for underwater benthic surveys of four sites outside and two sites inside the northern boundary of the California sea otter range. These surveys, continued from 1978 through 1981 with the support of the California Department of Fish and Game, were discontinued after 1981 because of lack of funding. In the fall of 1982, sea otters were observed in the vicinity of each of the four previously unoccupied sites, and reduced sea urchin densities were noted at two sites where dives were made. Neither the California Department of Fish and Game nor

the Fish and Wildlife Service was able to support replicate surveys of the types done from 1977 through 1981 and the Commission therefore provided support to repeat part of the earlier surveys. The results, to be available in the fall of 1985, will improve understanding of the effects of sea otter foraging on the structure and dynamics of kelp forest communities.

Workshop to Assess Possible Methods for Regulating the
Distribution and Movements of Sea Otters
(Point Reyes Bird Observatory, California)

It generally is recognized that sea otters and certain shellfish fisheries should be zonally managed, both in Alaska and in California, to protect and encourage recovery of sea otter populations while at the same time minimizing the adverse effects of sea otters on commercial and recreational fisheries. It also is recognized that zonal management will depend upon effective means for preventing or limiting the movement of sea otters into designated non-otter zones and/or for removing otters from such zones. The purpose of this Workshop, held in San Francisco on 25-26 October 1984, was to: identify those methods that appear to have the greatest potential for practically and effectively regulating sea otter distribution and movements; describe the research necessary to test and evaluate the effectiveness of potentially promising methods; and set forth timing, funding, personnel, and special equipment requirements to do the research. The report, to be completed early in 1985, will be reviewed by the Commission, in consultation with its Committee of Scientific Advisors, to determine how needed research might best be accomplished.

Assessment of Information and Programs Concerning the
Incidental Take of Sea Otters, Harbor Porpoise, and Other
Marine Mammals in California Coastal Waters
(B. Heneman)

At least 34 species of marine mammals occur in the coastal waters of California. In addition to sea otters, other species are now being or may be affected by fisheries and other human activities. The contractor is reviewing on-going and planned research and management programs bearing on these species to advise the Commission as to steps that have been, are being, or should be taken by the Fish and Wildlife Service, the National Marine Fisheries Service, and others to: prevent or reduce the incidental mortality of sea otters and other marine mammals in gill and trammel net fisheries;

facilitate development and adoption of an effective oil spill response plan which would include development and adoption of a protocol for assessing, preventing, and mitigating the possible impacts of oil spills on sea otters, fur seals, and other marine mammals; develop non-lethal methods for mitigating the impacts of sea lions, harbor seals, and other marine mammals on commercial and recreational fisheries; and improve organization, administration, and operation of the Marine Mammal Stranding Network in California. Information and recommendations provided by the contractor will be used by the Commission, in consultation with its Committee of Scientific Advisors, to advise the Fish and Wildlife Service, the National Marine Fisheries Service, and other agencies as to steps that should be taken to better protect and conserve marine mammals and their habitat in the coastal waters of California.

Organization of an International Workshop to Examine the Problem of Marine Mammal Entanglement in Lost and Discarded Fishing Gear and Other Debris

(J. R. Davidson, Sea Grant College Programs, University of Hawaii)

Entanglement in lost and discarded fish gear and other marine debris may be killing substantial numbers of marine mammals, birds, turtles, fish, and other marine organisms. In November 1983, the Commission, following up on its earlier recommendations to the National Marine Fisheries Service (see Annual Report for calendar year 1983), again recommended that the Service organize and convene an international workshop to better determine the nature and magnitude of the problem and how it might be addressed. To facilitate planning and organization of the Workshop, the Commission provided funding for the contractor to constitute and convene a steering group to develop an agreed-upon agenda, identify and invite key participants, and expedite preparation of background documents. The steering group met on 8 February and again on 8 September 1984. The Workshop, sponsored jointly by the Fish and Wildlife Service, the Marine Mammal Commission, the National Marine Fisheries Service, the North Pacific Fishery Management Council, the Pacific Fishery Management Council, Pacific Sea Grant College Programs, and the Western Pacific Fishery Management Council, was held in Honolulu on 26-29 November 1984. The Workshop proceedings, to be published in the spring of 1985, will be reviewed by the Commission, in consultation with its Committee of Scientific Advisors, and all other involved agencies, to provide guidance in

undertaking those research and management activities necessary to better address this problem.

Domestic and International Authorities Potentially Applicable to the Net Entanglement Problem

(M. J. Bean, Esq., Environmental Defense Fund)

Recognizing that domestic laws and international agreements could possibly be used to address the problem of entanglement of marine mammals and other marine organisms in lost and discarded fishing gear and other debris, the Commission contracted for a review of a wide range of potentially applicable authorities. The contractor reported on the applicability of various authorities and recommended certain actions that should be taken by the Commission and other Federal agencies to effectively address the problem. The report was provided to participants at the international workshop on net entanglement discussed above, and nearly all of its recommendations were adopted as part of the workshop findings. It currently is being considered by the Commission, in consultation with its Committee of Scientific Advisors, in developing further recommendations for actions to effectively address the problem.

Survey of Lost and Discarded Fishing Gear on Beaches from Yakutat to Dixon Entrance, Alaska

(North Pacific Fishery Management Council, Anchorage, Alaska)

The types and quantities of fishing gear washing up on mainland and island beaches may be a good indicator of the types and quantities of gear being lost or discarded at sea. The purpose of this project, supported jointly by the Marine Mammal Commission, the North Pacific Fishery Management Council, and the Auke Bay Laboratory of the National Marine Fisheries Service, was to survey selected beaches between Yakutat and Dixon Entrance, Alaska, to determine the types and quantities of fishing gear and other debris present on the beaches. The surveys, carried out in the spring and summer of 1984, indicated that substantial quantities of multi-strand gill net, dungeness crab pot floats, gill net floats, trawl web fragments, and other types of debris are present and washing up on beaches in southeast Alaska. The survey results were presented and considered during the international workshop described above.

Interactions Between Pilot Whales and the Squid Fishery
near Santa Catalina Island, California
(S. H. Shane)

Studies carried out in 1979 and 1980 by the California Department of Fish and Game, under contract to the National Marine Fisheries Service, indicated that four to twelve percent of the pilot whales found around Santa Catalina Island in the winter months may be caught and killed each year in the southern California squid fishery. The size, movements, and productivity of the affected pilot whale population and the precise nature, causes, and effects of the incidental take are unknown. In January 1983, this investigator initiated a three-year study to better determine the movements, number, and age/sex composition of pilot whales in the vicinity of Santa Catalina Island and the nature and extent of interactions between pilot whales and the squid fishery in the area. The study was supported by the National Marine Fisheries Service in 1983 and, in 1984, was jointly supported by the Commission and the National Marine Fisheries Service. The project report, expected to be completed by mid-1985, will be used in considering those research and management actions that may be indicated.

Assessment of Possible Bottlenose Dolphin/Fishery Interactions
in Coastal Waters of the Southeastern United States
(J. E. Reynolds, Ph.D.)

There have been a number of unsubstantiated reports of bottlenose dolphins being caught and killed incidental to fishing activities and of dolphins interfering with fishing operations in several locations in the coastal waters of the southeastern United States. The purpose of this study is to survey fishermen, researchers, and others who work in the coastal waters of the southeastern United States to more accurately determine the nature, location, and possible extent of the problem. The report, expected to be done by mid-1985, will be reviewed by the Commission, in consultation with its Committee of Scientific Advisors, to determine whether mitigation measures, additional investigation, or other actions may be necessary at this time.

Tag-Resighting Surveys of Bottlenose Dolphins in
Mississippi Sound
(Southeast Fisheries Center, National Marine Fisheries
Service)

Bottlenose dolphins are taken from a number of localities along the southeastern coast of the United States for purposes of public display and scientific research. To help assure that these live-captures and removals do not have a significant adverse effect on local populations or the species as a whole, the National Marine Fisheries Service, in consultation with the Commission, limits the number of animals that can be taken from given areas and also assesses and monitors the status of local populations or subpopulations from which most removals are authorized. This study, supported jointly by the Commission and the Southeast Fisheries Center, is designed to determine whether the authorized removal of 25 animals will have any effect on the ratio of marked to unmarked dolphins seen during monthly boat surveys of the designated capture area in Mississippi Sound. If the ratio increases, it will indicate that there is a relatively discrete bottlenose dolphin population in the area, that annual removal of 25 or more animals could result in a serious population decline, and that the authorized level of take should be further limited.

Aerial Surveys of Right Whales in the Great South Channel
(H. E. Winn, Ph.D., University of Rhode Island)

Data collected during the Cetacean and Turtle Assessment Program, supported by the Minerals Management Service from 1978 to 1982, suggest that right whales, the most endangered whales found in U.S. waters, pass between Nantucket Shoals and Georges Bank (the Great South Channel) each year on their way to summer feeding grounds in the Bay of Fundy and on the southeastern Scotian Shelf. The investigator has been conducting aerial surveys of the area each spring for the past five years and, in 1984, the Commission provided funds to conduct two additional surveys. During the first survey, conducted on 25 May, 27 right whale sightings were made and 16 individual animals were positively identified from photographs taken during the survey. During the second survey, conducted on 22 June, 24 right whale sightings were made and 13 individual animals were positively identified from photographs. These sightings support the hypothesis that a substantial proportion (but not necessarily all) of the northwest Atlantic right whale population moves through the Great South Channel each spring, a significant

factor when consideration is given to areas of particular importance to this species.

Census and Photographic Identification of Right Whales
in the Bay of Fundy
(New England Aquarium, Boston, Massachusetts)

In 1980, the National Marine Fisheries Service contracted with the New England Aquarium for surveys to determine the species and number of cetaceans present in the lower Bay of Fundy during the summer months. The survey results indicated that right, fin, minke, humpback, and pilot whales, white-sided dolphins, and harbor porpoise were present in the Bay during the summer. Since the initial survey, the National Marine Fisheries Service has provided partial support each year for additional aerial and shipboard surveys to photographically identify and document the number and movements of individual animals, particularly right whales, in the area during the summer. The National Marine Fisheries Service was unable to provide the support necessary to continue the surveys in 1984 and the Commission provided supplemental support. The survey results and other information concerning the northwest Atlantic right whale population will be important in developing a comprehensive research and management plan to protect and encourage the recovery of the species.

Workshop to Develop a Research and Management Plan for the
Northwest Atlantic Right Whale Population
(New England Aquarium, Boston, Massachusetts)

The northwest Atlantic population of right whales occurs primarily in waters under U.S. jurisdiction and is in serious danger of extinction. However, the National Marine Fisheries Service has not yet developed or implemented a recovery plan as required by the Endangered Species Act. The purpose of this Workshop is to facilitate development of a comprehensive research/management plan. Workshop participants will critically evaluate existing information concerning the status of the population and possible threats to the population and its habitat. They will also identify steps that should be taken to eliminate or reduce threats from human activities, encourage recovery, and monitor the status of the population and habitats essential to its survival and recovery. The Workshop will be divided into two sessions, the first to be held in February 1985 and the second to be held in June or July 1985. The Workshop report, to be

completed in the fall of 1985, will serve as a basis for advising the National Marine Fisheries Service, the Minerals Management Service, and other agencies of necessary and desirable steps to protect and encourage recovery of the northwest Atlantic right whale population.

Development of a Long-Range Plan to Protect and Conserve Marine Mammals in Alaska

(J. W. Lentfer, Juneau, Alaska)

A diverse assemblage of marine mammals, including walrus, polar bears, sea otters, a number of cetaceans, and several pinniped species, inhabit the coastal waters of Alaska. Many of these, already hunted by Alaskan natives for subsistence purposes, are being or could be affected by offshore oil and gas development, fisheries, and other human activities. The purpose of this project is to bring together, in species-oriented working groups, informed representatives of the many interested State and Federal agencies and Eskimo and private groups to undertake cooperative, comprehensive reviews of the status of the species as well as present research and management activities affecting each species. Based upon a careful consideration of these factors and other available information, the working groups will develop detailed research and management plans for each species. The contractor's report, to be completed in mid-1985, will provide guidance to Federal and State agencies as to research and management actions that should be undertaken.

Workshop on Methods and Procedures for Making Optimum Sustainable Population Determinations, 28-29 June 1984

(D. G. Chapman, Ph.D., Convenor)

The Marine Mammal Protection Act mandates that marine mammal populations be brought to and maintained at optimum sustainable population levels and, with several exceptions, prohibits taking from populations that are below this level. The purpose of this Workshop, sponsored by the Commission and the National Marine Fisheries Service, was to review and determine the likely utility of various methods and procedures that have been or possibly could be used to make optimum sustainable population determinations. Participants included representatives of the Commission, the National Marine Fisheries Service, the Fish and Wildlife Service, the Alaska Department of Fish and Game, the Oregon Department of Fish and Wildlife, the Washington Department of Game, the California Department of Fish and Game, and several academic

institutions. The participants concluded, among other things, that no single method could be used to make optimum sustainable population determinations and that the method of choice must be determined on a case-by-case basis considering the best available population and ecosystem data. The results of the Workshop were reviewed and discussed at the Commission's 19-21 July 1984 meeting in Fairbanks, Alaska, and have been of use in certain studies now underway.

Conference on Antarctic Politics and Marine Resources
(Center for Ocean Management Studies, University of Rhode Island)

As noted in Chapter IV, developing fisheries and growing interest in non-living resources, particularly off-shore oil and gas resources, pose threats to seals, whales, and other biota that inhabit the Southern Ocean, the seas surrounding Antarctica. The objectives of this Conference were to examine pertinent resource, policy, and institutional questions and to consider possible alternatives to the Antarctic Treaty system for ensuring that the continent of Antarctica and surrounding waters are demilitarized, free of nuclear weapons, and open to all for scientific research. The Conference was sponsored by the Department of State, the Minerals Management Service, the Marine Mammal Commission, and the National Oceanic and Atmospheric Administration. Participants included representatives of the aforementioned agencies, the U.S. Congress, the Antarctic Treaty countries, non-Treaty countries, the United Nations, industry, and the environmental community. While a broad range of views concerning the Antarctic Treaty system was expressed, there was general agreement that the Antarctic Treaty is essential to ensure that Antarctica does not become the scene or object of international discord.

Preparations for the 1984 Meetings of the Commission and Scientific Committee for the Conservation of Antarctic Marine Living Resources
(K. A. Green-Hammond, Ph.D.)

The third meetings of the Commission and Scientific Committee for the Conservation of Antarctic Marine Living Resources were held in Hobart, Tasmania, 3-14 September 1984. To help prepare for these meetings, a meeting of an ad hoc group of knowledgeable and interested U.S. scientists was convened by the Commission and the National Marine Fisheries Service, in cooperation with the National Science Foundation

and the Department of State. The contractor helped to organize the meeting and subsequently prepared a meeting report which was used to develop U.S. positions on scientific and technical items to be discussed at the Hobart meetings.

International Symposium and Workshop on the Biology of Fur Seals
(British Antarctic Survey, Cambridge, England)

There are two genera and nine recognized species of fur seals, all of which have been or are being harvested for commercial purposes. The objectives of this Symposium and Workshop, held in Cambridge, England, on 23-27 April 1984, were to: review the present status, recent trends, history of exploitation, and rate of recovery of each species; compare demographic, behavioral, and ecological traits related to the recovery of each species; and identify important needs and opportunities for fur seal research. It was organized by researchers from the British Antarctic Survey and the U.S. National Marine Fisheries Service, and partial support was provided by the Commission. Approximately 40 scientists from 12 countries participated. The proceedings, which will include species accounts and papers describing research techniques, will be used to evaluate and improve on-going and planned research and management programs.

Workshop on Genetic Management of Captive Populations
(Friends of the National Zoo, Washington, D.C.)

Development of self-sustaining captive breeding populations could reduce the need to take marine mammals from the wild for public display and scientific research and also help to assure the continued existence of species that are in danger of extinction. Successful propagation and maintenance in captivity require, among other things, that breeding programs be established to maintain genetic diversity and prevent inbreeding depression. The purpose of this Workshop, for which the Commission provided partial funding, was to consider and provide advice concerning: the probable relationship between genetic diversity and fitness; selection in captive populations; and the optimal size for captive populations. The Workshop was held at the National Zoo's Research and Conservation Center in Front Royal, Virginia, on 6-10 August 1984. The proceedings, now being prepared for publication, will be helpful in planning captive breeding programs for marine mammals and other vertebrates.

Workshop on the Possible Use of Mitochondrial DNA for
Determining Population Discreteness
(D. K. MacCallum, Ph.D., Convenor)

The Marine Mammal Protection Act requires that populations as well as species be protected and encouraged to develop to the greatest extent feasible commensurate with sound policies of resource management. Individual variation in mitochondrial DNA possibly could be used to distinguish between independent breeding populations of at least some species of marine mammals. The objectives of this Workshop, held on 30 October 1984 at Scripps Institution of Oceanography, La Jolla, California, were: to review on-going efforts to determine the discreteness of certain dolphin populations in the southeastern United States and in the eastern tropical Pacific Ocean; to familiarize marine mammal collectors, administrators, scientists, and other interested parties with preparation and possible uses of mitochondrial DNA; and to identify methods and opportunities for collecting specimen material. Participants included representatives of the Commission and the National Marine Fisheries Service, individuals involved in the live capture and maintenance of bottlenose dolphins and other marine mammals for public display and scientific research, marine mammal biologists, and scientists actively involved in research concerning mitochondrial DNA.

Preliminary Analysis of Mitochondrial DNA for Determining
Population Discreteness
(T. E. Dowling, Ph.D., University of Michigan)

As noted in the previous project description, analysis of variation in mitochondrial DNA provides a means for identifying discrete animal populations. The investigator is developing a method of analyzing mitochondrial DNA obtained from small samples of cetacean blood in order to determine whether there are differences which suggest the presence of independent breeding populations of bottlenose dolphins in the southeastern United States. If successful, the project should serve as a model for similar studies of other species.

Effect of Housing Development on Harbor Seals on
Strawberry Spit, San Francisco Bay, California
(S. Allen, Point Reyes Bird Observatory, California)

Up to one-third of the harbor seals in San Francisco Bay have been using a small cove on the eastern side of

Strawberry Spit as a hauling-out site since the early 1950s when they were displaced by development at Strawberry Point. In 1984, the owners of Strawberry Spit were granted a permit to develop building sites for 62 individual homes on the southern end of the Spit. The permit requires that certain steps be taken to avoid or minimize disturbance of harbor seals and other wildlife. The investigator is conducting periodic surveys and observations, both before and during development, to determine the nature and frequency of any disturbance from construction and subsequent activities and the seals' reaction to the disturbances. The study results, expected to be available by June 1986, will be used to assess the need for additional measures to better assure that human activities do not adversely affect the seals.

Photo-Reconnaissance and Follow-Up Surveys of the Oil Spill Resulting from the Break-Up of the Tanker Puerto Rican
(Hogan-Schoch & Associates, Sebastapol, California, and the Point Reyes Bird Observatory, California)

On 31 October 1984, there was an explosion aboard the tanker Puerto Rican as it was leaving San Francisco Bay. The tanker subsequently was towed away from the Bay and broke in two. Oil leaking from the broken tanker formed a slick, which subsequently contacted parts of the Farallon Islands and the mainland coast north of San Francisco Bay. On 3 November, the stern of the ship, containing as much as 8,500 barrels of bunker oil, sank in about 2,400 feet of water 11-12 miles south of the Farallon Islands. The Commission provided funds for an aerial photographic reconnaissance to document the size and movements of the initial spill and for follow-up aerial surveys to determine the species and numbers of marine mammals present in the areas that are being or could be affected by oil that continues to leak from the sunken stern. Copies of the photographs will be provided to the U.S. Coast Guard.

Status of Manatee Populations in the Greater Caribbean Area
(T. Garrett)

Manatees historically occurred in coastal waters throughout the greater Caribbean area. Subsistence hunting and habitat destruction have eliminated or reduced populations in many areas and, in most areas, current status and trends are uncertain or unknown. This investigator is traveling to the Caribbean and consulting with scientists and other informed people there to obtain the best available

information on current manatee distribution and abundance, as well as on the nature and probable effectiveness of on-going or planned conservation programs. Information provided by the contractor will be used to determine what additional measures might be taken to protect and encourage recovery of manatee populations throughout the Caribbean area.

Recovery of Beach-Cast Carcasses of the Gulf of California Harbor Porpoise

(R. L. Brownell, Jr., Ph.D.)

The Gulf of California harbor porpoise (Phocoena sinus) is a rare species whose range appears to be limited to the northern portion of the Gulf of California, Mexico. There are only about 20 confirmed records of the species, and its distribution, numbers, and trends are uncertain. This investigator, in cooperation with scientists from the Instituto de Biologia, Universidad Nacional Autonoma de Mexico, surveyed selected beaches around San Felipe, El Golfo de Santa Clara, and Puerto Penasco, Mexico, to locate and recover bones and carcasses of the species and to train students to conduct similar surveys in the future. The remains of only two animals were found, and there were no sightings of live animals, thus confirming that the species is extremely rare and may, in fact, be in danger of extinction.

CHAPTER IV

INTERNATIONAL ASPECTS OF MARINE MAMMAL PROTECTION AND CONSERVATION

Section 108 of the Marine Mammal Protection Act directs that the Departments of Commerce, the Interior, and State, in consultation with the Commission, seek to further the protection and conservation of marine mammals under existing international agreements and take such initiatives as may be necessary to negotiate additional agreements required to achieve the purposes of the Act. In addition, Section 202 of the Marine Mammal Protection Act directs that the Marine Mammal Commission recommend to the Secretary of State and other Federal officials appropriate policies regarding existing international arrangements for the protection and conservation of marine mammals.

The Commission's activities in 1984 with respect to conservation and protection of marine mammals in the Southern Ocean, the International Whaling Commission, the Interim Convention on Conservation of North Pacific Fur Seals, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora are discussed below.

Conservation and Protection of Marine Mammals in the Southern Ocean

At least thirteen species of seals and whales, several of which are or were in danger of extinction as a consequence of unregulated or poorly regulated exploitation, inhabit or migrate through the Southern Ocean, the seas surrounding Antarctica. Commercial sealing has ceased and, as is discussed in the following section on the International Whaling Commission a moratorium on commercial whaling is scheduled to begin in 1986. Consequently, commercial exploitation no longer poses as serious a threat as it once did to the continued existence

and well-being of these species. Developing fisheries, however, particularly the fishery for Antarctic krill (Euphausia superba), and growing interest in possible offshore oil and gas resources could pose new and perhaps more serious threats to marine mammals and other biota of the Southern Ocean.

As noted in previous Commission reports, Antarctic krill occupies a central role in the Southern Ocean food web. It is the dominant herbivore and the principal component in the diets of numerous species, including: fin, blue, hump-back, and minke whales; crabeater and Antarctic fur seals; Adelie, chinstrap, macaroni, and rockhopper penguins; several other species of seabirds; and several species of fish and squid. Some of these species are eaten in turn by sperm whales, killer whales, leopard seals, and other higher order predators.

Because of the possible effects on marine mammals, the Marine Mammal Commission, since it became operational in 1974, has undertaken a continuing review of matters that might affect krill or other components of the Southern Ocean ecosystem. It has made numerous recommendations on the need for a comprehensive biological and ecological research program in the Southern Ocean and for international agreements to regulate fisheries and offshore oil and gas exploration and development. Activities prior to 1984 have been reported in detail in previous Annual Reports. A brief summary of these earlier activities and a discussion of 1984 activities are provided below.

Activities Related to Living Resources

The Antarctic Treaty Consultative Parties recognized the potential adverse effects of the developing krill fishery and other fisheries on the Antarctic marine ecosystem and, at the IXth Antarctic Treaty Consultative Meeting in London in 1977, agreed that a Special Consultative Meeting should be held to elaborate a regime which would provide for the effective conservation of all living resources in the Antarctic marine ecosystem. Negotiation of the regime was initiated at a Special Consultative Meeting in Canberra, Australia, in February and March 1978, and was continued at formal and informal sessions held in Buenos Aires, Argentina (July 1978), Washington, D.C. (September 1978), Bern, Switzerland (March 1979), and Washington, D.C. (September/October 1979). The regime -- the Convention on the Conservation of Antarctic Marine Living Resources -- was concluded at a Diplomatic

Conference held in Canberra in May 1980 and came into force on 7 April 1982.

The Marine Mammal Commission's activities regarding the negotiations and the first two meetings of the Commission and Scientific Committee established by the Convention are described in previous Annual Reports, particularly those for 1980, 1982, and 1983.

The third annual meetings of the Commission and Scientific Committee for the Conservation of Antarctic Marine Living Resources were held in Hobart, Tasmania, Australia, from 3 to 14 September 1984. To help prepare for these meetings, the Marine Mammal Commission and the National Marine Fisheries Service, in consultation with the Department of State and the National Science Foundation, convened two meetings of an ad hoc group of U.S. scientists to seek information and views concerning scientific and technical issues on the agenda for the 3-14 September meetings. The first of the two working group meetings was held in Boston on 2 December 1983 and the second was held in Washington, D.C., on 11-12 April 1984. The meeting reports, prepared by a Marine Mammal Commission contractor (see Chapter III), were provided to and used by the U.S. Delegation to develop positions for scientific and technical issues considered during the 3-14 September meetings.

In addition to the preceding, the Marine Mammal Commission, as noted in the Annual Report for calendar year 1983, contracted for a study to identify species that could possibly be used to detect and monitor the effects of krill harvesting on krill predators and competitors, and to provide an up-to-date review of available information concerning the Southern Ocean fauna. The two contract reports ("Monitoring Indicators of Possible Ecological Changes in the Antarctic Marine Ecosystem" and "Review of Antarctic Fauna") were provided to and considered by the Antarctic Living Resources Scientific Committee during its 3-14 September meeting. The latter paper currently is being updated to take account of comments and additional information provided by Antarctic Living Resources Committee members. Both reports will be published early in 1985.

At the 1984 meetings, discussion focused on assessment of: measures needed to conserve exploited fish stocks; data needs and research priorities relative to Antarctic krill; means for detecting and monitoring the possible effects of krill harvesting on krill predators and competitors; and measures needed to detect and avoid accidental or incidental

take of non-target species. During the meeting, the Antarctic Living Resources Scientific Committee considered available information on the status of exploited fish stocks, including the report of an Ad Hoc Working Group on Data Collection and Handling, which met in Woods Hole, Massachusetts, on 11-12 June 1984, and the report of an Ad Hoc Working Group on Fish Stock Assessment, which was constituted and met during the meeting. It determined that five fish stocks in the vicinity of South Georgia Island and two stocks in the vicinity of Kerguelen Island had been heavily fished and might require conservation measures. The biomass of Notothenia rossii in the vicinity of South Georgia Island was judged, for example, to be less than 10 percent of its biomass prior to the beginning of exploitation in the early 1970s.

Acting upon advice provided by its Scientific Committee, the Antarctic Living Resources Commission requested that parties refrain from fishing for Notothenia rossii in the South Georgia area and avoid any by-catch of the species. (This action was in the form of a request rather than a formally agreed conservation measure since conservation measures would not become binding for 180 days or well into the 1984/85 fishing season.) The Commission adopted formal conservation measures prohibiting fishing within 12 nautical miles of South Georgia Island and instituting minimum mesh size regulations throughout the Convention Area. (The former is to be applied on an interim basis for the 1984/85 fishing season and will become binding early in 1985.) Other conservation measures were considered, but were not adopted due to differing views concerning need and the relative merits of possible alternative measures. It was agreed that the Ad Hoc Working Group on Fish Stock Assessment would meet again before the next meetings of the Antarctic Living Resources Commission and Scientific Committee to determine what additional measures might be necessary or desirable.

Antarctic krill stocks, unlike fish stocks, have not been heavily exploited except perhaps in very local areas. Available data indicate that krill catches, taken primarily by Soviet fishing vessels, reached a peak of 530,000 tons in the 1981/82 season and declined to about 250,000 tons in the 1982/83 and 1983/84 seasons. Soviet scientists indicated that the decline was caused by processing and marketing problems, not difficulty in finding or catching krill. Scientists from the United States, the Federal Republic of Germany, the United Kingdom, Poland, and the Soviet Union noted that it had been difficult to find concentrations of krill in the Scotia Sea during the winter and summer of 1983,

but thought that this almost certainly was due to natural variation rather than previous overfishing.

Several problems concerning the use of catch per unit effort analyses and other methods for assessing and monitoring krill abundance were noted, and it was proposed and agreed that a workshop would be held before the 1985 Antarctic Scientific Committee meeting to try to resolve some of these problems. It was also agreed that an Ad Hoc Working Group on Ecosystem Monitoring would meet at the National Marine Mammal Laboratory in Seattle during the week of 6 May 1985 to begin formulating plans for baseline/monitoring programs and controlled fishery experiments to detect and monitor the effects of krill harvesting on krill predators and competitors, as well as on krill stocks. Also, in response to a U.S. proposal, the Antarctic Living Resources Commission agreed to initiate a series of steps to assure that marine mammals, birds, and other non-target species are not and will not be affected adversely, either by incidental take during fishing operations or by being caught in lost or discarded fishing gear, packing bands, or other marine debris.

Implementing Legislation

In late 1984, the Congress passed and the President signed the Antarctic Marine Living Resources Convention Act of 1984. This Act establishes the domestic authority necessary to allow the United States to fully participate and to comply with the terms and provisions of the Convention on the Conservation of Antarctic Marine Living Resources. The Act, among other things, directs that the Secretary of Commerce, in consultation with the Secretary of State, the Director of the National Science Foundation, and appropriate officials of other Federal agencies, such as the Marine Mammal Commission, prepare and annually update a plan for conducting directed research necessary to effectively implement the Convention.

To facilitate preparation of this research plan, the Marine Mammal Commission, by letter of 19 October 1984, recommended that the National Marine Fisheries Service convene a workshop or meeting of an ad hoc group of U.S. Antarctic scientists and other experts to solicit information and views concerning research needs from representatives of the academic community, non-governmental organizations, and other government agencies. The Commission also offered to provide funds to help cover workshop expenses, including report preparation, and provided a provisional workshop

agenda and list of persons whom it considered potentially valuable contributors to such a meeting or workshop.

The National Marine Fisheries Service responded to the Commission's recommendation by letter of 23 November 1984. In its response, the Service noted that it had anticipated the Congressional request to develop a plan for a directed research program and had established a steering committee in July 1984 to oversee development of the plan. The letter noted that the steering group had met at the Service's Narragansett Laboratory on 30-31 October 1984, and that a draft plan was expected to be ready for consultation with the Commission and other appropriate Federal agencies by the end of the year. The letter also noted that the recommended workshop or an ad hoc working group might serve as a useful forum for broader consultations and would be considered.

The Service was unable to complete a draft plan and consult with the Marine Mammal Commission and other appropriate Federal agencies by the end of the year. It is expected, however, that the draft plan will be completed and consultations initiated early in 1985.

Preparations for the 1985 Meetings -- The next meeting of the Commission and Scientific Committee for the Conservation of Antarctic Living Marine Resources will be held in Hobart, Tasmania, Australia, on 2-13 September 1985. Representatives of the Marine Mammal Commission, the Department of State, the National Marine Fisheries Service, the National Science Foundation, and the environmental community met on 17 December 1984 to begin preparation for these meetings and the intersessional meetings of the three ad hoc working groups mentioned above. During the meeting, the group reviewed and determined what background work would be needed in order to deal effectively with various items expected to be considered at the forthcoming meetings.

Activities Related to Non-Living Resources

Activities associated with exploration for and exploitation of non-living resources, particularly offshore oil and gas, could have direct and indirect effects on whales, seals, krill, and other components of the Southern Ocean ecosystem. The Antarctic Treaty Consultative Parties have recognized this possibility, as they recognized the possible adverse effects of fishing and related activities, and, at the XIth Antarctic Treaty Consultative Meeting held in Buenos Aires, Argentina, in July 1982, agreed that a regime on Antarctic

mineral resources should be elaborated and that the regime should provide a means for: 1) assessing the possible impact of mineral resource activities on the Antarctic environment in order to provide for informed decision-making; 2) determining the acceptability of possible activities; and 3) governing those activities determined to be acceptable.

Negotiation of the regime was initiated at a Special Antarctic Treaty Consultative Meeting held in Wellington, New Zealand, in June 1982, and has continued at formal and informal sessions in Wellington (January 1983); Bonn, West Germany (July 1983); Washington, D.C. (January 1984); and Tokyo (May 1984). Further consultations are scheduled to be held in Rio de Janeiro, Brazil, in February 1985.

The Commission has provided and will continue to provide advice and assistance to assure, insofar as possible, that the regime being negotiated is ecologically sound and not to the disadvantage of marine mammals and other biota of the Southern Ocean.

New International Interest in the Antarctic

The basic purpose of the Antarctic Treaty, which entered into force in 1961, is to assure that the Antarctic remains demilitarized, that it not become the scene or object of international discord, and that freedom of scientific research be guaranteed. The original signatories were the twelve countries that operated scientific stations in the Antarctic during the International Geophysical Year, 1956-57, and it is significant that until recently science has been the primary focus of interest and activity on the continent.

In the past 10 to 15 years, however, a number of countries have initiated experimental and commercial fishing programs and, as noted earlier, there has been increasing interest in potential non-living resources, particularly offshore oil and gas resources. Interest in obtaining or sharing possible benefits of these resources, particularly non-renewable resources, has caused a number of countries to question those provisions of the Antarctic Treaty, among others, which require nations to undertake significant scientific research in the Antarctic before they can participate in decision-making. These questions and related issues have been raised in the United Nations and, following debate in December 1983, the United Nations adopted a resolution that called upon the Secretary General to "prepare a comprehensive, factual and objective study of all aspects of Antarctica."

To obtain the information needed to do the study, the Secretary General requested that the Antarctic Treaty Consultative Parties, the Scientific Committee on Antarctic Research, and other knowledgeable and interested countries and organizations provide information on their past and on-going activities and interests concerning the Antarctic. The Department of State and the National Science Foundation, with assistance from the Marine Mammal Commission and other Federal agencies, prepared the U.S. response. In addition, the Marine Mammal Commission, the Department of State, and other Federal agencies provided partial support for and participated in a 1984 conference at the University of Rhode Island to consider views and issues bearing upon the future of the Antarctic Treaty system (see Chapter III).

The report from the Secretary General's study was completed in preliminary form in November 1984 and, following debate, the United Nations General Assembly adopted a resolution which: (1) affirmed the conviction that, "in the interest of all mankind, Antarctica should continue forever to be used exclusively for peaceful purposes and that it should not become the scene or object of international discord" and (2) agreed to include an item entitled "Questions of Antarctica" in the provisional agenda of the fortieth session of the General Assembly.

The Marine Mammal Commission believes that the Antarctic Treaty and the related agreements which form the Antarctic Treaty system are of great importance. In 1985, the Commission will continue its efforts to strengthen and facilitate effective implementation of these agreements.

The International Whaling Commission

Representatives of the Marine Mammal Commission consulted with the U.S. Commissioner to the International Whaling Commission and others in preparation for the Thirty-sixth Annual Meeting of the IWC in Buenos Aires, Argentina, and attended the meetings of the IWC and its Scientific Committee during 1984. The Marine Mammal Commission's 1984 activities regarding the bowhead whale issue as it relates to the IWC are discussed in Chapter VII of this Report. A summary of other 1984 activities, as well as a review of the IWC meetings, follows.

The June 1984 Meeting

Participation -- Representatives from 37 of the 39 member nations participated in the 1984 meeting of the IWC. Jamaica, having withdrawn before the 1984 meeting, was no longer a member.

Moratorium on Commercial Whaling -- As discussed in the Marine Mammal Commission's 1982 and 1983 Annual Reports, a new paragraph was added to the IWC Schedule of regulations during the 1982 meeting of the IWC. The paragraph, Schedule paragraph 10 (e), provides that catch limits for the purpose of all commercial whaling will be set at zero for the 1986 coastal and 1985/86 pelagic whaling seasons and thereafter. The adopted measure also provides that, by at least 1990, the IWC shall undertake a comprehensive assessment of the effect of the scheduled pause in commercial whaling on whale stocks. Based on the results of that assessment, modification of the provision and/or the establishment of new catch limits may be considered. Four nations (Japan, Norway, Peru, and the U.S.S.R.) filed objections to the new provision, thereby removing themselves from the obligation to comply with that provision under the Convention for the Regulation of Whaling. Peru subsequently withdrew its objection, reducing to three the number of member nations objecting to the moratorium provision.

During the 1984 meeting, no proposals were put forward to modify the moratorium provision, and it remained unchanged. At Japan's request, a joint working group of the IWC Technical Committee and Scientific Committee was convened to consider the methods, procedures, and timetable for completing the required comprehensive assessment. Since a substantive proposal on the assessment was not developed by the joint working group for consideration by the IWC during its plenary session, the IWC agreed, at the suggestion of the United States, that interested IWC members should consider the matter further and meet as necessary to develop specific proposals concerning the comprehensive assessment that could be put forward during the next year's meeting. It was also agreed that the Scientific Committee should continue its related deliberations.

Future Operations of the IWC -- In view of the implications of the impending moratorium on the future operations of the IWC, the United States proposed, and the IWC agreed, that a working group should be constituted and convened to provide advice at its next meeting on the future of the IWC and any possible operational adjustments. In particular, it was

intended that the working group would identify and present a widely accepted view as to the IWC's continuing commitments and responsibilities and the attendant administrative and budgetary implications associated with meeting those commitments and responsibilities. Unfortunately, time restrictions precluded the appointment of working group members and the development of terms of reference for the working group's deliberations during the meeting. Therefore, on 1 August 1984, the United States Commissioner wrote to the Chairman of the IWC and proposed draft terms of reference and a procedure for constituting the working group. Membership will include Commissioners from several member nations, including the United States. Two meetings of the working group have been scheduled. The first will be held in February 1985, and the second will be held during the week before the next IWC meeting in England.

Catch Limits -- The June 1984 meeting of the IWC was the last meeting to set non-zero catch limits before the scheduled pause in commercial whaling. The catch limits set during the meeting for the forthcoming whaling seasons were 30 percent lower than the catch limits established at the July 1983 meeting (from 9,390 whales to 6,623 whales). The most significant change was a 40 percent reduction in total catch limits set for Southern Hemisphere minke whale stocks. The breakdown by Area of the Southern Hemisphere minke whale catch limit set by the IWC for the 1984/1985 season was as follows: Area I - 563; Area II - 376; Area III - 844; Area IV 974; Area V - 1,013; and Area VI - 877. However, the total catch of minke whales from these Areas should not exceed 4,224 whales, down from the total catch limit of 6,655 whales established by the IWC for the previous season. Other significant changes were reductions in the commercial catch limits for the Okhotsk Sea-West Pacific minke whale stock (from 421 whales to 320 whales) and the western North Pacific Bryde's whale stock (from 536 whales to 357 whales). At the end of 1984, three nations (Brazil, the U.S.S.R., and Japan) had filed objections to catch limits established for Southern Hemisphere stocks of minke whales, thereby removing themselves from their respective obligations to adhere to those provisions.

The Cold Harpoon -- As noted in the previous Annual Report, a ban on the use of the cold (non-exploding) harpoon to kill minke whales for commercial purposes was established for the 1982/83 pelagic and 1983 coastal whaling seasons and thereafter. Objections to the provision were filed by several countries, including Japan, Norway, Brazil, and the U.S.S.R. A working group of the Technical Committee, which

was convened to consider information and issues related to the humane killing of whales, reported the results of its deliberations, noting that Japan and Norway no longer allow the use of cold harpoons to kill minke whales and that it had reviewed the successful experimental programs of those countries, as well as those of Brazil and the U.S.S.R. The IWC, in its plenary session, agreed that the working group should continue to review information and experimental programs on alternatives to the use of cold harpoons. It also agreed that the working group should review humane killing considerations in aboriginal/subsistence whaling and that the Secretary of the IWC should request available information from concerned countries for consideration by the working group during the 1985 meeting.

Aboriginal/Subsistence Whaling -- The 1984 meeting was the second meeting at which the IWC considered and established catch limits for aboriginal/subsistence whaling under amendments to its Schedule of regulations adopted in 1982. With respect to the Bering Sea stock of bowhead whales, the IWC took no action to change the two-year (1984-85) block quota of 43 whales set at its 1983 meeting and, therefore, the catch limit for that stock remained unchanged. It did, however, recommend that bowhead whaling efforts be directed towards smaller, immature whales (less than 13 meters in length) and that steps be taken to reduce the number of whales struck but lost. As noted in Chapter VII, 25 bowhead whales were struck and 12 whales were landed in 1984 by Alaska Eskimo whalers, leaving 18 strikes available under the 1984-85 block quota.

Stocks of several species of whales (humpback, fin, and minke whales) are subject to aboriginal/subsistence whaling off Greenland, and the IWC adopted a Danish proposal under which new catch limits for those affected stocks were set as follows: the catch limit for the West Greenland stock of minke whales was continued at a level of 300 whales for the 1985 season; the catch limit of the western North Atlantic stock of humpback whales was reduced from nine to eight whales with any excess catch above eight whales taken in 1985 or 1986 to be deducted from a succeeding year's catch limit of eight; and the catch limit for the western North Atlantic stock of fin whales was increased from six to eight whales with a two-year (1985-86) maximum quota of sixteen whales. Finally, the IWC agreed to continue the catch limit for gray whales taken by the Soviet Union and, to a limited extent, by Alaska Eskimos from the Eastern Pacific stock at a level of 179 whales.

Non-Consumptive Uses of Whales -- A working group was convened immediately prior to the 1984 meeting to: examine recommendations contained in the Report of the June 1983 Conference on the Non-Consumptive Utilization of Cetacean Resources; report on such matters as may fall within the competence of the IWC; and identify financial implications of any actions as might be taken with respect to those matters. The Report of the working group contained no recommendations and did not identify either a position concerning expansion of the Secretariat or financial implications of any actions that might be taken. The IWC considered and took note of the Report.

Related Activities

Negotiations with Japan -- At the request of Japan, a series of meetings was held in Washington, D.C., during the fall of 1984 between officials of the Government of Japan and a delegation of U.S. officials headed by the U.S. Commissioner to the IWC. The purpose of the meetings was to discuss issues of mutual concern relating to the future of Japanese whaling. As noted above, Japan had filed an objection to the IWC provision adopted in 1982 establishing a moratorium on all commercial whaling, which is to take effect at the beginning of the 1986 coastal and the 1985/86 pelagic whaling seasons. As discussed in previous Annual Reports, Japan also filed an objection on 9 November 1981 to the IWC provision (Footnote 1 to Table 3 of the IWC Schedule) establishing that no whales could be taken from the western North Pacific stock of sperm whales.* Under terms of the Convention establishing the IWC, these objections remove Japan from any international obligation to adhere to restrictions concerning these provisions. However, whaling activities pursuant to objections filed by members of the IWC may trigger

* In 1981, the IWC adopted a Footnote to Table 3 of its Schedule of regulations providing that no whales shall be taken from the western North Pacific stock of sperm whales until catch limits or other necessary restrictions, if any, are established by the IWC. Subsequently, the IWC approved catch limits for the western North Pacific sperm whale stock of 450 and 400 whales in 1982 and 1983, respectively. Sperm whales in excess of these catch limits were not taken and no catch limits were set for this stock by the IWC for the 1984 coastal whaling season.

provisions under two U.S. laws -- the Pelly Amendment to the Fishermen's Protective Act and the Packwood-Magnuson Amendment to the Magnuson Fishery Conservation and Management Act. The former allows the United States to embargo fish imports from countries whose nationals are certified by the Secretary of Commerce for conducting fisheries operations (including whaling) in a manner or under circumstances which diminish the effectiveness of international fishery conservation programs. The latter amendment provides that the allocation of fish caught within the U.S. Fishery Conservation Zone by any nation so certified must be reduced by at least 50 percent.

The process to set in motion such sanctions could have been initiated when the Japanese began harvesting sperm whales from the western North Pacific Stock during Japan's coastal whaling season scheduled to begin late in 1984. Japanese officials, therefore, sought to meet with U.S. officials to explore possible arrangements whereby a pending Japanese harvest of sperm whales in the western North Pacific could continue pursuant to its filed IWC objections without invoking potential sanctions as might be authorized under U.S. law. In view of the friendly relations between the two countries and in order to encourage Japan to adhere to all approved provisions of the IWC Schedule of regulations, the U.S. agreed to meet with the Japanese officials.

Consultations between the two countries concluded in mid-November with the announcement of a mutual understanding between the two parties. Specifically, it was understood that, if Japan filed, by 13 December 1984, an irrevocable prospective withdrawal of its objection to Footnote 1 of Table 3 to the IWC Schedule of regulations to take effect no later than 1 April 1988 and if 400 or fewer sperm whales would be taken during each of the 1984 and 1985 seasons, then the Secretary of Commerce would not certify Japan on account of such whaling. Further, the Secretary indicated that he would not certify Japan for the taking of 200 or fewer sperm whales during each of the coastal sperm whaling seasons beginning in 1986 and 1987 provided that Japan filed by 1 April 1985 an irrevocable prospective withdrawal of its objection to the moratorium provision that would take effect no later than the 1987 coastal and 1986/87 pelagic whaling seasons. Finally, it was understood that, upon filing a prospective withdrawal of its objection to the moratorium provision, catch limits acceptable to the United States would be established by Japan for its 1986 and 1987 coastal (other than for sperm whales) and 1985/86 and 1986/87 pelagic seasons that would be guided by the most recent quotas voted by the IWC prior to those seasons. Thus, given explicit

commitments provided by Japan to both the IWC and the United States to end all of its whaling activities on or before 1 April 1988, the Secretary indicated he would consider the limited Japanese whaling activities as described above to not diminish either the effectiveness of the Convention for the Regulation of Whaling or its conservation program.

On 11 December 1984, the Ambassador of Japan informed the Secretary of Commerce that, with reference to the understanding developed during the bilateral negotiations, Japan had filed a prospective withdrawal of its objection to Footnote 1 of Table 3 of the Schedule to become effective 1 April 1988 and that it would impose a catch limit for Japanese sperm whaling at a level of 400 whales in each of the 1984 and 1985 seasons. In response, the Secretary indicated he would refrain from certifying Japan for taking up to 400 sperm whales in the 1984 and 1985 seasons. As indicated above, a determination by the Secretary on whether or not to certify Japan for any sperm whales as might be taken during the whaling seasons beginning in 1986 and 1987 will depend, in part, on actions which Japan takes during 1985 to withdraw its objection to the IWC's moratorium provision.

Litigation -- On 8 November 1984, a complaint was filed on behalf of a number of environmental organizations with the United States District Court for the District of Columbia against the Secretaries of Commerce and State. The lawsuit seeks to restrain the Secretaries from entering into or carrying out any agreement with the Government of Japan whereby Japan would not be certified under the Pelly and Packwood-Magnuson Amendments for non-compliance by Japanese whalers with whaling quotas established by the IWC. In addition, the lawsuit seeks a declaratory judgment that the Secretary of Commerce is required to certify Japan for any non-compliance with IWC quotas by Japanese nationals. On 11 December 1984, the plaintiffs filed a motion for summary judgment. Federal defendants' answer to plaintiffs' complaint and response to the summary judgment motion are expected to be filed early in 1985.

Other Matters -- During the July 1984 meeting of the Marine Mammal Commission and its Committee of Scientific Advisors on Marine Mammals, the Marine Mammal Commission asked the Chairman of its Committee to constitute an Ad Hoc Working Group on International Whaling Commission Issues to provide advice and recommendations on the development of U.S. positions for impending IWC deliberations on aboriginal/subsistence whaling, the final year of commercial whaling, and the organizational future and integrity of the IWC

itself. The Working Group reported to the Commission and, among other things, recommended: that the IWC ask its Scientific Committee to make advice on scientific questions bearing on the determination of aboriginal/subsistence whaling catch limits a matter of high priority; that the IWC ask its Scientific Committee to establish procedures and a schedule for undertaking analyses of the condition of stocks subject to whaling under applicable objections as well as stocks not subject to whaling and for which zero catch limits have been adopted; and that the IWC establish procedures for managing aboriginal/subsistence whaling based on periods of at least two years in length. On 12 December 1984, the Marine Mammal Commission forwarded the report of the working group to the U.S. Commissioner to the IWC for his use in developing U.S. positions.

The Commission will continue to consult and cooperate with other agencies and interested groups and individuals during 1985 concerning these and other issues related to the IWC.

Interim Convention on Conservation of North Pacific Fur Seals

The Interim Convention on Conservation of North Pacific Fur Seals calls for cooperative research and management efforts by Japan, Canada, the United States, and the U.S.S.R. to achieve the maximum sustainable productivity of the fur seal populations of the North Pacific Ocean. The Convention entered into force in 1957 and has been extended by a succession of Protocols. The most recent of these was signed on 12 October 1984 by the four Parties and extends the Convention through October 1988. This Protocol is expected to be submitted to the United States Senate for its advice and consent in 1985.

The objective of the Convention is to establish a cooperative international management system for North Pacific fur seal (also called the northern fur seal) populations. The Convention prohibits pelagic sealing and provides for sharing pelts from the land harvest carried out by the United States on the Pribilof Islands and by the U.S.S.R. on Commander and Robben Islands. For the past ten years, the U.S. harvest has averaged about 25,000 subadult male fur seals annually. The Soviet harvest is currently about 7,500 seals a year. The present total population of North Pacific fur seals is about 1.2 million animals.

During recent years, the Pribilof fur seal pup population, and possibly its entire North Pacific population, has declined at a rate of about 6.5 percent per year. While the cause or causes of this decline have not been documented, mortality resulting from entanglement in lost or discarded fishing gear and other debris appears to be at least a contributing factor. The possible effects of such entanglement on northern fur seals, as well as on other marine mammal species, are discussed in greater detail in Chapter V of this Report.

The 1984 meeting of the North Pacific Fur Seal Commission took place in Moscow on 9-13 April 1984 and was preceded by a meeting of the Standing Scientific Committee from 29 March to 6 April. As was discussed in the previous Annual Report, the Marine Mammal Commission consulted with the National Marine Fisheries Service prior to this meeting on development of U.S. position papers for these sessions.

In their 1984 deliberations, the Fur Seal Commission and the Standing Scientific Committee focused primarily on the decline of the Pribilof Island population and the possible effects of continued harvest of subadult males. These two groups noted that the population is below the level required for maximum sustainable productivity and that there is no evidence to suggest that the harvest of subadult males had caused or contributed to the decline or that any substantial gain would be achieved by reducing the present harvest. However, in view of the uncertainty regarding the future of the Pribilof population and a recent weakening of the market for seal skins, the Commission agreed to set an upper limit of 22,000 seals for the 1984 commercial harvest on St. Paul Island.

The Fur Seal Commission expressed considerable concern over the apparent mortality resulting from entanglement of seals in lost and discarded fishing gear. It reviewed U.S. plans to hold an international scientific workshop on the issue and expressed its support, in principle, for the workshop. Because of questions raised by Japan and the U.S.S.R. about the workshop's organization, anticipated products, and their intended use, the Commission was unable to agree to participate as a formal sponsor of the workshop. The U.S. Delegation noted that the workshop report would be made available to the Fur Seal Commission before its 1985 meeting.

Research and Management Actions

As noted in the Marine Mammal Commission's previous Annual Report, the National Marine Fisheries Service convened a workshop to review its North Pacific Fur Seal Research Program in November 1983. Marine Mammal Commission representatives participated in the workshop and, by letter of 9 March 1984, the Commission provided comments on the draft report distributed by the National Marine Mammal Laboratory.

In its comments, the Commission pointed out the need for: (1) additional research to assess the problem of fur seal entanglement in lost and discarded fishing gear and other debris, including comparison of entanglement rates on different islands inhabited by fur seals; and (2) re-examination of parts of the existing data base to provide better estimates of historic change in vital population parameters.

On 15 May, the Commission wrote to the Service, noting that important decisions would have to be made during 1984 both with respect to the renegotiation of the Interim Fur Seal Convention and in response to the petition to list the northern fur seal as threatened under the Endangered Species Act (discussed below). In its letter, the Commission noted that, during 1983, the Service had carried out a shearing and sampling census of fur seal pups on both St. Paul and St. George Islands, and that this had been one of the very few times that censusing had been done simultaneously on both islands since the moratorium on commercial harvesting was established on St. George in 1973. The Commission further noted that it had recently learned that, during 1984, the Service planned to repeat the pup census only on St. Paul Island. The Commission strongly recommended that censuses be conducted on both islands to permit comparisons of trends over time in pup counts on each island, as well as comparisons between islands of the numbers of pups born, mortality rates, and ratios of harem bulls to pups. The Commission pointed out that resulting data would have a bearing on both the evaluation of the effects of the harvest moratorium on St. George and on the Service's determination with respect to the petition to list the Pribilof fur seal population under the Endangered Species Act. The Commission noted that these recommendations were in general agreement with the recommendations from the program review held in November 1983.

By late June, no response to this letter had been received and, on 28 June 1984, the Commission again wrote to the Service, repeating its recommendations on pup censusing on both St. Paul and St. George Islands, noting that the

period for carrying out such census work would soon be at hand and asking to be advised of steps that the Service was taking to address the Commission's recommendations. On 9 July, the Commission received a copy of a 12 June letter apparently sent by the Service in response to the Commission's May letter. In this letter, the Service said that it agreed with the merits of the Commission's recommendations on pup censusing, but that funding constraints prevented it from carrying out the work recommended by the Commission.

On 21 July, the Commission wrote to the Administrator of the National Oceanic and Atmospheric Administration, summarizing the exchanges between the Commission and the Service on the pup census issue and advising him that it found the Service's response unacceptable because it was not consistent with the results and recommendations of the Service's November 1983 fur seal program review, it was otherwise incomplete, and it lacked any scientific justification for the decision. The Commission asked the Administrator to direct the Service to immediately reconsider its decision, and further noted that Sections 202(a)(4) and 202(d) of the Marine Mammal Protection Act require that, if a Federal agency does not adopt a formal recommendation of the Commission, it must provide the Commission with a detailed explanation of the rationale for that decision.

On 27 August, the Administrator responded to the Commission's 21 July letter. The Administrator advised the Commission that he had asked the National Marine Fisheries Service to reassess the Pribilof Islands fur seal research program in line with the Commission's recommendations, and that it subsequently had been determined that these recommendations could not be adopted because of budget constraints. The Administrator further noted that, although the shearing and sampling census on St. George had been considered a priority research task at the time of the November 1983 fur seal workshop, other research needs later took precedence over the St. George Island census.

In a letter to the Commission dated 20 September 1984, the National Marine Fisheries Service provided additional explanation as to why it did not adopt the Commission's recommendations. The Service pointed out that the St. George pup census task had been assigned "high" priority, but not "highest" priority, and that the decision not to conduct the census was based on the following reasons: (1) the St. George fur seal population still includes a few adult males from year classes that were harvested before the moratorium was implemented in 1973 and, thus, is only now becoming an

"unharvested" population; (2) the St. George population is only about 15 percent of the total Pribilof population; and (3) other work identified at the November 1983 workshop was given a higher priority.

On 13-15 November 1984, the Service's National Marine Mammal Laboratory held a research program review to inform constituent groups of research being conducted and planned by the Laboratory and to solicit opinions and recommendations concerning research directions and priorities. Representatives of the Commission participated in the program review. During the review, it was noted that, contingent upon available funding, the Laboratory's research plans for 1985 include shearing and sampling censuses of fur seal pups on both St. Paul and St. George Islands and expansion of behavioral studies on St. George to include comparable studies on St. Paul Island. Both projects had been recommended by the Commission in May and July 1984. The Laboratory's research plans for 1985 also call for additional reproduction studies, investigation of fur seal mortality resulting from entanglement in marine debris, assessment of the effects of altered sex ratios on population growth, and other related work.

On 11 December 1984, the Commission wrote to the Service commenting on the 13-15 November review of the National Marine Mammal Laboratory's research program. With respect to the North Pacific fur seal, the Commission noted that, with the exception of adequate controls for the St. George Island experiment and efforts to determine the cause or causes of the on-going population decline and how it might be stopped, the Laboratory's fur seal research program has been generally well-conceived and implemented. The Commission also noted that hypotheses concerning the effects of harvesting and the cause or causes of the on-going population decline have not been fully or clearly articulated and that it therefore was difficult to judge whether and when the program would provide the information needed to effectively address these issues.

In order to provide a more adequate basis for evaluating the on-going and planned fur seal studies, the Commission asked that the Service provide: (1) a list of the hypotheses being tested by the St. George Island experiment; (2) a description of the studies that have been and are being conducted or are planned to test the various hypotheses, including the rationale for the selected study sites and sampling frequency on both St. Paul and St. George Islands; (3) a list of the hypotheses concerning the possible cause or causes of the on-going decline of the Pribilof fur seal populations; (4) a list of hypotheses concerning the likely

effectiveness of measures that possibly could be taken to stop or reverse the population decline; (5) a brief description of the types of studies that would be required to test the various hypotheses; (6) an estimate of the time, money, and other resources that would be required to conduct the identified studies; (7) an indication of the relative importance or priority which the Service attaches to the various studies; and (8) an indication of which studies the Service will or will not undertake in the next three years.

The need to address the problem of entanglement of fur seals and other marine mammals, seabirds, turtles, fish, and other marine organisms in lost and discarded fishing gear and other debris has been apparent for several years. In 1982, the Commission first recommended that the National Marine Fisheries Service organize and convene an international workshop on the subject and take a number of other steps to address the problem. The Commission also offered, on several occasions, to provide funds to begin developing and implementing a comprehensive program plan. These efforts are described in previous Annual Reports.

In 1984, the Commission, as noted in Chapter III, provided funds for a steering group to meet to facilitate planning for an International Workshop on the Fate and Impact of Marine Debris. This Workshop, held in Honolulu, Hawaii, on 26 to 29 November 1984, was organized and hosted by the Honolulu Laboratory of the National Marine Fisheries Service and involved participants from Federal and state agencies, the fishing and public display industries, conservation groups, the academic community, and several foreign nations. A report of the Workshop findings and recommendations is expected to be available from the National Marine Fisheries Service in the spring of 1985. Additional information on the Workshop is provided in Chapter V, Marine Mammal/Fishery Interactions.

Litigation

On 15 June 1984, the International Fund for Animal Welfare, the Humane Society of the United States, and the Fund for Animals, Inc., filed a lawsuit seeking to enjoin the Secretary of Commerce and the Secretary of State from conducting the 1984 harvest of subadult male seals on the Pribilof Islands. Tandagusix Corporation, the village corporation for St. Paul Island and the contractor to conduct the 1984 harvest, intervened as a co-defendant.

The plaintiffs argued that the harvest would be contrary to Federal law in the following respects: (a) the Fur Seal Act would be violated because the Secretary of Commerce failed to promulgate regulations governing the harvest and because the Act allows seal killing only if necessary for the conservation, management, and protection of the fur seal population or to carry out the provisions of the Convention; (b) the Marine Mammal Protection Act's moratorium on taking would be contravened; and (c) an environmental impact statement had not been prepared pursuant to the National Environmental Policy Act.

Plaintiffs' motion for a preliminary injunction was denied on all three counts on 28 June 1984 by the United States District Court for the District of Columbia. The Court held that, under the Fur Seal Act, the Secretary need only issue regulations when deemed necessary and that an adequate explanation of why regulations were not needed had been provided. The Court also found that the Fur Seal Act provision relating to the conservation, management, and protection of the population was intended to serve as a guide for regulatory action, not as a substantive restriction on the circumstances under which a harvest can be conducted.

With respect to the alleged violation of the Marine Mammal Protection Act, the Court relied on Section 113 of the Act which provides that the provisions of the Act shall be deemed to be in addition to, and not in contravention of, the provisions of any existing treaty or convention that applies to the taking of marine mammals. Noting that the Fur Seal Convention grants the United States the right to conduct a planned harvest, the Court concluded that to construe the Act's moratorium as prohibiting the taking of fur seals would be to contravene the Convention and contrary to the express purpose of Section 113. Accordingly, the Court held that, with respect to the 1984 harvest, the substantive provisions of the Marine Mammal Protection Act that apply a moratorium to the taking of marine mammals conflict with the Convention and that, under Section 113, the Convention must take precedence.

Finally, in response to plaintiffs' National Environmental Policy Act cause of action, the Court determined that the 1980 environmental impact statement prepared in connection with the contemplated four-year extension of the Convention adequately assessed the impacts of the annual kills through 1984. Based on these findings, the Court denied the request for injunctive relief and ruled dispositively in favor of the defendants.

Plaintiffs filed an emergency motion for an injunction and, in the alternative, a request for summary reversal with the United States Court of Appeals for the District of Columbia on 29 June 1984. The Court of Appeals denied the motion, noting that plaintiffs had failed to make the extraordinarily strong showing required to enjoin agency action in cases which involve foreign affairs and international agreements. As a result of the decision, the 1984 harvest took place as scheduled.

Petition To List the North Pacific Fur Seal as Threatened

On 5 January 1984, the National Marine Fisheries Service was petitioned by several environmental groups to list the North Pacific fur seal (Callorhinus ursinus) as threatened under the Endangered Species Act. In support of the proposed action, the petition suggested that the current decline in the North Pacific fur seal population was a result of the over-utilization of fur seals for commercial purposes and of the inadequacy of existing regulatory mechanisms to address the mortality resulting from entanglement of seals in marine debris.

By Federal Register notice of 11 April 1984, the National Marine Fisheries Service announced its determination that the petition presented substantial scientific information to indicate that the action to designate the North Pacific fur seal as threatened may be warranted. In its notice, the Service noted that it is required to make a determination within 12 months as to whether the petitioned action is warranted. The Service requested comments and data to assist it in evaluating the status of the North Pacific fur seal under the Endangered Species Act and in determining the most appropriate course of action.

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors, reviewed available information in response to the Service's request and, by letter of 17 August, forwarded its comments. In its letter, the Commission noted that: (1) the Pribilof Island fur seal population is currently declining and is now below its optimum sustainable population level; (2) if the population decline continues at the present rate, the population will be half its present size in approximately seven to ten years; (3) although the precise cause of the population decline is not known, it appears likely that entanglement in lost and discarded fishing gear and other debris is, at the very least, a contributing factor; (4) it is possible but doubtful

that the continuing harvest of subadult male fur seals may be affecting population size; (5) disease and predation do not appear to be major factors, but cannot be ruled out as contributors to the decline; and (6) new threats to the Pribilof population may develop from onshore and offshore oil and gas related development and tanker transport in the vicinity of the Islands, as well as elsewhere in the population's range. With respect to possible causes of the population decline, the Service was provided with a Commission contract report entitled "Factors Bearing on the Present Status and Future of the Eastern Bering Sea Fur Seal Population with Special Emphasis on the Effects of Terminating the Subadult Male Harvest on St. Paul Island."

The Commission concluded that, if steps currently being taken by the United States and other Parties to the Interim Fur Seal Convention are insufficient to identify and eliminate or mitigate the cause or causes of the population decline soon, the population could decline to a point where it would be in danger of extinction in the foreseeable future and should therefore be considered threatened at the present time. The risk of such a decline could, of course, be increased by offshore oil and gas development, fishery development, port construction, and other activities in and near the species' range, particularly on or around the Pribilof Islands, if and when such activities occur. Given these circumstances, regardless of any uncertainty concerning the possible role of the subadult male harvest, the Commission concluded that a designation of threatened would be appropriate and that the development of a recovery plan, which such a designation would require, would be beneficial.

Renegotiation of the Convention

A Protocol to extend the Interim Fur Seal Convention through October 1988 was signed by the four Party Governments on 12 October 1984 and is subject to ratification or other forms of acceptance by the Governments involved. In a joint statement accompanying the signed Protocol, the Parties made particular note of their concern about the decline of the fur seal population, current economic conditions, and other problems of fur seal conservation and utilization. In the statement, the Parties indicated that: (1) additional research is needed on the problem of entanglement of fur seals in lost or discarded fishing nets, fishing gear, and other debris; (2) in accordance with the London Dumping Convention and in conformity with their respective national laws, the Party Governments will take appropriate measures to

prohibit the disposal at sea in the Convention area of synthetic materials, such as fishing nets and gear, ropes, packing bands, and other debris that might lead to the entanglement of fur seals; (3) in the event of unforeseen circumstances, the countries of fur seal origin may take measures as necessary for the conservation and management of fur seals, after consultations with other Parties; and (4) within two years, all Parties will review the Convention in light of issues raised in the statement to determine if modifications or renegotiation of the Convention is desirable.

As discussed above, the Protocol must be submitted to the U.S. Senate for ratification. It is expected that the document will be transmitted to the Senate for this purpose early in 1985. In support of this requirement, the National Marine Fisheries Service distributed a draft environmental impact statement on the proposed action in October 1983. As discussed in the previous Annual Report, the Marine Mammal Commission, in consultation with its Committee of Scientific Advisors, reviewed the Statement and, by letter of 11 January 1984, provided comments to the Service. In its comments, the Commission noted its belief that the proposed action to extend the Interim Convention would be the preferred action if, in fact, it were to lead to the establishment of research, education, and enforcement programs which would assure prompt resolution of uncertainties concerning the rate and possible causes of the current decline of the Pribilof Island fur seal population and if it were to assure that appropriate and necessary steps would be promptly taken to effectively stop and reverse the decline. The Commission therefore recommended that the draft environmental impact statement be revised and expanded to include: (1) a more accurate description of the proposed modifications to the Convention text; (2) data and analysis to support the conclusion that termination of the subadult male harvest could impede recovery of the population; (3) further assessment of the potential effects of pelagic sealing in areas outside U.S. jurisdiction and the probability of such sealing occurring if the Convention were allowed to expire; and (4) a more complete assessment of the possible effects of terminating the fur seal harvest on residents of the Pribilof Islands.

The Service is expected to issue its final environmental impact statement on the extension of the Interim Convention early in 1985 and, at that time, will seek the advice and consent of the U.S. Senate on the Protocol agreed to by the Party Governments.

Convention On International Trade
in Endangered Species of Wild Fauna and Flora (CITES)

The United States is party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, a Convention designed to control trade in animal and plant species which are or may become threatened with extinction. The extent of trade control depends upon the extent to which the species is endangered, as reflected by inclusion on one of three appendices to the Convention. Changes in the species listed in the appendices can be made by agreement of the Parties and, in the case of Appendix III, by individual Parties.

Appendix I includes species threatened with extinction that are or may be affected by trade. Appendix II includes species that, although not necessarily currently threatened with extinction, may become so unless trade in them is strictly controlled. Appendix II also includes non-endangered species that must be regulated so that trade in "look-alike" species that are threatened with extinction may be brought under effective control. Appendix III includes species that any Party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exportation and for which the Party needs the cooperation of other Parties in controlling trade.

Overall responsibility for coordinating the development of U.S. positions and implementation of the provisions of the Convention is vested in the Fish and Wildlife Service. As was discussed in the Commission's Annual Report for calendar year 1983, the Service consulted with the Commission and others in preparation for the biennial meeting of the Parties to the Convention, held from 19 to 30 April 1983.

The Fish and Wildlife Service is presently engaged in the process of preparing the United States' positions for the 1985 biennial meeting, to be held from 22 April to 3 May 1985 in Buenos Aires, Argentina. The Service has proposed to delete the northern elephant seal (Mirounga angustirostris) from Appendix II of the Convention on the grounds that it is not potentially threatened and is not in trade. This proposal was based on a recommendation from the National Marine Fisheries Service. The Commission will consult with the Fish and Wildlife Service, the National Marine Fisheries Service, and others during 1985 concerning this and other matters related to the Convention and the upcoming biennial meeting.

CHAPTER V

MARINE MAMMAL/FISHERY INTERACTIONS

Interactions between marine mammals and fishermen have sometimes presented difficult problems for those concerned with protecting and conserving marine mammal populations while making wise use of available fish resources. One of the most widely known examples of this problem -- the interactions between the yellowfin tuna purse seine fishery and porpoises in the eastern tropical Pacific Ocean -- was among the factors that led Congress to pass the Marine Mammal Protection Act. While substantial progress has been made in recent years to reduce porpoise mortality incidental to the tuna fishery, other serious problems have emerged.

Over the past several years, the Marine Mammal Commission has devoted considerable attention and funding to efforts to identify, assess, and resolve marine mammal/fishery conflicts. These activities have been described in previous Annual Reports. This Chapter provides a brief summary of earlier Commission efforts in the area and a description of its activities during calendar year 1984.

Background

Interactions between marine mammals and fisheries can take various forms -- sometimes to the detriment of the marine mammal population involved and other times with more impact on the involved fishery. In the former case, marine mammals can be killed or injured, either inadvertently or deliberately, during fishing operations or by becoming entangled in lost or discarded fishing gear or other marine debris. In the latter case, fishermen may be affected when marine mammals take or damage fish on lines or in traps and nets or when they accidentally become entangled and damage or destroy fishing gear. In some areas, marine mammals and

fishermen may compete for the same fish and shellfish resources.

Prior to enactment of the Marine Mammal Protection Act, regulated or unregulated hunting, bounty programs, and various forms of harassment were used in a number of areas in an attempt to eliminate or reduce marine mammal-caused gear damage, fish damage, and fish loss. Passage of the Act in 1972 placed a moratorium on such activities and, in the ensuing years, animals in some areas appear to have become more numerous and/or bolder in their approach to fishermen and fishing gear.

Although the tuna-porpoise issue is the most widely known marine mammal/fishery interaction problem, it was apparent by the mid-1970s that other marine mammal/fishery conflicts warranted attention as well. In 1977, the Commission sponsored a workshop to examine some of these interactions, and workshop results confirmed that there were potentially acute problems in the Pacific Northwest involving seals, sea lions, and the salmon gill net fisheries in the Copper River Delta area of Alaska and the Columbia River in Washington and Oregon. On the basis of the workshop recommendations, the Commission, among other things, provided funds to initiate a study of marine mammal/fishery interactions in the Copper River Delta/Prince William Sound area of Alaska. The results of the study, completed in 1978, confirmed that harbor seals and several other marine mammal species were affecting and being affected by the salmon gill net fishery and indicated several measures that could be taken by fishermen to reduce the interactions.

The Commission also provided funds to develop a plan to start investigating apparent conflicts in the Columbia River and adjacent waters and a study was begun in 1980 by the Washington Department of Game, in cooperation with the Oregon Department of Fish and Wildlife, with funding provided by the National Marine Fisheries Service. Following a review of the first year's results, the Commission in 1981 transferred funds to the Service to support additional work on the number, movements, and diets of harbor seals in the Columbia River and adjacent areas.

At about this time, the Commission and others became concerned that the several on-going studies of marine mammal/fishery interactions might not be providing either comparable data or the types and quality of information needed to resolve the problems. This concern resulted in a Commission decision to convene a follow-up workshop in October 1981 to

review and coordinate on-going field studies to determine whether, and if so in what ways, on-going and planned studies should be modified or expanded to better provide the needed information.

Based on the workshop results, the Commission concluded that on-going research by the Washington Department of Game should be augmented to expedite identification and evaluation of possible means for mitigating as well as documenting marine mammal/fishery conflicts in the Columbia River and adjacent waters. In August 1982, the Commission again transferred funds to the National Marine Fisheries Service, this time to support development of a research and studies plan for identifying the most effective methods for mitigating marine mammal/fishery conflicts in the Columbia River. In February 1983, the Commission reviewed and provided comments on the draft of the third annual project report.

Interactions off California

Efforts to determine the nature and extent of marine mammal/fishery interactions in California coastal waters have been underway since 1979 as a cooperative project of the National Marine Fisheries Service and the California Department of Fish and Game. These investigations, reviewed during the previously discussed 1981 workshop sponsored by the Commission, were again examined in 1982 during a Commission review of the marine mammal research programs being conducted or supported by the Southwest Fisheries Center of the National Marine Fisheries Service.

At the 1982 program review, it was noted that: gill netting is a cheap, non-labor-intensive way of fishing that has attracted many immigrant as well as established fishermen; the amount of gill and trammel net fishing and the number of fishermen using entangling-type nets has increased dramatically in central and northern California since 1979; and incidental marine mammal take has increased accordingly. For a limited period during 1982, gill netting was prohibited in Monterey Bay because of large numbers of sea birds being caught and killed in the nets and this apparently caused a number of gill net boats to shift fishing operations north to Marin, San Francisco, and San Mateo Counties. As a result, substantial numbers of harbor porpoise were killed in the nets, especially those set for halibut and white croaker. Elsewhere along the California coast, pinnipeds, small cetaceans, and sea otters were being killed in gill and trammel nets as well.

The nature and extent of the incidental take and measures that possibly could be taken to avoid or reduce it were not clear. Therefore, in 1982, the Commission provided funds to the California Department of Fish and Game to continue and expand the Department's efforts to better determine when, where, how, and how many sea otters, harbor porpoise, and other marine mammals were being caught and killed in coastal gill and trammel net fisheries. Because of State-imposed hiring restrictions, the Department was not able to begin using the funds provided by the Commission until the second half of 1983. To assure continued observation of gill and trammel net fisheries, in at least part of the California sea otter range, the Commission, as noted in Chapter III and in previous Annual Reports, contracted directly with several investigators to conduct periodic observations of set net fisheries in Morro and Monterey Bays.

Data from the Commission-sponsored studies and studies conducted by the California Department of Fish and Game confirmed that significant numbers of sea otters, harbor porpoise, harbor seals, and other non-target species were being caught and killed. The data also suggested that incidental take could be preventing or impairing recovery of the California sea otter population. As noted in the previous Annual Report, the Commission conducted a general sea otter program review in August 1983 and, by letter of 14 September 1983, recommended that the Fish and Wildlife Service, among other things, take steps to expedite assessment of the level of incidental sea otter mortality and actions necessary to eliminate or significantly reduce the incidental take. These and subsequent efforts to facilitate assessment and elimination or reduction of the incidental take of sea otters in coastal gill net fisheries are described in more detail in Chapter VII of this Report.

As noted earlier, incidental take of harbor porpoise in areas north of Monterey Bay increased substantially following the 1982 prohibition on gill netting in the Bay. Because of this increase, the Commission, by letter of 10 November 1983, recommended that the National Marine Fisheries Service consult with the California Department of Fish and Game to cooperatively assist in the development and implementation of a strategy to better assess and resolve the problem. The Service was aware of the problem and, as noted in Chapter VII, initiated surveys to assess the status of the affected porpoise stock(s) and consulted with the California Department of Fish and Game on proposed State legislation to: prohibit the use of gill nets in areas off San Mateo, San Francisco, and Marin Counties; restrict the length of gill

nets authorized to be used north of Point Sur, Monterey County; and establish a moratorium on issuing new permits for gill net fishing north of Point Sur.

In July 1984, the State of California enacted legislation restricting the use of gill nets in a number of areas from Point Reyes to Monterey Bay. Fishery observations and marine mammal stranding data indicate that the restrictions have not eliminated, and may not have reduced, the incidental take of harbor porpoise, harbor seals, and other marine mammals in the aforementioned areas. In addition, since they do not apply to areas south of Monterey Bay, which include most of the California sea otter range, the gill net restrictions will not eliminate or reduce the incidental take of sea otters and other marine mammals in areas south of Monterey Bay.

At the end of 1984, the Commission was consulting with the National Marine Fisheries Service, the Fish and Wildlife Service, the California Department of Fish and Game, and others to expedite identification and implementation of additional measures needed to assess, monitor, and protect sea otter, harbor porpoise, and other marine mammal populations in California coastal waters.

Interactions in the Southeastern Bering Sea

The Bering Sea is one of the world's richest fishing grounds and supports a diverse assemblage of marine mammals. The continued expansion of both domestic and foreign fisheries in the area since the mid-1960s has focused attention on possible competition between marine mammals and fishermen for the same fish and shellfish resources.

Because of the potential interactions, the Commission, in 1980, initiated cooperative efforts with the North Pacific Fishery Management Council to develop and implement an ecosystem approach to the management of marine mammals and fishery resources in the area. As part of this effort, the Commission and the Council cooperatively supported a review of existing information concerning the demography and food habits of marine mammals in the Bering Sea and, as discussed in the previous Annual Report, jointly supported a Workshop on Biological Interactions Among Marine Mammals and Commercial Fisheries in the Southeastern Bering Sea.

The winter joint venture fishery in Shelikof Strait, Alaska, targets on pollack and has grown from a catch of about 900 metric tons in 1980 to more than 130,000 metric

tons in 1983. Steller sea lions occur in the area and, in 1982 and 1983, respectively, an estimated 1,392 and 222 animals were taken incidentally during fishing operations. This take could cause a population decline and, in 1983, the Commission, the North Pacific Fishery Management Council, and the National Marine Fisheries Service provided funds to the Alaska Department of Fish and Game to do a count of Steller sea lion pups in nearby rookeries for comparison with similar counts made in 1978 and 1979. Preliminary analysis of data from the count, done in June 1984, suggests that there is an on-going decline in the size of Steller sea lion pupping colonies in the Shelikof Strait area.

Additional data presented during a 13-15 November 1984 review of the National Marine Mammal Laboratory's research program indicate that the Steller sea lion population(s) in the eastern Aleutian Islands has declined more than 50 percent over the past several years. Little is being done to identify and eliminate the cause of the decline and, in its 11 December letter commenting on the program review, the Commission recommended that the Service expedite efforts to assess and resolve the problem and, if necessary, re-orient research priorities to do so.

In 1985, the Commission will continue to work with the North Pacific Fishery Management Council, the National Marine Fisheries Service, the Alaska Department of Fish and Game, and other responsible and interested parties to facilitate definition and resolution of possible marine mammal/fishery conflicts in the southeastern Bering Sea and elsewhere off Alaska.

Interactions off Hawaii

Information reviewed during the Commission-sponsored workshop on marine mammal/fishery interactions held in December 1977 indicated that several species of porpoise occasionally take bait, damage or take caught fish, or otherwise interfere with longline, handline, and troll fisheries for tuna and other fish in Hawaiian waters. Staff from the Honolulu Laboratory of the National Marine Fisheries Service subsequently conducted a number of surveys and experiments to better determine the nature and extent of the damage being done by the porpoise and steps that might be taken to prevent or reduce it.

During the Commission's meeting in Honolulu in February 1983, several fishermen indicated that the incidence of interactions had increased substantially in several areas and

that some fishermen and fisheries were suffering substantial economic loss. As a result of these discussions, the Commission provided funds to compile and summarize existing data and, on 30 November 1983, convened a meeting of knowledgeable and interested parties to review the existing data and to identify steps that may be necessary and possible to better document and/or mitigate marine mammal/fishery interactions in Hawaii.

A draft meeting report was prepared and distributed in 1984, but no further action was taken to better document or determine how to avoid or mitigate the problems. In 1985, the Commission will consult with the National Marine Fisheries Service, the affected fishermen, and others to determine what if any follow-up actions may be needed.

Interactions off the Southeastern and Gulf States

In recent years, there have been a number of unsubstantiated reports that bottlenose dolphins and other marine mammals are affecting and being affected by fisheries in the coastal waters off the southeastern and Gulf states. To determine the nature, location, and scope of possible problems, the Commission, as noted in Chapter III, provided funds in 1984 to survey fishermen, researchers, and others who routinely work in the coastal waters of the Gulf and southeastern states and should be aware of interactions.

In 1985, the Commission, in consultation with its Committee of Scientific Advisors, will review the survey results and, as appropriate, advise the National Marine Fisheries Service of any follow-up studies or mitigation measures that may be necessary.

Entanglement in Lost or Discarded Fishing Gear

The tendency of marine mammals to become entangled in net fragments, packing bands, and other debris lost or discarded at sea has been recognized for many years. While a variety of marine mammals are affected, the problem in the North Pacific appears to be particularly serious for the North Pacific fur seal and the Hawaiian monk seal. During the past several years, data analyses have indicated that entanglement may be a significant cause of both fur seal mortality and the on-going decline of the northern fur seal population. In addition, incidents of entanglement of the Hawaiian monk seal indicate that the problem is significant

for that species as well. Furthermore, data and information from other of the world's oceans show that the problem is, in fact, global.

Background -- For at least the past decade, the North Pacific Fur Seal Commission has been aware of seals becoming entangled with material lost or discarded by fishermen. In 1975, the Fur Seal Commission's Standing Scientific Committee repeated its previously stated concern about the entanglement problem and noted that, on the Pribilof Island of St. Paul, the incidence of entangled fur seals had increased nearly fourfold between 1967 and 1975. During the following years, the four nations party to the Fur Seal Convention -- Canada, Japan, the United States, and the Soviet Union -- attempted to check this growing problem by distributing posters, brochures, and other educational material to the fishing industries involved in the North Pacific. They also tried, in some areas, to clear beaches of debris considered dangerous to fur seals and other marine life.

By 1982, however, it was apparent that these efforts had not diminished the rate of fur seal entanglement and that the impact of entanglement was more serious than had been realized. As described in the Marine Mammal Commission's Annual Report for calendar year 1982, a data analysis carried out in preparation for the April 1982 meeting of the Fur Seal Commission indicated that entanglement of fur seals may be a far more significant mortality factor than had been previously believed and was possibly a primary cause of the on-going decline in the North Pacific fur seal population. It was estimated at that time that the annual mortality rate due to entanglement might be more than five percent of the population as a whole.

The Marine Mammal Commission, gravely concerned by these estimates, participated in the National Marine Fisheries Service's preparations for the April 1982 meeting of the Fur Seal Commission and prepared a U.S. position paper on the entanglement issue. Throughout 1982 and 1983, the Commission worked with the Service, the Department of State, and others to encourage the Parties to the North Pacific Fur Seal Commission to take all possible steps to assess and eliminate the entanglement problem.

Preparations for an Entanglement Workshop -- In August 1982, at the request of the Commission, a review of several marine mammal programs being conducted by the National Marine Fisheries Service was held at the Southwest Fisheries Center. At that meeting, Service scientists reviewed documented

reports of Hawaiian monk seal entanglement in fishing gear which indicated that entanglement in lost or discarded fishing gear could be a cause of substantial monk seal mortality as well. The net entanglement problem also was raised in other contexts during the two-day program review, and participants concluded that it would be of value to promptly convene a workshop to address the issue of entanglement. The Service offered to proceed with planning such a workshop.

After further discussion, the Commission wrote to the Service's Southwest Regional Office on 22 September 1982 expressing its support for the approach being taken by the Service and offering to contribute Commission funds to assist in organizing the workshop. By early in 1983, however, it was apparent that no progress was being realized. Therefore, planning and progress with respect to a net entanglement workshop were reviewed in detail at the February 1983 meeting of the Commission and its Committee of Scientific Advisors. At that time, the Commission also circulated draft terms of reference for a workshop designed to determine: the types, probable sources, and amounts of fishing gear that have been and are being lost, discarded, or otherwise accumulated each year in various areas; the species and numbers of marine mammals, sea birds, turtles, and other animals apparently being caught and killed in such gear; steps that should be taken to prevent, reduce, and/or better document mortality from entanglement; and domestic and international authorities that might be of use in addressing this problem. Subsequent to its meeting in Honolulu, the Commission, in consultation with its Committee of Scientific Advisors, continued to pursue the workshop idea with Service officials. On 13 April 1983, the Commission wrote to the Service and summarized points on which agreement had been reached during previous discussions.

In its 13 April letter, the Commission noted, among other things, that: because of the gravity of the entanglement situation, particularly with respect to the North Pacific fur seal, time was of the essence; a workshop should be held in August 1983 in Hawaii; the workshop should be international in character and participation should be sought from Japan, Taiwan, South Korea, Canada, and the Soviet Union; the Service should seek commitments for support of the workshop; the possibility of having the Hawaii Sea Grant Programs run the workshop should be considered; and the Service should take steps to organize the meeting as quickly as possible. In its letter, the Commission offered to provide funds to the Service to convene a steering group to immediately begin planning for the workshop.

The letter was accompanied by a detailed scope of work which noted, among other points, that the ultimate objective of the workshop should be to identify actions that could be taken to prevent further dumping and, to the extent possible, loss of materials in which fur seals and other marine mammals could become entangled as well as to clean up or reduce the amount of accumulated debris in areas inhabited by fur seals and other marine mammals.

By letter of 21 April 1983, the Service indicated that it shared the Commission's desire for prompt and effective action to deal with the serious and continuing decline of the fur seal population. The Service also indicated that it planned to consult further with the Commission and to organize and convene a workshop in August 1983 to better assess the probable sources, extent, and effects of lost or discarded fishing gear, packing material, and other debris in the North Pacific and to identify ways in which entanglement of marine mammals and other marine species could be eliminated or reduced. The Service also indicated that it planned: to promulgate and enforce regulations for both domestic and foreign fishermen to prohibit the discard of net material and other debris; to direct U.S. observers on foreign vessels to notify captains of these prohibitions; and to explore the feasibility of establishing a bounty system and/or other arrangements to discourage the discard and encourage the recovery of such material.

The Service did not convene the workshop in August 1983. It did, however, hold a briefing on 27 September for representatives of Canada, Japan, the Republic of Korea, Taiwan, and the Soviet Union at which Service staff presented recent data on the extent of fur seal losses due to entanglement and the Commission set forth the need for and terms of reference for an international workshop of technical and scientific experts to address the issues.

On 30 September, the Commission wrote the Service conveying its understanding of the results of the 27 September briefing. The Commission noted that those present appeared favorably disposed to the proposed terms of reference and that there appeared to be consensus among participating nations that an international, non-governmental workshop of scientific and technical experts was needed and should be convened. The Commission also noted that, at the request of foreign participants in the briefing, it would send its draft terms of reference for a workshop to them.

On 18 November 1983, the Commission again wrote to the Service, stressing the extremely serious nature of the entanglement problem and repeating its offer to contribute funds for purposes of planning the workshop. Among other points, the Commission also recommended that: the Service take prompt steps to plan, organize, and convene an international workshop of experts to address the net entanglement issue; the National Oceanic and Atmospheric Administration's Office of General Counsel identify and evaluate all domestic and international authorities that might be used to prevent further dumping of gear and debris and to facilitate recovery of materials already discarded; the Service request that the Department of State take necessary steps to gather similar information on the domestic authorities of other involved countries; the Service undertake studies of ways to mark nets to show their provenance in the event of recovery; the Service immediately start identifying critical data gaps so as to develop such programs as may be needed to determine the types, quantity, size, and distribution of net fragments and other debris and the likely fate of these materials; and the Service assign a high-level administrator/scientist the responsibility for overseeing and coordinating all aspects of an organized, systematic attack on the net entanglement problem.

By letter of 23 December 1983, the Service responded to the Commission's November letter noting that: it would consider the Commission's suggestions; it concurred with the Commission that the task of greatest immediate importance was to convene a net entanglement workshop; the Honolulu Laboratory had agreed to assume planning responsibility; the Sea Grant Programs Office of the University of Hawaii would be participating; the Commission's offer of funds was accepted; and the money should be transferred to the Hawaii Sea Grant Programs Office. The Commission subsequently transferred the funds to the Sea Grant Programs Office at the University of Hawaii for a steering group meeting.

On 30 December, the Commission responded to the Service's 23 December letter noting that it was not adequate and that a further, detailed response to each recommendation contained in the Commission's 18 November letter was needed.

Activities During 1984

On 9 February 1984, the National Marine Fisheries Service provided further information in response to the Commission's 18 November and 30 December 1983 letters. Among other things, the letter noted that a Steering Group for the

Workshop had been selected; funding support for the Workshop would be provided based on the results of the first meeting of the Steering Group; the National Oceanic and Atmospheric Administration's General Counsel's Office was assembling a list of domestic and international authorities relevant to the entanglement problem; the State Department had been asked to request information on relevant domestic authorities from other countries; and implementation of a carefully developed program addressing most of the Commission's specific research and management actions would be reviewed and considered during and after a net entanglement workshop.

Recognizing that the success of the Workshop would depend, in no small measure, on the adequacy of preparations for it and concerned that the Service's efforts to generate a list rather than a careful evaluation of domestic and international authorities would not be particularly helpful as a background document for Workshop participants, the Commission contracted for a review and analysis of all domestic and international authorities that might be used to prevent dumping and to facilitate recovery of lost and discarded fishing gear and other debris. In addition, to help document the magnitude of the problem, the Commission provided funds to the North Pacific Fishery Management Council to support beach surveys along certain southeast Alaska shorelines for derelict fishing gear and other debris. These studies are discussed in greater detail in Chapter III of this Report.

Also in 1984, the National Marine Pollution Program Office of the National Oceanic and Atmospheric Administration convened a Workshop to assist it in identifying priority marine pollution issues to be addressed in the third edition of the "Federal Plan for Ocean Pollution Research, Development and Monitoring." Representatives of the Commission participated in the workshop, which was held 22-24 May 1984 in Easton, Maryland. During the meeting, Commission representatives identified the entanglement of marine organisms, especially marine mammals, sea birds, and turtles in ghost nets, traps, and other debris, as one of the issues which the five-year plan should recognize and address. The plan will be prepared in 1985 and the Commission expects to work with the National Marine Pollution Program Office to ensure that the problem of lost and discarded fishing gear and other debris is recognized and appropriately reflected in the Plan as a national marine pollution issue.

Workshop on the Fate and Impact of Marine Debris

The year 1984 was a year of positive changes with respect to the National Marine Fisheries Service's efforts to address the net entanglement problem. Immediate and beneficial results were realized as soon as responsibility for the Workshop on the Fate and Impact of Marine Debris was firmly vested with the Director of the Service's Honolulu Laboratory. Under his direction, a Workshop Steering Group was established; it was composed of representatives of the North Pacific Fishery Management Council, the Marine Mammal Commission, the Sea Grant College Programs of the University of Hawaii, and other parts of the National Marine Fisheries Service. The Steering Group meet twice and developed careful plans for the successful Workshop which took place 27-29 November 1984 in Honolulu.

Workshop participants, convened to address the scientific and technical aspects of various marine debris problems and their impacts on marine resources, set about this task by: (1) reviewing the state of knowledge on the fate and impact of marine debris to determine the extent of the problem; (2) identifying and making recommendations on possible mitigating actions; and (3) identifying and making recommendations on future research needs. While the steering group recognized that active fishing operations may pose serious threats to marine species, workshop participants focused their attention on the "ghost fishing" problem. This limitation on the scope of the problem, as well as a geographical limitation to the North Pacific, was intentional on the part of the convenors. It was felt that the gains to be realized from holding a narrowly focused workshop upon which subsequent activities could logically be built probably far exceeded what might be realized, were an attempt made to tackle all active and passive entanglement issues on a global basis.

Workshop Sponsorship, Participation, and Organization --
Workshop sponsors were: the U.S. Fish and Wildlife Service, the Marine Mammal Commission, the National Marine Fisheries Service, the North Pacific Fishery Management Council, the Pacific Fishery Management Council, the Pacific Sea Grant College Programs, and the Western Pacific Fishery Management Council.

Participants included representatives of these groups as well as scientists from a broad range of disciplines; administrative, scientific, and management personnel from Federal and state offices; representatives of the fishing industry, the academic community, conservation groups, and aquaria; and scientific, technical, and management

representatives from Canada, Japan, New Zealand, the Republic of China (Taiwan), and the Republic of Korea.

The Workshop opened with a review of the existing conventions, laws, and regulations that could provide a legal framework for dealing with the problem of marine debris. As a contribution to this section, the Commission provided a contract report entitled "United States and International Authorities Applicable to Entanglement of Marine Mammals and Other Organisms in Lost or Discarded Fishing Gear and Other Debris." The legal discussion was followed by background and experience papers given in plenary sessions on the following topics: the source and quantification of marine debris; its impact on marine resources; and the fate of marine debris in the world's oceans. Because of broad public interest in the topic, particularly as regards the entanglement issue, a fourth general session was held which focused on identification of management needs.

Participants then met in four separate working groups to discuss the results of the general sessions and to formulate recommendations on needed actions. At a final plenary session, working group chairmen summarized the results of these deliberations for consideration by all participants.

Summary of Conclusions and Findings -- The Working Group on Source and Quantification of Marine Debris recommended that steps be taken to: initiate a program to educate the fishing industry on the extent of the problem, including mortality of marine species and threat to human safety; investigate means for regulating sizes and types of mesh used in those sections of nets likely to be lost or replaced at sea and initiate steps to halt the ocean disposal of webbing and other harmful debris; develop charts identifying known snags that could contribute to net loss; devise a system to code fishing nets to help identify the origin of derelict nets and areas where lost; impose a requirement to install biodegradable (e.g., vegetable fiber) hangings or escape panels on fishing pots; encourage a U.S. commitment to efforts to limit international waste disposal at sea; and expand efforts to involve the public in clean-up projects on beaches.

The Working Group also identified research that could lead to mitigating measures and recommended that steps be taken to: explore further the hypothesis regarding fur seal mortality resulting from entanglement in relation to other potential sources of mortality, such as disease, that could be contributing to the documented population decline; expand the

study of wintering areas of birds; conduct experiments to study the fate of lost fishing nets, including where nets go, how they are broken down by natural forces, and how long they may pose a hazard to marine life; confirm sources of major debris and investigate its distribution in the marine environment; compile a catalog to help identify net components, mesh characteristics, and fishing lines; collect information from the fishing industry on derelict fishing nets and disablement of vessels by marine litter; encourage use of submersible research vessels to study impacts of lost or abandoned fishing gear on the seafloor; seek support of other fishing nations, particularly Far Eastern countries fishing in the U.S. Exclusive Economic Zone, in investigating the extent of net loss in the high-seas gill net fisheries for squid, and obtain available information on net loss from pertinent international organizations; evaluate the degree to which entanglement constitutes a problem for marine species in other major trawling areas throughout the world; and investigate potential benefits of marine debris, such as its tendency to concentrate finfish that could serve as food resources for marine mammals, sea birds, and commercial fishing operations.

The Working Group on Impact of Debris on Resources, agreeing on the need to address questions related to the kinds, weight, and spatial distribution of debris, the fate of different types of derelict gear and discarded materials in different locales, and the rates of gear loss for major fisheries, recommended that: a net identification program be implemented to obtain this information; educational programs be initiated aimed at reducing the discard and loss of debris; programs be undertaken to clean up beaches where debris is concentrated; the plastics industry be encouraged to develop materials that will degrade more rapidly; and that a reference collection of different types of debris, particularly nets, be developed.

With respect to North Pacific fur seals, the Group concluded that further information is needed to confirm the level of fur seal mortality resulting from entanglement, to determine if fur seals become entangled in netting of all sizes in proportion to its frequency, to compare the distribution of netting at sea and on beaches, and to measure the drag effect on seals entangled in debris and any impact on the animals' ability to forage. To accomplish this, the Group recommended: radio-tracking experiments to track entangled seals; placement of marked debris near rookery islands to determine its fate; additional beach surveys to document quantity and types of debris; sampling programs to

determine distribution of debris at sea; and comparison of impacts on fur seals with those on other pinnipeds.

With respect to impacts on fisheries, both because of increased fish mortality and interference with fishing operations (vessel fouling), the Group recommended efforts to: obtain information from and cooperation of the fishing industry on this matter; extend population dynamics models to evaluate fish loss; and evaluate net modification efforts by replacing critical parts with biodegradable materials or weighting nets to cause them to float or sink once they become derelict.

With respect to the Hawaiian monk seal and the fact that trawl net fragments are an apparent source of entanglement for this endangered species, the Group recommended that studies be undertaken to obtain quantitative data on effects of debris on seals, that continuous efforts be made to remove debris from beaches and lagoons inhabited by monk seals in order to avoid adverse impacts, and that population monitoring programs be continued.

In its consideration of marine birds, the Group noted that: while birds have been observed entangled in fish netting and lines, the problem appears to be related primarily to gear being actively fished and not to lost or discarded material; ingestion of plastic materials is a major problem that appears to have most severe implications for albatross, shearwaters, and parakeet auklets; population dynamics studies are needed to determine the extent of this impact on populations; physiological studies are needed to assess impacts upon individuals; possible hydrocarbon contamination resulting from plastic ingestion should be studied; some mitigating effect may be realized by halting effluent dumping by plastics manufacturers; and ocean surveys should be done to assess the extent of plastic pollution and collect dead birds for examination.

The Working Group also considered marine turtles. It noted that while entanglement of turtles has been observed, ingestion of plastic debris may be a more serious problem. The Group suggested the expansion of stranding networks and stranded animal examinations, physiological studies to determine the effects of plastic ingestion on turtles, and the use of ships of opportunity to collect turtles for stomach analysis.

While the Working Group noted that cetaceans on occasion become entangled in fishing gear, it is not always clear whether

such incidents involve debris or gear being used in fisheries. In either case, however, marine debris does not appear to pose as major a problem for cetaceans as it does for pinnipeds.

The Working Group on Fate of Debris concluded that, while the extent, nature, and fate of marine debris are not well defined, debris is clearly a global problem. The Group also concluded that: research is needed to develop data and information on the quantity, type, distribution, and change through time of debris now in the world ocean; increased effort is needed to better understand how the threat potential of existing marine debris may change with time as a result of mechanical, chemical, and biological changes, as well as the extent to which benthic and beached debris constitute a threat; the mechanisms of entanglement, ingestion, or wounding of individuals need to be better understood, as do resulting rates of mortality and other effects; the impact of demersal gill nets on marine fauna should be thoroughly examined; historical meteorological data should be examined to determine its value as an index of the drift of marine debris; the exchange of ideas, data, and techniques regarding marine debris should be expedited among the international community; the potential packing band threat might be reduced by requiring that each band be stamped with instructions that it be cut before disposal or that each band have snap-off or biodegradable weak links; the use of biodegradable materials should be encouraged in products that may end up as marine debris; and present programs to remove and quantify marine debris from monk seal habitat should be continued.

The Working Group on Management Needs recommended, with respect to program management, that the National Marine Fisheries Service should immediately designate a person of appropriate stature as program coordinator for the marine debris problem and that a mechanism should be established for periodic review and monitoring of overall program progress.

With respect to public information and education, the Group recommended that cooperative efforts be initiated with fisheries organizations, the regional fishery management councils, appropriate national and international organizations and relevant industries to create a comprehensive information and education program for U.S. and foreign fishermen working within the U.S. Fishery Conservation Zone.

In its consideration of technology, the Group recommended that specific actions be taken to: (1) develop a

reference catalog of netting materials; (2) develop and implement improved or alternative methods of fishing that will diminish the likelihood of gear loss; (3) encourage use of biodegradable materials and other gear alterations; (4) encourage development of economically attractive methods for recycling plastics retained at sea; (5) develop economical and effective systems to mark gear through color-coding or other means for retrieval and identification of sources of lost gear; (6) develop a system to facilitate and simplify means of retaining damaged gear onboard for onshore disposal; and (7) promote modification of plastic packing bands to reduce the likelihood of entanglement.

In the area of debris clean-up, the Group recommended immediate action to: (1) undertake clean-up programs to remove existing debris from both the shoreline and the water column; (2) direct priority attention to areas where density of debris already affects endangered, threatened, or commercially valuable species; (3) require that all potentially harmful debris be retained on board vessels until appropriate disposal is possible; (4) institute an incentive program to encourage removal of existing debris and limit discard of additional debris; and (5) develop means to assure the proper disposal of unwanted materials in a non-harmful manner.

With respect to regulations, the Group noted that certain regulatory actions should be implemented and other possible measures explored to reduce or eliminate impacts of marine debris. Specifically, the Group recommended that actions be taken to: (1) apply existing treaties, laws, and programs to minimize and, if possible, halt the dumping of harmful debris; (2) encourage other nations to examine their domestic authorities for similar purposes; (3) review Federal gear damage compensation programs to identify ways to decrease net losses; (4) review existing rulemaking authority under the Fishermen's Protective Act to help reduce gear loss; (5) review the Magnuson Fishery Conservation and Management Act to identify additional steps that can be taken to reduce gear disposal at sea and investigate the possibility of amending this Act for such purposes; (6) advise the fishing industry that intentional disposal of fishing gear in the U.S. territorial sea is prohibited under the Clean Water Act; (7) promote U.S. ratification of the optional Annex V of the Convention for the Prevention of Pollution from Ships and encourage other nations to become signatories; (8) consider using "regional seas" agreements under the United Nations Environmental Program to address the issue; (9) review existing U.S. treaties, laws, and relevant programs to determine other ways that they might be used to reduce

discard of debris from non-fishing sources both on land and at sea; and (10) consider additional positive and negative incentives to reduce the discard of debris into the marine environment.

The Group suggested that, in the area of identification of problems and impacts, efforts should be initiated to: (1) analyze existing data on impacts of non-biodegradable debris from fisheries (both U.S. and foreign) on marine organisms in order to document the magnitude of the problem; (2) monitor rates of accumulation and natural removal of synthetic debris on selected beaches; (3) monitor information developed by stranding networks to determine level of entanglement; (4) develop and implement a standardized program to monitor debris ingestion and entanglement on a long-term basis; (5) undertake a reporting program to monitor entanglement of vessels in lost or discarded fishing gear; (6) monitor impact of lost or discarded fishing gear and other marine debris on marine mammals, birds, turtles, fish, and humans; (7) assess the type and quantity of debris lost in domestic and foreign fisheries with emphasis on trawl and pelagic drift gill net fisheries in the North Pacific; and (8) coordinate programs related to entanglement with programs related to incidental take.

As is obvious, many common threads appeared in the findings and determinations of all four Working Groups. There is no question that a serious problem exists which affects marine mammals, fishes, turtles, seabirds, and other marine organisms throughout the world. Furthermore, it is clear that a wide variety of scientific, technical, legal, and procedural actions can be taken to address these issues.

Thanks in no small measure to the dedication and competence of the Director of the Honolulu Laboratory of the National Marine Fisheries Service and the members of the Workshop Steering Group, as well as the substantial contributions of many people from this country and abroad, the National Marine Fisheries Service now has the necessary information base to allow it to move forward with vigor to effectively address the problem in 1985. The Marine Mammal Commission will continue to make every effort possible to assist the National Marine Fisheries Service and other organizations, both domestic and international, in their efforts to address this difficult issue.

CHAPTER VI

INCIDENTAL TAKE OF MARINE MAMMALS IN THE COURSE OF COMMERCIAL FISHING OPERATIONS

The Marine Mammal Protection Act directs the Secretaries of Commerce and the Interior, in consultation with the Commission, to develop regulations governing the incidental taking of marine mammals by persons subject to the jurisdiction of the United States and to develop effective international arrangements, through the Secretary of State, for the purpose of reducing the incidental taking of marine mammals to insignificant levels approaching a zero mortality and serious injury rate.

Although the incidental taking of marine mammals occurs in the course of several fisheries and involves several different species of marine mammals, the "tuna-porpoise" issue involving the incidental mortality and serious injury of porpoises entrapped in purse seine nets used by commercial yellowfin tuna fishermen has, over the past years, been the subject of the most intense concern, attention, and controversy. Of more recent concern has been the incidental taking of Dall's porpoises in the course of the Japanese salmon gill net fishery in the North Pacific Ocean, a portion of which occurs within the United States' 200-mile Fishery Conservation Zone, and the incidental take of southern sea otters in gill and trammel nets. The Commission's activities during 1984 relating to the tuna-porpoise and Dall's porpoise issues are discussed below. A discussion on the incidental take of southern sea otters is included in Chapter VII of this Report.

The Tuna-Porpoise Issue

Discussions of the Commission's past activities and a historical summary of the efforts to resolve this problem are presented in the Commission's previous Annual Reports. As

discussed below, the Commission, the National Marine Fisheries Service, the U.S. tuna industry, and others continued to devote substantial attention to the issue in 1984.

The 1984 Fishing Season

The National Marine Fisheries Service issued final regulations on 31 October 1980 establishing an annual allowable take (quota) of 20,500 animals for each of the five years, 1981-1985, and, on 7 December 1980, a general permit to take porpoise in compliance with the final regulations and quotas was issued to the American Tunaboat Association. The overall quota and individual stock quotas as well as the regulations and general permit were extended by Congress in the 1984 amendments to the Marine Mammal Protection Act (see Chapter II of this Report).

Estimates of the annual incidental take of porpoise by the U.S. tuna purse seine fleet since passage of the Marine Mammal Protection Act are listed below.

<u>Year</u>	<u>Estimated Kill and Serious Injury</u>
1972	368,600
1973	206,697
1974	147,437
1975	166,645
1976	108,740
1977	25,452
1978	19,366
1979	17,938
1980	15,305
1981	18,780
1982	22,736
1983	9,589
1984	[preliminary estimate] 17,732

The estimated mortality and serious injury in 1983 was well below the average in the preceding five years and may have been due to a decline in the total number of U.S. purse seiners fishing in the eastern tropical Pacific Ocean. The preliminary estimate for 1984 (a final estimate will not be available until May 1985) indicates that the level of mortality and serious injury in 1984 was nearer the levels in the years 1978-82, but still below the aggregate quota established in 1980.

The increase in the mortality and serious injury of porpoise in 1984, compared to 1983, was due at least in part to the return of much of the U.S. tuna purse seine fleet to the eastern Pacific in 1984. At the same time, it is likely that there has been a continuing increase in the number of foreign flag purse seiners fishing in the eastern tropical Pacific. Although there is no reliable information on the number or size of such vessels, where and how they are fishing, or the species and number of porpoise being killed or injured, there are indications that the mortality and injury of porpoise by foreign flag vessels is approaching or exceeding that by U.S. vessels. It is important, therefore, that efforts to better estimate and reduce the level of foreign kill be increased in 1985.

Research Activities and Research Planning

As noted in the previous Annual Report, the National Marine Fisheries Service established in 1983 four scientific panels to review the status of porpoise stocks as determined in 1979. These panels, which met several times during 1983 and 1984, also reviewed the results of several experimental programs and shipboard surveys that had been conducted since 1979. The Marine Mammal Commission participated in all four panels along with experts from the academic community, the fishing industry, and the Service.

However, as was pointed out in the previous Annual Report, incomplete information in at least two areas means that even the best scientific assessment of the status of stocks will have serious shortcomings. First, there is no reliable information on current incidental porpoise kill by Mexican or other foreign tuna purse seining vessels which account for an increasing share of the yellowfin fishing effort in the eastern tropical Pacific Ocean. Second, there is little reliable information on the possible adverse effects on porpoise of extensive pursuit, encirclement, and capture in purse seine nets. In addition, there remain long-standing differences of opinion about the present size of porpoise stocks and their relationship to pre-exploitation levels.

Because of the questions and differing views concerning the reliability of estimates of stock size and population trends, Congress amended the Marine Mammal Protection Act in 1984 to, among other things, legislatively reauthorize the general permit issued to the American Tunaboat Association on 7 December 1980 and due to expire on 31 December 1985.

Because of uncertainty concerning the status of several of the affected porpoise stocks and the possible effects of continued incidental take, the Act also was amended to require, among other things, that the National Marine Fisheries Service carry out a monitoring program aimed at detecting any changes in the size of the impacted porpoise stocks.

As an initial step in implementing the latter provision, the Service's Southwest Fisheries Center held two workshops in the autumn of 1984. The first of these, held on 18-19 September, dealt with policy issues and logistics requirements. The second workshop, held 1-2 November, reviewed a preliminary monitoring plan based on surveys conducted by research vessels. Commission representatives participated in both of these workshops.

There are several possible ways to carry out the monitoring program mandated by the Marine Mammal Protection Act amendment. They include the use of aircraft or research vessels to survey areas inhabited by the affected porpoise stocks and use of data provided either by fishermen or by observers placed aboard tuna purse seine vessels. However, there are unresolved differences between data obtained by various means and it is likely that further evaluation and calibration experiments will be required to resolve them. Preliminary analyses indicate that, no matter which methods are used, it may take four to eight years to confidently determine trends in the affected porpoise populations. Thus, it is critical that work be initiated as soon as possible.

During 1985, the Commission will continue to assist the the Service's Southwest Fisheries Center in determining the most cost-effective methods of monitoring the affected populations.

Litigation

Two major lawsuits relating to the tuna-porpoise regulations were decided during 1984.

On 12 December 1980, representatives of the U.S. tuna fishing fleet filed a lawsuit in the U.S. District Court for the Southern District of California (American Tunaboat Association v. Baldrige). Plaintiffs in the case alleged that the October 1980 decision of the Administrator of the National Oceanic and Atmospheric Administration establishing annual quotas and the tuna-porpoise regulations was illegal because, among other things, the recommendations of the

administrative law judge concerning mean school size, density, and range of the porpoise stocks were not adopted and the determination that the coastal spotted dolphin stock is depleted was improper. The plaintiffs alleged that, because the regulations and quotas were not based upon the best scientific evidence available, they were unlawful.

On 10 March 1982, the District Court ruled that the Administrator should have accepted the administrative law judge's determinations and that the Administrator's rejection of those determinations was unsupported by substantial evidence and was unlawful. The District Court granted the plaintiffs' motion for summary judgment and directed the Government to submit recalculations concerning the density and range of porpoise schools and the current status of the affected porpoise stocks based upon the recalculated density, range, and mean school size values. On 21 May 1982, the District Court denied the Government's motion for reconsideration and, on 25 June 1982, the Government appealed the District Court's decision to the U.S. Court of Appeals for the Ninth Circuit. On 8 June 1983, the appellate panel issued an order to withdraw the case from submission, pending a decision in the Balelo case, discussed below.

On 24 April 1984, the Ninth Circuit Court of Appeals issued an order that the parties to the litigation file supplemental briefs concerning the effect, if any, of the 24 January decision in the Balelo case. The parties complied and, on 24 July 1984, the Court of Appeals affirmed the District Court's decision. In its decision, the Court concluded that the Administrator had acted arbitrarily by failing to utilize the best scientific evidence available in arriving at population and range estimates and, therefore, had reached a conclusion not supported by substantial evidence.

In rendering these decisions, neither the District Court nor the Court of Appeals for the Ninth Circuit invalidated any of the tuna-porpoise regulations or the overall quotas that were established pursuant to the adjudicatory rulemaking that was the subject of the litigation. As a result, the decision is not expected to affect the on-going implementation of the tuna-porpoise regulations. The decision is likely to have a bearing, however, on methodologies used in arriving at future estimates on population size, range, and school density.

The second lawsuit (Balelo v. Baldrige), filed 1 October 1980, was also brought by representatives of the U.S. fishing fleet in the U.S. District Court for the Southern

District of California. This lawsuit challenged the statutory and constitutional authority for the Government's use of information gathered by observers on board tuna vessels for enforcement of the quotas and other provisions of the regulations. On 27 July 1981, the District Court ruled that, in the absence of statutory authority, such use of observer-gathered information violated the Marine Mammal Protection Act and the Fourth Amendment to the U.S. Constitution. The Court enjoined the Government from using such information for civil or criminal penalty proceedings, or any purpose except scientific research. On 22 September 1981, the Government appealed the District Court's decision to the U.S. Court of Appeals for the Ninth Circuit.

On 5 January 1983, a three-judge panel of the Court of Appeals ruled that the regulation requiring tuna vessels to accept observers was invalid for all purposes -- scientific data gathering as well as enforcement of quotas and other regulations. The Court affirmed the District Court's July 1981 holding with respect to placement of observers for enforcement, reversed the District Court's holding that such placement for scientific purposes was permissible, and remanded the case to the District Court to enter an injunction consistent with the opinion banning placement of observers without consent for any purposes. The Court reasoned that such placement of observers without consent was a search without a warrant and raised issues of "questionable constitutionality." It also concluded that there was no express Congressional authorization in the Marine Mammal Protection Act for searches of this nature which might overcome such constitutional problems.

The full Court of Appeals for the Ninth Circuit granted the Government's motion for a rehearing en banc on 30 June 1983, and oral arguments were presented to the Court on 15 September 1983. For purposes of the rehearing, the Ninth Circuit consolidated Balelo with a companion case (United States v. \$50,178.50) in which the Service had sought forfeiture of that portion of a vessel's catch of tuna obtained from unlawful sets on prohibited stocks or species of porpoise.

On 24 January 1984, the full panel of the Ninth Circuit reversed the 5 January 1983 three-judge Court of Appeals decision. In the decision, the Court held that the observer regulation was valid under the broad rulemaking authority delegated to agencies by the Marine Mammal Protection Act. It also concluded that the use of observer data for enforcement purposes falls within the "pervasively regulated industry exception" to the warrant requirement of the Fourth Amendment.

In the companion case, United States v. \$50,178.80, the Court affirmed the decision of the District Court for the Central District of California that had denied defendant's motion to suppress observer-collected data.

Representatives of the tuna fishing fleet petitioned the United States Supreme Court for a writ of certiorari on the Balelo decision on 23 April 1984. Opposition briefs were filed by the United States Government and intervenor-defendants Environmental Defense Fund, Inc., and Defenders of Wildlife. On 18 June 1984, the Supreme Court denied the petition, thereby bringing an end to the litigation. As a result, the National Marine Fisheries Service has been able to proceed with its observer program.

The Dall's Porpoise Issue

Dall's porpoise (Phocoenoides dalli) become entangled and die in gill nets used by Japanese salmon fishermen in the North Pacific Ocean. Pursuant to the International Convention for the High Seas Fisheries of the North Pacific, the Japanese are permitted to fish west of 170 degrees east longitude both inside and outside the U.S. 200-mile Fishery Conservation Zone (FCZ). As noted in previous Annual Reports, the fishery is also subject to provisions of a Memorandum of Understanding between the United States and Japan on coordinated research efforts and to general permit requirements and other requirements of the Marine Mammal Protection Act with respect to incidental taking of Dall's porpoise and other marine mammals in the U.S. FCZ. A general permit authorizing the Federation of Japan Salmon Fisheries Cooperative Association (Federation) to incidentally take up to 5,500 Dall's porpoise, 450 northern fur seals, and 24 northern sea lions per year was issued for the fishing seasons beginning in 1981 and extending through 1983. Through the Fishery Amendments of 1982 to the North Pacific Fisheries Act, which implements the Convention in the United States, the general permit was extended to cover fishing seasons through 1986 provided, among other things, that the Japanese adopt new fishing gear or techniques to reduce the incidental porpoise take during the permit period, and that the National Marine Fisheries Service annually prepare a detailed action plan concerning monitoring, research, and development, and other necessary actions.

In May 1984, the Service completed and released its "Final Action Plan for Dall's Porpoise Program 1984." During an 11-15 November 1984 review of the National Marine Mammal

Laboratory's research programs, the Commission considered the Action Plan and other recent information related to the Dall's porpoise as well as other Laboratory research programs and, by letter of 11 December 1984, provided the Service with the results of its review. With respect to the Dall's porpoise program, the Commission noted that it was not clear whether the Laboratory had determined precisely what questions would be raised when the Federation's general permit for taking porpoise comes up for renewal in 1986, what information would be required to adequately answer those questions, and what research would be necessary to obtain the needed information within the required timeframe. In addition, while Japan was to provide funding and logistic support for required research, it appeared that the Laboratory was providing salary and support for several researchers involved in the Dall's porpoise research program and that the Service had neither identified nor asked Japan to support all of the required research.

Therefore, the Commission's 11 December letter requested that the Service forward certain additional material in order to provide a better basis for evaluating the Dall's porpoise program. Specifically, the Commission requested: 1) a list of critical questions likely to be raised when renewal of the Dall's porpoise permit is considered in 1986; 2) an assessment of the likelihood that the current research program will provide answers to each of those questions; 3) a description of additional research requirements, if any, that cannot be answered by the current research program within the required timeframe; and 4) a budget breakdown indicating funding, logistic support, and services being provided by Japan and by the United States. A response to the Commission's letter had not yet been received at the end of 1984.

During 1983, Japanese salmon fishing vessels took an estimated 2,906 Dall's porpoise within the U.S. FCZ and an estimated total of 4,280 porpoise both within and outside the FCZ. The observed mean kill was 0.47 porpoise per set. During 1984, the estimated incidental take of porpoise was 2,443 porpoise inside the FCZ and 3,355 porpoise both within and outside the FCZ, and the observed mean kill was 0.42 porpoise per set, based on preliminary data. The cause and significance of the variability in the estimated incidental take between the two years is unknown. The estimated take of 2,443 porpoise in 1984 is below the annual quota of 5,500 porpoise. In addition, implementation has begun concerning the general permit requirement for adopting fishing gear or techniques that could help reduce incidental take rates. During 1985, 50 percent of the Japanese salmon

fishing vessels will be using nets containing hollow strand netting material.

The Commission will continue to consult with the National Marine Fisheries Service and others during 1985 to ensure that the research program is properly designed and appropriately supported and that necessary management needs are carried out.

CHAPTER VII

SPECIES OF SPECIAL CONCERN

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, reviews the status of marine mammal populations and makes recommendations on necessary research and management actions as well as on designations with respect to the status of species or populations under the Marine Mammal Protection Act and the Endangered Species Act. During 1984, the Commission continued to concentrate efforts on several species of marine mammals designated as "endangered" or "threatened," including the West Indian manatee, the Hawaiian monk seal, the California sea otter, the bowhead whale, the right whale, and the humpback whale. Attention also was focused on the endangered Mediterranean monk seal, the bottlenose dolphin populations in the southeastern United States, the Gulf of California harbor porpoise, the Guadalupe fur seal, and the harbor porpoise population off the coast of California. A review of the Commission's activities regarding these animals follows.

West Indian Manatee (*Trichechus manatus*)

The West Indian manatee is one of the most endangered species of marine mammals found in the coastal waters of the United States. The largest concentration in the United States, and perhaps the world, is found in Florida where the population has been estimated to number as few as 1,000 animals. However, information now being developed through a statewide effort to photographically identify individual manatees suggests that the Florida population may be larger than previously estimated. Despite this encouraging information, the continued high level of manatee mortality due to cold winter temperatures, intensifying human activities, and continued degradation and destruction of manatee habitat,

raises serious doubts as to prospects for survival of the population.

Earlier efforts by the Commission and others to enhance protection of the species have been reviewed in past Annual Reports. While encouraging signs were noted in 1983 when manatee deaths declined, manatee mortality in Florida coastal waters again took an upward turn in 1984 and reached a record high of 128 for the year. This increase has been attributed, in part, to exceptionally cold weather early in the year and a large increase in the number of boat/barge-related deaths.

Based on recovered carcasses and animals known to have died but which were not recovered, manatee mortalities in U.S. waters since 1977 have been as follows:

<u>Year</u>	<u>From Florida</u>	<u>Outside Florida</u>	<u>Total</u>
1977	113	1	114
1978	84	0	84
1979	77	1	78
1980	63	4	67
1981	113	3	116
1982	117	6	123
1983	80	0	80
1984	128	3	131

The high mortality in 1977, 1981, and 1984 correspond to years in which extended periods of unusually cold winter weather occurred, while the high mortality in 1982 was largely related to an occurrence of red tide in the Caloosahatchee River and its estuary in southwest Florida.

As indicated in previous Annual Reports, despite the serious problems confronting the Florida population of manatees, the Commission has been encouraged by the cooperative efforts of responsible Federal and state agencies and private groups to increase protection of the species. Cooperation among these groups with respect to manatee research and management needs continued throughout 1984. During the year, the State of Florida took several steps to strengthen its involvement in manatee conservation. Most significant was approval by the State Legislature of an annual \$250,000 authorization for manatee-related work. Funds for this continuing effort will come from the State's Motorboat Revolving Trust Fund which derives its support from boat registration fees. The monies will be used to support an on-going State research and management program.

Manatee protection in Florida likely will be further enhanced by the transfer of administrative responsibilities within the Florida Department of Natural Resources from the Division of Resource Management to the Division of Marine Research. This transfer, along with the State's decision to hire a staff of biologists to work on manatee matters, reflects an increased emphasis on manatee research. Additionally, in cooperation with the Fish and Wildlife Service, the State is now in the process of assuming responsibility for the Service's Manatee Salvage Program. High priority also is being placed on strengthening the State's boat speed zone program. As noted in the previous Annual Report, both the Army Corps of Engineers and the State of Florida were instrumental in posting boat speed zones established by the State to reduce manatee mortality resulting from collisions with vessels.

The Corps of Engineers has a nationwide responsibility for approving and issuing permits for various shoreline modification and construction projects, such as marinas, docks, and piers. In January 1984, the Environmental Defense Fund and the National Wildlife Federation announced their intent to sue the Corps over its permitting activities in the State of Florida. The groups alleged that the Corps had failed to fulfill the required Section 7 consultation under the Endangered Species Act. During the early part of 1984, the Commission met with the Corps and other interested parties to determine whether the Corps had satisfactorily completed its Section 7 responsibilities prior to taking certain permitting actions and whether the alleged failure to do so likely would have adverse impacts on manatees and their designated Critical Habitat in Florida waters.

On 2 March 1984, the Commission wrote to the Assistant Secretary of the Army (Civil Works), relaying specific concerns with respect to: the Corps' 1982 authorization for construction of a multi-family pier on the Crystal River within manatee Critical Habitat and a short distance from the Kings Bay manatee sanctuaries; the December 1983 reissuance of General Permit SAJ-33, which provided a general authorization for the construction of multi-family piers in any navigable waters on the Florida peninsula and included a "kick-out" clause that required site-specific review for projects located in some, but not all, important manatee habitat areas; and State Program General Permit SAJ-49, issued 24 February 1984, which, if put into effect, would have authorized the Florida Department of Environmental Regulation to administer and issue permits on behalf of the Corps for activities such as the building of piers, boat ramps, and outfall structures.

The Commission noted that, based on its understanding of the situation, the Corps may have failed to follow statutorily mandated Endangered Species Act review for the three permit actions, all of which have clear potential for adversely affecting manatees and manatee habitat. The Commission recommended that the Corps immediately undertake Section 7 consultations with the Fish and Wildlife Service on these actions in order to resolve this and any other Endangered Species Act problems. Particular concern was noted over the inadequacy of the "kick-out" clauses contained in General Permits SAJ-33 and SAJ-49. As the Commission noted, although that clause provided for additional review of projects located in the Kings Bay/Crystal River waterway and motorboat speed zones, it did not cover many areas important as manatee feeding, resting, calving, and traveling habitat, including numerous Critical Habitat locations.

On 16 March 1984, the Department of the Army responded to the Commission, noting that on 9 and 12 March, the Corps' Jacksonville, Florida, District Engineer had initiated consultation with the Fish and Wildlife Service under Section 7 of the Endangered Species Act on the Crystal River multi-family pier authorization. The Army expressed confidence that, through constructive consultation, the issue would be resolved in a manner that would remove any threat to the manatee while maintaining the integrity of the Corps' general permit program. On 19 March, the Corps informed the Fish and Wildlife Service that it had concluded that the multi-family pier which had been constructed on the Crystal River would have no effect on the manatee.

The Fish and Wildlife Service provided its Biological Opinion to the Corps on 25 June 1984. In the Opinion, the Service disagreed with the Corps' "no-effect" determination and concluded that the pier was likely to jeopardize the continued existence of the manatee. The Service also noted that, based on available information, there were no reasonable and prudent alternatives that would satisfy the "no jeopardy" requirement of Section 7. At the end of 1984, the Corps had not taken action to address the Service's determinations.

Partly in response to the above-noted environmental concerns, the Corps withdrew General Permit SAJ-49 before it became effective and deactivated General Permit SAJ-33 on 3 April 1984. On 6 April, the Corps notified the Fish and Wildlife Service of its intent to initiate Section 7 consultation on SAJ-33. Pending completion of the Section 7 review of SAJ-33, the Corps is conducting individual permit reviews for projects that would have been subject to

authorization under the General Permit. At the end of 1984, Section 7 consultation on this General Permit had not been completed.

While manatees are distributed throughout Florida waters along both the Atlantic and Gulf of Mexico coasts, available information suggests that the manatees which use the Crystal River/Kings Bay warm-water refuge during winter months constitute a more or less discrete subpopulation of animals. This manatee subpopulation presently numbers more than 150 animals and is one of the few subpopulations that is known to have been increasing in size. Its range includes some of Florida's least-developed shoreline and the long-term survival and growth of the subpopulation will depend on identification and protection of essential habitat. Several major Federal and State wildlife refuges and preserves exist in the area and, as was noted in the previous Annual Report, portions of habitat essential for survival and growth of the regional manatee subpopulation have recently been acquired. Special recognition is due The Nature Conservancy for making the development of an effective regional system of protected areas an achievable goal. The Conservancy's efforts to acquire and protect remaining coastal wildlife habitat in the region have been particularly constructive.

However, many of the most essential manatee habitats in the region are not included within the boundaries of these areas and merit similar protection. Therefore, in 1982, the Commission asked that the Manatee Working Group of its Committee of Scientific Advisors initiate a study to identify and assess habitat protection needs for this subpopulation of manatees.

During 1984, the Working Group completed a report, entitled "Habitat Protection Needs for the Subpopulation of West Indian Manatees in the Crystal River Area of Northwest Florida." After review and approval by the full Committee, the report was submitted to, and adopted by, the Commission. The document presents a systematic examination of habitat essential for the survival and growth of the area's subpopulation of manatees, identifies the geographic areas most important as manatee habitat, reviews existing and on-going habitat protection efforts in the region, and recommends additional steps that should be taken to ensure the long-term protection of critical habitat. As the report indicates, special effort was made to reflect on-going and planned State, Federal, and private activities. In addition, the report's findings and recommendations complement information and recommended actions provided in a recently completed

Fish and Wildlife Service report entitled "Proposed Research/Management Plan for Crystal River Manatees," which was prepared by the Cooperative Fish and Wildlife Research Unit of the University of Florida at Gainesville.

On 31 October 1984, the Commission forwarded the report and its recommendations to the Fish and Wildlife Service for review and action.

By means of this transmittal, the Commission recommended, among other things, that certain lands in the Crystal River area be surveyed and, as appropriate, incorporated into the National Wildlife Refuge System as part of a new national wildlife refuge unit, which might appropriately be designated the "Crystal River Manatee National Wildlife Refuge." The Commission further recommended that: the proposed Lower Suwannee National Wildlife Refuge be completed as soon as possible; management plans for all State and Federally owned refuges, preserves, aquatic preserves, and sanctuaries in northwest Florida that contain essential manatee habitat be reviewed to ensure that they contain such measures as may be necessary or appropriate for protecting manatees and their essential habitat; estuarine areas along the Suwannee, Withlacoochee, Chassahowitzka, and Salt Rivers be evaluated to determine whether designation of additional critical habitat under the Endangered Species Act is warranted; regulations for protecting important manatee habitat not within State or Federally owned protected areas be evaluated and, as appropriate, strengthened; certain existing State land acquisition proposals be completed as soon as possible; and a long-term plan embracing Federal, State, local, and private programs be developed and implemented for acquiring and protecting certain essential manatee habitat in the region.

During 1985, the Commission and its Committee of Scientific Advisors look forward to working with the Fish and Wildlife Service, the State of Florida, The Nature Conservancy, and other interested organizations to ensure that the recommendations contained in the Commission's report as well as other needed research and management programs related to this species are fully implemented.

Hawaiian Monk Seal (*Monachus schauinslandi*)

The Hawaiian monk seal occurs in a limited area around the Leeward Hawaiian Islands and is now in serious danger of extinction. Even so, it may become the only surviving member of the genus Monachus since, of its two congeners, the

Caribbean species (M. tropicalis) appears to be extinct and the Mediterranean species (M. monachus) appears to be declining rapidly (see following discussion). Without a sustained and vigorous effort by the responsible Federal and state agencies and public interest and industry groups, the Hawaiian monk seal may soon share this fate.

Protection and conservation of the Hawaiian monk seal is the responsibility of the National Marine Fisheries Service under provisions of the Marine Mammal Protection Act and the Endangered Species Act. Because the species' range includes the Hawaiian Islands National Wildlife Refuge, the Fish and Wildlife Service shares responsibility for protecting the monk seal and its habitat.

The Commission's efforts during the past several years to promote protection of the monk seal have been described in past Annual Reports. Congressional concern for survival of the species is evident from the special funding and attention it has directed to monk seal issues, beginning in FY 1981. For that fiscal period, the Commission received a special \$100,000 appropriation to aid in developing an effective research and management program. In FY 1982, Congress directed the National Marine Fisheries Service to invest \$400,000 in monk seal work, and, in the following year, the Service was directed to budget \$150,000 for that purpose. Further Congressional action provided the Commission an additional \$150,000 for monk seal efforts in FY 1983, and in, FY 1984, Congress increased the Service's appropriation for monk seal work to \$300,000.

As has been noted in previous Annual Reports, the Commission has consulted with the Service during the past several years to determine the most appropriate use of these funds, including identification of needed research. The Commission has also worked closely with the Service on the development of a recovery plan for the species and, in 1983, provided extensive comments on the Service's "Agency Review Draft" of the Hawaiian monk seal recovery plan.

On 6-7 February 1984, Commission representatives participated in a planning workshop for the Hawaiian monk seal research program at the Service's Southwest Fisheries Center, Honolulu Laboratory. The goal of the workshop was to identify future areas of needed research and to develop short- and long-range research plans. The workshop reviewed major research activities already underway or being planned by the Honolulu Laboratory. Among other efforts, these include: the on-going Kure Island pup capture and release

effort, known as the "head start" project; the removal of certain male seals from Laysan Island to Johnston Atoll to reduce mortality and injury of female monk seals caused by male seals; continuation of tagging and population monitoring studies; a proposed project to rehabilitate weakened and dying pups recovered from French Frigate Shoals; further analysis of population data to better determine population size and trends; and efforts to complete data analyses and publish the results of past research.

In ranking future research needs, the workshop participants gave top priority to: 1) efforts to monitor population trends and life history parameters; and 2) research that would provide survival and fecundity data useful for assessing recovery potential and for developing a population model. The group also identified experimental work on sex ratio manipulations and expansion of the present monk seal "head start" program as important tasks.

In 1984, the Fish and Wildlife Service, the agency responsible for managing the Hawaiian Islands National Wildlife Refuge, completed a draft master plan for management of the Refuge. On 28 August 1984, the Service forwarded this document, entitled "Hawaiian Islands National Wildlife Refuge Master Plan/Environmental Impact Statement," to the Commission for its review and comment. Among other things, the Draft Master Plan would provide for: the maintenance and occupation of a base of Refuge operations on Tern Island, French Frigate Shoals; research and monitoring activities for endangered and threatened species, as well as other wildlife, in the Refuge; continuation of a permit system to control public access and human activity within Refuge boundaries; enhancement of public awareness of Refuge resources through off-site exhibits and supervised on-site visitation opportunities; and certain forms of support for the development and operation of a proposed commercial mothership fishery operation based at French Frigate Shoals. With regard to the proposed fishery operation, the Service proposed support for installing a mooring buoy adjacent to the Refuge boundary at French Frigate Shoals for use by commercial fishing vessels and allowing limited use of Tern Island facilities for storage of fishing gear, rest and recreation by fishing crews, emergency evacuations, and radio contact.

The Commission, in consultation with its Committee of Scientific Advisors, reviewed the Draft Master Plan and, by letter of 9 November 1984, forwarded its comments and recommendations to the Service. The Commission agreed that the Service's proposed action appeared to be the preferred

alternative. The Commission noted, however, that the nature, scope, and possible consequences of some aspects of the alternatives, including the proposed action, were not described in sufficient detail to make informed judgments. In the Commission's view, the document did not make a clear case that continued and expanded support of fishery development in the Northwest Hawaiian Islands was compatible with other higher priority Refuge objectives, such as protecting endangered and threatened species, or that proposed monitoring and management programs would be sufficient to detect and prevent possible adverse effects. The Commission also questioned whether the Draft Master Plan appropriately reflected the National Marine Fisheries Service's responsibilities and efforts to implement the Hawaiian Monk Seal Recovery Plan.

The Commission recommended that, if the Fish and Wildlife Service had not already done so, it undertake consultations pursuant to Section 7 of the Endangered Species Act to ensure that the proposed action would not jeopardize the Hawaiian monk seal or other endangered or threatened species, or result in the destruction or adverse modification of habitat critical to their survival. The Commission further recommended that the proposed action be modified as necessary to reflect the results of this consultation.

As noted in previous Annual Reports, the National Marine Fisheries Service issued a Draft Environmental Impact Statement in 1980 proposing that certain waters and lands in the Northwest Hawaiian Islands be designated as Critical Habitat for the Hawaiian monk seal pursuant to provisions of the Endangered Species Act. The Commission, the Hawaiian Monk Seal Recovery Team, and others provided comments on the proposal in 1980. In its comments, the Commission recommended that areas out to three miles or the 20-fathom isobath adjacent to pupping and haul-out islands, whichever is greater, be designated Critical Habitat. The Recovery Team recommended that areas out to the 20-fathom isobath around pupping and haul-out islands be designated Critical Habitat.

A Final Environmental Impact Statement was not issued and the Service did not make a final determination with respect to the 1980 proposal. In December 1984, the Service issued a Supplemental Environmental Impact Statement, proposing that waters and lands within the 10-fathom isobath surrounding the islands and atolls in the Northwest Hawaiian Islands be designated critical habitat for Hawaiian monk seals. Comments on the Supplement have been requested by 15 February 1985. The Commission has conducted a preliminary

assessment of the Supplement, and based upon this, expects that it will support the Recovery Team's recommendations.

Mediterranean Monk Seal (Monachus monachus)

The Mediterranean monk seal is in severe danger of extinction and, in fact, probably is the most endangered species of seal in the world. It is listed on Appendix I of the International Convention on Trade in Endangered Species of Wild Fauna and Flora, classified as "endangered" in the Red Data Book compiled by the International Union for the Conservation of Nature and Natural Resources, and designated as "endangered" under the U.S. Endangered Species Act.

While the Mediterranean monk seal is still found scattered throughout much of its historical range, the total population appears to number no more than a few hundred animals and is probably declining. Within the Mediterranean area, the largest concentration of animals is found in the southern and eastern Aegean Sea. In the Atlantic, greatest concentrations are thought to occur along the northwest coast of Africa. A few monk seals are also known to exist at the Desertas Islands, Madeira, several hundred miles west of Africa's Moroccan coast.

The species' survival is threatened by indirect and direct interaction with fishermen (e.g., involving competition for fish resources, intentional killing by fishermen, and accidental entanglement in fishing gear), destruction of shoreline pupping and hauling habitat by coastal development, disturbance by humans, and marine pollution.

On 5-6 October 1984, the Second International Conference on the Mediterranean Monk Seal was convened in La Rochelle, France, in an effort to focus worldwide attention on the precarious status of the species and to outline actions needed for its continued survival. A representative of the Commission participated in the meeting in order to share U.S. experience with research and management efforts for the only other surviving species of monk seal, the Hawaiian monk seal. An action plan for protecting the Mediterranean monk seal was developed during the meeting and will be transmitted to appropriate national and international authorities in order to encourage and direct needed conservation efforts.

On 11 July 1984, the Museu Do Mar, Cascais, Portugal, wrote to the Commission, seeking support for its efforts to

establish a monk seal sanctuary in the Desertas Islands, Madeira. Recognizing the importance of preserves for protecting remaining habitat for the species, the Commission, in consultation with its Committee of Scientific Advisors, responded to the museum by letter of 19 October 1984. Among other things, the Commission indicated its general support for such efforts and provided information concerning U.S. efforts to protect and conserve Hawaiian monk seals and their habitat in the Northwest Hawaiian Islands National Wildlife Refuge. On the same date, the Commission wrote to the President of the Government of Madeira, expressing its support for the concept of a sanctuary to help protect the Mediterranean monk seal and for any other efforts that could be initiated to otherwise strengthen protection of remaining Mediterranean monk seals and their essential habitat.

At the end of 1984, the Commission looked forward to receiving the formal report and recommendations resulting from the La Rochelle conference. During 1985, the Commission will continue to encourage and assist with efforts to conserve and protect this highly vulnerable species.

The California Sea Otter Population (*Enhydra lutris*)

Because of its small size and limited distribution, the remnant sea otter population in California is vulnerable to oil spills and other catastrophic events and, primarily for this reason, was designated as "threatened" under the Endangered Species Act in January 1977. The most effective way to reduce the threat from such events is to establish one or more sea otter colonies outside the population's present range. While such an action could adversely affect commercial and recreational fisheries for abalone, clams, and other invertebrate species eaten by sea otters, it also could reduce populations of sea urchins and other herbivores which sea otters eat, and thus enhance the growth of kelp, a product of commercial significance that also provides habitat for certain finfish species of recreational and commercial importance.

To facilitate protection and recovery of the California sea otter population, while minimizing possible adverse impacts on commercial and recreational fisheries, the Commission, in December 1980, recommended that the Fish and Wildlife Service adopt and implement a management strategy recognizing the ultimate need for "zonal" management of sea otters and the need to establish one or more sea otter colonies at a site or sites not likely to be affected by an oil spill in or near the population's present range. The Fish and Wildlife

Service concurred with the Commission's recommendation and incorporated the zonal management concept into the Southern Sea Otter Recovery Plan, which it adopted in February 1982.

Past Commission efforts to facilitate development and implementation of an effective Southern Sea Otter Recovery Plan are described in previous Annual Reports. The Commission's activities in this regard in 1984 are summarized below.

Five-Year Status Review

The Endangered Species Act requires that the Fish and Wildlife Service review the status of all species designated either "threatened" or "endangered" at least once every five years. Pursuant to this responsibility, the Service published a Federal Register notice on 27 September 1982, requesting information on the status of the California sea otter population and a number of other listed species.

During 1983, the Commission, in consultation with its Committee of Scientific Advisors, compiled and reviewed available information concerning the distribution, size, and productivity of the California sea otter population and the nature and extent of possible threats from offshore oil and gas development, fisheries, and other human activities. The results of the review were conveyed to the Fish and Wildlife Service by letter of 15 December 1983. In this letter, the Commission noted that: the California sea otter population had not increased in more than a decade; the range expansion, which was about five percent per year through the 1960s, appears to have stopped; the best available estimates indicate a present population of 1,200 to 1,500 independent animals producing 120 to 220 pups each year; there was a substantial decrease in the number of pups counted in the spring of 1983 compared to the spring of 1982, possibly as a result of the severe coastal storms in the winter and early spring of 1983; tanker traffic in the vicinity of the sea otter range has increased, as was anticipated in 1977, and presumably will continue to increase; efforts to explore and develop offshore oil and gas deposits in and near the sea otter range are likely to increase; and the incidental taking of sea otters in coastal gill net and trammel net fisheries has been identified recently as a major threat to the California sea otter population.

In consideration of the lack of population expansion, the recently recognized impacts of incidental take, and the continuing risk of oil spills from tanker accidents and

offshore oil and gas development, the Commission concluded that there can be no question that the population should not be removed from its threatened status. Moreover, the Commission noted that, if the Service is unable to eliminate or substantially reduce the incidental kill, serious consideration should be given to changing the status of the California sea otter population from "threatened" to "endangered." The Commission also recommended that the status of the population be re-examined late in 1984.

During the comment period on the five-year review, the Service received two petitions to change the listed status of the sea otter. On 3 February 1984, the Pacific Legal Foundation, Save Our Shellfish, and the Greater Los Angeles Council of Divers requested the delisting of the California sea otter population. To support this request, the petitioners stated their views that the California sea otter population is not a separate subspecies distinct from the Alaska sea otter and that there is no threat from a potential oil spill. On 1 May 1984, the Friends of the Sea Otter requested the reclassification of the California sea otter population from threatened to endangered. The petition listed a number of reasons for the reclassification, including direct, malicious killing by people, incidental drowning in fishing nets, intensive offshore oil exploration and leasing activity, and the possibility of adverse effects related to pollution from toxic trace metals, synthetic organic compounds, and raw sewage.

In April 1984, the Fish and Wildlife Service completed its five-year status review and concluded that the California sea otter population is appropriately classified as threatened. In reaching this conclusion, the review noted the following: the population has not grown significantly in numbers since 1969 and is possibly declining; the range of the population has not expanded since 1977; human-related mortality is a limiting factor; and the risk of loss of a significant part of the population from an oil spill is still present. Although it was determined that the sea otter is "probably somewhat worse off" now than it was at the time of the listing, the Service stated that reclassification to endangered is "inappropriate because the population does not appear to be immediately threatened with extinction and major action on the recovery program is expected in the immediate future." The Service also determined that the status of the population should be assessed annually.

Based in part on the results of this review, the Fish and Wildlife Service denied both petitions on 13 July 1984.

In response to the delisting request, the Service found that the preponderance of available information indicates that the California population is a distinct subspecies and that, even if it were not, it would qualify for listing under the Endangered Species Act. The petition to reclassify the population as endangered was denied for the reasons noted in the preceding paragraph.

Incidental Take

The incidental take of sea otters was either insignificant or unrecognized when the California sea otter population was designated as "threatened" in 1977. The existence and possible significance of the problem was documented by the California Department of Fish and Game and others in 1982. As noted in previous Annual Reports, the Commission provided funds to the California Department of Fish and Game in 1982 to augment on-going studies of the problem and to assist in determining how programs being conducted, supported, or planned by other agencies and organizations could usefully expedite acquisition of needed data. In addition, in 1983, the Commission provided funds to continue and expand observations of gill and trammel net fisheries in and near Morro Bay and Monterey Bay. As described in Chapter III of this Report, the Commission continued its funding for these observations in 1984.

As a result of the reports submitted by Commission-funded observers and the studies undertaken by the California Department of Fish and Game, the magnitude of the incidental take problem was reasonably well documented for the first time in 1984. In a report issued in September 1984 by the California Department of Fish and Game, it was estimated that between 1973 and 1983 an average of 105 otters were killed annually through entanglement in gill and trammel nets. Available information indicates that most losses due to incidental take occur in large mesh nets that are set for halibut within the 15-fathom depth curve. A complete breakdown of incidental take mortality for the period from 1973 through 1983 is shown in the following table prepared by the California Department of Fish and Game:

[Table appears in full on next page.]

Estimates of incidental take of sea otters in set nets
calculated from estimates of set net effort 1973-1983.*

Year	Number of Landings	Estimated Mortality
1973	457	49
1974	645	69
1975	[no data provided]	
1976	980	105
1977	663	71
1978	874	93
1979	1449	154
1980	1407	150
1981	1578	168
1982	1057	113
1983	696	74

* Estimate of effort is based on the number of landings of set net boats within the sea otters' range. Estimated take is based on the rate of take observed in 1983.

As the data set forth in the California Department of Fish and Game report indicate, the incidental take problem is a substantial threat to the continued existence and recovery of the California sea otter population. In recognition of the severity of this threat, the Commission has taken an active role in seeking solutions to the problem. In the Commission's letter of 14 September 1983 to the Fish and Wildlife Service, it pointed out that, among other priority concerns, the Service should expedite assessment of sea otter mortality in gill and trammel nets and take steps to either prohibit or significantly reduce incidental taking. The need to give top priority to resolution of the incidental take problem was emphasized again in a letter to the Service on 21 July 1984 and in comments on the Draft Revision of the Southern Sea Otter Recovery Plan sent to the Service on 21 December 1984. In addition to these letters, the Commission has conferred with the Service on this matter in several meetings and recommended alternative courses of action for addressing the problem, including an expanded enforcement program, public education efforts, research and monitoring, and cooperation with the State of California to implement appropriate regulatory measures to control fishing activities that are resulting in the incidental take of sea otters.

Thousands of seabirds also are caught in gill and trammel nets and, to avoid or reduce the incidental take of seabirds, as well as sea otters, the State of California enacted legislation in July 1984 prohibiting fishing with gill and trammel nets inside the 15-fathom depth contour in certain areas including Monterey Bay. Preliminary monitoring surveys indicate that this action has been effective in reducing the number of otters entangled in gill and trammel nets in Monterey Bay. It is possible, however, that this closure may have shifted fishing efforts to other areas and increased the level of incidental take of otters and other marine mammals in those locations. Additional monitoring will be necessary to determine the precise effect of the Monterey Bay and other closures.

In September 1984, the California Department of Fish and Game initiated a public review process to determine what action, either regulatory or legislative, would be appropriate to address the incidental take of sea otters in areas beyond Monterey Bay in a manner that would not be unnecessarily restrictive on fishing interests. At the end of 1984, the State was considering proposed legislation for additional commercial fishing closures and other regulatory measures within the sea otter range.

Translocation Decision-Making Process

In a Federal Register notice published on 27 June 1984, the Fish and Wildlife Service announced its intention to prepare an environmental impact statement on a proposal to translocate a portion of the California sea otter population to a site within the species' historic range off the Pacific coast of the United States. This action is called for in the Southern Sea Otter Recovery Plan and has been recommended by the Commission on several occasions. As described in the Federal Register notice, the proposal would involve the issuance of experimental population regulations under the Endangered Species Act, permits under both the Endangered Species Act and Marine Mammal Protection Act, and compliance with a number of Federal and state laws.

Three phases have been identified for determining how to implement the proposed action, should it be carried out. During the first phase, which essentially has been completed, the existing population would be evaluated, a determination made as to the optimum number, age, and sex composition of animals to be translocated, an exact translocation site selected, and baseline data collected concerning the ecological and

socio-economic aspects of the translocation site. Phase two would involve capturing the otters selected for translocation, transporting them to the translocation site, and releasing them. The final phase of the proposed action would involve monitoring the translocated animals and their habitat, appropriate efforts to regulate their distribution, law enforcement, and public education.

In order to facilitate compilation and evaluation of biological, ecological, and socio-economic information bearing on the selection of possible translocation sites, the Fish and Wildlife Service, acting upon the recommendation of the Commission and with the assistance of Commission funds, initiated the Sea Otter Mapping Project in 1981. This project was completed in May 1984. Based upon the information contained in the project report, the Service selected San Nicolas Island, one of the Channel Islands, as the preferred location for a translocated population of southern sea otters. Other possible translocation sites assessed during the mapping project and identified as possible alternatives in the Federal Register notice include the northern California coast, the northern coast of Washington, and the southern coast of Oregon. Additional alternatives referenced in the Federal Register notice are no action, and mitigation measures and regulatory actions other than translocation that would promote the conservation and recovery of the sea otter.

As part of the environmental impact statement preparation process, the Fish and Wildlife Service initiated a formal scoping process and held public scoping meetings on 23 July in Santa Barbara, California, and on 24 July 1984 in Monterey, California. In addition, the Service established an Interagency Project Review Team, as recommended by the Council on Environmental Quality, to participate in the scoping process and otherwise assist the Service in the preparation of the environmental impact statement. The Review Team is composed of representatives from the California Department of Fish and Game, the Fish and Wildlife Service, the Marine Mammal Commission, the Minerals Management Service, and other interested Federal and state agencies. Public meetings of the Interagency Project Review Team were held on 4 June, 6 August, and 4 October 1984. Non-governmental participants in these meetings have included representatives of environmental groups, the oil and gas industry, and sport and commercial fishing organizations. The Interagency Project Review Team meetings have been used to discuss a variety of issues related to translocation, including the topics to be addressed in the environmental impact statement, alternatives

to the proposed action, the time schedule and procedures for drafting the environmental impact statement, U.S. Coast Guard vessel routing procedures, and oil spill risk analysis issues that are pertinent to the translocation proposal.

The tentative time frame established by the Fish and Wildlife Service for preparation and distribution of the environmental impact statement calls for release of a draft environmental impact statement in March 1985 and completion of a final environmental impact statement by the end of July 1985. A final decision is to be made by the end of August 1985. If a translocation is to be accomplished in 1985, the Fish and Wildlife Service must adhere to the proposed environmental impact statement schedule in order to make a decision before September or October when weather conditions are considered optimal for such an undertaking.

Oil Spill Risk Assessment

In December 1982, a study was undertaken by a private consulting firm, Tetra Tech Inc., for the Western Oil and Gas Association's Sea Otter Task Force and the American Petroleum Institute to determine if offshore oil and gas development posed a sufficient level of risk to warrant listing the southern sea otter as "threatened" under the Endangered Species Act. The study report, entitled "An Overview of Sea Otter Oil Spill Risk Analysis," was completed in January 1983 and concluded, among other things, that the assumptions and input variables used by the Minerals Management Service to assess the potential oil spill risk to sea otters in California were overly conservative and over-stated the risk to sea otters. In addition, an Overview and Executive Summary provided as part of the report concluded that the risk analysis performed by the Minerals Management Service for OCS Lease Sale #53 did not support the contention that sea otters are threatened by oil development and that the Fish and Wildlife Service had offered no technical basis for concluding that offshore oil and gas activities threaten the continued existence of the southern sea otter population and, accordingly, the Service should remove the population from its list of endangered and threatened species.

Representatives of the Western Oil and Gas Association's Sea Otter Task Force requested that the Marine Mammal Commission, the Minerals Management Service, the Fish and Wildlife Service, and other interested parties review and provide comments on the report. The Commission, in consultation with its Committee of Scientific Advisors,

reviewed the report and, by letter of 18 May 1984, provided comments. In its comments, the Commission noted that, while the report provided reasonable justification for the conclusion that the likelihood of a major oil spill is somewhat less than that estimated by the Minerals Management Service, the remainder of the conclusions in the Overview and the Executive Summary were not well supported by information or analyses provided in the report and, in some cases, seemed unjustified. The Commission also noted that neither the Minerals Management Service's assessment nor the Tetra Tech assessment of the risk and the possible impacts of oil spills on sea otters consider the possible effects of oil on kelp, shellfish, or other important components of sea otter habitat, or the probable effects and effectiveness of equipment, procedures, and chemicals that could be used to contain, disperse, and clean up oil spills.

For purposes of further discussion, the Commission prepared and enclosed a draft scope of work describing the type of assessment that would be necessary to accurately determine the risk and the possible indirect as well as the direct effects of oil spills and offshore oil and gas development on the southern sea otter population. Discussions of this and related issues were held during the Inter-agency Project Review Team meetings described in the previous section and, at the 4 October meeting, industry representatives provided up-to-date information concerning the nature, timing, location, and extent of on-going and planned exploration and development activities in and near the California sea otter range. In addition, the Minerals Management Service and the Fish and Wildlife Service have initiated steps to undertake a number of the tasks described in the aforementioned scope of work.

General Program Review

On 14 September 1983, the Commission advised the Fish and Wildlife Service of the steps it considered necessary to carry out an adequate program for the protection and recovery of the California sea otter population. The principal recommendations set forth in that letter are as follows: 1) expedite assessment of incidental take and proceed with actions to reduce or eliminate the problem; 2) determine the optimal design and establish agreed-upon schedules and procedures for conducting periodic population surveys; 3) complete the Sea Otter Mapping Project; 4) select a translocation site or sites and develop a proposed translocation plan or plans that can be subjected to legal, environmental, and economic

evaluation and assessment; 5) develop and begin implementing an agreed-upon plan for assessing alternative methods for protecting and containing sea otters in designated zones; 6) facilitate the compilation, evaluation, and publication of existing survey, tagging, and mortality data; 7) update the Southern Sea Otter Recovery Plan and initiate development of a Comprehensive Work Plan; and 8) engage a full-time Sea Otter Activities Coordinator.

Considerable progress was made on meeting these objectives during 1984. As discussed earlier in this section, the Fish and Wildlife Service has initiated a decision-making process on the proposal to translocate sea otters to San Nicolas Island. This proposal is based, in part, on the mapping project which was completed in May 1984. In the five year status review, the Service announced that population surveys would be conducted annually, and in October 1984, a draft updated Recovery Plan was circulated for review. To oversee these and other tasks, the Service appointed a full-time Sea Otter Activities Coordinator in July 1984.

Containment

In an effort to better define the various methods that possibly could be used to regulate the distribution and abundance of sea otters, the Marine Mammal Commission, in consultation with the Fish and Wildlife Service and the California Department of Fish and Game, convened a workshop on 25-26 October 1984 in San Francisco. The objectives of the workshop were to identify those methods that would be most practical and have the greatest potential for regulating sea otter distribution and movements, describe the research that would be necessary to test and evaluate the effectiveness and practicality of those methods, and determine the funding, personnel, equipment, and other resources that would be required to complete the described research. Workshop participants included representatives of Federal and state (California, Washington, and Oregon) agencies, environmental groups, the oil and gas industry, and sport and commercial fisheries.

As a result of the review conducted at the workshop, it was determined that existing technology and techniques are adequate to catch sea otters, either individually or in groups, provided there is a willingness and ability to devote the time, effort, and other resources necessary to do so. In addition to assessing methods for capture, the workshop also considered the full range of techniques for regulating

species distribution, including herding and capture procedures, the use of natural and artificial barriers, birth control, and random and selective culling. No single technique was found to be suitable for controlling the distribution, size, and growth of sea otter populations in all circumstances. Consequently, an optimal management strategy would likely combine several of the above techniques, provided it is determined that it is desirable to restrict otters to particular locations or maintain a given population in an equilibrium state.

In order to better determine which techniques would be most cost-effective and suitable for use in different circumstances, the workshop participants identified priority research tasks to be: development of more efficient methods for capturing otters; compilation and evaluation of existing information concerning the nature and rate of sea otter range expansion in different geographic areas; more accurate determination of the acoustic, visual, tactile, and chemosensory capabilities of sea otters and their likely responses to varying combinations of stimuli in different situations; completion of a review of the feasibility of using chemical contraceptives to regulate sea otter reproduction; development and use of a population simulation model to develop and assess hypotheses on the possible effects of translocating, sterilizing, or culling different numbers and age/sex groups of otters; field experiments to test hypotheses concerning the probable effects of different translocation and population control strategies; and development of engineering studies and implementation of field tests to determine the effectiveness of sensory barriers and negative conditioning for purposes of causing sea otters to avoid certain areas.

The report on the workshop results will be published early in 1985. Follow-up on the workshop will be a primary objective for the Commission during 1985.

Bowhead Whale (*Balaena mysticetus*)

Over-exploitation by commercial whalers between 1600 and 1900 reduced populations of bowhead whales to extremely low levels throughout the species' range. It is thought that at least five or six separate stocks once existed. The largest surviving stock is the Bering Sea stock which occurs in the Beaufort, Chukchi, and Bering Seas off Alaska and Canada. This stock is of great importance to Alaska Eskimos,

who continue to hunt bowhead whales for subsistence and cultural purposes.

Consideration by the International Whaling Commission (IWC)

Previous Annual Reports have discussed the significant increase in the subsistence bowhead take in the 1970s, which led to a decision by the International Whaling Commission to increase efforts to protect bowhead whales. Acting on the recommendation of its Scientific Committee, the IWC in 1977 initially imposed a total ban on the subsistence take of bowhead whales. This ban was later modified in recognition of the needs of Alaska Eskimos and, since 1977, the IWC has attempted to manage the stocks so as to balance Eskimo subsistence and cultural needs with the biological requirement to rebuild the Bering Sea bowhead stock.

To this end, the IWC in 1982 adopted a formal management scheme for aboriginal/subsistence whaling. Under this scheme, IWC member nations whose nationals carry out aboriginal/subsistence whaling must provide detailed analyses of subsistence needs. In 1983 and 1984, the United States provided such information to the Aboriginal/Subsistence Whaling Subcommittee of the IWC's Technical Committee.

Under the aboriginal/subsistence whaling management scheme, the IWC's Scientific Committee is charged with advising the IWC on the establishment of minimum stock levels below which no take should be authorized and on the rate that affected stocks should be increasing towards the level of maximum sustainable yield. To date, the Scientific Committee has not been able to provide useful advice on either of these issues and, as a result, the IWC has not been able to establish catch limits for aboriginal/subsistence whaling with the benefit of this advice. The IWC took no action with regard to establishing bowhead subsistence quotas in 1984 since, as noted below, a two-year block quota of 43 strikes for 1984 and 1985 had been established in 1983.

Eskimo Whaling

In order to provide Alaska's Eskimo whalers with substantial opportunity and responsibility for regulation, monitoring, and enforcement of the bowhead whale hunt, the National Oceanic and Atmospheric Administration and the Alaska Eskimo Whaling Commission signed a cooperative agreement in 1981, recognizing each party's responsibility

for bowhead whale management. In particular, the agreement recognizes the National Oceanic and Atmospheric Administration's primary responsibility for managing the bowhead whale stock while also recognizing the responsibility of the Alaska Eskimo Whaling Commission to allocate a mutually agreed quota among Alaska's whaling villages and to monitor the hunt for compliance with the regulations. As discussed below, the Alaska Eskimo Whaling Commission also carries out a research program as part of this agreement. The quotas set by the IWC and the results of the Eskimo hunt are shown in the table which follows.

Quotas and Catch of Bowhead Whales by Alaska Eskimos, 1977-1985

Year	Quota*		Whales Landed	Whales Struck but Lost	Total Whales Struck
	Whales Landed	Strikes			
1977	[No Quota]		26	82	108
1978	14	20	12	6	18
1979	18	27	12	15	27
1980	18	26	16	18	34
1981	45**	65**	17	11	28
1982			8	11	19
1983			9	9	18
1984	--	43***	12	13	25
1985	--	--	--	--	--

* In general, in establishing quotas on both the number of whales landed and on the number of strikes, the IWC stipulated that whaling should cease whenever the number of whales landed or the number of strikes reached the specified number, whichever came first.

** In 1980, a block quota was set for the three years 1981-1983 with a further specification that in any one year, the number landed should not exceed 17 and the number of strikes should not exceed 27.

*** In 1983, a block quota was set on strikes alone for 1984 and 1985, with the further stipulation that the number of strikes in any year may not exceed 27.

Environmental Concerns

Over the past several years, there has been increased interest and activity related to offshore oil and gas development in areas of the Bering, Chukchi, and Beaufort Seas used by bowhead whales. Activities related to offshore oil exploration and exploitation could disrupt the migrations, over-wintering activities, or feeding habits of bowhead whales and possibly result in either direct or indirect mortality or injury of whales. The Minerals Management Service, which has responsibility for ensuring that activities in offshore areas leased for oil and gas development do not adversely affect endangered or threatened species, has supported numerous studies of endangered whales and other species in the areas subject to leasing in order to provide an improved basis for predicting, detecting, and monitoring possible adverse effects. A point of particular concern identified by Alaska Eskimos and some scientists working on bowhead problems is the need to protect important feeding areas, and it has been suggested that such areas should be designated critical habitat under the Endangered Species Act. As noted below, research is being carried out to assist in making the determinations necessary for such a designation.

Research Coordination and Planning

When the IWC modified its total ban on the subsistence take of bowhead whales in December 1977, it acted, in part, on a pledge by the U.S. Commissioner to the IWC that the United States would undertake a comprehensive research program on the species. Responsibility for planning and implementing this program was delegated to the National Marine Mammal Laboratory of the National Marine Fisheries Service. The Marine Mammal Commission's role in development of this program has been described in its Annual Reports for calendar years 1977 through 1979.

When the Bureau of Land Management (now the Minerals Management Service) initiated studies in 1978 to determine how bowhead whales might be impacted by oil and gas development in the Beaufort Sea, it appeared that some elements of their proposed research program might duplicate research already being conducted or planned by the National Marine Mammal Laboratory. In an effort to eliminate potential duplication, the Commission sponsored a series of meetings that resulted in coordination of the research programs of the two agencies. Since 1982, the National Marine Mammal Laboratory has assumed

responsibility for organizing and convening these coordinating meetings. Meetings are held on an annual basis and also involve representatives from two Eskimo organizations (the Alaska Eskimo Whaling Commission and the North Slope Borough) and the oil and gas industry, as well as the Minerals Management Service and the Commission.

Research efforts were initially focused on determining the size of the Bering Sea bowhead whale stock. To this end, camps have been established on the ice near Point Barrow, Alaska, to count the number of whales passing through the nearshore ice leads on their northern migration from their winter habitat to summer feeding grounds. This census work was originally carried out by the National Marine Fisheries Service and is now carried out by the North Slope Borough under the cooperative agreement referred to above. While census procedures have improved greatly since first begun in 1977, the number of whales sighted is affected by weather and ice conditions and hence has varied significantly from year to year. More important, the census may also be biased by the fact that an unknown number of whales may pass beyond the visual range of the census personnel while other whales may pass the census camps after operations have been halted by deteriorating ice conditions. To assess these possible sources of biases, the National Marine Mammal Laboratory attempted to carry out an aerial survey in 1984 to determine the number of whales using the offshore leads. Bad weather and ice conditions seriously hampered those efforts.

The North Slope Borough supported extensive acoustic work at the same location in an attempt to identify by sound those whales that could not be seen from the census camps. The results of both projects are now being analyzed and will be presented in January 1985 at the next interagency bowhead whale research planning meeting and at the Third Conference on the Biology of the Bowhead Whale which will be sponsored by the North Slope Borough.

Knowledge of age/sex composition and annual rate of increase, as well as the size of the bowhead population, is essential to determine the need for and effectiveness of various conservation measures. In 1981, the National Marine Fisheries Service began aerial photographic surveys of bowhead whales on their summer feeding grounds in the eastern Beaufort Sea to identify and estimate the length (age) of individual animals. Although the surveys have provided useful information, the sample sizes still are not large enough to make accurate estimates of general age composition, survival rates, or reproductive rates.

Extensive aerial surveys of the Bering Sea bowhead population also have been supported by the Minerals Management Service. The purpose of these surveys is to obtain information on the distribution, movements, and behavior of the whales. Reliable information on distribution and movements is needed to determine where and when oil exploration and development activities, particularly seismic testing, should be restricted to reduce or avoid possible impacts on whales. Information on normal behavior patterns is necessary in order to detect and monitor the possible effects of disturbance. The Minerals Management Service has also supported the development of methods to track large cetaceans by satellite.

Although much has been learned, there is a need for better information concerning: (1) the mortality rate of whales from causes other than the Eskimo harvest; (2) the location and characteristics of bowhead whale feeding and breeding areas and other areas of similar biological importance; and (3) the possible effects of offshore oil and gas activities on components of the whales' food chain.

When completed, the analyses now underway of the 1984 research program should indicate whether additional acoustic work would be useful, either on an experimental basis or as a monitoring program. Additional aerial surveys of spring ice leads also may be useful. During 1985, the Commission will participate in the interagency bowhead whale research planning meeting to assure that the Federal agency research programs are well conceived and effectively coordinated. The Commission also will continue to cooperate with the Alaska Eskimo Whaling Commission and the North Slope Borough in their research efforts.

Humpback Whale (*Megaptera novaeangliae*)

Humpback whales, which are found throughout the world's oceans, are among the several species of great whales that have been severely reduced in number as a result of past commercial whaling. Since 1966, the species has been protected by the International Whaling Commission. In the United States, it is listed as "endangered" under the Endangered Species Act. However, humpback whales, still taken by subsistence hunters off Bequia in the Caribbean and in Greenland, may also be threatened in other areas by human activities such as commercial shipping, recreational boating, offshore oil and gas development, commercial fisheries, and coastal development.

Glacier Bay National Park, Alaska

Glacier Bay and surrounding waters in southeast Alaska provide summer habitat for a portion of the North Pacific population of humpback whales. As noted in previous Annual Reports, there was a decline in the number of whales using the Bay in the late 1970s and it was believed that increased vessel traffic in the area could be a contributing cause. Beginning in 1979, the National Park Service promulgated interim regulations to restrict vessel traffic in the area and initiated consultations with the National Marine Fisheries Service to determine if additional measures were needed to protect whales. In response to a Commission-sponsored workshop and a 1979 Biological Opinion issued by the National Marine Fisheries Service under Section 7 of the Endangered Species Act, the National Park Service also initiated certain studies on the relationships between whales and prey and whales and boats in Glacier Bay and surrounding waters. The studies were carried out by the National Marine Fisheries Service with special funds appropriated by Congress to the National Park Service.

In May 1983, the Commission joined the two Services and others in a review of the research conducted up to that time, and the National Park Service requested re-initiation of Section 7 consultations under the Endangered Species Act. Subsequently, the National Marine Fisheries Service reviewed its earlier Biological Opinion. As was noted in the most recent Annual Report, the National Marine Fisheries Service concluded, among other things, that some increase in the amount of vessel use in Glacier Bay could be permitted without jeopardizing the southeast Alaska humpback whale population, provided that increases were implemented in a conservative manner and with an appropriate monitoring program. The Service recommended that no additional vessel traffic be allowed in the area unless the number of individual whales entering Glacier Bay remains equal to or greater than the 1982 level. Under such conditions, an initial increase of no more than 20 percent for both large ship and small vessel categories was recommended.

Interim regulations controlling vessel access and operations and protecting humpback whale prey species expired on 31 August and 31 December 1983, respectively. On 18 April 1984, the National Park Service published in the Federal Register proposed permanent regulations to protect humpback whales in the Glacier Bay area. The proposed regulations called for establishment of a permit system, vessel operating restrictions, and a mechanism for designating "whale waters"

and vessel limits. Additionally, harvest of certain species of fish and crustaceans, upon which humpback whales feed, would be prohibited during the time that whales were using the area.

While previous interim regulations had distinguished between "large ships" (at or exceeding 100 tons gross) and "small vessels" (less than 100 tons), the proposed permanent regulations reclassified the categories of affected vessels to include charter vessels (less than 100 tons, rated to carry up to 49 passengers for hire on an unscheduled basis); cruise ships (any vessel at or more than 100 tons carrying passengers for hire); private vessels (any motor vessel used for recreation); and tour vessels (any motor vessel under 100 tons carrying more than 49 passengers for hire or any small motor vessel regularly scheduled for hire). Also, while interim regulations had controlled the number of vessels entering the Bay on a given day, the new regulations established a "use day" concept. This mechanism would limit the number of vessels in the Bay at any given time by regulating the number of days that vessels in each category could use the Bay.

Concurrent with the publication of the proposed permanent regulations, the National Park Service proposed certain temporary regulations for calendar year 1984 on 18 April 1984. These included establishment of certain "whale waters" in the lower portion of the Bay, set up a permit system to control vessel entry, and established vessel operating requirements.

The Commission, in consultation with its Committee of Scientific Advisors, reviewed the proposed regulations and, on 18 May 1984, submitted comments to the National Park Service. In its letter, the Commission recommended that the proposed measures be undertaken, subject to certain modifications. In the Commission's view, the regulations could be improved with respect to: a) preventing disruptive vessel operations within 1/2 nautical mile of the whales when in the Bay; b) limiting the operations of seaplanes within the Bay; c) ensuring that violations of permits and vessel operating restrictions are subject to appropriate penalties; d) providing that any future increases in vessel use limits are implemented through permanent rather than temporary regulations; e) clarifying that the regulations do not authorize the National Park Service to increase vessel use in the Bay more than 20 percent above 1976 levels without first conducting further consultations with the National Marine Fisheries Service under Section 7 of the Endangered Species Act; and f)

ensuring that terms used in the proposed temporary restrictions are consistent with the terms used in the permanent regulations. Final regulations controlling vessel operations and harvesting of humpback whale prey species in Glacier Bay are expected to be promulgated in 1985.

Because permanent regulations could not be put into effect in time for the 1984 season, the National Park Service, on 29 May 1984, implemented temporary regulations to cover the 1984 whale season (June 1 to August 31). These provided for establishment of a permit system to control vessel entry into the Bay and adjacent waters; imposed vessel operating requirements; prohibited commercial harvest of certain fish and crustaceans eaten by humpback whales; and provided for additional protection for whales in the lower portions of the Bay through designation of "whale waters."

In October 1984, the National Park Service announced the establishment of temporary regulations for the 1985 whale season. These regulations allow for an increase in vessel operation in the Park area on the basis of the National Park Service's count of 23 whales in the Bay during the 1984 season. The temporary regulations for the 1985 season are expected to be published in the Federal Register simultaneously with the permanent regulations.

Humpback Whales in Hawaii

The waters surrounding the main Hawaiian Islands provide winter/spring calving and breeding habitat for a substantial portion of the North Pacific humpback whale population. As described in previous Annual Reports, the Commission has worked closely with the National Marine Fisheries Service and the State of Hawaii to identify and implement research and management programs to protect the whales and their habitat.

One authority for providing such protection is the Marine Protection, Research, and Sanctuaries Act of 1972. Under this authority, a proposal was submitted in 1977 to the National Oceanic and Atmospheric Administration's Office of Coastal Zone Management (now the Office of Ocean and Coastal Resource Management) to establish a National Marine Sanctuary for humpback whales in Hawaii. Due in part to confusion over how sanctuary designation might affect fishermen and other users of Hawaii's coastal waters, there was an initial lack of local public support for the sanctuary proposal. During the past several years, the Commission has consulted informally

with the Office of Ocean and Coastal Resource Management, the State of Hawaii, and others on the practicality and potential benefits of creating such a sanctuary.

In January 1984, the Office requested comments from the Commission and others on its "Proposed Hawai'i Humpback Whale National Marine Sanctuary Draft Management Plan and Environmental Impact Statement." The Commission, in consultation with its Committee of Scientific Advisors, reviewed the document and, by letter of 21 March 1984, submitted its comments. In its letter, the Commission noted that, while a well-conceived designation proposal could provide a useful basis for complementing existing authorities and programs for protecting humpback whales and their habitat in Hawaii, the document did not appear to provide a clear or well-organized description of proposed measures, particularly those concerning research and enforcement, and it failed to consider a number of alternative measures that could offer greater advantages than those associated with the proposed measures. The Commission therefore recommended that the document be revised and re-issued as a draft environmental impact statement so as to receive the benefit of further public review and comment.

Among other things, the Commission indicated that the draft environmental impact statement could be significantly improved by: reflecting more fully the results of recent research; including additional details on the purpose, scope, and mechanics of the steps that would be taken to encourage and direct research activities; describing the capabilities and effectiveness of existing enforcement, public information, and research efforts and the proposed arrangements for improving those efforts; and considering alternative forms of sanctuary administration. The Commission also recommended that, if the Office had not already done so, it consult with the National Marine Fisheries Service to determine whether and how the "core areas" proposed as part of the sanctuary's boundaries might be expanded to better reflect recent information on habitat use patterns of humpback whales in Hawaii.

On 13-15 November 1984, the Commission participated in a review of the National Marine Mammal Laboratory's research programs, including its cetacean research program. Based on information presented during the review, it was apparent that funding and logistic support were not adequate to effectively and efficiently meet all relevant data needs and that the research and management needs for the North Pacific population of humpback whales were illustrative of the problem. For example, existing data suggest that, in the North

Pacific, only the right and blue whale populations are smaller than the humpback population with respect to pre-exploitation size and that there are a number of threats to the population both in Hawaii and Alaska. However, there is neither a program nor a plan to monitor the population and its habitat or to identify and implement needed conservation actions. In its comments on the program review, the Commission noted the need for, and asked that it be advised of, steps being taken or contemplated to develop and implement recovery plans for humpback whales, right whales, bowhead whales, and other endangered cetaceans as required by the Endangered Species Act.

A response to the Commission's letter had not been received by the end of 1984. In 1985, the Commission will continue to work with the National Marine Mammal Laboratory as well as the Office of Ocean and Coastal Resource Management, the State of Hawaii, and others to identify and carry out the research and management activities necessary to protect the North Pacific population of humpback whales.

Right Whale (*Eubalaena glacialis*)

The right whale is one of the most endangered of the large whales. Over-exploitation by commercial whalers in the 19th and early 20th centuries reduced the species to a fraction of its original size and only a few small groups of animals remain. Along the northeast coast of the United States, for example, the right whale population has been estimated to number in the low hundreds and perhaps fewer than 200 animals. While the taking of right whales has been prohibited for nearly 50 years, the species' preference for coastal areas exposes it to a number of human activities which pose new threats to the whales and their habitats.

The Commission's efforts to enhance protection of right whales and their habitat and to encourage the species' recovery have been described in past Annual Reports. As a result of a Commission-sponsored workshop in 1979, a general plan for East Coast cetacean research was developed. This plan, which outlined needed research on right whales as well as other species, was subsequently implemented in part with funding provided by the Commission, the National Marine Fisheries Service, the Minerals Management Service, and private environmental groups. An international workshop on right whales, convened in June 1983 at the request of the International Whaling Commission and funded by the Commission

and others, further identified priority research and management needs for the species throughout its world-wide range.

As noted in the previous Annual Report, the Commission and the World Wildlife Fund-U.S. provided funds in 1982 to develop a right whale sighting network in the southeast United States. Between December 1982 and May 1983, a total of 27 right whale sightings were made along the coast between Cape Hatteras, North Carolina, and central Florida. The sightings were of at least 15 individual whales, including two or more cow-calf pairs. These sightings together with previous sighting data suggest that the coastal waters of the southeastern states provide over-wintering/calving habitat for at least a portion of the northwest Atlantic right whale population. The sighting results have been provided to other interested Federal agencies, including the Minerals Management Service, which is responsible for ensuring that offshore oil and gas activities on Federal leases do not adversely affect endangered species such as the right whale. Because areas of oil and gas activities off the southeast United States could include the calving/breeding grounds for all or part of the northwest Atlantic right whale population, the Minerals Management Service, in consultation with the Marine Mammal Commission, is considering the initiation of a major right whale research program in 1985 as part of its Atlantic OCS Environmental Studies Program.

In addition to the activities described above, the Commission provided funds in 1984 for: aerial surveys of right whales in the Great South Channel east of Cape Cod, Massachusetts; aerial and shipboard surveys to document the number and movement of right whales in the Bay of Fundy during the summer months; and a workshop to develop a research and management plan for the northwest Atlantic right whale population. These studies are described in greater detail in Chapter III of this Report.

In 1985, the Commission will continue to work with the National Marine Fisheries Service, the Minerals Management Service, and other organizations to ensure that urgent research and management needs for right whales are identified and carried out as promptly and as efficiently as possible.

Bottlenose Dolphin (*Tursiops truncatus*)

The bottlenose dolphin is the most common cetacean in the coastal waters of the southeast United States and is the cetacean species most frequently taken for scientific

research and public display. Capture of bottlenose dolphins for these purposes began early in the 1900s and, although records are poor, it may be that as many as 1,800 animals were taken from coastal U.S. waters prior to passage of the Marine Mammal Protection Act in 1972. In the waters of Florida alone, at least 600 animals were taken from 1970 to 1972. Since that time, authorizations have been granted to collect approximately 500 additional bottlenose dolphins.

Despite the considerable number of animals that have been removed from this area, there probably has not been a significant adverse effect on the species as a whole. However, the species does not occur uniformly throughout its range and a number of more or less discrete or "local" populations may exist. If so, repeated captures and removal of animals from certain areas could have an adverse effect on these local populations. Such effects could be compounded by incidental take in fisheries and by disturbance and environmental degradation resulting from coastal development, offshore oil and gas development, and other human activities.

Under the Marine Mammal Protection Act, the National Marine Fisheries Service is responsible, among other things, for assuring that live-captures and removals do not have significant adverse effects on bottlenose dolphin populations. In 1977, the Service, in consultation with the Commission, developed and adopted a system for regulating the number of bottlenose dolphins authorized to be taken annually from various areas. The following year, again in consultation with the Commission, the Service convened a workshop to define the information needed to accurately identify and assess the status of populations that may have already been affected by the removal of animals and to better determine the number of animals, by age and sex, that could be taken from various areas without causing populations to be reduced below their optimum sustainable levels. Subsequently, the Southeast Fisheries Center of the National Marine Fisheries Service developed a long-range program for assessing and monitoring the number, age/sex composition, and productivity of dolphins in areas where past and current collection activities were concentrated.

During 1983, the Commission continued to consult with the Service regarding the potential adverse effects of repeated chase and encirclement of animals, as well as removal of animals, from management areas or subareas. Following a program review in February 1983, the Commission wrote to the National Marine Fisheries Service outlining steps it felt should be taken to better assure that dolphins in the

southeast United States are not being affected adversely by taking for public display or scientific research. As noted in the previous Annual Report, the Service responded positively to a number of the Commission's recommendations before the end of 1983.

On 15 May 1984, the Commission wrote to the National Marine Fisheries Service reiterating its concern that the actual impacts of collection activities on bottlenose dolphins may be more extensive than might appear from a review of collection permits. The Commission noted that, during collection operations, more animals are chased and encircled than are actually removed and, in some cases, dolphins are captured and held temporarily while collectors determine which animals are most suitable for their purposes. For these reasons, the Commission recommended that permits reflect all forms of taking, not just permanent removal of individual animals.

To address this concern, the Commission also requested that the Service take such steps as may be possible to assess the numbers, ages, and sexes of animals that have been or are being chased and/or encircled, including the geographic area of take, and advise the Commission of the the number of animals so affected. The Commission also recommended that collectors of record be notified that future permit applications must include estimates of all taking involved in the capture operations -- not just those animals removed from the wild -- and that they will be required to report the numbers and, as possible, ages and sexes of animals chased, encircled, held, and released, as well as those permanently removed from the wild. The Commission advised the Service that it would defer consideration of any permit applications received after 15 May 1984 that did not contain the information requested.

The Service adopted these recommendations and has transmitted to the Commission all data received from the collectors of record. On 30 November 1984, the Service issued the first permit in accordance with the Commission's recommendations. That permit contained special conditions authorizing the taking of such numbers of animals as might be likely to be affected by the capture operations and requiring submission of a post-collection report indicating the number of animals chased, encircled, and held as well as permanently removed.

Harbor Porpoise (Phocoena phocoena)
(Central California Population)

The harbor porpoise occurs throughout the world's oceans, including the waters off Europe, the Far East, and both coasts of North America. Because of its inshore distribution, the species is particularly vulnerable to coastal pollution and net fisheries.

As noted in the previous Annual Report, it became apparent in 1983 that the rapidly growing use of gill and trammel nets off northern and central California was causing a large incidental kill of harbor porpoise and other marine species. Also as noted in the previous Annual Report, the Commission, by letter of 10 November 1983, recommended that the National Marine Fisheries Service immediately undertake consultations with the California Department of Fish and Game to cooperatively assist in the development and implementation of a program to eliminate or reduce the incidental take and to assess and monitor the affected harbor porpoise population(s).

The Service did not reply to the Commission's 10 November 1983 letter within six weeks, as requested, and, by letter of 12 January 1984, the Commission requested that it be advised of steps that had been or were being taken to address the problem. The Service responded by letter of 30 January 1984, indicating that: it had been working with researchers from the California Department of Fish and Game to determine the extent of the problem; the level of incidental mortality had increased off San Mateo, San Francisco, and Marin Counties; existing data indicated that the fishery interaction was occurring primarily at the southern periphery of the harbor porpoise range; the seasonal abundance of harbor porpoise in this portion of the range is at a minimum when fishing effort is maximum; an aerial survey of the Farallon Basin conducted in October 1983 indicated that harbor porpoise abundance in this area was comparable to that observed during surveys in 1980, 1981, and 1982; and the California Department of Fish and Game was proposing legislation to prohibit net fishing in affected areas off San Mateo, San Francisco, and Marin Counties.

The State subsequently enacted legislation, which went into effect in July 1984, restricting the use of gill nets off San Mateo, San Francisco, and Marin Counties. In addition, the California Department of Fish and Game increased its fishery observation effort and, in September 1984, the National Marine Fisheries Service conducted a combined aerial/shipboard survey to census harbor porpoise in coastal

waters from Point Conception, California, to Cape Flattery, Washington.

In 1984, more than 300 halibut nets were monitored by California Department of Fish and Game personnel and fifteen harbor porpoise and twenty-one harbor seals were observed caught in the nets. In 1983, four harbor porpoise and eleven harbor seals were observed caught in 151 net sets. These data indicate that the restrictions on gill net fishing have not solved the problem.

Preliminary analyses of data from the population survey carried out in September 1984 indicate that harbor porpoise occur over a broader range and are more abundant in central and northern California than previously thought. Preliminary analyses of the survey data also indicate that densities off the three-county area are lower than those in adjacent areas, possibly because of the incidental take.

The National Marine Fisheries Service and the California Department of Fish and Game plan to conduct additional surveys and to continue monitoring the gill net fishery in 1985. The Commission will review the results of these efforts and recommend such further observations and conservation measures as may be needed.

Gulf of California Harbor Porpoise (Phocoena sinus)

The Gulf of California harbor porpoise, sometimes known as the cochito or vaquita, is one of the smallest and least-known cetaceans. Only about 20 confirmed records of the species have been documented. Its range is thought to be limited to the northern portion of the Gulf of California, Mexico. Field surveys of that area, which were supported by the Commission in 1976 and again in 1979, resulted in only a few probable sightings.

As noted in the Commission's previous Annual Report, early in 1983 the National Marine Fisheries Service was petitioned to list the species as "threatened" under the Endangered Species Act. On 14 September, the Commission recommended that the species be listed as "endangered" instead of the less-protected designation of "threatened." In its comments, the Commission noted, among other things, that potential threats to the population include interactions with fisheries and possible loss of habitat.

On 25 April 1984, the Service published a Federal Register notice proposing regulations listing the Gulf of California harbor porpoise as "endangered" on the basis of the presumed low number of animals and the threat of mortality due to incidental catch in gill net fisheries throughout its range. In response to a request for comments contained in the Service's notice, the Commission wrote to the Service on 29 June noting that the proposed action was consistent with the Commission's 14 September 1983 recommendation that the Gulf of California harbor porpoise be added to the list of endangered species. A final determination by the Service on whether to proceed with the proposed listing is expected to be announced early in 1985.

A special scientific workshop on Phocoena sinus was held on 29-31 March 1984 in conjunction with the IX International Meeting on Marine Mammals of Baja California, held in La Paz, Mexico. During the workshop, a number of research needs were identified with respect to this species. Those included: intensive beach surveys along the upper Gulf of California to collect bones and carcasses of harbor porpoises; examination of carcasses of porpoises stranded or taken incidental to fishing operations to determine basic life history parameters; review of gill net and trawl fisheries to determine the number of years that porpoises have been taken incidental to fishing operations; evaluation of the probable impact of future incidental take; acquisition of additional information on the species' range; and evaluation of the condition of the habitat in light of human alterations.

In response to these identified research needs, the Commission provided funding for a cooperative U.S.-Mexican effort to collect and archive harbor porpoise remains deposited on beaches along the northern Gulf of California (see Chapter III for additional details).

During 1985, the Commission will, as possible, continue to assist in efforts to increase knowledge and enhance the protection of this species.

Guadalupe Fur Seal (*Arctocephalus townsendi*)

The Guadalupe fur seal is named for its primary pupping and breeding site, the Isla de Guadalupe, 140 miles west of Baja California, Mexico. Its historical distribution and abundance are unknown because commercial sealers and other observers failed to distinguish between it and the northern

fur seal in their records. Prized for its fur, the Guadalupe fur seal was heavily exploited in the early 1900s and, by the middle of the century, was thought to be extinct.

Discovery of a breeding colony on Isla de Guadalupe in 1954 renewed hopes for the species' survival. During the next 20 years, the animal was rarely observed outside that area. Over the past decade, there have been sightings of adult and juvenile Guadalupe fur seals at some of the Channel Islands off southern California and recolonization of the species in that area now is considered possible. This will depend primarily on the continued growth of the Isla de Guadalupe population, but may also be influenced by the dynamics of other pinniped species in California waters and the nature and scope of human activities in the area. A survey conducted jointly by the Mexican Department of Fisheries and the National Marine Mammal Laboratory during the summer of 1984 indicates that the current population is about 1,500 to 2,000 animals and that approximately 200 pups are produced annually.

In November 1983, the National Marine Fisheries Service received a petition to list the species as "endangered" under the Endangered Species Act. Based on information provided in the petition, the Service determined that designation as "endangered" might be warranted and, by means of a 6 February 1984 Federal Register notice, it requested additional information and data for use in evaluating the status of the Guadalupe fur seal.

The Commission, in consultation with its Committee of Scientific Advisors, reviewed available information on the Guadalupe fur seal and, by letter of 9 April 1984, recommended to the Service that the species be designated as "threatened" under the Endangered Species Act. In its letter, the Commission noted that fur seals on Isla de Guadalupe comprise a small but increasing population and that, while human activities around this breeding habitat may represent some level of disturbance to the animals, it was not clear that these activities were growing or intensifying to the point where they could halt the population's apparent growth or threaten its continued existence. The Commission also noted that human-related threats, such as those associated with offshore oil spills or sonic booms, could have an adverse impact on potential recolonization of the Channel Islands, but that they do not appear to pose a threat to the continued existence of the Isla de Guadalupe population. Thus, the Commission concluded that, while the population could become an endangered species within the foreseeable

future, it currently does not appear to be in danger of extinction. The Commission recommended, however, that if new information becomes available indicating that possible threats to the species' breeding grounds are increasing and/or the trend in population growth is halted or reversed, the status of the population should be promptly reassessed to determine whether it should be designated as "endangered."

The Service's determination as to whether to propose listing the species under the Endangered Species Act is expected to be made early in 1985. The Commission and its Committee of Scientific Advisors will continue to review the status of the population and to assist the National Marine Fisheries Service in further efforts to determine appropriate actions with regard to conservation and protection of the species.

CHAPTER VIII

MARINE MAMMAL MANAGEMENT IN ALASKA

The Marine Mammal Protection Act sets forth certain procedures whereby the Secretaries of Commerce and the Interior may, in response to a properly submitted request, take actions that would lead to the transfer of management authority from the Federal Government to a state for marine mammals found in that state. In order to transfer Federal management authority, the Secretary with jurisdiction over the species in question must determine, after notice and opportunity for public comment, that the state has developed and will implement a program for the conservation and management of the affected species that satisfies the requirements of Section 109 of the Act. In making this determination, the Secretary must issue a finding that the state has, among other things, established a process to determine the optimum sustainable population for each affected species and the maximum number of animals that may be taken without reducing the species below that level.

Certain additional points are germane to requests for transfer of management to the State of Alaska. For example, the State of Alaska's conservation and management program must include a mechanism whereby determinations are made for each species that is below its optimum sustainable population level of the maximum numbers of animals that can be taken by rural Alaska residents for subsistence uses while still allowing that species to increase towards its optimum sustainable population. Furthermore, Alaska's program must include a State statute and regulations which require that subsistence takings shall not be wasteful and that priority shall be given to subsistence rather than other consumptive uses of the species. Federal regulations implementing the transfer of management requirements that were established by the 1981 amendments to the Act were promulgated by the Fish and Wildlife Service and the National Marine Fisheries Service on 6 May 1983.

During 1982 and 1983, the State of Alaska took preliminary steps toward requesting a transfer of management for ten species of marine mammals. Early in 1984, however, the State determined that it would be appropriate to conduct a public education and comment process prior to making a final decision on whether or not to proceed with such a request. As part of this process, the State has held a series of public meetings in order to provide information on the requirements of the transfer process, explain the likely consequences of undertaking a State management program, and solicit comments from coastal residents and other affected parties. These meetings are scheduled to be completed early in 1985.

The comments and information obtained during the State's public review process are to be compiled by the Alaska Department of Fish and Game and submitted to the Governor's Office early in 1985. Following the review of this information by the Governor's Office and appropriate State agencies, the State will make a final decision on whether or not to request transfer of management authority.

In order to bring together research and management information essential for whoever has management authority, the Commission, with the cooperation of representatives of the Eskimo community, the State, the Fish and Wildlife Service, the National Marine Fisheries Service, and private groups, established seven working groups charged with preparing comprehensive species accounts for the ten marine mammal species for which the State may request transfer of management. When completed, these species accounts will summarize all available information on population status, threats to the various populations, research activities that are either underway or planned, and management programs which either exist or are proposed. The reviews should reveal data and information gaps for which the groups can develop appropriate responses in terms of detailed research and management program plans which should be of equal value to either the State or Federal Government.

Working groups were formed for walrus, polar bears, sea otters, sea lions, harbor seals, beluga whales, and ice seals (ringed, bearded, ribbon, and spotted seals). Each group is composed of biologists, biometricians, coastal residents, and representatives of the conservation community. The working groups held their first meetings in Fairbanks in July 1984, and completion of the reports is scheduled for mid-1985.

CHAPTER IX

OUTER CONTINENTAL SHELF OIL, GAS AND HARD MINERALS DEVELOPMENT

Activities and accidents associated with the exploration and development of non-living resources of the Outer Continental Shelf, including oil, gas, and hard minerals deposits, have the potential for adversely affecting marine mammals and the ecosystems of which they are a part. Under the Outer Continental Shelf (OCS) Lands Act, the Department of the Interior's Minerals Management Service is responsible for predicting, mitigating, and detecting the adverse effects of OCS development. The National Marine Fisheries Service and the Fish and Wildlife Service are responsible, under the Marine Mammal Protection Act and the Endangered Species Act, for reviewing proposed actions and advising the Minerals Management Service of measures that may be needed to assure that they will not be to the disadvantage of marine mammals and other wildlife. The Commission reviews the relevant policies and activities of these agencies and recommends actions that appear necessary to conserve marine mammals and their habitats. The Commission's activities in this regard in 1984 are discussed below.

Proposed OCS Lease Sale #90 Offshore The South Atlantic States

Lease Sale #90, tentatively scheduled for March 1985 but subsequently rescheduled for July 1985, involves 7,245 tracts (approximately 40.8 million acres) of submerged OCS lands off the Atlantic coast of the southeastern United States. As noted in previous Annual Reports, the Commission on three previous occasions (22 April 1981, 13 December 1982, and 14 March 1983) has provided comments to the Minerals Management Service on proposed offshore operations in this area.

On 19 April 1984, the Service issued its Draft Environmental Impact Statement (DEIS) on proposed lease sale #90. The document indicated that approximately 32 species of marine mammals, including six species of endangered whales (right, humpback, blue, fin, sei, and sperm whales) and the endangered West Indian manatee are found in the South Atlantic planning area. It concluded that: no significant impacts on endangered whales are expected to result from the proposed action although the northwest Atlantic right whale population could be moderately affected; the endangered West Indian manatee could be adversely affected by onshore development although existing state and Federal laws should preclude any serious threats; cumulative impacts from OCS-related activities in this and other Atlantic coast leasing areas on fin, sei, sperm, humpback, and right whales are uncertain since these species are known to occur to some degree in all three leasing areas along the U.S. Atlantic coast; and adverse cumulative impacts from OCS-related activity could be particularly severe for endangered right and humpback whales. The DEIS did not identify possible adverse effects on non-endangered species or populations of marine mammals.

The Commission, in consultation with its Committee of Scientific Advisors, reviewed the DEIS and, by letter of 19 June 1984, provided comments to the Minerals Management Service. In its letter, the Commission indicated that the document provided a generally accurate and useful review of available information concerning marine mammals found in and near the proposed lease sale area. The Commission also noted that conclusions concerning possible impacts on endangered manatees and endangered blue, fin, sei, and sperm whales seemed reasonable, given what is known about the northwest Atlantic populations of these species. The Commission questioned, however, whether available information was sufficient to conclude that effects on the northwest Atlantic humpback whale population would not be significant or that impacts on the northwest Atlantic right whale population would not be likely to exceed "moderate" levels as a result of the proposed action.

The Commission recommended that, if the Minerals Management Service had not already done so, it consult with the National Marine Fisheries Service to determine: (a) the adequacy of available information for ensuring that endangered right and humpback whales will not be adversely affected by the proposed action; and (b) the need, if any, to expand research and monitoring programs to better assess, detect, and mitigate the possible effects, including cumulative effects, of oil- and gas-related activities along the Atlantic

coast. The Commission noted that assurance that endangered and non-endangered whales would not be adversely affected by the proposed action would be greater if: (a) lease stipulations were expanded to more clearly describe the provisions and steps that would be taken to ensure that lease managers have adequate information to predict, detect, and avoid or mitigate possible adverse effects on marine mammals and other wide-ranging biological resources; and (b) the Information to Lessees concerning marine mammal protection were expanded to provide guidance on recommended distances and conduct to be followed by ship and aircraft operators when in the vicinity of whales.

Proposed OCS Lease Sale #89
St. George Basin

Proposed Lease Sale #89, tentatively scheduled for April 1985 but subsequently rescheduled for September 1985, involves 12,563 blocks (approximately 69.7 million acres) of submerged OCS lands in the St. George Basin in the southeastern Bering Sea. The Minerals Management Service's DEIS on the proposed action indicates that sea otters, walrus, five species of pinnipeds, at least ten species of non-endangered whales, and eight species of endangered whales (bowhead, right, fin, sei, gray, blue, sperm, and humpback whales) may occur in the proposed sale area. It concluded that: (a) the northern fur seal is the pinniped species at greatest risk from oil spills and disturbance associated with the proposed action; (b) oil spill-related effects on fur seals are not expected to exceed moderate levels; (c) oil spills and disturbance associated with the proposed action are likely to have minor levels of impact on non-endangered cetaceans and on endangered gray, right, fin, and humpback whales and negligible impacts on endangered bowhead, blue, sei, and sperm whales; and (d) cumulative effects from the proposed action and other offshore oil and gas development and tankering activity are likely to have moderate-to-major effects on northern fur seals and regional sea otter populations, moderate effects on gray whales, and minor effects on bowhead, right, humpback, and sperm whales.

The Commission, in consultation with its Committee of Scientific Advisors, reviewed the DEIS and provided comments to the Service by letter of 6 July 1984. The Commission noted that the DEIS provided a thorough review of available information concerning the effects of oil spills and disturbance on marine mammals and a generally accurate and useful review of information on marine mammal populations found in

the proposed lease area. The Commission indicated that, with the exception of the southeast Bering Sea population of northern fur seals, which is presently declining in abundance, the evaluation of possible impacts on both endangered and non-endangered marine mammals seemed reasonable.

With respect to northern fur seals, the Commission pointed out that, since oil spills could affect foraging grounds and migratory routes, as well as pupping and breeding areas, the possible effects more likely would range from moderate to major. The Commission therefore recommended that, if the Minerals Management Service had not already done so, it consult with the National Marine Fisheries Service to determine: (a) the accuracy of information and impact assessments in the DEIS concerning the northern fur seal population; (b) the possible need for additional mitigation measures to ensure that the population is not adversely affected by the proposed action; and (c) any additional steps that should be taken to avoid unacceptably high risks to fur seals from the cumulative effects of existing and proposed offshore development and tankering activities in the southeastern Bering Sea.

The Commission further recommended that the DEIS be modified to: (a) include the best available information on the status and trends of the northern fur seal population; (b) provide additional analysis of the possible effects of oil spills on fur seal foraging grounds and migratory corridors; (c) expand the oil spill trajectory analysis by including hypothetical oil spill launch points at the assumed St. George Island pipeline and tanker terminal and in the Unimak Pass tanker corridor between the Bering Sea and the North Pacific Ocean; and (d) describe the post-sale research and monitoring responsibilities of the Service's Environmental Studies Program and its role in ensuring that lease managers have the types and quality of environmental information necessary for predicting, avoiding, and detecting possible adverse impacts on endangered and non-endangered marine mammals and the ecosystems of which they are a part.

Proposed Polymetallic Sulfide Minerals Lease Sale
Gorda Ridge, Offshore Oregon and Northern California

The proposed Gorda Ridge lease sale, originally planned for August 1984 but subsequently postponed indefinitely, would have been the Minerals Management Service's first major offering of submerged lands for the purpose of hard minerals development. The proposed sale area encompasses 180,000

square kilometers of OCS land off the coasts of Oregon and northern California. Potential lessees would have been authorized to carry out activities related to exploration, development, and production of polymetallic sulfide minerals.

The Service's DEIS on the proposed sale noted that as many as 33 species of marine mammals could be affected by activities associated with the proposed action. These include seven species of endangered whales (gray, humpback, sperm, blue, fin, right, and sei whales) and the threatened southern sea otter population. The Service concluded that both endangered and non-endangered marine mammals could be affected by vessel traffic, the use of explosives, and sediment plumes from the at-sea mining operations, but that the impacts of these activities would not exceed low levels. The DEIS further noted that formal consultations under Section 7 of the Endangered Species Act had been initiated with the National Marine Fisheries Service and the Fish and Wildlife Service and that the results of these consultations would be considered and included in the Final EIS.

The Commission, in consultation with its Committee of Scientific Advisors, reviewed the DEIS and provided comments to the Service on 29 February 1984. The Commission noted that, in general, the document provided a comprehensive summary of information concerning marine mammals likely to be affected by the proposed activities and the potential impacts on these species. The Commission also noted that mining operations of the type and scale envisioned in the DEIS had not been conducted previously and, as a result, the environmental impact assessment was based upon a number of assumptions regarding the probable mining operations. The Commission recommended that, if the Minerals Management Service had not already done so, it consult with the National Marine Fisheries Service and the Fish and Wildlife Service to ensure that baseline information and monitoring programs that would be initiated when mining operations commence were adequate to detect possible unforeseen impacts on endangered and non-endangered marine mammals, as well as on other marine species, particularly impacts associated with the introduction of heavy metals into the area's food web.

The DEIS also identified a number of potential mitigating measures that could help detect, reduce, or avoid possible impacts on marine mammals and other marine resources, including a biological stipulation, a downshunting stipulation, an environmental report requirement, and a notice of information to lessees concerning protection of seabirds, marine mammals, and endangered species protection. These measures would be

useful and the Commission recommended that the Service adopt them as part of the proposed action. The Commission further recommended that: (a) a Biological Task Force be established for the Gorda Ridge area to ensure that the Service's Regional Manager has the best possible advice concerning the status of the environment and implementation of needed mitigating measures; and (b) additional analyses of the possible impacts of onshore facility construction and operation on estuarine environments be included as part of the Final EIS.

The Minerals Management Service's Regional Environmental Studies Program

As noted above, the Minerals Management Service is responsible for assessing and mitigating the possible adverse effects of offshore oil and gas exploration and development. To help meet this responsibility, the Service has established Regional Environmental Studies Programs, which are administered by its OCS offices in Metairie, Louisiana; Los Angeles, California; Anchorage, Alaska; and Vienna, Virginia. The Service also has contracted with the National Oceanic and Atmospheric Administration's Office of Oceanography and Marine Services to plan and administer the Alaska Outer Continental Shelf Environmental Assessment Program (OCSEAP).

To help the Service meet its responsibilities with regard to the conservation and protection of marine mammals, the Commission: reviews and provides comments on regional studies plans, environmental impact statements, and requests for proposals related to marine mammal research developed by the Service; participates in meetings of Technical Proposal Evaluation Committees convened by the Service to review research proposals; and helps plan and participates in meetings and workshops to review and coordinate relevant research programs being conducted or planned by the Minerals Management Service, the National Marine Fisheries Service, the Fish and Wildlife Service, and other Federal, state, and private agencies and organizations.

General Program Review

At its meeting in July 1984 in Fairbanks, Alaska, the Commission and its Committee of Scientific Advisors met with representatives of the Minerals Management Service, the National Marine Fisheries Service, the Fish and Wildlife Service, and others to review on-going and planned research aimed at enhancing the protection and recovery of certain

marine mammal populations. During the review, representatives of the Minerals Management Service briefed the Commission on: marine mammal-related studies that had been or were being supported by the Service's OCS offices; the OCS lease sales scheduled over the next five years; and the types of marine mammal-related research and monitoring activities expected to be undertaken during the next two to five years, with particular emphasis on the Alaskan Environmental Studies Program. Questions were raised during the review as to the reliability of data and procedures being used to predict the likelihood and probable effects of oil spills and the nature and likely effectiveness of the existing capability for detecting, containing, and cleaning up oil spills in ice-covered areas. Subsequent discussion and published information provided by the Service indicate that there are a number of uncertainties concerning the probability of occurrence and the likely effects of oil spills on marine mammals and habitats critical to their survival and that the capability to detect, contain, and clean up oil spills in ice-covered areas is limited at best.

Atlantic OCS Regional Environmental Studies Program

To provide a better basis for assessing and mitigating the possible adverse effects of OCS development on marine mammals and other species along the U.S. Atlantic coast, the Minerals Management Service, through its Atlantic OCS Regional Environmental Studies Program, has supported a number of marine mammal-related research projects, including the Cetacean and Turtle Assessment Program (CeTAP) off the New England and mid-Atlantic coasts and studies of the effects of oil on bottlenose dolphins and other cetaceans. As discussed in previous Annual Reports, these projects have resolved many uncertainties concerning possible OCS development-related effects on marine mammals and the ecosystems of which they are a part. However, as noted above and in Chapter VII of this Report, information on northwest Atlantic populations of right whales, humpback whales, and perhaps other marine mammals still is insufficient to assure that offshore oil and gas development can be planned and conducted so as to avoid adversely affecting these populations.

Recognizing the possible deficiencies in the existing data base, the Atlantic Regional Office of the Minerals Management Service convened a workshop on 20 December 1984 to review the progress and results of marine mammal research funded by the Office and to assess the need and relative priorities for additional studies necessary to assess and

avoid or mitigate the possible effects of offshore oil and gas development on marine mammals in the Atlantic OCS. The Commission's Scientific Program Director participated in the workshop and, by letter of 26 December 1984, provided comments to the Service on marine mammal research priorities. Among other things, the Commission's letter noted that further research was needed to determine whether the results of laboratory studies on the effects of oil on bottlenose dolphins would be applicable to free-ranging animals in the natural environment and to species other than those studied in the laboratory. It noted that a priority task was to develop and adopt a plan and protocol for conducting behavioral observations and sampling studies whenever and wherever oil spills occur in areas potentially inhabited by endangered, threatened or representative species of marine mammals.

Recognizing that available information was not, and possibly never would be, sufficient to accurately predict all the possible adverse effects of offshore oil and gas development, the letter noted that, in order to detect and mitigate possible unforeseen effects, it would be necessary to select and monitor environmental variables, including marine mammal species and populations likely to be sensitive indicators of changes caused by disturbance, oil spills etc. With respect to this point, it also noted that existing regional marine mammal stranding programs, organized through the Regional Offices of the National Marine Fisheries Service, would be a useful and logical source of data to help monitor and detect possible OCS development-related effects on marine mammals. It suggested that the Minerals Management Service contact the individuals administering the regional stranding programs to determine whether and how those programs might be used to help meet the aforementioned monitoring needs.

Finally, since certain data on migrations and habitat-use patterns might best be obtained by satellite-linked radio-tracking, it was noted that it might be useful to hold a workshop or to contract for a study to evaluate existing radio-tracking technology and to determine when, where, how, and how many transmitters should be deployed and monitored to resolve critical uncertainties on the location of feeding areas, breeding areas, and other areas of similar importance to right whales and other species in and near the Atlantic OCS.

The Commission expects to continue working with the Minerals Management Service and other involved agencies and organizations during 1985 to review plans for offshore lease sales and to develop and implement needed marine mammal-related research and management actions.

CHAPTER X

MARINE MAMMAL MAINTENANCE STANDARDS AND REGULATIONS

On 20 September 1979, the Department of Agriculture's Standards and Regulations for the Humane Handling, Care, Treatment, and Transportation of Marine Mammals went into effect. These Standards, promulgated by the Department of Agriculture under the Animal Welfare Act in response to the Commission's recommendations of 20 October 1974, were the subject of lengthy and extensive correspondence, consultation, and rulemaking, all of which are discussed in the Commission's previous Annual Reports.

The Standards require dealers, research facilities, exhibitors, operators of auction sales, carriers, and intermediate handlers to comply with minimum standards relating to the various aspects of maintenance and transportation of marine mammals in captivity. All such persons or facilities maintaining marine mammals in captivity in the United States must obtain a license from the Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) and must maintain those marine mammals in compliance with the Standards unless a variance has been obtained to allow a limited time for modification of existing facilities, construction of new facilities, or other actions necessary to achieve full compliance.

During the succeeding five years, representatives of the Animal and Plant Health Inspection Service consulted with representatives of the Commission, the National Marine Fisheries Service, the Fish and Wildlife Service, the American Association of Zoological Parks and Aquaria, and others concerning the practical effects of application of the Standards and the need for changes. On 29 July 1983, the Service published proposed amendments to the Standards in the Federal Register for comment. The Commission commented to the Service by letter of 30 September 1983, recommending that the proposed amendments be adopted subject to certain modifications set forth in its letter.

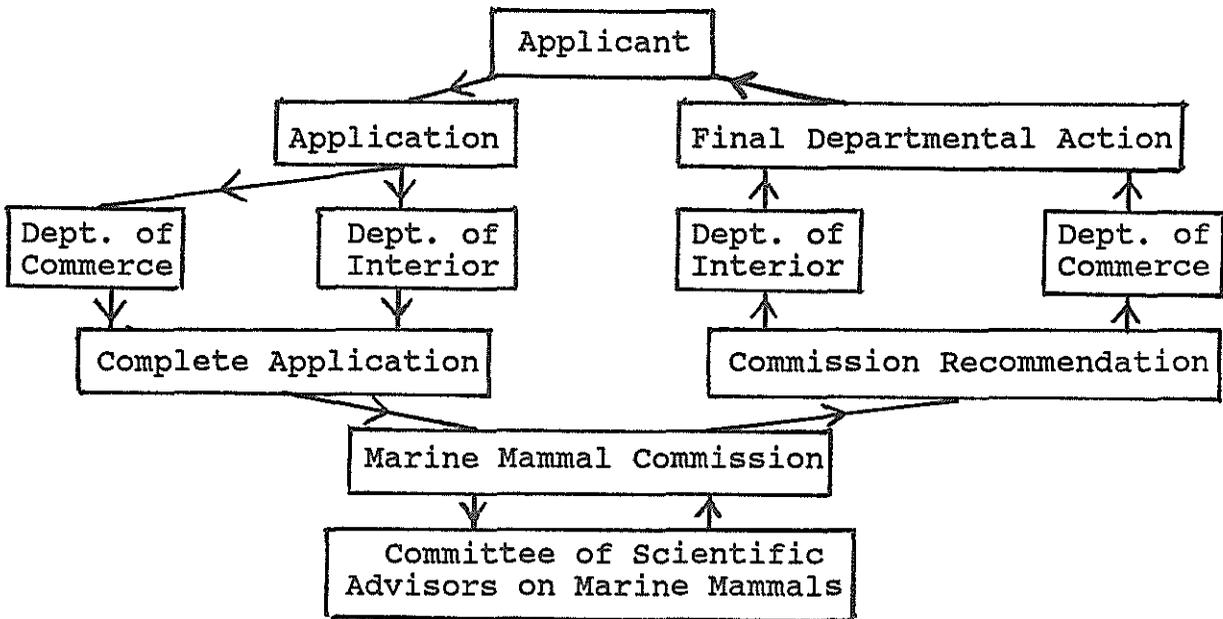
On 28 June 1984, the Animal and Plant Health Inspection Service published its final amendments to the Standards in the Federal Register. Significant areas covered by the final amendments included space requirements for primary enclosures for certain marine mammals, new procedures for the granting of variances, construction requirements for housing marine mammals, requirements for accompanying pinnipeds during transport, and specifications for holding areas for marine mammals maintained in transportation facilities.

In an effort to facilitate enforcement of the Standards and provide Animal and Plant Health Inspection Service inspectors with information that is likely to assist them in performing their responsibilities, the Commission, in conjunction with the Animal and Plant Health Inspection Service, the Fish and Wildlife Service, and the National Marine Fisheries Service, will sponsor a three-day training seminar in April 1985. The objectives of this program are to instruct the inspectors on the requirements of the Animal Welfare Act, the Standards for the Humane Handling, Care, Treatment, and Transportation of Marine Mammals, and the Marine Mammal Protection Act; provide them with information on marine biology, including species identification, behavior, and general anatomy and physiology; and introduce them to the basic practices of marine mammal husbandry. Members of the Commission's Committee of Scientific Advisors will participate in the program as instructors. Participation is also expected from the public display industry.

CHAPTER XI

PERMIT PROCESS

The Marine Mammal Protection Act places a moratorium, with certain exceptions, on the taking and importing of marine mammals and marine mammal products. One exception is the provision for the issuance of permits by either the Secretary of Commerce or the Secretary of the Interior, depending upon the species of animal involved, for the taking of marine mammals for purposes of scientific research or public display. Prior to the issuance of a permit, the application is reviewed by the Commission in consultation with its Committee of Scientific Advisors on Marine Mammals. The following is a schematic representation of this permit review process.



Application Review

The permit application and review process involves three stages: (1) receipt and initial review of the application at the Department, publication of a notice of receipt of application in the Federal Register, and transmittal to the Commission; (2) review of the application by the Commission and transmittal of its recommendation to the Department; and (3) final processing by the Department, including consideration of all comments and recommendations of the Commission and the public, resulting in the approval or denial of the application. The total review time (initial receipt of application until final Departmental action) depends on many factors, including: the sufficiency of the information provided by the applicant; special actions, such as inspection of an applicant's marine mammal holding facilities, that may be warranted before a decision can be reached; and the efficiency and thoroughness of those responsible for the agency review.

During 1984, the Commission made recommendations on 40 applications submitted to the Department of Commerce (including six applications that were received in 1983 but which did not receive final action until 1984) and 11 applications submitted to the Department of the Interior. The Commission's average review time for complete applications was 31 days (median, 29 days). Not included in the preceding statistics are recommendations on one application which was awaiting final action by the Department of Commerce, three applications withdrawn prior to final action by the Department of the Interior, and two applications which were under Commission review at year's end. The Commission, in consultation with its Committee of Scientific Advisors, also made recommendations on 13 requests to modify permits during 1984. The average time required for Commission review of these matters was 28 days.

For the 40 applications processed by the Department of Commerce during 1984, it took an average of 106 days (median, 81 days) from the date the application was received by the Department until final action was taken. The 11 permit applications submitted to the Department of the Interior were processed in an average of 99 days (median, 96 days). If calculated from the date of receipt of a complete application by the Services, the average processing times for the Departments of Commerce and the Interior were 69 and 61 days, respectively, compared to 80 and 53 days, respectively, in 1983.

APPENDIX A

COMMISSION RECOMMENDATIONS: CALENDAR YEAR 1984

- 5 January Commerce, scientific research permit application, Daniel P. Costa.
- 11 January Commerce, commenting to the National Marine Fisheries Service on the Draft Environmental Impact Statement on the Interim Convention on Conservation of North Pacific Fur Seals, and recommending that the Service prepare draft position papers indicating:
(a) the precise language of the changes in the Convention text to be proposed to the other Party Governments under the proposed action; (b) when and how the proposed changes will be presented to the other Party Governments; and (c) what actions will be taken if the proposed changes are unacceptable to one or more of the other Party Governments. Further recommending that the DEIS be expanded to include: 1) a more accurate description of proposed modifications to the Convention; 2) data and analyses to support the stated conclusion that termination of the adult male harvest would impede population recovery; 3) further assessments of the effect and likelihood of resumed pelagic sealing; and 4) a more complete assessment of the effects of terminating the harvest on the Pribilof Island residents.
- 17 January Commerce, public display permit application, Marineland, Inc.
- 24 January Commerce, scientific research permit application, Ocean Research & Education Society.
- 1 February Commerce, scientific research permit application, J. M. Terhune.

3 February Commerce, scientific research permit application, Bolt, Beranek and Newman, Inc.

16 February Commerce, recommending to the National Marine Fisheries Service that it make funds available to the Service's Southwest Fisheries Center/Honolulu Laboratory to support the planned international workshop on net entanglement.

21 February Commerce, public display permit application, Gulf World, Inc.

21 February Commerce, public display permit application, New York Aquarium.

28 February Commerce, public display permit application, Brighton Aquarium and Dolphinarium.

29 February Interior, commenting to the Minerals Management Service on the Draft Environmental Impact Statement on the proposed polymetallic sulfide minerals lease offering, Gorda Ridge area offshore Oregon and northern California, and recommending, among other things, that: (1) certain potential mitigating measures identified in the DEIS be adopted as part of the proposed action; (2) if the Service had not already done so, it consult with the National Marine Fisheries Service and the Fish and Wildlife Service to ensure that baseline information, and monitoring programs that would be initiated when mining operations commence, are adequate to detect possible unforeseen impacts on endangered and non-endangered marine mammals as well as other marine species, particularly impacts associated with the introduction of heavy metals into the area's marine food web; (3) a Biological Task Force be established for the Gorda Ridge area to ensure that the Regional Manager has the best possible advice concerning the status of the environment and implementation of needed mitigation

measures; and (4) additional analyses of the possible impacts of onshore facility construction and operation on estuarine environments be provided in the FEIS.

- 1 March Commerce, scientific research permit application, Mark Blane McHugh.
- 2 March Department of the Army, commenting to the Army Corps of Engineers on certain permitting actions in Florida waters that could adversely affect the Florida population of the endangered West Indian manatee and recommending that the Corps undertake formal consultations with the Fish and Wildlife Service pursuant to the requirements of Section 7 of the Endangered Species Act.
- 2 March Commerce, commenting to the National Oceanic and Atmospheric Administration on the draft Advance Notice of Proposed Rulemaking regarding implementation of the Coastal Zone Management Act of 1972, as amended, and recommending that, in light of the ongoing efforts by the Congress to clarify and, as necessary, amend the Act, the agency limit its rulemaking effort to: (1) making necessary changes to exempt Outer Continental Shelf lease sales from NOAA's consistency regulations; and (2) seeking public comment on whether other consistency provisions require revision.
- 6 March Commerce, commenting to the National Marine Fisheries Service on a "Notice of Intent to Prepare an EIS for Tuna-Porpoise Rule Making and Hold Scoping Meetings" and recommending that the Service: (1) consult with the Department of State to determine whether anything more might be done to obtain reliable estimates of the species and number of porpoises being taken by foreign flag fishermen; (2) develop and begin implementing a program to detect and monitor changes in the size, composition, and

vital rates of the affected porpoise populations; and (3) determine whether there are any potentially feasible alternatives to the practice of setting-on-porpoise and, if so, what research and development would be necessary to assess the economic and technological feasibility of the alternatives.

- 19 March Commerce, scientific research permit application, Minerals Management Service.
- 19 March Commerce, scientific research permit application, Michael Graybill.
- 20 March Commerce, scientific research permit application, Sherman C. Jones, III.
- 20 March Commerce, public display permit application, Walt Disney Productions.
- 21 March Commerce, commenting to the Office of Ocean and Coastal Resource Management on the "Proposed Hawai'i Humpback Whale National Marine Sanctuary Draft Management Plan and Environmental Impact Statement"; noting, among other things, that the document does not consider a number of alternative measures whose advantages may be greater than the advantages associated with the proposed measures; and recommending that: the document be substantially revised and reissued as a second DEIS; and, if the Office had not already done so, it consult with the National Marine Service to determine whether and how proposed sanctuary boundaries for the identified "core area" might be expanded to better reflect recent information on habitat use patterns of humpback whales in Hawaii.
- 22 March Interior, commenting to the Fish and Wildlife Service on proposed regulations for "Endangered and Threatened Wildlife and Plants; Experimental Populations," and recommending, among other things, that: (1) the definition of "experimental

population" be drafted to conform as closely as possible to the language of section 10(j) of the Endangered Species Act; (2) the definition of the term "essentiality" be replaced by standards that will be used to make this determination; (3) language be added to clarify which of the Secretary's authorities are permissive and which are mandatory; (4) the Service's list of consultative parties be expanded to include concerned public groups and organizations; and (5) the word "survival" be replaced with the statutory term, "continued existence."

- 26 March Commerce, scientific research permit application, Northwest and Alaska Fisheries Center.
- 28 March Commerce, modification of public display permit, Mystic Marinelife Aquarium.
- 30 March Commerce, scientific research permit application, Center for Marine Studies.
- 9 April Commerce, commenting to the National Marine Fisheries Service on the "Petition to List the Guadalupe Fur Seal, Arctocephalus townsendi, as an Endangered Species," and recommending that the species be listed as a threatened species rather than an endangered species, but noting that, if new information becomes available indicating that possible threats to the species' breeding grounds are increasing and/or the trend in population growth is halted or reversed, the status of the species be promptly reassessed to determine whether it should be designated as endangered.
- 10 April Commerce, scientific research permit application, Southwest Fisheries Center.
- 11 April Commerce, commenting to the National Marine Fisheries Service on the Service's suggestion that amendments to the Marine

Mammal Protection Act may be necessary to address: (1) an apparent inconsistency between that Act and the Endangered Species Act and (2) the implications of the likely determination that the northern offshore spotted dolphin stock in the eastern tropical Pacific Ocean is depleted under the Marine Mammal Protection Act; noting that legislative action is not necessary to remedy the perceived inconsistencies between the two Acts, that the problems that were identified as requiring such action may be dealt with by administrative action, and that, with respect to the northern offshore spotted dolphin, there was no need to amend the Act to change the depletion standard or provide discretionary authority for taking species or populations determined to be depleted; requesting that, if the Service did not agree with this assessment, it provide the Commission with a thorough explanation as to why it disagreed; and, if the Service shared the Commission's view, suggesting that the Service and the Commission cooperatively draft amending language to provide for continued authorization of incidental take by U.S. fishing interests and for improved assessment and monitoring.

- 12 April Commerce, modification of scientific research permit, Southwest Fisheries Center.
- 19 April Commerce, modification of scientific research permit, J. R. Gilbert.
- 19 April Commerce, scientific research permit application, North Wind Undersea Institute.
- 19 April Commerce, scientific research permit application, William A. Lawton.
- 8 May Interior, public display permit application, Mark Lee.

- 8 May Interior, scientific research permit application, Donald B. Siniff.
- 8 May Commerce, scientific research permit application, Jonathan Stern.
- 8 May Commerce, public display permit application, Kamogawa Sea World.
- 15 May Commerce, scientific research permit application, Louis Herman.
- 15 May Commerce, commenting to the National Marine Fisheries Service on the potential impact of chase and encirclement on populations of Tursiops in the coastal waters of Florida and the Gulf of Mexico, and recommending that: (1) the Service take such steps as may be possible to assess the numbers, ages, and sexes of animals that are being chased and encircled, including geographic area of take, and advise the Commission by year and area of the numbers of animals chased, encircled, and released, as well as those removed from the wild; and (2) that Tursiops collectors of record be notified that future permit applications must include estimates of all taking involved in the capture operation, not just the animals to be removed from the wild, and that collectors will be required to report the numbers and, as possible, ages and sexes of animals chased, encircled, held, and released, as well as removed from the wild.
- 15 May Commerce, commenting to the National Marine Fisheries Service on the Service's plans to conduct a shearing sampling census of North Pacific fur seal pups on St. Paul Island and recommending that such a census be undertaken on both St. Paul and St. George Islands and that the Service take steps to establish a program on St. Paul Island that permits valid comparison with the ongoing behavioral program on St. George Island in order to further contribute to the evaluation of the effects of the mora-

torium on the seal harvest on St. George Island.

- 18 May Interior, commenting to the National Park Service on the proposed regulations, "Glacier Bay National Park and Preserve, Alaska; Protection of Humpback Whales," and recommending that the proposed measures be undertaken, subject to certain modifications and, if the Service is unable to promulgate revised regulations by 1 June 1984, some form of emergency regulations be implemented.
- 21 May Commerce, scientific research permit application, Cascadia Research Collective.
- 24 May Commerce, modification of scientific research permit, Jeffrey D. Goodyear.
- 4 June Commerce, public display permit application, Tampereen Sarkanniemi Oy.
- 5 June Interior, public display permit application, Tulsa Zoological Park.
- 5 June Commerce, modification of scientific research permit, Randall S. Wells.
- 8 June Commerce, scientific research permit application, Washington Department of Game.
- 8 June Commerce, public display permit application, Morris Museum of Arts and Sciences.
- 8 June Interior, public display permit application, Detroit Zoological Parks.
- 19 June Interior, commenting to the Minerals Management Service on the "Draft Environmental Impact Statement, Proposed 1985 Outer Continental Shelf Oil and Gas Lease Sale Offshore the South Atlantic States, OCS Sale 90"; noting that available information seems insufficient to conclude that effects on the northwest Atlantic

humpback whale population would not be significant and that impacts on the northwest Atlantic right whale population would not be likely to exceed "moderate" levels as a result of the proposed action; and recommending that, if the Service had not already done so, it consult with the National Marine Fisheries Service to determine: (a) the adequacy of available information for ensuring that endangered right and humpback whales will not be adversely affected by the proposed action; and (b) the need, if any, to expand research and monitoring programs to better assess, detect, and mitigate the possible effects, including cumulative effects, of oil and gas related activities along the Atlantic coast.

- 21 June Commerce, public display permit application, St. Louis Zoological Park.
- 29 June Commerce, commenting to the National Marine Fisheries Service on its proposed listing of the Gulf of California harbor porpoise (Phocoena sinus) as "endangered" under the Endangered Species Act and recommending that the proposal be adopted.
- 25 June Commerce, public display permit application, Zoogesellschaft Osnabruck E.V.
- 2 July Commerce, public display permit application, Seattle Aquarium.
- 5 July Commerce, commenting to the National Marine Fisheries Service on previous arrangements that an observer monitor all collections of Tursiops carried out by a particular collecting firm and recommending that, while a requirement for having an observer on all collecting trips was no longer necessary, the collector should be accompanied by an observer on no less than 65 percent of its collecting trips.

6 July

Interior, commenting to the Minerals Management Service on the "St. George Basin Sale 89, Draft Environmental Impact Statement," and recommending that, if the Service had not already done so, it consult with the National Marine Fisheries Service to determine: (a) the accuracy of information and impact assessments concerning the northern fur seal population; (b) the possible need for additional mitigation measures to ensure that the northern fur seal population is not adversely affected by the proposed action; and (c) any additional steps that should be taken to avoid unacceptably high risks to fur seals from the cumulative effects of existing and proposed offshore development and tankering activities in the Southeastern Bering Sea. Further recommending that the DEIS be modified to: (a) include the best available information on the status and trends of the northern fur seal population; (b) provide additional analysis of the possible effects of oil spills on fur seal foraging grounds and migratory corridors; (c) expand the oil spill trajectory analysis by including hypothetical oil spill launch points at the assumed St. George Island pipeline and tanker terminal and in the Unimak Pass tanker corridor; and (d) describe the post-sale research and monitoring responsibilities of the Service's Environmental Studies Program and its role in providing information necessary for predicting, avoiding, and detecting possible adverse impacts on endangered and non-endangered marine mammals and the ecosystem of which they are a part.

9 July

Commerce, modification of scientific research permit, Center for Marine Studies.

9 July

Commerce, modification of scientific research permit, Daniel P. Costa.

9 July

Council on Environmental Quality, recommending certain changes to Appendix II

of the National Environmental Policy Act regulations.

- 13 July Commerce, scientific research permit application, National Zoological Park.
- 13 July Commerce, scientific research permit application, Donald B. Siniff.
- 17 July Interior, modification of scientific research permit, John Fletemeyer.
- 21 July Commerce, recommending to the National Oceanic and Atmospheric Administration that it direct the National Marine Fisheries Service to reassess its decision not to carry out a census of northern fur seal pups on both St. Paul and St. George Islands during 1984.
- 21 July Commerce, commenting to the National Marine Fisheries Service on actions needed to implement the 1984 amendments to the Marine Mammal Protection Act; requesting certain information as to the Service's plans involving the tuna-porpoise situation in the eastern tropical Pacific Ocean; and recommending, among other things, that the Service promptly develop all reasonable and possible options for monitoring the population abundance and trends of porpoise stocks taken incidentally in the yellow-fin tuna purse seine fishery and that the Service convene a series of workshops involving all interested parties on this subject.
- 21 July Interior, commenting to the Fish and Wildlife Service on its Notice of Intent to prepare an environmental impact statement on the proposal to translocate southern sea otters; emphasizing the serious nature of the incidental take problem involving sea otters; and recommending that the Service take steps to improve assessments of the nature and effects of incidental take mortality and to eliminate or reduce that take.

Further recommending that the Service:
(a) continue efforts to identify and reduce the risks of tanker accidents in and near the California sea otter range;
(b) assess the possible impacts of oil spills on kelp, shellfish, and other important components of sea otter habitat;
(c) improve capabilities for containing, dispersing, and cleaning up oil spills in and near the California sea otter range;
(d) improve capabilities for moving sea otters from areas likely to be affected by spills; (e) improve capabilities for capturing, cleaning, and rehabilitating sea otters; and (f) develop and evaluate non-lethal methods for containing sea otters in designated zones.

- 6 August Commerce, modification of scientific research permit, James R. Gilbert.
- 6 August Commerce, public display permit application, Moscow Zoo.
- 10 August Interior, commenting to the Fish and Wildlife Service on its plans to prepare an environmental impact statement on the proposal to translocate southern sea otters; commending that decision; and recommending, as regards the Interagency Project Review Team on sea otter translocations, that the Service: develop a detailed, provisional agenda for each meeting; distribute necessary background papers and documents so as to provide adequate time for review by the Team members; and define, as possible, the future role of the Review Team in the development of the DEIS.
- 13 August Commerce, scientific research permit application, Southwest Fisheries Center.
- 13 August Interior, modification of scientific research permit, Donald B. Siniff.
- 17 August Commerce, commenting to the National Marine Fisheries Service on the status of the North Pacific fur seal (Callorhinus ursinus) and a petition to

list the species as threatened under the Endangered Species Act; and recommending that the species be designated as threatened and that the Service develop a recovery plan as required under the Act.

24 August Commerce, modification of scientific research permit, Bruce R. Mate and James T. Harvey.

24 August Commerce, public display permit application, Marineland Cote d'Azure.

24 August Interior, public display permit application, Sunshine International Aquarium.

24 August Interior, public display permit application, Matsushima Aquarium.

4 September Commerce, scientific research permit application, Southwest Fisheries Center.

5 September Interior, scientific research permit application, John G. Morris.

5 September Interior, public display permit application, Detroit Zoological Parks.

7 September Commerce, public display permit application, Zoologischer Garten der Stadt Wuppertal.

1 October Commerce, modification of scientific research permit, Southwest Fisheries Center.

1 October Commerce, scientific research permit application, U.S.S.R. Ministry of Fisheries.

1 October Interior, scientific research permit application, Donald B. Siniff.

2 October Interior, commenting to the Fish and Wildlife Service on plans to constitute a "peer review group" to review the Draft Environmental Impact Statement on the southern sea otter translocation and suggesting that certain questions

concerning the purpose and composition of that group be addressed before making a decision on the establishment of such a group.

- 10 October Interior, modification of scientific research permit, Denver Wildlife Research Center.
- 11 October Interior, public display permit application, Milwaukee County Zoo.
- 17 October Interior, public display permit application, Cincinnati Zoo.
- 19 October Commerce, recommending to the National Marine Fisheries Service, that a workshop or meeting of the Ad Hoc U.S. Scientific Working Group on the Antarctic be convened before the end of 1984 and offering its assistance to the Service in preparing for and funding such a meeting.
- 25 October Interior, commenting to the Fish and Wildlife Service on the need to develop a set of instructions for submitting permit applications pursuant to the Marine Mammal Protection Act and other permit programs; and recommending that the Service consider a draft version of such instructions forwarded by the Commission and that it promptly convene a meeting to consider that proposal.
- 30 October Commerce, commenting to the National Marine Fisheries Service on its plans to conduct taste aversion experiments on California sea lions using lithium chloride; and recommending that the Service not commit funds or other resources to the proposed experiment unless it has been determined: (a) that use of this substance would be permissible under applicable federal laws and authorities; and (b) whether Food and Drug Administration restrictions apply to the use of this drug for research purposes.

31 October Commerce, public display permit application, Zeedierenpark Harderwijk.

31 October Commerce, public display permit application, Kolmardens Djurpark.

31 October Interior, forwarding to the Fish and Wildlife Service a report on "Habitat Protection Needs for the Subpopulation of West Indian Manatees in the Crystal River Area of Northwest Florida"; and recommending, among other things, that certain lands in the Crystal River area be acquired and incorporated into the National Wildlife Refuge System as part of a new national wildlife refuge unit called the "Crystal River Manatee National Wildlife Refuge."

9 November Interior, commenting to the Fish and Wildlife Service on the "Hawaiian Islands National Wildlife Refuge Master Plan/ Environmental Impact Statement"; and recommending that: if it had not already done so, the Service consult with the National Marine Fisheries Service to ensure that proposed Refuge management strategies, particularly those concerning support for a proposed commercial mothership fishing operation at French Frigate Shoals, will not jeopardize monk seals or other endangered or threatened species and will not destroy or adversely modify habitat critical to their survival; the proposed action be modified as necessary to reflect results of that consultation; and the results be reported in the Final Master Plan/EIS.

13 November Interior, public display permit application, San Francisco Zoo.

13 November Commerce, public display permit application, Sea World, Inc.

5 December Commerce, public display permit application, Knie's Kinderzoo.

5 December Commerce, public display permit application, Tampereen Sarkanniemi Oy.

11 December Commerce, commenting to the National Marine Fisheries Service on the 13-14 November 1984 review of the National Marine Mammal Laboratory's research programs; commending the Laboratory on its progress towards becoming a center of excellence for the study of certain marine mammal species and problems; requesting certain additional information needed to adequately evaluate the North Pacific fur seal research program and other research programs; and recommending that certain steps be taken to better define research and management needs and to reorient or expand certain programs.

12 December Commerce, scientific research permit application, Bruce R. Mate.

12 December Commerce, public display permit application, Belfast Zoological Garden.

21 December Interior, commenting to the Fish and Wildlife Service on the "Southern Sea Otter Recovery Plan" and recommending, among other things, that: (1) updating of the Recovery Plan be postponed until effective measures are taken to prevent or reduce incidental take and develop a translocation plan; (2) the revised Recovery Plan be expanded to describe ongoing and completed tasks; and (3) a workshop involving representatives of relevant Federal and State agencies, industry groups, environmental groups, and other interested parties be convened as soon as possible to (a) discuss and agree upon research, education, enforcement, and other tasks meriting immediate attention, (b) agree on the agency or organization that should have lead responsibility for undertaking those tasks, and (c) agree on the general content, format, and schedule for completing and adopting a Comprehensive Work Plan.

APPENDIX B

REPORTS OF COMMISSION-SPONSORED RESEARCH ACTIVITIES AVAILABLE FROM THE NATIONAL TECHNICAL INFORMATION SERVICE (NTIS) *

- Ainley, D.G. H.R. Huber, R.P. Henderson, and T.J. Lewis. 1977. Studies of marine mammals at the Farallon Islands, California, 1970-1975. Final report for MMC contract MM4AC002. NTIS PB-274 046. 42 pp. (A03).
- Ainley, D.G., H.R. Huber, R.P. Henderson, T.J. Lewis, and S.H. Morrell. 1977. Studies of marine mammals at the Farallon Islands, California, 1975-1976. Final report for MMC contract MM5AC020. NTIS PB-266 249. 32 pp. (A03)
- Ainley, D.G., H.R. Huber, S.H. Morrell, and R.R. LeValley. 1978. Studies of marine mammals at the Farallon Islands, California, 1976-1977. Final report for MMC contract MM6AC027. NTIS PB-286 603. 44 pp. (A03)
- Allen, S.G., D.G. Ainley, and G.W. Page. 1980. Haul out patterns of harbor seals in Bolinas Lagoon, California. Final report for MMC contract MM8AC012. NTIS PB80-176 910. 31 pp. (A03)
- Balcomb, K.C, J.R. Boran, R.W. Osborne, and N.J. Haenel. 1980. Observations of killer whales (Orcinus orca) in greater Puget Sound, State of Washington, Final report for MMC contract MM1300731-7. NTIS PB80-224 728. 42 pp. (A03)
- Beddington, J.R., and H.A. Williams. 1980. The status and management of the harp seal in the north-west Atlantic. A review and evaluation. Final report for MMC contract MM1301062-1. NTIS PB80-206 105. 127 pp. (A07)

* Price codes for printed reports (including postage) are shown in parentheses at the end of each citation. Microfiche copies of the reports are also available (price code A01). The key to the codes and ordering information can be found on the last page.

- Bengtson, J.L. 1978. Review of information regarding the conservation of living resources of the Antarctic marine ecosystem. Final report for MMC contract MM8AD055. NTIS PB-289 496. 148 pp. (A08)
- Bockstoce, J. 1978. A preliminary estimate of the reduction of the western Arctic bowhead whale (Balaena mysticetus) population by the pelagic whaling industry: 1848-1915. Final report for MMC contract MM7AD111. NTIS PB-286 797. 32 pp. (A08).
- Brownell, R.L., Jr., C. Schoenwald, and R.R. Reeves. 1978. Preliminary report on world catches of marine mammals 1966-1975. Final report for MMC contract MM6AC002. NTIS PB-290 713. 353 pp. (A16).
- Chapman, D.G., L.L. Eberhardt, and J.R. Gilbert. 1977. A review of marine mammal census methods. Final report for MMC contract MM4AC014. NTIS PB-265 547. 55 pp. (A04)
- Clark, W.G. 1984. Analysis of variance of photographic and visual estimates of dolphin school size. Southwest Fisheries Center Admin. Report LJ-84-11C. 36 pp. Final report for MMC Contract MM2324792-1. *
- Committee To Evaluate Antarctic Marine Ecosystem Research, National Research Council. 1981. An evaluation of Antarctic marine ecosystem research. National Academy Press, Washington, D.C. 99 pp. **
- Contos, S.M. 1983. Workshop on marine mammal-fisheries interactions. Final report for MMC contract MN2079341-0. NTIS PB82-189 507. 64 pp. (A04)
- Cornell, L.H., E.D. Asper, K.N. Osborn, and M.J. White, Jr. 1979. Investigations on cryogenic marking procedures for marine mammals. Final report for MMC contract MM6AC003. NTIS PB-291 570. 24 pp. (A03)

* Available from Director, National Marine Fisheries Service, Southwest Fisheries Center, La Jolla, California 92038.

** Available from Polar Research Board, National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

- Dayton, P.K., B.D. Keller, and D. A. Ven Tresca. 1980. Studies of a nearshore community inhabited by sea otters. Final report for MMC contracts MM6AC026 and MM1300702-9. NTIS PB81-109 860. 91 pp. (A06)
- DeBeer, J. 1980. Cooperative dedicated vessel research program on the tuna-porpoise problem; overview and final report. Final report for MMC contract MM8AC006. NTIS PB80-150 097. 43 pp. (A03)
- Dohl, T.P. 1981. Remote laser branding of marine mammals. Final report for MMC contract MM4AC011. NTIS PB81-213 449. 34 pp. (A03).
- Erickson, A.W. 1978. Population studies of killer whales (Orcinus orca) in the Pacific Northwest: a radio-marking and tracking study of killer whales. Final report for MMC contract MM5AC012. NTIS PB-285 615. 34 pp. (A03)
- Fay, F.H., H.M. Feder, and S.W. Stoker. 1977. An estimation of the impact of the Pacific walrus population on its food resources in the Bering Sea. Final report for MMC contracts MM4AC006 and MM5AC024. NTIS PB-273 505. 38 pp. (A03)
- Foster, M.A. 1981. Identification of ongoing and planned fisheries in the Northwestern Hawaiian Islands. Final report for MMC contract MM1801069-7. NTIS PB81-207 516. 90 pp. (A05)
- Foster, M.S., C.R. Agegian, R.K. Cowen, R.F. Van Wagenen, D.K. Rose, and A.C. Hurley. 1979. Toward an understanding of the effects of sea otter foraging on kelp forest communities in central California. Final report for MMC contract MM7AC023. NTIS PB-293 891. 60 pp. (A04)
- Fowler, C.W., W.T. Bunderson, M.B. Cherry, R.J. Ryel, and B.B. Steele. 1980. Comparative population dynamics of large mammals: A search for management criteria. Final report for MMC contract MM7AC013. NTIS PB80-178 627. 330 pp. (A15)
- Fowler, C.W., R.J. Ryel, and L.J. Nelson. 1982. Sperm whale population analysis. Final report for MMC contract MM8AC009. NTIS PB82-174 335. 35 pp. (A03)

- Gaines, S.E., and D. Schmidt. 1978. Laws and treaties of the United States relevant to marine mammal protection policy. Final report for MMC contract MM5AC029. NTIS PB-281 024. 668 pp. (A99)
- Gard, R. 1978. Aerial census, behavior, and population dynamics study of gray whales in Mexico during the 1974-75 calving and mating season. Final report for MMC contract MM5AC006. NTIS PB-274 295. 18 pp. (A02)
- Gard, R. 1978. Aerial census and population dynamics study of gray whales in Baja California during the 1976 calving and mating season. Final report for MMC contract MM6AC014. NTIS PB-275 297. 20 pp. (A03)
- Geraci, J.R., and D.J. St. Aubin. 1979. Biology of marine mammals: insights through strandings. Final report for MMC contract MM7AC020. NTIS PB-293 890. 343 pp. (A16)
- Geraci, J.R., S.A. Testaverde, D.J. St. Aubin, and T.H. Loop. A mass stranding of the Atlantic whitesided dolphin, Lagenorhynchus acutus: a study into pathobiology and life history. Final report for MMC contract MM5AC008. NTIS PB-289 361. 141 pp. (A08)
- Gerrodette, T. 1983. Review of the California sea otter salvage program. Final report for MMC contract MM2629677-5. NTIS PB83-262 949. 23 pp. (A03)
- Gilbert, J.R., V.R. Schurman, and D.T. Richardson. 1979. Gray seals in New England; present status and management alternatives. Final report for MMC contract MM7AC002. NTIS PB-295 599. 40 pp. (A03)
- Gold, J. 1981. Marine Mammals: A selected bibliography. NTIS PB 82-104 282. 91 pp. (A05)
- Gonsalves, J.T. 1977. Improved method and device to prevent porpoise mortality application of polyvinyl panels to purse seine nets. Final report for MMC contract MM6AC007. NTIS PB-274 088. 28 pp. (A03)
- Goodman, D. 1978. Management implications of the mathematical demography of long lived animals. Final report for MMC contract MM8AD008. NTIS PB-289 678 80 pp. (A05)

- Green, K.A. 1977. Antarctic marine ecosystem modeling revised Ross Sea model, general Southern Ocean budget, and seal model. Final report for MMC contract MM6AC032. NTIS PB-270 375. 111 pp. (A06)
- Green-Hammond, K.A. 1980. Fisheries management under the Fishery Conservation and Management Act, the Marine Mammal Protection Act, and the Endangered Species Act. Final report for MMC contract MM1300885-3. NTIS PB80-180 599. 186 pp. (A09)
- Green-Hammond, K.A. 1981. Requirements for effective implementation of the Convention on the Conservation of Antarctic Marine Living Resources. Final report for MMC contract MM2079173-9. NTIS PB82-123 571. 36 pp. (A03)
- Green-Hammond, K.A. 1982. Environmental aspects of potential petroleum exploration and exploitation in Antarctica: Forecasting and evaluating risks. Final report for MMC contract MM2079173-9. NTIS PB82-169 772. 28 pp. (A03)
- Green-Hammond, K.A., D.G. Ainley, D.B. Siniff, and N.S. Urquhart. 1983. Selection criteria and monitoring requirements for indirect indicators of changes in the availability of Antarctic krill applied to some pinniped and seabird information. Final report for MMC contract MM2324753-6. NTIS PB83-263 293. 37 pp. (A03)
- Herman, L.M., P.H. Forestell, and R.C. Antinaja. 1980. The 1976/77 migration of humpback whales into Hawaiian waters: composite description. Final report for MMC contracts MM7AC014 and MM1300907-2. NTIS PB80-162 332. 55 pp. (A04)
- Hofman, R.J. (Editor). 1979. A workshop to identify new research that might contribute to the solution of a tuna-porpoise problem. Proceedings of a Marine Mammal Commission-sponsored workshop held on 8-9 December 1975 at the University of California, Santa Cruz. NTIS PB-290 158. 17 pp. (A02)
- Hofman, R.J. 1982. Identification and assessment of possible alternative methods for catching yellowfin tuna. NTIS PB83-138 993. 243 pp. (A11)
- Huber, H.R., D.G. Ainley, S.H. Morrell, R.R. LeValley, and C.S. Strong. 1979. Studies of marine mammals at the Farallon Islands, California, 1977-1978. Final report for MMC contract MM7AC025. NTIS PB-111 602. 50 pp. (A04)

- Huber, H.R., D.G. Ainley, S.H. Morrell, R.J. Boekelheide, and R.P. Henderson. 1980. Studies of marine mammals at the Farallon Islands, California, 1978-1979. Final report for MMC contract MM1300888-2. NTIS PB80-178 197. 46 pp. (A04)
- Huber, H.R., D.G. Ainley, R.J. Boekelheide, R.P. Henderson, and B. Bainbridge. 1981. Studies of marine mammals at the Farallon Islands, California, 1979-1980. Final report for MMC contract MM1533599-3. NTIS PB81-167 082. 51 pp. (A04)
- Hui, C.A. 1978. Reliability of using dentin layers for age determination in Tursiops truncatus. Final report for MMC contract MM7AC021. NTIS PB-288 444 25 pp. (A03)
- Irvine, A.B., M.D. Scott, R.S. Wells, J.H. Kaufmann, and W.E. Evans. 1979. A study of the activities and movements of the Atlantic bottlenosed dolphin, Tursiops truncatus, including an evaluation of tagging techniques. Final report for MMC contracts MM4AC004 and MM5AC018. NTIS PB-298 042. 54 pp. (A04)
- Johnson, B.W., and P.A. Johnson. 1978. The Hawaiian monk seal on Laysan Island: 1977. Final report for MMC contract MM7AC009. NTIS PB-285 428. 38 pp. (A03)
- Johnson, B.W., and P.A. Johnson. 1981. Estimating the Hawaiian monk seal population on Laysan Island. Final report for MMC contract MM1533701-4. NTIS PB82-106 113. 29 pp. (A05)
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- Johnson M.L., and S.J. Jeffries. 1977. Population evaluation of the harbor seal (Phoca vitulina richardi) in the waters of the State of Washington. Final report for MMC contract MM5AC019. NTIS PB-270 376. 27 pp. (A03)
- Johnson, M.L., and S.J. Jeffries. 1983. Population biology of the harbor seal (Phoca vitulina richardsi) in the waters of the State of Washington: 1976-1977. Final report for MMC contract MM6AC025. NTIS PB83-159 715. 53 pp. (A04)
- Kasuya, T., and Y. Izumizawa. 1981. The fishery-dolphin conflict in the Iki Island area of Japan. Final report for MMC contract MM1533791-7. NTIS PB81-171 357. 31 pp. (A03)

- Katona, S.K. 1983. The Gulf of Maine Whale Sighting Network: 1976. Final report for MMC contract MM6AC018. NTIS PB83-151 290. 32 pp. (A03)
- Katona, S.K., and S. Kraus. 1979. Photographic identification of individual humpback whales (Megaptera novaeangliae): evaluation and analysis of the technique. Final report for MMC contract MM7AC015. NTIS PB-298 740. 29 pp. (A03)
- Kooyman, G.L. 1982. Development and testing of a time-depth recorder for marine mammals. Final report for MMC contract MM6AC019. NTIS PB82-257 932. 10 pp. (A02)
- Leatherwood, J.S., R.A. Johnson, D.K. Ljungblad, and W.E. Evans. 1977. Broadband measurements of underwater acoustic target strengths of panels of tuna nets. Final report for MMC contract MM6AC020. Naval Ocean Systems Center Tech. Report 126. 19 pp. *
- Loughlin, T. 1978. A telemetric and tagging study of sea otter activities near Monterey, California. Final report for MMC contract MM6AC024. NTIS PB-289 682. 64 pp. (A04)
- Marine Mammal Commission. 1974. Annual Report of the Marine Mammal Commission, Calendar Year 1973. Report to Congress. NTIS PB-269 708. 14 pp. (A03)
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- Marine Mammal Commission. 1976. Annual Report of the Marine Mammal Commission, Calendar Year 1975. Report to Congress. NTIS PB 269-711. 50 pp. (A04)
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* Available from the Naval Ocean Systems Center, San Diego, California 92152.

- Marine Mammal Commission. 1979. Annual Report of the Marine Mammal Commission, Calendar Year 1978. Report to Congress. NTIS PB-106 784. 108 pp. (A06)
- Marine Mammal Commission. 1980. Humpback whales in Glacier Bay National Monument, Alaska. Final report for an interagency review meeting. NTIS PB80-141 449 44 pp. (A03)
- Marine Mammal Commission. 1981. Annual Report of the Marine Mammal Commission, Calendar Year 1979. Report to Congress. NTIS PB81-247 892. 100 pp. (A06)
- Marine Mammal Commission. 1981. Annual Report of the Marine Mammal Commission, Calendar Year 1980. Report to Congress. NTIS PH81-247 884. 114 pp. (A06)
- Marine Mammal Commission. 1982. Annual Report of the Marine Mammal Commission, Calendar Year 1981. Report to Congress. NTIS PB82-221 425. 102 pp. (A06)
- Marine Mammal Commission. 1982. Report of a meeting to review on-going and planned research concerning humpback whales in Glacier Bay and surrounding waters in southeast Alaska. Final report of an interagency meeting. NTIS PB82-201 039. 20 pp. (A02)
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- Mate, B.R. 1977. Aerial censusing of pinnipeds in the eastern Pacific for assessment of population numbers, migratory distributions, rookery stability, breeding effort, and recruitment. Final report for MMC contract MM5AC001. NTIS PB-265 859. 67 pp. (A04)
- Mate, B.R. 1980. Workshop on marine mammal-fisheries interactions in the northeastern Pacific. Final report for MMC contract MM8AC003. NTIS PB80-175 144. 48 pp. (A04)
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- Matkin, C.O., and F.H. Fay. 1980. Marine mammal-fishery interactions on the Copper River and in Prince William Sound, Alaska, 1978. Final report for MMC contract MM8AC013. NTIS PB80-159 536. 71 pp. (A05)
- Mayo, C.A. 1982. Observations of cetaceans: Cape Cod Bay and southern Stellwagen Bank Massachusetts 1975-1979. Final report for MMC contract MM1800925-5. NTIS PB82-186 263. 68 pp. (A05)
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- Metleff, B.R., and D.H. Rosenberg. (Editors). 1984. Proceedings of the Workshop on Biological Interactions Among Marine Mammals and Commercial Fisheries in the Southeastern Bering Sea, October 18-21, 1983, Anchorage, Alaska. Final report for MMC contract MM2324802-7. *
- Miller, L.K. 1978. Energetics of the northern fur seal in relation to climate and food resources of the Bering Sea. Final report for MMC contract MM5AC025. NTIS PB-275 296. 27 pp. (A03)
- Nolan, R.S. 1981. Shark control and the Hawaiian monk seal. Final report for MMC contract MM1801065-5. NTIS PB81-201 808. 45 pp. (A03)
- Norris, K.S., and J.D. Hall. 1979. Development of techniques for estimating trophic impact of marine mammals. Final report for MMC contract MM4AC013. NTIS PB-290 399. 16 pp. (A02)
- Norris, K.S., and R.R. Reeves (Editors). 1978. Report on a workshop on problems related to humpback whales (Megaptera novaeangliae) in Hawaii. Final report for MMC contract MM7AC018. NTIS PB-280 794. 90 pp. (A05)
- Norris, K.S., W.E. Stuntz, and W. Rogers. 1978. The behavior of porpoises in the eastern tropical Pacific yellowfin tuna fishery: preliminary studies. Final report for MMC contract MM6AC022. NTIS PB-283 970. 86 pp. (A05)

* Available from the Alaska Sea Grant College Program, University of Alaska, Fairbanks, Alaska 99701.

- Odell, D.K. 1979. A preliminary study of the ecology and population biology of the bottlenose dolphin in southeast Florida. Final report for MMC contract MM4AC003. NTIS PB-294 336. 26 pp. (A03)
- Odell, D.K., and J.E. Reynolds, III. 1980. Abundance of the bottlenose dolphin, Tursiops truncatus, on the west coast of Florida. Final report for MMC contract MM5AC026. NTIS PB-80-197 650. 47 pp. (A04)
- Odell, D.K., D.B. Siniff, and G.H. Waring. 1979. Tursiops truncatus assessment workshop. Final report for MMC contract MM5AC021. NTIS 291 161 141 pp. (A04)
- Packard, J.M. 1982. Potential methods for influencing the movements and distribution of sea otters: Assessment of research needs. Final report for MMC contract MM2079342-3. NTIS PB 83-109 926. 51 pp. (A04)
- Packard, J.M. 1984. Proposed research/management plan for Crystal River manatees. Vols. 1-3. Tech. Report 7. Florida Cooperative Fish and Wildlife Research Unit, University of Florida, Gainesville. 31 pp; 235 pp; 346 pp. Prepared for U.S. Fish and Wildlife Service. Final report for MMC Contract MM1801024-4. *
- Payne, R., O. Brazier, E. Dorsey, J. Perkins, V. Rowntree, and A. Titus. 1981. External features in southern right whales (Eubalaena australis) and their use in identifying individuals. Final report for MMC contract MM6AC017. NTIS PB81-161 093. 77 pp. (A05)
- Pitcher, K.W. 1977. Population productivity and food habits of harbor seals in the Prince William Sound-Copper River Delta area, Alaska. Final report for MMC contract MM5AC011. NTIS PB-266 935. 36 pp. (A03)
- Prescott, J.H., and P.M. Fiorelli. 1980. Review of the harbor porpoise (Phocoena phocoena) in the U.S. northwest Atlantic. Final report for MMC contract MM8AC016. NTIS PB80-176 928. 64 pp. (A04)

* Available from the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

- Prescott, J.H., S.D. Kraus, and J.R. Gilbert. 1980. East Coast/Gulf Coast cetacean and pinniped workshop. Final report for MMC contract MM1533558-2. NTIS PB80-160 104. 142 pp. (A07)
- Ralston, F. (Ed.). 1977. A workshop to assess research related to the porpoise/tuna problem, February 28, March 102. Southwest Fisheries Center Admin. Report LJ-77-15. Final report for MMC contract MM7AC022. 119 pp. 6 appendices. *
- Ray, G.C., R.V. Salm, and J.A. Dobbin. 1979. Systems analysis mapping: An approach towards identifying critical habitats of marine mammals. Final report for MMC contract MM6AC011. NTIS PB80-111 594. 27 pp. (A03)
- Reeves, R.R. 1977. Exploitation of harp and hooded seals in the western North Atlantic. Final report for MMC contract MM6AD055. NTIS PB-270 186. 57 pp. (A04)
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APPENDIX C

SCIENTIFIC LITERATURE RESULTING FROM COMMISSION-SPONSORED RESEARCH ACTIVITIES

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