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ANNUAL REPORT OF THE
MARINE MAMMAL COMMISSION, CALENDAR YEAR 1986

A REPORT TO CONGRESS



Marine Mammal Commission
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ANNUAL REPORT OF THE MARINE MAMMAL COMMISSION

CALENDAR YEAR 1986

CONTENTS

I.	Introduction.....	1
	Background.....	1
	Personnel.....	1
	Funding.....	2
II.	Research and Studies Program.....	3
	Survey of Federally-Funded Marine Mammal Research.....	3
	Research Program Reviews, Workshops, and Planning Meetings.....	4
	Commission-Sponsored Research and Study Projects.....	4
	Special Research Concerns for FY 1987.....	12
III.	Statutory Amendments Concerning Marine Mammals.....	15
IV.	International Aspects of Marine Mammal Protection and Conservation.....	17
	Conservation and Protection of Marine Mammals in the Southern Ocean.....	17
	The International Whaling Commission.....	32
	Interim Convention on Conservation of North Pacific Fur Seals.....	41
	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).....	52
V.	Marine Mammal Management in Alaska.....	54
	Marine Mammal Working Groups and Species Reports.....	54
	Background Information on Transfer of Management.....	56
	Federal Marking and Tagging Regulations.....	58
	Litigation.....	58
VI.	Marine Mammal/Fisheries Interactions.....	60
	Background.....	60
	Interactions in California Coastal Waters.....	62
	Interactions in Areas off Alaska.....	65

VII.	Incidental Take of Marine Mammals in the Course of Commercial Fishing Operations.....	70
	The Tuna-Porpoise Issue.....	70
	The Dall's Porpoise Issue.....	78
VIII.	Entanglement in Marine Debris.....	82
	Background.....	82
	Domestic Activities in 1986.....	85
	International Activities.....	92
IX.	Species of Special Concern.....	98
	West Indian Manatee (<i>Trichechus manatus</i>).....	98
	Hawaiian Monk Seal (<i>Monachus schauinslandi</i>)....	104
	Caribbean Monk Seal (<i>Monachus tropicalis</i>)....	112
	The California Sea Otter Population (<i>Enhydra lutris</i>).....	114
	Humpback Whale (<i>Megaptera novaeangliae</i>).....	120
	Bowhead Whale (<i>Balaena mysticetus</i>).....	124
	Right Whale (<i>Eubalaena glacialis</i>).....	128
	Harbor Porpoise (<i>Phocoena phocoena</i>).....	131
	River Dolphins (Family Platanistidae).....	134
X.	Outer Continental Shelf Oil and Gas Development....	136
	Proposed OCS Lease Sale #97.....	136
	Canadian Oil Exploration on Georges Bank.....	137
	The Minerals Management Service's Regional Environmental Studies Program.....	138
XI.	Marine Mammals in Captivity.....	141
XII.	Permit Process.....	144
	Application Review.....	144
	Administration of the Permit Process.....	145
	Working Group on the Permit System.....	146
	Permit-Related Litigation.....	147
Appendix A:	Commission Recommendations: Calendar Year 1986.....	148
Appendix B:	Reports on Commission-Sponsored Activities Available from the National Technical Information Service.....	164
Appendix C:	Selected Literature Published Elsewhere Resulting from Commission-Sponsored Activities.....	180

CHAPTER I

INTRODUCTION

Background

This is the fourteenth Annual Report of the Marine Mammal Commission, covering the period from 1 January through 31 December 1986. 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 for 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. The Marine Mammal Protection Act requires that the Commissioners be knowledgeable in marine ecology and resource management. At the beginning of 1986, the Commissioners were: William E. Evans, Ph.D. (Chairman), San Diego, California; Robert Elsner, Ph.D., Fairbanks, Alaska; and Karen Pryor, North Bend, Washington. Effective 21 September 1986, Dr. Evans submitted his resignation as Chairman of the Commission to assume the position of Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration. Dr. Elsner was subsequently appointed Chairman. At the end of 1986, a replacement for Dr. Evans had not been named.

The Commission's full-time senior staff members are: John R. Twiss, Jr., Executive Director; Robert J. Hofman, Ph.D., Scientific Program Director; David W. Laist, Policy and Program Analyst; Donald C. Baur, General Counsel; Sherburne B. Abbott, Assistant Scientific Program Director; Jeannie K. Drevenak, Staff Assistant in charge of permits; and Eileen Shoemaker, Staff Assistant in charge of publications.

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 statutorily mandated to be knowledgeable in marine ecology and marine mammal affairs. In 1986, its members were: Robert L. Brownell, Jr., Ph.D., U.S. Fish and Wildlife Service; William W. Fox, Jr., Ph.D., University of Miami; Joseph R. Geraci, D.V.M., Ph.D., University of Guelph; Daniel Goodman, Ph.D., Montana State University; Murray L. Johnson, M.D. (Chairman), University of Washington; Jack W. Lentfer, Alaska Environmental Consulting, Juneau, Alaska; George A. Llano, Ph.D., Naples, Florida; Jane M. Packard, Ph.D., Texas A&M University; and Forrest G. Wood, San Diego, California.

In recognition of the importance of marine mammals in the lives of so many Eskimos, Indians, and Aleuts, the Commission asked Matthew Iya of Nome, Alaska, if he would accept an appointment as Special Advisor to the Marine Mammal Commission on Native Affairs. In late October 1986, Mr. Iya accepted this position.

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
FY 85:	\$929,000
FY 86:	\$861,000 ¹
FY 87:	\$900,000

¹ The original FY 1986 appropriation of \$900,000 was reduced to \$861,000 as a result of government-wide reductions stemming from passage of the Balanced Budget and Emergency Deficit Control Act of 1985 (PL99-177).

CHAPTER II

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 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 many 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 1986, the Commission requested information from 20 Federal agencies and departments, at least 16 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 the Air Force, the Department of Energy, the Department of State, the Minerals Management Service, the National Aeronautics and Space Administration, the National Institutes of Health, the

National Marine Fisheries Service, the National Park Service, the National Sea Grant College Program, the National Science Foundation, the Naval Ocean Systems Center, the Office of Naval Research, the Office of Ocean and Coastal Resource Management, the Office of Oceanography and Marine Assessment, the Smithsonian Institution, 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 had the largest and most diverse marine mammal research programs.

Information from the 1986 survey is due early in 1987. 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 1986, the Commission, in consultation with its Committee of Scientific Advisors, reviewed, commented on, and/or made recommendations concerning: the tuna/porpoise, harbor porpoise, Dall's porpoise, Hawaiian monk seal, North Pacific fur seal, Steller sea lion, right whale, gray whale, entanglement, and Antarctic marine living resources research programs being planned, conducted, or supported by the National Marine Fisheries Service; the research on southern sea otters, bowhead whales, gray whales, and other marine mammals being planned and supported by the Minerals Management Service; and the manatee, sea otter, walrus, and polar bear research programs being conducted by the Fish and Wildlife Service. The Commission also convened, co-sponsored, or participated in meetings and workshops to: (1) describe research, education, and other programs necessary to better assess and resolve problems caused by lost and discarded fishing gear and other potentially hazardous marine debris; and (2) better define and decide how best to meet essential information and management requirements relating to: gray whales; right whales; porpoise affected by yellowfin purse seine fishing in the eastern tropical Pacific; marine mammal/fisheries interactions in California coastal waters; polar bears, sea otters, walrus, and other marine mammals in Alaska; river dolphins; and conservation of seals and whales in the seas surrounding Antarctica.

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 other research necessary to further the purposes and policies of the Act. Since it was established, the Commission has contracted for 571 projects, ranging in amounts from several hundred dollars to \$150,000. The average contract has been for about \$7,100. The total amounts of 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; \$327,854 in FY 84; \$226,160 in FY 85; and \$132,611 in FY 86.

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 to 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 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.

Projects undertaken by the Marine Mammal Commission in 1986 are summarized below. In those cases in which the Commission has jointly supported the work with other agencies, it is so noted in the project summary.

Final reports from Commission-sponsored studies completed in 1986 and earlier are available from the National Technical Information Service; they are listed in Appendix B of this Report. Papers resulting from Commission-sponsored activities and published elsewhere are listed in Appendix C.

Technical Editing and Publication of Alaskan Marine Mammal Species Accounts

(C. Mecklenburg, Point Stephens Press, Auke Bay, Alaska)

As described in Chapter V, the Commission has organized and provided funding for groups of experts to prepare reports explaining the rationale for research and management programs

necessary to effectively protect and conserve ten species of marine mammals that commonly occur in Alaskan coastal waters. The contractor is editing the individual species reports to make them consistent in style and format prior to publication. At the end of 1986, all but one of the ten species accounts had been completed and submitted for final technical editing. The individual reports will be integrated into an overall program plan expected to be published early in 1987.

Identification of Research/Management Requirements for Walrus in Alaska

(J. L. Sease, University of Alaska, Fairbanks, Alaska)

As a contribution to the species accounts mentioned above, the contractor, in collaboration with D. G. Chapman, Ph.D., University of Washington, compiled, synthesized, and evaluated available information on the biology, ecology, exploitation, and management of the Pacific walrus population. The draft contract report notes that walrus move between and are hunted in both Soviet and U.S. waters and that effective conservation of the population will require cooperative U.S./U.S.S.R. research and monitoring programs. The report was reviewed during the Commission's meeting in Anchorage, Alaska, on 28-30 October 1986. Based on comments received, the report is now being revised and will be included in the overall research and management plan for Alaskan marine mammals described in Chapter V.

Identification of Research/Management Requirements for Bearded and Spotted Seal Populations in Alaska

(B. P. Kelly and L. T. Quakenbush, Institute of Marine Science, University of Alaska, Fairbanks, Alaska)

As a contribution to the species accounts mentioned above, the contractors have compiled, synthesized, and evaluated available information on the biology, ecology, exploitation, and management of bearded and spotted seal populations in Alaskan coastal waters. Draft contract reports point out the need for better information on population size and discreteness and for monitoring and collecting data from the Alaskan subsistence and Soviet commercial harvests. The reports were reviewed during the Commission's meeting in Anchorage, Alaska, on 28-30 October 1986. Based on the comments received, they are being revised and will be included in the overall research and management plan for Alaskan marine mammals described in Chapter V.

Completion of a Study of Priorities for Marine Research in Arctic and Sub-Arctic Seas

(Polar Research Board, National Academy of Sciences)

In 1985, the Commission provided funds to help support an ad hoc committee established by the Polar Research Board of the National Academy of Sciences. The committee's task was to: review past and ongoing marine research programs in the Arctic and sub-Arctic; identify major information gaps and priority research needs; and describe research areas that would require or could best be addressed by new technological advances and/or a dedicated polar research vessel. Because additional money was needed for the committee to complete its report, the Commission provided that money in 1986. The committee is expected to submit its report to the Polar Research Board early in 1987. The report will be published by mid-1987.

Overview of Federal and State Efforts to Protect Manatees and Their Habitat in Florida

(C. J. Gluckman, Esq., Tallahassee, Florida)

As discussed in Chapter IX, the contractor is reviewing and evaluating actions taken since 1979 by the Federal Government, the State of Florida, involved public interest groups, and others to protect manatees and essential manatee habitats in Florida. The project is being funded partially by the Fish and Wildlife Service, and the Service, as well as the Commission, reviewed and commented on a draft contract report submitted in July 1986. The final contract report, expected early in 1987, will include recommendations for improving State and Federal land acquisition, habitat protection, education, enforcement, research, and other programs required to assure the continued existence of viable manatee populations in Florida.

Workshop on Measures to Address Marine Mammal/Fisheries Interactions in California

(Point Reyes Bird Observatory, Stinson Beach, California, and S. Montgomery, Woodstock, Virginia)

The contractors provided logistic support and prepared the report for the Workshop on Measures to Address Marine Mammal/Fisheries Interactions in California, held at the Fort Mason Center, San Francisco, California, on 26-28 March 1986. The purposes of the workshop, sponsored cooperatively by the Marine Mammal Commission, the California Department of Fish and Game, the California Sea Grant Program, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service, were to: (a) describe measures that could be taken to avoid or reduce the adverse effects of marine mammal/fisheries interactions on affected fisheries and marine

mammal populations in California; and (b) describe the research and monitoring programs necessary to evaluate the likely costs and benefits of potential mitigation measures. The workshop results, described in Chapter VI, will be used to help develop a cooperative State/Federal program for minimizing the adverse effects of interactions on both the affected fisheries and marine mammal populations.

Symposium on Biomass and Geography of Large Marine Ecosystems

(K. Sherman, Ph.D., Northeast Fisheries Center, National Marine Fisheries Service)

The contractor is organizing a Symposium on Biomass and Geography of Large Marine Ecosystems, to be held in Chicago, Illinois, on 16-17 February 1987, as part of the annual meeting of the American Association for the Advancement of Science. The symposium is being co-sponsored by the Association, the Center for Ocean Management Studies at the University of Rhode Island, the Marine Mammal Commission, and the National Oceanic and Atmospheric Administration/National Marine Fisheries Service. Symposium participants will include researchers from Argentina, Australia, China, Denmark, Japan, Spain, Thailand, and the United States. The purpose of the symposium is to provide a forum for examining the causes of large-scale biomass shifts within large marine ecosystems against the background of natural variability and anthropogenically-induced perturbations from over-exploitation and pollution. The results of the symposium should contribute to determining how to assess and maintain the health and stability of the marine ecosystems of which marine mammals are a part.

Field Surveys and Photo-Identification of Right Whales in the Bay of Fundy

(S. D. Kraus, New England Aquarium, Boston, Massachusetts)

In 1985, the Commission convened two workshops to identify and describe research and management actions necessary to protect right whales and their habitat in the northwest Atlantic Ocean. In 1986, Congress provided a special appropriation to the National Marine Fisheries Service to support needed research. The funding did not become available until late in the year and, in the interim, the Commission provided funds for the contractor to continue summer surveys and photo-identification studies of right whales begun in the lower Bay of Fundy in 1980. The study is providing valuable information on right whale calving intervals, growth rates, and mortality, as well as population size and habitat-use patterns. Some of the information must be collected each year to permit meaningful interpretation, and failure to continue the study in 1986 would have compromised its value.

Humpback Whale Surveys in Stephens Passage, Frederick Sound, and Seymour Canal, Alaska

(C. S. Baker, Ph.D., Gustavus, Alaska)

Areas in and around Glacier Bay National Park, Alaska, may be important summer feeding grounds for some of the humpback whales that winter, calve, and breed in the coastal waters of Hawaii. The contractor, with support from the Marine Mammal Commission and the National Marine Fisheries Service, conducted several summer surveys and photographed humpback whales in Stephens Passage and Frederick Sound, Alaska. He also continued a late fall survey begun in 1979 to determine how many humpback whales may remain in Seymour Canal, Alaska, during the winter. The study results will help to identify essential feeding areas and other areas of importance to humpback whales in southeast Alaska, determine when and what age/sex classes of whales migrate to and from Hawaii and Alaska, and provide the basis for detecting and monitoring future population trends.

Dissemination and Collection of Information Concerning Wildlife Conservation Problems Being Caused by Lost and Discarded Fishing Gear and Other Marine Debris in Australasia

(P. K. Dayton, Ph.D., Scripps Institution of Oceanography, La Jolla, California)

As described in Chapter VIII, the Commission has initiated a number of actions to determine how to prevent or reduce the impacts of lost and discarded fishing gear and other potentially hazardous marine debris on marine mammals. The objectives of this contract were to: (1) make scientists and others in Australia and New Zealand aware of problems caused by different types of persistent marine debris and steps being taken in the United States to resolve the problems; (2) obtain information on the nature and magnitude of marine debris problems in Australasian waters; and (3) prepare for a continuing dialogue on the issue. To meet the contract objectives, the contractor, while at the Australian Institute of Marine Science in Townsville, Australia, presented seminars on the problem, distributed written material concerning U.S. programs, and surveyed a number of marine ecologists and other scientists in Australia and New Zealand. In the process, the contractor met with investigators carrying out entanglement and debris-related research in both countries and thereby established the groundwork for substantially expanded international cooperative efforts now underway.

Workshop on the Biology and Ecology of River Dolphins
(Species Survival Commission, International Union for the
Conservation of Nature and Natural Resources, Gland,
Switzerland)

There are five species of fresh water river dolphins which occur in several of the major river systems in China, India, and South America. The biology, ecology, and status of these species are not well known and all five may be threatened or endangered due to hunting, incidental take, habitat degradation, or other human activities. The purposes of this Workshop, held in Wuhan, China, 26 October-6 November 1986, were to: review available information on the biology and conservation of river dolphins; identify threats to the dolphins and their habitat; and determine what can and should be done to assure survival of the species. A preliminary workshop report, provided to the Commission in November 1986, confirms that all species of river dolphins are either threatened or endangered. As described in Chapter IX, the Commission subsequently recommended that the National Marine Fisheries Service take certain steps to encourage and assist needed protective measures.

Relative Discreteness of Harbor Porpoise Populations in
North-Central California

(K. S. Norris, Ph.D., University of California, Santa Cruz)

Substantial numbers of harbor porpoise are being caught and killed in set net fisheries for halibut and other finfish along the north central coast of California. The distribution, size, and discreteness of populations being affected by the fisheries are not known and therefore it is difficult to judge the likely effects of the incidental take. Information on harbor porpoise distribution and movement patterns may best be obtained by radio-tagging and tracking a representative sample of animals. The objectives of this pilot project are to: (1) determine when, where, and how harbor porpoise might most effectively be captured, observed, and tracked or relocated in or near the areas affected by the fisheries; and (2) develop safe and effective methods for capturing, marking, radio-tagging, tracking, and relocating harbor porpoise in and near the affected areas. The contract report, due by 30 September 1987, will be reviewed by the Commission, in consultation with its Committee of Scientific Advisors, to determine whether the Commission should recommend that the National Marine Fisheries Service initiate a harbor porpoise radio-tagging/tracking program.

Analysis of the Possible Use of Mitochondrial DNA for
Determining Discreteness of Bottlenose Dolphin Populations
(W. M. Brown, Ph.D., and T. E. Dowling, Ph.D., University of
Michigan, Ann Arbor, Michigan)

In December 1984, the Commission provided support for a feasibility study to determine whether analysis of mitochondrial DNA could be used to identify discrete populations of marine mammals. The investigators analyzed mitochondrial DNA in tissue samples collected from bottlenose dolphins in several coastal areas in the United States. The results were promising and, in 1986, the Commission provided additional funds to assist in obtaining and analyzing tissues from a larger and more representative sample of animals. If successful, the study will provide a powerful new tool to help determine whether marine mammals from different geographic areas are from the same or different breeding populations.

Review of Information Concerning the Possible Effects of
Salmon and Other Fisheries on Dall's Porpoise Populations in
the North Pacific

(D. G. Chapman, Ph.D., University of Washington, Seattle,
Washington, and F. T. Awbrey, Ph.D., San Diego State
University, San Diego, California)

An Administrative Law Judge hearing was held in Seattle, Washington, on 1-7 December 1986 to review information related to the Federation of Japan Cooperative Fisheries Association's application for a permit authorizing the incidental take of Dall's porpoise during fishing operations in the North Pacific. To help prepare evidence and other documents for the Administrative Law Judge's review of the permit application, the contractors and the Committee of Scientific Advisors on Marine Mammals reviewed and provided advice on scientific/technical matters contained in background documents, testimony prepared and submitted by other parties in advance of the hearing and briefs filed by parties after the hearing. In addition, Dr. Chapman prepared and presented expert testimony on behalf of the Commission. In 1987, the contractors will continue to review and provide advice on scientific and technical aspects of this matter.

Development of a Computerized System for Storing and
Selectively Retrieving Marine Mammal Literature Citations
(W. A. Watkins, Ph.D., Woods Hole Oceanographic Institution,
Woods Hole, Massachusetts)

While there are thousands of scientific papers, reports, and other documents bearing upon the conservation and protection of marine mammals, their usefulness depends, in no small measure, upon their accessibility. With this in mind, the

Commission provided funds for the contractor to obtain, evaluate, and adapt existing computer software to facilitate storage and retrieval of marine mammal bibliographic information. Funding necessary to develop the computer data base will be provided by the National Marine Fisheries Service and other organizations.

Analysis of Elephant Seal Resighting Data from the Farallon Islands

(H. R. Huber, Visiting Scientist, National Marine Mammal Laboratory, Seattle, Washington)

Tag/resighting studies of elephant seals have been carried out on the Farallon Islands since the early 1970s. However, data produced by these studies have not been completely analyzed. Recognizing the potential value of such data, the Commission provided support for the contractor to analyze the data to determine possible changes in the survival rates of immature elephant seals on the Farallon Islands from 1974 to 1986. Juvenile survival rates, which may have declined as population density increased during this period, may provide a basis for determining the optimum sustainable population level. The contract report will be reviewed by the Commission, in consultation with its Committee of Scientific Advisors, to determine whether additional analysis, monitoring, or management actions may be necessary to ascertain and maintain the optimum sustainable northern elephant seal population.

Publication of Contract Reports

(National Technical Information Service)

Many of the Commission's contract reports are of interest to organizations and individuals outside the Commission and may be of value for many years to come. To assure that such reports are readily available, the Commission contracts with the National Technical Information Service, part of the Department of Commerce, to publish and archive selected reports. Commission reports available from the Service are listed in Appendix B of this Report.

Special Research Concerns for FY 1987

As noted in this and previous Annual Reports, substantial additional research is needed to more effectively assess and determine how best to deal with a number of problems affecting the conservation and protection of marine mammals worldwide. As examples, additional research is needed to:

- determine the cause(s) and possible means for stopping and reversing the continuing decline of certain northern

fur seal, harbor seal, and Steller sea lion populations in the North Pacific and Bering Sea;

- identify and evaluate the relative costs and benefits of possible means for preventing or reducing the at-sea loss and discarding of fishing gear and other potentially hazardous and persistent marine debris;
- identify and evaluate the costs and benefits of possible means for avoiding or reducing the adverse effects of interactions between marine mammals and fisheries;
- identify and determine how best to protect habitats essential to the health and stability of marine mammal populations worldwide; and
- develop better methods for assessing and monitoring the status of marine mammal populations and habitats and the effects of activities such as offshore oil and gas development on marine mammals.

As noted at the beginning of this chapter, agencies such as the National Marine Fisheries Service, the Fish and Wildlife Service, and the Minerals Management Service have primary responsibility for assuring that needed research and studies are done. The Commission is responsible for reviewing this research and for seeing that other studies it deems necessary or desirable are done in order to meet the objectives of the Marine Mammal Protection Act. To meet its responsibilities, the Commission, in FY 1987, will continue to convene workshops, hold planning meetings, and contract for studies to help define and develop solutions to critical problems. In particular, the Commission expects to organize, convene, or help support workshops, program reviews, and planning meetings to: (1) help develop and adopt a cooperative State/Federal plan for assessing and minimizing the adverse effects of marine mammal/fisheries interactions on both fisheries and marine mammal populations in California; (2) determine what further actions should be taken to assess and mitigate problems caused by lost and discarded fishing gear and other persistent and hazardous marine debris; (3) determine what additional research is needed to facilitate development of safe and effective systems for radio-tagging and tracking large cetaceans; (4) develop recovery plans for right whales, humpback whales, and other endangered whales in U.S. waters; (5) identify directed research and monitoring programs that should be carried out by the United States to facilitate implementation of the Convention for the Conservation of Antarctic Marine Living Resources; and (6) improve planning and coordination of marine mammal research and management programs being conducted or supported by Federal agencies, State agencies, and other organizations.

As funding permits, the Commission will also contract for studies to: determine the types of monitoring programs that might be useful for detecting and monitoring the possible effects of offshore oil and gas exploration and development on marine mammals and the ecosystems of which they are a part; determine whether and what data management systems might be used to facilitate storage, retrieval, and exchange of information concerning whales, seals, and other components of the Southern Ocean ecosystem; and describe additional international agreements or programs that may be useful for protecting marine mammal populations and habitats that occur in areas outside U.S. jurisdiction.

CHAPTER III

STATUTORY AMENDMENTS CONCERNING MARINE MAMMALS

In 1986, Congress passed legislation to clarify legal requirements for the proposed translocation of southern sea otters and to provide authorization for the taking of small numbers of depleted marine mammals incidental to activities other than commercial fishing. As discussed in the previous Annual Report, these issues were raised in 1985 during Congressional deliberations on reauthorization of the Endangered Species Act. Although the reauthorization bill, H.R. 1027, was passed by the House of Representatives on 29 July 1985, reauthorization legislation was not passed by the Senate. However, during 1986, the marine mammal provisions of H.R. 1027 were considered and passed in conjunction with other legislation.

The sea otter amendment was passed by Congress on 18 October 1986 as part of the Wetlands Loan Extension Act and was signed into law on 7 November 1986. The amendment clarifies the Fish and Wildlife Service's authority to translocate and manage a second population of sea otters. In addition, it establishes special decision-making standards for the proposed translocation. The provisions of this amendment are discussed in detail in the sea otter section of Chapter IX of this Report. As noted in that section, the Fish and Wildlife Service is conducting its decision-making review of the sea otter translocation proposal, and a decision on the proposal pursuant to the requirements of the sea otter amendment is expected early in 1987.

Also on 18 October 1986, Congress passed S. 991, authorizing appropriations for certain fisheries activities. This bill included an amendment to section 101(a)(5) of the Marine Mammal Protection Act. Prior to amendment, section 101(a)(5) authorized the Secretaries of the Interior and Commerce to permit U.S. citizens engaged in activities other than commercial fishing to incidentally take small numbers of non-depleted marine mammals. However, the authority did not coincide with analogous incidental take provisions in the Endangered Species Act. Therefore, amendment was considered desirable to make the analogous provisions of the two statutes consistent.

Under the Endangered Species Act, permission may be granted to incidentally take endangered or threatened species if it is determined that the activity involved is not likely to jeopardize the continued existence of that species or to result in the destruction or adverse modification of its critical habitat. Because marine mammals designated as endangered or threatened are considered to be depleted species under the Marine Mammal Protection Act, section 101(a)(5) previously had enjoined the issuance of incidental take authorizations under the Endangered Species Act when endangered or threatened marine mammals were involved. In order to conform the Marine Mammal Protection Act to the less stringent provisions of the Endangered Species Act, section 101(a)(5) was amended to authorize the incidental take of small numbers of depleted, as well as non-depleted, marine mammals.

Before issuing the Marine Mammal Protection Act incidental take authorization under section 101(a)(5), the Secretary is required to determine, after notice and comment rulemaking, whether the proposed take will have a negligible impact on the affected species or stock. If the taking would have more than a negligible impact, the request may not be granted. Authorization is limited to five consecutive years and is subject to regulations that prescribe, among other requirements, the permissible means of taking and the measures that must be followed to cause the least practicable adverse impact on the affected species or stock.

The amendment to section 101(a)(5) also changed the standard for the Secretary's review of the impact of the proposed take on the availability of marine mammals for subsistence uses by Alaska Natives. Prior to the amendment, unless the Secretary determined that the requested take would have a negligible impact on the availability of the species for subsistence uses, the incidental take authorization could not be issued. As a result of the amendment, the "negligible impact" standard was changed to the requirement that the incidental take would not have an "unmitigable adverse impact" on the availability of marine mammals for subsistence uses. In addition, the amendment added the requirement that regulations be promulgated on methods of taking that would have the least practicable impact on the availability of the affected species or stock for subsistence uses by Alaska Natives.

During 1987, the National Marine Fisheries Service and the Fish and Wildlife Service are expected to propose regulations to implement the new requirements of section 101(a)(5). The Marine Mammal Commission will review the proposed regulations in consultation with its Committee of Scientific Advisors.

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 1986 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 inhabit or are present seasonally in the Southern Ocean, the seas surrounding Antarctica. Two of the seal species, the Antarctic fur seal (Arctocephalus spp.) and the southern elephant seal (Mirounga leonina), were driven to near-extinction by unregulated hunting in the late 18th and early 19th centuries. Most of the large whale stocks, including humpback, blue, fin, sei, and sperm whale stocks, have been severely depleted by poorly regulated commercial whaling which began in the Antarctic in the early 1900s.

In 1972, the Antarctic Treaty Consultative Parties concluded an agreement, the Convention for the Conservation of Antarctic Seals, to regulate commercial sealing, should it ever begin again in the Antarctic. In 1982, the International Whaling Commission agreed to a moratorium on com-

mercial whaling which began in 1986 (see following discussion). Thus, commercial sealing and whaling presently do not pose threats to Southern Ocean populations of seals and whales, both activities could resume. In addition, serious threats could be posed by developing fisheries, particularly the fishery for Antarctic krill (Euphausia superba), and growing interest in possible offshore oil and gas resources.

As noted in previous Commission reports, Antarctic krill occupies a central role in the Southern Ocean food web. It is one of the dominant herbivores and the principal component in the diets of numerous species including: fin, blue, humpback, and minke whales; crabeater and Antarctic fur seals; Adelie, chinstrap, macaroni, and rockhopper penguins; several other species of sea birds; 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 direct and indirect effects of fisheries and offshore oil and gas development on marine mammals, the Marine Mammal Commission has, since 1974, undertaken a continuing review of matters that might affect krill or other important components of the Southern Ocean ecosystem. It has made recommendations to the National Science Foundation, the Department of State, and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service on the need for basic and directed research and monitoring programs, and for international agreements to effectively regulate fisheries and offshore oil and gas exploration and development in the Southern Ocean. Since the mid-1970s, the Commission has also provided, often through a representative serving as the lead scientist on the U.S. delegation, scientific advice during the many negotiating sessions here and abroad on Antarctic living and non-living resource regimes. Activities before 1986 have been described in previous Annual Reports. A summary of these earlier activities and a description of 1986 activities are provided below.

Activities Related to Antarctic Seals

The Convention for the Conservation of Antarctic Seals, which entered into force in March 1978, recognizes that unregulated harvesting could have severe adverse effects on Antarctic seal stocks and on the marine ecosystem of which they are a part. The Convention includes an Annex which specifies permissible catch levels, sealing areas, and sealing seasons for various species. The Convention requires that parties to the Convention annually provide information to the other parties and to the Scientific Committee on

Antarctic Research (see page 26) on seals taken for both research and commercial purposes, and that both the Scientific Committee on Antarctic Research and other contracting parties be notified at least thirty days in advance of departure of proposed sealing expeditions from their home ports.

Since the Convention was concluded in 1972, several hundred seals have been killed each year for research purposes. The Scientific Committee on Antarctic Research has established a Group of Specialists on Seals to facilitate and coordinate Antarctic seal research and this Group has been charged with compiling and advising the Scientific Committee on Antarctic Research on information submitted in response to the aforementioned requirements of the Seals Convention. The Soviet Union and Poland have not met the reporting requirements, and, at its meeting in San Diego in June 1986 (discussed below), the Scientific Committee on Antarctic Research urged all of its national committees to take steps to insure that data on seals killed and captured in the Antarctic are submitted in the appropriate form and in a timely fashion to the convenor of the Group of Specialists on Seals to enable the Scientific Committee on Antarctic Research to meet its commitments under the Seals Convention.

There has been no commercial hunting of seals in the Antarctic since 1964 when a private Norwegian expedition conducted exploratory sealing in the western Atlantic sector of the Southern Ocean. In October 1986, the Soviet Union advised the United States and other parties to the Seals Convention that it was sending two sealing vessels to the Antarctic on 10 November 1986, to conduct experimental sealing. The Department of State, following consultation with the Commission and the National Marine Fisheries Service, requested information on the purposes and expected duration of the experimental sealing, the size and operating characteristics of the two sealing vessels, the planned operating area or areas, and the species and number of seals expected to be taken. By the end of 1986, no further information had been provided.

Article VI of the Seals Convention provides that any contracting party may propose a meeting of parties at any time after commercial sealing has begun to consider constituting a regulatory commission or taking other measures which may be necessary to effectively meet the Convention objectives. If subsequent information indicates that the Soviet Union has begun commercial sealing, the Commission will recommend that the Department of State propose a meeting of contracting parties to consider and take necessary action.

Activities Related to Other Living Resources

In addition to recognizing the possible adverse effects of unregulated seal hunting, the parties to the Antarctic Treaty have recognized the potential adverse effects of the developing krill fishery and other fisheries on the Antarctic marine ecosystem. At the IXth Antarctic Treaty Consultative Meeting held in London in 1977, the Consultative Parties agreed that a special meeting should be held to elaborate a regime which would provide for the effective conservation of all living resources in the Antarctic marine ecosystem. Negotiations were initiated in February 1978 and the resulting regime -- the Convention for the Conservation of Antarctic Marine Living Resources -- was concluded in May 1980 and came into force in April 1982. To implement it, the Convention establishes a Commission, Scientific Committee, and Secretariat, all headquartered in Hobart, Tasmania, Australia.

The Marine Mammal Commission's activities regarding the negotiations and the first four meetings of the Commission and Scientific Committee established by the Convention are described in previous Annual Reports.

Meeting of the Working Group for the Ecosystem Monitoring Program under the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) -- At its third annual meeting, held in Hobart in September 1984, the Scientific Committee for the Conservation of Antarctic Marine Living Resources established an ad hoc working group to formulate and recommend actions for planning, implementing, and coordinating multi-national research programs necessary to effectively assess and monitor key components of the Antarctic marine ecosystem. This group met in Seattle, Washington, in May 1985 and, following consideration of its report at the September 1985 meeting of the full Scientific Committee, the Scientific Committee constituted a formal Working Group for the CCAMLR Ecosystem Monitoring Program. The formal working group met for the first time on 2-7 July 1986 in Hamburg, Federal Republic of Germany.

Representatives of the Marine Mammal Commission participated in both the May 1985 and July 1986 working group meetings. At its first meeting, the working group identified six krill predators (crabeater and Antarctic fur seals; Adelle, chinstrap, and macaroni penguins; and minke whales) that might be useful indicators of the indirect or second-order effects of krill harvesting. The group recommended that these species be monitored at a network of sites throughout Antarctica and that high priority be placed on the initiation of integrated ecosystem monitoring programs in

three areas -- Prydz Bay, the Bransfield Strait, and the area around South Georgia Island.

At the Hamburg meeting, the Working Group amplified and refined the conceptual framework for the ecosystem monitoring program and began to determine the time, ship support, special equipment, and associated research that would be required to satisfactorily meet the program objectives. The Working Group noted the importance of standardizing methods and procedures for collecting, reporting, and archiving data. It agreed that at its next meeting, to be held in Paris in June 1987, the Working Group would consider: data requirements, data acquisition and data handling with regard to predator, prey, environmental, and fisheries variables; standardization of monitoring methods; identification and elaboration of new data collection methods; the potential role of remote sensing technology; theoretical aspects and pilot studies as related to monitoring needs and methodologies; and establishing a schedule for various program elements.

The 1986 Annual Meetings of the Commission and Scientific Committee Established by the Convention for the Conservation of Antarctic Marine Living Resources -- The 1986 annual meetings of the Commission and the Scientific Committee for the Conservation of Antarctic Marine Living Resources were held in Hobart on 8-20 September 1986. To help prepare for these meetings and review the status of the development plan for a directed research program (described below), the National Marine Fisheries Service, in consultation with the Marine Mammal Commission, the Department of State, and the National Science Foundation, convened an ad hoc group of U.S. scientists and representatives of interested industry and environmental groups in Washington, D.C., on 2 May 1986. At that meeting, information and views were sought and exchanged on scientific and technical issues on the agenda for the 8-20 September 1986 meetings of the Antarctic Marine Living Resources Commission and Scientific Committee and on research and monitoring which the U.S. should carry out to best facilitate implementation of the Living Resources Convention. Marine Mammal Commission representatives helped prepare for and participated in both the May preparatory meeting and the September meetings of the Commission and Scientific Committee for the Conservation of Antarctic Marine Living Resources.

During the September 1986 meetings, the Antarctic Marine Living Resources Commission and Scientific Committee considered a wide range of issues including: measures needed to better assess and conserve exploited fish stocks; evaluation of possible methods for assessing and monitoring the status of Antarctic krill stocks; development of a coordinated,

multi-national plan for ecosystem monitoring; assessment and avoidance of accidental and incidental catch of non-target species; and elaboration of a system of observation and inspection. The Scientific Committee concluded that several fish stocks, particularly the Notothenia rossii stock in the South Georgia area, had been severely depleted by overfishing and that additional measures should be taken to protect and permit recovery of the stocks. Most members of the Commission, including the United States, took the position that area closures or enforceable catch limits were required to permit recovery of some depleted stocks. Others, particularly the Soviet Union, took the position that there had not yet been sufficient time to detect the effects of net regulations and prohibitions on directed fishing adopted at the 1985 meeting, and were not convinced that more restrictive measures either were necessary or justified. The Commission, which must make decisions by consensus, continued existing conservation measures (see the previous Annual Report), adopted several additional measures including a prohibition on directed fisheries for N. rossii in the vicinity of the Antarctic Peninsula, and agreed that at its next meeting it would consider and, as necessary, fix catch limits for the South Georgia area to become effective for the 1987/1988 fishing season.

Information provided during the September 1986 meetings indicate that catches of Antarctic krill, which had declined from a high of about 528,000 metric tons in the 1981/1982 fishing season to about 128,000 tons in the 1983/1984 fishing season, have increased in the past two years due at least in part to improved success in preparing peeled krill products. Most of the increase, as indicated in the following table, has been in the reported Soviet catch, which has doubled in each of the past two years.

Antarctic Krill Catches
(in metric tons)

	1982/83	1983/84	1984/85	1985/86*
Chile	3752	1649	2598	3264
GDR	0	0	50	0
Japan	42282	49531	38274	61846
Rep. of Korea	1959	2657	0	0
Poland	360	0	0	2065
USSR	<u>180290</u>	<u>74381</u>	<u>150538</u>	<u>379270</u>
TOTAL:	228643	128218	191460	446445

*The figures for 1986 are preliminary.

Although increasing, it is unlikely that krill catches have had or are having any adverse effects on krill stocks or krill predators, except possibly in local areas. Much of the catch has been from the South Georgia Island and South Orkney Island areas and it is possible that krill fishing has reduced krill abundance in the vicinity of these islands, at least during the fishing season, making it more difficult for krill-eating birds and seals breeding on the islands to find food. Recognizing the importance of resolving these uncertainties the Antarctic Marine Living Resources Scientific Committee has initiated or recommended a range of theoretical studies, field experiments, and monitoring programs to determine how best to assess and monitor krill stocks and to detect the possible effects of fishing on both krill stocks and krill predators.¹

Seals, whales, birds, and other non-target species may be affected directly, as well as indirectly, by krill and other fisheries. That is, they may be caught and killed incidentally during fishing operations or be caught and killed in lost and discarded fishing gear. The Antarctic Marine Living Resources Commission has recognized this potential and has adopted a number of measures to try to insure that accidental and incidental mortality of marine living resources does not become a problem in the Convention Area. In response to proposals made by the United States delegation, the Commission adopted additional measures during its September 1986 meeting. These included agreement that those members that had not already done so would consider and take steps necessary to ratify and implement Optional Annex V of the 1978 Protocol Relating to the International Convention for the Prevention of Pollution from Ships and ratify and implement the Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. Commission members also agreed that, when feasible, samples of any lost or discarded nets, net fragments, strapping bands, or other potentially hazardous marine debris found incidentally by their nationals in the Convention Area should be collected and provided to the Secretariat for archiving along with information on when, where, and how much debris was found, the condition of the debris when found, the species, number, and condition of any fish, birds, marine mammals, or other organisms entangled in the debris when found, and what was

¹ Actions taken by the Commission and the Scientific Committee for the Conservation of Antarctic Marine Living Resources are described in the annual meeting reports of the Commission and Scientific Committee. These and other reports can be obtained from: The Executive Secretary, Commission for the Conservation of Antarctic Marine Living Resources, 25 Old Wharf, Hobart, Tasmania 7000, Australia.

done with any parts of the debris not sent to the Secretariat for archiving.

The Commission also considered and generally agreed on procedures for authorizing and reporting the results of experimental fishing, which otherwise would be prohibited by conservation measures previously adopted, and for elaborating a system of observation and inspection to give effect to Article XXIV of the Convention. These matters, as well as matters concerning stock assessment, identification and adoption of necessary conservation measures, development and adoption of a long-range conservation strategy and program of work, and further elaboration and implementation of needed research and monitoring programs, will be considered further at the next meetings of the Antarctic Living Resources Commission and Scientific Committee scheduled to be held in Hobart from 26 October to 6 November 1987. To help prepare for these meetings, the Marine Mammal Commission recommended, by letter of 23 December 1986, that the National Marine Fisheries Service organize and hold another meeting of the ad hoc Scientific Working Group on the Antarctic before May 1987 to seek advice on scientific and technical matters to be considered during these meetings and on the research program being developed by the Service as required by the Antarctic Marine Living Resources Conservation Act of 1984 (see below).

Development of a Directed U.S. Antarctic Marine Living Resources Research Program -- The Antarctic Marine Living Resources Conservation Act of 1984 establishes the domestic authority necessary for the United States to comply with and implement the Convention for the Conservation of Antarctic Marine Living Resources. Among other things, the Act 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, implement, and annually update a plan for conducting directed research necessary to effectively implement the Convention.

In response to this directive, the National Marine Fisheries Service has prepared, adopted, and started to implement a program development plan. The plan was developed in consultation with the National Science Foundation, the Marine Mammal Commission, other Federal agencies, knowledgeable scientists in the U.S. and abroad, and representatives of the U.S. fishing industry and public interest groups.

The Service received a \$2,000,000 supplement to its Fiscal Year 1987 budget appropriation to begin implementing the directed research program outlined in its program development plan. There are few ships capable of supporting

marine research in the Antarctic and they expensive to operate. Therefore, to try to make the best possible use of the available funding, the Service made arrangements to cooperatively carry out three research cruises in 1986-1987 on a cost-sharing basis aboard a Polish research vessel, the Profesor Siedlecki.

The three research cruises are scheduled to be completed early in 1987. On 23 December 1986, the Commission wrote the National Marine Fisheries Service recommending that, following completion of the three research cruises, the Service prepare and make public a progress report and tentative plans for directed research to be carried out in the 1987-1988 and the 1988-1989 austral summers. As noted earlier, the Commission also recommended that the Service organize and hold another meeting of the ad hoc U.S. scientific working group on the Antarctic before May 1987 to seek outside advice on the overall direction of the program and the tentative implementation plans for the next two field seasons.

The Commission believes that both basic and directed research are essential to conserving wildlife and protecting U.S. interests in the Southern Ocean. Therefore, in 1987, the Commission will continue to work with the Department of State, the National Oceanic and Atmospheric Administration, the National Marine Fisheries Service, the National Science Foundation, and other organizations to help develop both basic and directed Antarctic research programs.

Activities Related to Non-Living Resources

As noted earlier, there is growing interest in potential non-living resources in Antarctica, particularly offshore oil and gas. Activities associated with exploration, development, and transport of oil and gas resources and possibly other non-living resources could have direct and indirect effects on whales, seals, krill, and other components of the Antarctic marine ecosystem. The Antarctic Treaty Consultative Parties have recognized this possibility, as they recognized the possible adverse effects of living resource exploitation. At the XIth Antarctic Treaty Consultative Meeting held in Argentina in July 1982, they agreed that a regime on Antarctic mineral resources should be elaborated and that the regime should provide 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 mineral resource activities; and (3) governing those activities determined to be acceptable. Negotiation of the regime began at a special Antarctic Treaty Consultative Meeting in New Zealand in June 1982, and it has continued at formal and informal sessions in New Zealand (January 1983);

the Federal Republic of Germany (July 1983); Washington, D.C. (January 1984); Japan (May 1984); Brazil (February 1985); France (September 1985); Australia (April 1986); and Japan (October/November 1986). Marine Mammal Commission representatives have helped prepare for these sessions and have been members of the U.S. negotiating delegations.

The negotiations initially involved only the Antarctic Treaty Consultative Parties, which presently include Argentina, Australia, Belgium, Brazil, Chile, China, the Federal Republic of Germany, France, India, Japan, New Zealand, Norway, Poland, South Africa, the Soviet Union, the United Kingdom, Uruguay, and the United States. Beginning with the meeting in Rio de Janeiro in February 1985, the negotiations have been open to observers from states acceding to the Antarctic Treaty. As of 1 January 1987, these were: Bulgaria, Cuba, Czechoslovakia, Denmark, Finland, German Democratic Republic, Hungary, Italy, the Netherlands, Papua New Guinea, Peru, Romania, South Korea, Spain, and Sweden.

The next round of negotiations is scheduled to be held in Uruguay in May 1987. If differences of view concerning a number of key issues can be resolved at that session, a diplomatic conference could be held in New Zealand in late 1987 or early 1988 to conclude the regime.

The Marine Mammal Commission believes that an effective regime for regulating and monitoring possible mineral resource activities offers the greatest potential for insuring that any such activities are not to the disadvantage of whales, seals, and other components of the Antarctic marine ecosystem. The Commission has provided and will continue to provide advice and assistance to the Department of State to insure, insofar as possible, that the regime is ecologically sound and provides adequate and effective means for protecting marine mammals and their habitat in the Southern Ocean.

The Scientific Committee on Antarctic Research

The Scientific Committee on Antarctic Research (SCAR) was established in 1958 to foster international cooperation and coordinate scientific programs in the Antarctic. It is one of the Scientific Committees which form the International Council of Scientific Unions, a body to which the National Academy of Sciences is the U.S. adhering organization. The Academy's Polar Research Board functions as the U.S. National Committee for SCAR. SCAR serves as an unofficial scientific advisory body to the Antarctic Treaty Consultative Parties, who have increasingly called upon SCAR for scientific and technical advice concerning conservation and other issues.

At its XIXth meeting, in June 1986, SCAR and several of its subsidiary bodies considered a number of issues relevant to the conservation and protection of marine mammals and their habitat in the Southern Ocean. These included: facilitation and coordination of ecological research in the Southern Ocean; establishment of additional categories of protected areas; environmental monitoring and data management; waste disposal practices; and development of a comprehensive plan for Antarctic conservation.

In 1972, one of the SCAR Working Groups, the Working Group on Biology, established a Subcommittee on Living Resources of the Southern Ocean. In 1976, the Subcommittee was upgraded to become the Group of Specialists on Southern Ocean Ecosystems and Their Living Resources. Also in 1976, the Scientific Committee on Antarctic Research and the Scientific Committee on Oceanic Research (SCOR) co-sponsored the First International Conference on Living Resources of the Southern Ocean. The conference report -- entitled "Biological Investigations of Marine Antarctic Systems and Stocks" (BIOMASS) -- outlined a ten-year collaborative international research program "to gain a deeper understanding of the structure and dynamic functioning of the Antarctic marine ecosystems as a basis for the management of actual and potential living resources." Implementation of the BIOMASS program involved two multi-nation research efforts (the First and Second BIOMASS Experiments -- FIBEX and SIBEX) during the period 1981-1985. Planning and coordination of FIBEX and SIBEX were done by a Steering Committee -- the BIOMASS Executive -- and a BIOMASS Data Center was established in Cambridge, England, in 1984.

Much of the work begun under the BIOMASS Program is being continued under the CCAMLR Ecosystem Monitoring Program mentioned earlier. In 1985, the SCAR Executive disbanded the Group of Specialists on Southern Ocean Ecosystems and Their Living Resources, while providing that the BIOMASS Executive continue its work until 1989 to complete synthesis and analysis of data collected during FIBEX and SIBEX. Recognizing that disbanding the Group of Specialists would leave no group within the Scientific Committee to act as a forum for review, discussion, and coordination of biological research in the Southern Ocean, the Working Group on Biology proposed, and the SCAR Executive approved, establishing a new Group of Specialists on Southern Ocean Ecology. The purposes of this new group are to identify, encourage, and facilitate interdisciplinary studies on Antarctic marine ecosystems and to respond through SCAR to requests for scientific advice and information. Such requests may be from the Antarctic Treaty Consultative Parties, the Commission and Scientific Committee for the Conservation of Antarctic Marine Living Resources, and other international organizations with interest in

science, resources, and conservation in the Southern Ocean. The Commission will work with the U.S. Polar Research Board to try to assure effective communication and coordination between the Group of Specialists on Southern Ocean Ecology and relevant intergovernmental bodies such as the Commission and Scientific Committee for the Conservation of Antarctic Marine Living Resources and the International Whaling Commission and its Scientific Committee.

The Antarctic Treaty Consultative Parties recognize that science-related activities as well as resource-related activities could have significant adverse effects on the environment. They have adopted measures providing for designation of Sites of Special Scientific Interest and Specially Protected Areas to help insure that scientific and logistic activities do not interfere with ongoing science programs or damage important wildlife habitat. To date, 20 Specially Protected Areas and 21 Sites of Special Scientific Interest have been designated. In addition, in 1983, the Consultative Parties requested that SCAR provide advice on the types of research and logistic activities which might reasonably be expected to have significant adverse effects on the Antarctic environment. They also sought advice on the types of assessment procedures that would be useful for insuring that possible adverse effects are identified and considered before initiating activities. In response, SCAR constituted an ad hoc working group to consider and prepare a report responding to the request.

The Marine Mammal Commission was consulted and provided information which was included in a draft report reviewed and endorsed at the XVIIIth meeting of SCAR in autumn 1984. The report, entitled "Man's Impact on the Antarctic Environment," was provided to and considered during the XIIIth Antarctic Treaty Consultative Meeting in October 1985. The Consultative Parties were unable to reach consensus on whether and what type of environmental impact assessment procedure is necessary to insure that scientific and logistic support activities do not have significant adverse effects on the Antarctic environment. The subject will be considered again during the XIVth Antarctic Consultative Meeting to be held in Brazil in October 1987.

The Marine Mammal Commission believes that environmental impact procedures, such as those used to give effect to the National Environmental Policy Act, would help to minimize environmental impacts in Antarctica and that such procedures should be applied as suggested in the SCAR report. The Commission will work with the Department of State and other involved Federal agencies to encourage adoption of environmental impact assessment procedures by all Antarctic Treaty Consultative Parties.

In addition to seeking SCAR's advice on environmental impact assessment procedures, the Antarctic Treaty Consultative Parties requested, in 1985, that SCAR consider and provide advice on: waste disposal procedures and standards that would be desirable for coastal and inland stations and field camps; the possible desirability of expanding the system of protected areas in Antarctica to include areas or forms of protection not covered by the existing system of Sites of Special Scientific Interest and Specially Protected Areas; and steps that might be taken to improve the comparability and accessibility of scientific data on Antarctica. In response to the requests concerning waste disposal and the possible need for additional protective arrangements, SCAR, at its meeting in San Diego in June 1986, established a panel of experts and an ad hoc working group to consider the matters. Reports will be produced in time for review and submission to the October 1987 meeting of the Antarctic Treaty Consultative Parties. In response to the request for advice on steps that could be taken to improve the comparability and accessibility of scientific data, SCAR established an ad hoc group to consider the matter and to provide a report to the next meeting of the Working Group on Biology in September 1988.

At its 1984 meeting, SCAR constituted a joint working group with the International Union for the Conservation of Nature and Natural Resources (IUCN) on long-term conservation in the Antarctic. To facilitate its work, the joint working group organized and held a symposium in Bonn, Federal Republic of Germany, in April 1985. The report of the working group was presented to the IUCN General Assembly Meeting in May 1986 and to SCAR at its meeting in June 1986. SCAR welcomed the report and invited delegates to provide written comments for consideration when discussing further collaboration between IUCN and SCAR in this effort.

The Marine Mammal Commission believes that the advice of the Scientific Committee on Antarctic Research is essential to the effective operation of the Antarctic Treaty system. Through the Polar Research Board, the Commission will continue to provide whatever assistance possible to facilitate SCAR's work.

New International Interest in Antarctica

The basic purpose of the Antarctic Treaty, which entered into force in 1961, is to assure that Antarctica is used exclusively for peaceful purposes. To this end, military activities, nuclear explosions, and the disposal of radioactive waste in Antarctica are prohibited. The Treaty guarantees freedom of scientific research and provides for on-site inspection of all stations, installations, and

equipment. The Treaty also provides for regular consultative meetings which are used, among other purposes, to deal with new issues.

There is growing international interest in Antarctica. Since the Treaty entered into force, twenty-two additional nations have acceded to it, bringing the total to thirty-four parties². As noted earlier, eighteen of these are now Consultative Parties with decision-making rights under the Antarctic Treaty. The remaining non-Consultative Parties can attend the regular consultative meetings as observers.

The growing international interest in Antarctica reflects, in part, recognition of the value of scientific research which remains the primary human activity in Antarctica. It also reflects speculation about potential resources, particularly non-renewable mineral and fossil fuel resources, in Antarctica. This speculation appears to have been a major factor stimulating an initiative by Malaysia in 1983 to have the United Nations consider the existing international arrangements concerning Antarctica. Acting on a Malaysian proposal, the United Nations General Assembly inscribed an item on Antarctica on the agenda of its Thirty-eighth Session in 1983. As a result, the General Assembly adopted a resolution that called upon the Secretary General to "prepare a comprehensive, factual and objective study of all aspects of Antarctica."

The Secretary General's study was completed in November 1984. Following further consideration of the matter, the General Assembly adopted a resolution that: (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 inscribe an item entitled "Question of Antarctica" on the provisional agenda for the Fortieth Session of the General Assembly in 1985.

Although the question of Antarctica had previously been treated on a consensus basis in the United Nations, this pattern was broken during the Fortieth Session of the General Assembly when Malaysia and its supporters chose to push through three resolutions by vote. The first resolution called upon the Secretary General to "update and expand the study on the question of Antarctica by addressing questions concerning the availability of information from the Antarctic Treaty Consultative Parties to the United Nations on their

² Since 1 January 1987, two more countries, Greece and North Korea, have acceded to the Treaty, bringing the total to thirty-six.

respective activities in, and their deliberations regarding Antarctica, the involvement of the relevant specialized agencies and intergovernmental organizations in the Antarctic Treaty system and the significance of the United Nations Convention on the Law of the Sea and the Southern Ocean." The second resolution called attention to the ongoing negotiation of the minerals regime, indicated that any exploitation of resources in Antarctica should ensure the international management and equitable sharing of the benefits of such exploitation, and invited the Antarctic Treaty Consultative Parties to "inform the Secretary General of their negotiations to establish a regime regarding Antarctic minerals." The third resolution noted that South Africa is a Party to the Antarctic Treaty and urged the Antarctic Treaty Consultative Parties to exclude South Africa from participation in meetings of the Consultative Parties.

In the view of the United States and the other Antarctic Treaty Consultative Parties, the three resolutions adopted during the Fortieth Session of the General Assembly incorporated elements which seek unjustifiably to call into question the Antarctic Treaty system and to create an artificial dichotomy between that system and the United Nations' system. For these reasons, the great majority of the Antarctic Treaty Consultative Parties did not participate in the votes on the three resolutions. In explaining their position, Australia, speaking before the General Assembly on behalf of the Consultative Parties, expressed regret that the consensus tradition had been abandoned and indicated that the nature of the resolutions and the way in which they had been adopted would call into question further Consultative Party participation in the Antarctic agenda until consensus was restored.

The "Question of Antarctica" was raised again during the Forty-first Session of the United Nations General Assembly in December 1986. Again, three resolutions were pushed through by vote. In brief, these resolutions: (1) requested the Antarctic Treaty Consultative Parties "to keep the Secretary General fully informed on all aspects of the question of Antarctica so that the United Nations could function as the central repository of all such information"; (2) called upon the Antarctic Treaty Consultative Parties "to impose a moratorium on the negotiations to establish a minerals regime until such time as all members of the international community can participate fully in such negotiations"; (3) appealed to the Antarctic Treaty Consultative Parties "to take urgent measures to exclude the racist apartheid regime of South Africa from participation in the meetings of the Consultative Parties"; (4) requested the Secretary General to continue to follow all aspects of the question of Antarctica and to provide an updated report thereon at the Forty-second Session

of the General Assembly; and (5) included the "Question of Antarctica" in the provisional agenda for the Forty-second Session of the General Assembly. Again, the great majority of the Consultative Parties (all but China, which abstained) did not participate in the votes on these two resolutions relating to Antarctica. A number of Consultative Parties did, however, participate in the vote on the resolution regarding South Africa.

The Marine Mammal Commission believes that the Antarctic Treaty and the related agreements that form the Antarctic Treaty system provide an essential basis for effectively protecting and conserving marine mammals and their habitat in the Southern Ocean. In 1987, the Commission will continue its efforts to strengthen and facilitate effective implementation of the Antarctic Treaty, the Convention for the Conservation of Antarctic Seals, the Convention on the Conservation of Antarctic Marine Living Resources, and the minerals regime currently being negotiated.

The International Whaling Commission

Representatives of the Marine Mammal Commission consulted with the U.S. Commissioner to the International Whaling Commission (IWC) and others in preparation for the Thirty-eighth Annual Meeting of the IWC in Malmo, Sweden. Commission representatives also attended meetings of the IWC and its Scientific Committee during 1986. A summary of the Marine Mammal Commission's activities and related U.S. activities during 1986 follows.

Pre-Meeting Activities

As noted in the previous Annual Report, John V. Byrne, Ph.D., submitted his resignation as U.S. Commissioner to the IWC late in 1985. Early in 1986, Anthony J. Calio, Ph.D., was appointed as the new U.S. Commissioner. Dr. Calio's appointment coincided with the onset of a moratorium on commercial whaling, which had been adopted by the IWC at its 1982 meeting and which took full effect in 1986 (see previous Annual Reports and discussion below). In light of these transitions within both the IWC and U.S. leadership in IWC matters, late in 1985, the Marine Mammal Commission undertook a review of IWC issues to provide guidance with respect to future U.S. policy directions and activities. The results of this review, completed early in 1986, were reflected in a letter sent to the new IWC Commissioner on 15 January 1986. Major issues before the IWC were considered carefully and recommendations for U.S. action during 1986 and beyond were made. In particular, the Commission recommended that:

- as a guiding principle, the U.S. take all feasible steps to insure the long-term future of the Whaling Convention and improve the effectiveness of the IWC;
- the U.S. continue its support of the moratorium provision at least until such time as the comprehensive assessment is completed and the provisions governing commercial take are re-examined;
- the U.S. make certain that post-comprehensive assessment management decisions do not neglect uncertainties in available data and/or population models that might, if disregarded, allow whale stocks to be reduced to or maintained at unacceptable levels, and that catch limits other than zero for commercial whaling be supported only if whale stocks are determined with certainty to be at a level which could sustain such exploitation;
- three or four U.S. scientists be immediately designated to represent the U.S. at IWC meetings bearing on the comprehensive assessment and that this group meet with other appropriate U.S. scientists by mid-March 1986 to consult on positions and develop scientific background papers on: (a) procedures and timetables affecting the comprehensive assessment, and (b) potential revision of the IWC's present management procedures;
- the U.S. participate in IWC meetings, including those scheduled for 7-11 April in England on the comprehensive assessment and for 6 June in Sweden on socio-economic aspects of IWC whaling decisions;
- the U.S. participate in the 2 June 1986 working group meeting and any other IWC meetings to consider matters relating to the issuance of special permits for scientific research;
- the U.S. continue to support IWC actions that reflect legitimate subsistence needs of Alaska Eskimos;
- the U.S. maintain appropriate arrangements with the Alaska Eskimo Whaling Commission to ensure that the Alaska Eskimo bowhead whale hunt is conducted in a manner consistent with adopted IWC quotas and related provisions;

- the National Marine Mammal Laboratory continue its past practice of convening annual meetings to review and coordinate bowhead whale research supported by Federal agencies, State agencies, Native organizations, and industry groups by convening such a meeting as early as possible in 1986;
- money be provided to the National Marine Mammal Laboratory to sustain efforts to better determine the net recruitment rate for the Bering Sea bowhead whale population as recommended by the IWC's Scientific Committee; and
- the U.S. continue its support for development and use of the most humane killing techniques for the taking of bowhead whales for subsistence purposes.

Following the 1985 meeting of the IWC, the Marine Research Institute of Reykjavik, Iceland, sent to members of the IWC Scientific Committee a draft outline and research budget for a proposed whale research program to be carried out in 1986-1989. Some of the proposed studies involved an experimental take of whales in order to extend catch per unit of effort data. The proposal called for a catch of 80 fin whales, 40 sei whales, and 80 minke whales during each year of the research program, a catch equal to about half of Iceland's commercial catch levels in recent years. Other proposed studies did not depend on data from the experimental catch. By letter of 6 December 1985, the U.S. Commissioner asked the Marine Mammal Commission to review the described research for scientific merit to assist the U.S. in evaluating it in light of other policy considerations.

On 7 March 1986, the Commission sent the results of its review to the U.S. Commissioner. With respect to the proposed studies involving the experimental catch, the Commission noted that: collected samples and data would be similar to those collected during the past decade or more of commercial whaling; past samples and data had not yet been completely analyzed; and, from the information provided in the research outline, it was questionable whether additional data collected from the proposed experimental catch would significantly improve understanding of the subject whale stocks beyond that which should already be possible through analysis of existing data and samples. The Commission noted that the proposed research program had been developed without first analyzing available data to determine precisely what additional data are needed and how they should be collected, analyzed, and archived. In short, the plan was not developed in accordance with generally accepted scientific procedure.

Accordingly, the Commission concluded that the proposed sampling program may be ill-conceived and fundamentally flawed.

The Commission further noted that the draft research program proposed studies to: compile and analyze available catch, sighting, and biological data from fin, sei, minke, humpback, and blue whales from the North Pacific Ocean; radio tag and track fin whales and satellite tag and track other whales; conduct shipboard and aerial surveys of whales adjacent to Iceland; photographically identify individual humpback and killer whales; and analyze and improve population models for estimating maximum sustainable yield levels. The draft research outline did not specify the research protocol to be used in these studies, but it did note that these studies would be based on recent experience and proven methodology. The Commission concluded that, although the information provided in the draft research outline was not adequate to make an informed judgment, it seemed possible that such research, if properly designed and carried out, could provide useful new information for the comprehensive assessment contemplated by the IWC.

As indicated above, the IWC agreed during its 1985 meeting that a special meeting should be held in 1986 to consider planning for the comprehensive assessment. That meeting was held on 7-11 April 1986. Its objective was to identify specific tasks and priorities and a timetable for undertaking the comprehensive assessment of whale stocks required under paragraph 10 (e) of the IWC Schedule of regulations. Representatives of the Marine Mammal Commission and the National Marine Fisheries Service attended from the United States. Meeting participants proposed that the comprehensive assessment be conducted through an iterative process whereby individual whale stocks would be reviewed according to a seven-point work plan outline consisting of the following steps: an inventory of current knowledge of whale stocks; a study of methodological problems involved in determining stock identity and population trends; a parallel examination of the availability of relevant data; a review of scientific aspects of alternative management procedures; preparation of a second-round inventory; an examination of general aspects of whale population dynamics; and preparation of a third-round inventory.

Recognizing constraints associated with the iterative nature of the comprehensive assessment process, the number of stocks to be reviewed, and the availability of personnel and financial resources, a timetable was developed with a view to completing an interim report on the comprehensive assessment, which would cover at least the major stocks of whales, by 1990. The report of this meeting was considered by the full

Scientific Committee during its meeting on 19-31 May 1986 and the proposed work plan for the comprehensive assessment was endorsed by the full Committee.

The June 1986 Meeting of the IWC

Membership and Participation -- Representatives of thirty-two of the Commission's forty-one member nations participated in the Thirty-eighth Annual Meeting of the IWC, which was held in Malmo, Sweden, on 6-13 June 1986.

Moratorium on Commercial Whaling -- As discussed in the Marine Mammal Commission's previous Annual Reports, the IWC adopted a new provision to its Schedule of regulations in 1982, which provides that catch limits for all commercial whaling will be set at zero for the 1985/86 pelagic and 1986 coastal whaling seasons and thereafter. The new provision, Schedule paragraph 10 (e), also provides that, by 1990 at the latest, the IWC will undertake a comprehensive assessment of the effect of this decision on whale stocks and consider modifying this provision and establishing catch limits other than zero. No action was taken during the 1986 meeting to amend or modify Schedule paragraph 10 (e) and, therefore, pursuant to its provisions, catch limits for all stocks of whales for the 1987 whaling seasons remained at zero for purposes of commercial whaling. Catch limits for commercial whaling will remain at zero unless and until a three-quarters majority of the IWC members vote to modify Schedule paragraph 10 (e).

Three nations (Japan, Norway, and the Soviet Union) maintain objections to Schedule paragraph 10 (e). Under the International Convention for the Regulation of Whaling, 1946, this action removes the obligation of their respective governments to comply with the requirements of this provision. During 1986, all three nations exercised rights under their objections to take whales commercially. The U.S. response to these whaling activities is discussed below. Consistent with the provisions of Schedule paragraph 10 (e), all other members refrained from commercial whaling in 1986.

Aboriginal/Subsistence Whaling -- At its meeting in 1985, the IWC adopted a three-year block quota for the Bering Sea stock of bowhead whales of 26 strikes per year for the years 1985 through 1987. The quota provides that strikes not used in any one year may be used the following year as long as no more than 32 whales are struck in any one year. No action was required or taken during the 1986 meeting to modify this quota. Similarly, no action was required or taken to modify the 1986-1987 block quota of up to 220 minke whales adopted by the IWC for the West Greenland stock during its 1985 meeting. Aboriginal catch limits for other stocks

of whales were set as follows for the 1987 aboriginal whaling seasons: 12 minke whales from the central Atlantic stock; 10 fin whales from the West Greenland stock; zero humpback whales from the West Greenland stock; and 179 gray whales from the eastern Pacific stock.

Comprehensive Assessment -- With respect to the comprehensive assessment, the IWC reviewed the report of the special meeting of the Scientific Committee held on 7-11 April 1986 and the relevant sections of the report of the Scientific Committee's annual meeting. The IWC accepted the Scientific Committee's outline proposals for future work on the comprehensive assessment and its work plan for 1986/1987. The latter includes: conducting an inventory of data; further encoding of data by the Secretariat and monitoring studies such as the International Decade of Cetacean Research surveys in the Antarctic; conducting two workshops (on the scientific aspects of alternative management procedures and catch per unit of effort data); and carrying out three reviews on (a) cytogenetic and biochemical techniques for examining stock identity, (b) census techniques, and (c) mark-recapture techniques. The IWC also agreed that a joint Scientific and Technical Committee working group meeting on the comprehensive assessment should be held during the week prior to the 1987 IWC Annual Meeting.

Special Permits for Scientific Research -- Article VII of the Whaling Convention provides that any member nation may grant a special permit to its citizens to take whales for purposes of scientific research and that the whales taken may be processed and sold in accordance with that party government's directions. Party governments, however, must provide the IWC and its Scientific Committee an opportunity to review proposed special permits, which must include certain information concerning proposed activities. During the 1986 meeting, the IWC considered and adopted a resolution pertaining to the issuance of special permits for scientific research and reviewed proposed special permits submitted by the Governments of Iceland and the Republic of Korea.

With respect to the former matter, a working group was established by the IWC to consider a proposed resolution put forward by the Government of Sweden to define parameters for conducting scientific research under special permits and to establish guidelines for international trade in products derived from whales taken during research activities. After considerable discussion, the IWC adopted a revised resolution which, among other things, calls upon party governments to: comply with guidelines for research developed by the Scientific Committee; take into account whether research objectives can be achieved through non-lethal research techniques and whether the resulting information will contribute to the

comprehensive assessment; and ensure that, following completion of scientific treatment of any whales killed, available meat or other products be utilized "primarily for local consumption."

As mentioned, the Governments of Iceland and the Republic of Korea submitted proposals for special permits for scientific research, and these were reviewed by the IWC during the 1986 meeting. In both cases, similar proposals had been submitted for consideration at the 1985 meeting. As it had at the previous meeting, the Scientific Committee provided detailed comments on the Icelandic research proposal but was unable to agree on the extent to which the proposal satisfied research guidelines developed to review special permit proposals. With respect to the Korean research proposal, it was again found that it did not meet IWC information requirements.

Related Activities

Certification under the Packwood-Magnuson and Pelly Amendments -- As discussed in previous Annual Reports, whaling carried out under objections to provisions of the IWC Schedule may trigger certain actions under two U.S. laws -- the Packwood-Magnuson Amendment to the Magnuson Fishery Conservation and Management Act and the Pelly Amendment to the Fishermen's Protective Act. The Packwood-Magnuson Amendment mandates a reduction by at least 50 percent in the allocation of fish that may be caught within the U.S. Fishery Conservation Zone by any nation whose nationals are certified by the Secretary of Commerce for directly or indirectly conducting fishing operations or engaging in trade or taking which diminishes the effectiveness of the International Whaling Convention or its conservation program. Under the Pelly Amendment, the U.S. may embargo imports of fish products by any nation so certified.

During 1986, whaling activities conducted by citizens of the Soviet Union and Norway were certified by the Secretary of Commerce as diminishing the effectiveness of the IWC. As noted in the previous Annual Report, the Soviet Union was certified in April 1985 for taking an excessive number of minke whales from the Antarctic Ocean during the pelagic whaling season immediately preceding the first year of the commercial whaling moratorium. As a result, its allocation of fishery resources from U.S. waters was reduced by 50 percent. Soviet whalers again took minke whales in the Antarctic Ocean in 1986. Therefore, during 1986, the entire U.S. fishery allocation for the Soviet Union was withheld. Because the Soviet Union did not request a U.S. fishery allocation in 1986, this sanction had no apparent effect in preventing the offending whaling practices. However, as

noted above, the Soviet Union announced at the opening of the 1985 IWC meeting that it would suspend commercial whaling activity for technical reasons, beginning in 1988.

In the spring of 1986, the Government of Norway issued permits to its coastal fishermen to take minke whales in the northeast Atlantic. In doing so, it exercised rights preserved by its formal objection to the moratorium on commercial whaling, which had been adopted by the IWC and which took effect beginning with the 1986 coastal whaling season. Early in June 1986, the U.S. learned that Norwegian whalers had taken minke whales under those permits. Therefore, pursuant to provisions of the Pelly Amendment, the Secretary of Commerce certified to the President on 9 June 1986 that Norwegian nationals were conducting fishing operations in a manner which was diminishing the effectiveness of the IWC. At the same time, the Secretary recommended that the Secretary of State advise Norway of the certification.

As indicated above, Pelly Amendment sanctions may be invoked to prohibit the importation of all fish products from any nation so certified. As recommended by the Secretary of Commerce, Norway was advised of the U.S. certification action. Subsequently, on 3 July 1986, the Government of Norway announced that it would suspend commercial whaling after the 1987 whaling season and that the total 1987 domestic quota would be less than the total of 400 whales allowed to be killed in 1986. In making this announcement, the Government of Norway expressed its intention to phase out commercial whaling in a manner which parallels the course of action agreed to by the U.S. and Japan for Japanese whaling (see discussion below). It differs, however, in that Norway's announcement lacks a formal commitment to the IWC in the form of a prospective withdrawal of its objection to the moratorium provision.

The Pelly Amendment requires that, within 60 days of receiving a certification finding from the Secretary, the President must notify Congress of actions taken in response to the certification, including the reasons for any action that falls short of a complete prohibition of the importation of fish products from that country. Accordingly, after considering Norway's announcement, the President submitted a report to Congress on 4 August 1986 indicating that he would impose no sanctions. This decision was made on the premise that Norway will not allow the resumption of commercial whaling after 1987 unless the IWC takes affirmative action to authorize such a resumption. The report also said that the Secretary of Commerce would continue his certification of Norway until Norway withdraws its objection to the moratorium and that the Secretary, in cooperation with the Secretary of

State, would carefully monitor Norwegian whaling to determine if recommended sanctions under the certification become warranted.

The U.S.-Japanese Agreement -- As noted in the Marine Mammal Commission's past two Annual Reports, the U.S. and Japan reached an agreement in November 1984 whereby Japan would phase out its commercial whaling activity on or before April 1988 and withdraw its objection to the IWC's moratorium provision, Schedule paragraph 10 (e). In return, the U.S. would refrain from certifying Japan under applicable U.S. laws for certain limited whaling activity that would be contrary to the established IWC quotas. As part of the agreement, the Government of Japan indicated it would file a prospective withdrawal of its objection to the moratorium provision with the IWC on 1 April 1985, which would take effect in April 1988. A number of environmental groups brought suit against the Secretaries of Commerce and State seeking to prevent the Secretaries from entering into the agreement with Japan. Among other things, the suit sought a declaratory judgment that the Secretary of Commerce is required to certify Japan if Japanese whalers exceed quotas adopted by the IWC. The U.S. District Court ruled in favor of the plaintiffs on 5 March 1985 and the U.S. immediately filed an appeal. In light of the court case, Japan advised the U.S. in April 1985 that it would delay filing the prospective withdrawal of its objection to the IWC moratorium decision, pending final resolution of the court case.

After unsuccessful appeals by the U.S. Government, the U.S. Supreme Court agreed on 13 January 1986 to review the matter. On 30 June 1986, the Supreme Court handed down a final decision on the matter which found for the U.S. Government and reversed the lower court ruling. Among other things, the Court held that the Secretary of Commerce is not automatically directed to certify a nation that fails to conform to the IWC whaling schedule and that the Secretary's decision to secure Japan's future compliance with the IWC's program through the 1984 agreement, rather than by certification and imposition of economic sanctions under the Pelly and Packwood-Magnuson Amendments, is a reasonable exercise of the discretionary authority under those laws. The Court's decision was shared by five justices with four justices joining in a dissenting opinion. By overturning the lower court's decision, the 1984 U.S.-Japan agreement was allowed to stand, and, consistent with its provisions, the Government of Japan filed the prospective withdrawal of its objection to Schedule paragraph 10 (e) with the Secretary of the IWC on 1 July 1986.

In 1987, major issues facing the IWC are likely to involve planning for the comprehensive assessment, further

quotas for the subsistence take of bowhead whales by Alaska Eskimos in 1988 and beyond, and matters pertaining to the special permits for scientific research. The Marine Mammal Commission expects to continue to consult and cooperate with other involved agencies and organizations on these and other IWC issues during 1987.

Interim Convention on Conservation of North Pacific Fur Seals

In recent years, the Pribilof Islands fur seal population has been declining at a rate of about five to eight percent per year. The most recent population estimate, about 800,000 animals, is less than half of the estimated population size of 2,000,000 animals in the late 1950s. While the cause or causes of this decline have not been documented, mortality resulting from entanglement in lost and discarded fishing gear and other debris appears to be at least a contributing factor, if not the major contributing factor. The entanglement issue as it relates to fur seals and other marine species is discussed in Chapter VIII of this Report.

The ongoing population decline and issues related to the harvest of fur seals on the Pribilof Islands have raised difficult research and management questions. Until recently, North Pacific fur seals were managed pursuant to provisions of the Interim Convention on Conservation of North Pacific Fur Seals. As discussed below, however, the Interim Convention has not been renewed and, within areas under U.S. jurisdiction, domestic laws and regulations now provide the basis for management. Actions taken by the Marine Mammal Commission and others concerning the Interim Convention and conservation of the fur seal population in recent years are summarized below.

The 1984 Protocol to Extend the Interim Convention

The Interim Convention on Conservation of North Pacific Fur Seals entered into force in 1957 and included, as contracting parties, the Governments of Japan, Canada, the Soviet Union, and the United States. The Convention called upon party governments to cooperatively undertake research and management to achieve the maximum sustainable productivity of fur seal populations in the North Pacific Ocean. Among other things, the Convention prohibited pelagic sealing and provided for the sharing of pelts taken from commercial land-based harvests carried out by the United States on the Pribilof Islands and by the Soviet Union on the Commander and Robben Islands.

The Convention also established the North Pacific Fur Seal Commission composed of a representative from each party government. Between 1958 and 1986, the Commission met annually to coordinate and review the results of cooperative research programs and to develop recommendations to party governments on appropriate research and management measures. As discussed below, however, the Fur Seal Commission did not meet in 1986 and it seems unlikely that fur seals will continue to be managed under the Interim Convention as it currently exists.

After the Interim Convention entered into force in 1957, it was extended by a succession of Protocols, the most recent of which was signed by the four parties on 12 October 1984 and called for extending the Convention through October 1988. By early 1985, all of the nations which had signed the Protocol had not yet submitted their instruments of ratification. However, in hopes that favorable action by all party governments would be forthcoming, the Fur Seal Commission met in April 1985 in Tokyo, Japan, to consider cooperative research and management recommendations for the 1985 field season. On 13 June 1985, the U.S. Senate conducted a hearing to seek public and Administration views on ratification of the 1984 Protocol, but did not take any final action on the matter before the scheduled beginning of the 1985 fur seal harvest on the Pribilof Islands. Therefore, domestic laws and regulations became the exclusive authority for managing the Pribilof Islands fur seal population.

As a related matter, the National Marine Fisheries Service had not been doing everything necessary to determine and mitigate the cause(s) of the continuing fur seal population decline. On 29 November 1985, the Commission, in consultation with its Committee of Scientific Advisors, wrote to the Service recommending a number of needed actions, including several relevant to U.S. participation in the Fur Seal Commission. Among other things, the Commission recommended that the Service, in cooperation with the Commission, constitute and convene a working group to develop a long-term fur seal conservation plan similar in form and content to the recovery plans required for species listed under the Endangered Species Act. It also recommended that the Service propose that a separate working group of the Fur Seal Commission be established and convened before the 1987 Fur Seal Commission meeting to develop recommendations for cooperative actions to address the critical issues.

With respect to its recommendation for jointly constituting a working group to develop a fur seal conservation plan, the Commission noted that a well-conceived conservation plan, which sets forth the steps and supporting rationale for identifying and attacking the causes of the population

decline, would provide a substantially improved basis for identifying, scheduling, and evaluating essential research and management activities. In addition, the Commission noted that such a plan would help facilitate agreements on ways to strengthen and expand cooperative international support of critical research and management tasks. To help clarify the scope and intent of the recommended conservation plan, the Commission sent a preliminary discussion draft outline for a Pribilof Islands fur seal conservation plan to the Service on 6 December 1985.

By early 1986, the 1984 Protocol to extend the Interim Convention had been ratified by all parties but the United States and arrangements were being considered for a meeting of parties in Ottawa, Canada, in April 1986. The purpose of the meeting was to discuss the future role of the Interim Convention, long-term research planning, the entanglement problem, and the 1985 subsistence harvest on the Pribilof Islands. In preparation for the meeting, the National Marine Fisheries Service prepared and distributed a draft issue paper on 10 February 1986 and scheduled a preparatory meeting for 19 March 1986 in Seattle, Washington.

The Commission reviewed the issue paper, which proposed U.S. positions on the four subject areas noted above, and returned comments to the Service on 14 February 1986. The Commission noted that it had not received a response from the Service to its letter of 29 November 1985 and that, based on the draft issue paper for the Ottawa meeting, it appeared that needed actions still had not been defined adequately. Accordingly, the Commission noted that, unless steps were taken immediately to develop and seek international cooperation in implementing a comprehensive conservation plan, yet another year would pass with the Service failing to take the steps necessary to determine and reverse the causes of the continuing population decline.

On 21 February 1986, the Service responded to the Commission's 29 November 1985 letter. With respect to the recommendations that the Service constitute and convene a domestic working group to prepare a long-term conservation plan and that it use that plan as a basis for seeking international cooperation in implementing necessary measures, the Service noted that: the matter would be discussed during the course of the Ottawa meeting of party governments; the Commission's discussion draft outline for a conservation plan would form the basis of the U.S. contribution; the U.S. would propose during the meeting that party governments direct their scientists to jointly develop a long-term research master plan for fur seals; and, if the U.S. did not ratify the Protocol extending the Convention, the Service would consult with the Marine Mammal Commission to consider alter-

native mechanisms for seeking international cooperation on fur seal research.

The Service's letter was not fully responsive to all of the points that had been raised in its 29 November 1985 and 14 February 1986 letters and the Commission again wrote to the Service on 12 March 1986. In its follow-up letter, the Commission advised the Service that little would be accomplished during the upcoming meeting unless the U.S. first determined precisely what it thought necessary to include in the proposed conservation plan. The Commission also noted that its discussion draft outline addressed both research and management needs, but the Service's response suggested planning should be limited to research matters. Therefore, the Commission restated its recommendation that the Service and the Commission cooperatively convene a group of experts before the Ottawa meeting to develop and agree on the scope and desired results of the long-term planning effort which the U.S. was apparently prepared to propose during the Ottawa meeting. The Commission also recommended that the meeting of experts be held in conjunction with the Service's scheduled preparatory meeting.

The Service's preparatory meeting was held on 19 March 1986 in Seattle, Washington. During the meeting, the Service announced that Canada had withdrawn its offer to host the meeting of parties because the U.S. had not ratified the 1984 Protocol and that, unless the Senate acted favorably on the matter in the next few days, the meeting of parties would probably be cancelled. The working group to develop a fur seal conservation plan was not constituted or convened in conjunction with the preparatory meeting, as had been recommended by the Commission. However, during the meeting, Service representatives described research plans for 1986 and noted that a draft paper on long-term fur seal research needs had been prepared. The draft paper did not identify research priorities or management needs. However, it was noted that sections on these topics were to be developed subsequently as a first step toward developing the conservation plan recommended by the Commission.

The meeting of parties in Ottawa was cancelled and, by the end of 1986, the Senate had taken no final action with respect to the Convention. Although the Service considered plans for an alternative meeting of party governments in 1986, no meeting was held that year. Late in 1986, arrangements were being made to hold a meeting of fur seal scientists from Canada, Japan, the Soviet Union, and the U.S. in April 1987 to consider recent research activities.

Fur Seal Research and Management Needs

As noted above and in the previous Annual Report, the Commission wrote to the National Marine Fisheries Service on 29 November 1985 recommending a number of actions which it believed necessary to effectively identify and mitigate the cause or causes of the continuing decline of the Pribilof Islands fur seal population. Among other things, that letter recommended that the Service promptly convene a North Pacific fur seal research program review to ensure that the coming year's research was well-conceived and addressed the most important research questions.

The Service's 21 February 1986 response to the Commission's recommendations stated, among other things, that a research program review was not needed in 1986 because new research on entanglement and food habits was planned and that it would be more appropriate to schedule another research program review in February 1987 when that research had been completed and the results analyzed. The Service's letter was not fully responsive to the Commission's recommendations and a follow-up letter was sent to the Service on 12 March 1986.

With respect to the recommended research program review, the Commission noted that its recommendation had been intended to ensure that all research necessary to identify and determine how to resolve the cause or causes of the fur seal population decline had been identified and to ensure that appropriate priorities and funding levels had been established for those studies. Because the Service had not advised the Commission of what research it considered necessary, what priorities it had assigned to those studies, or what studies would be supported in Fiscal Year 1986, the Commission asked to be advised as to: (a) what research the Service considered necessary to identify and mitigate the cause of the continuing population decline; (b) the level of funding available for fur seal research in 1986; (c) what research would be carried out with those funds; and (d) what necessary research would not be supported due to insufficient funding.

Some of the requested information was presented during the course of the aforementioned preparatory meeting convened by the Service on 19 March 1986 in Seattle, Washington. The research program review recommended by the Commission was not convened by the Service in 1986.

In May 1986, the Service requested comments and recommendations from the Commission on two applications for permits to take fur seals for purposes of scientific research. The permit applications were for research being conducted by the Service as part of its North Pacific fur

seal research program. This research previously had been carried out under the authority of the Interim Fur Seal Convention and, while the Convention was in effect, authorization under the Marine Mammal Protection Act had not been required.

The first application requested authority to experimentally entangle up to 70 seals, including adult males and females with pups, to determine how entanglement in relatively small net fragments (200 grams or less) affected energy expenditure and survival. The second application requested authority to mark, tag, and otherwise take up to 36,000 seals annually for a five-year period for purposes of population monitoring and investigating several aspects of the entanglement problem.

The applications did not provide detailed descriptions of the planned research and raised questions as to whether the planned entanglement-related studies would contribute significantly to determining the probable cause or causes of the continuing fur seal population decline. Therefore, by letters of 10 and 19 June 1986, the Commission requested additional information on the nature, purposes, and expected value of the research for which authorization was being sought.

The Commission subsequently received additional information from the Service. However, it did not adequately address all the Commission's questions, particularly those concerning the expected value of certain aspects of planned entanglement-related research. On 14 July 1986, the Commission advised the Service that it remained unable to determine how proposed studies involving the deliberate entanglement of fur seals in small net fragments would help to determine whether net entanglement is causing or contributing to the continuing decline of fur seal populations on the Pribilof Islands. On 15 July 1986, the Commission advised the Service that it also had uncertainties about the nature, purposes, need for, possible effects, and humaneness of some of the population and other net-entanglement studies being planned. Recognizing that certain tagging and other programs were essential to better assess and monitor population status, the Commission recommended that authorization to continue certain essential programs be provided immediately. The Commission also recommended that authorization be granted, with certain conditions, to incidentally entangle up to sixty fur seals during the course of a pilot study to determine the feasibility of possible techniques for assessing the rate of entanglement of different age/sex classes of fur seals in different types and sizes of net fragments.

Both the Service and the applicant responded to the Commission's 14 July 1986 letter questioning the practical value of the planned experiments to determine how entanglement in small net fragments affects the energy requirements of fur seals. The information provided convinced the Commission that the planned experiment would provide information of scientific interest, but of no practical value with respect to determining whether entanglement is causing or contributing to the continued fur seal population decline. Noting that the Commission and the National Marine Fisheries Service shared the view that the Pribilof Islands fur seal population was depleted as defined under the Marine Mammal Protection Act and that the Service's permit regulations require detailed justification for conducting research on depleted species or populations, the Commission, by letter of 31 July 1986, recommended that the Service not provide support for the study as planned. The applicant subsequently withdrew the permit application.

In response to the Commission's letter of 15 July, the National Marine Fisheries Service authorized continuation of essential population studies as recommended by the Commission. The Service did not authorize the planned pilot study recommended by the Commission to determine the feasibility of possible techniques for assessing the probability of different age/sex classes of fur seals being entangled in different types and sizes of net fragments. Therefore, in its letter of 31 July 1986, the Commission repeated its recommendation that the planned pilot study be authorized and carried out as a matter of priority.

Following consultation with the Commission, the National Marine Fisheries Service published a Federal Register notice on 1 August 1986 proposing to modify its fur seal research permit to authorize the pilot study recommended by the Commission. Information provided in the Federal Register notice did not address a number of questions raised in earlier comments provided by the Humane Society of the United States and, on 2 September 1986, the Humane Society requested that a public hearing be held to review the objectives, need for, and design of the Service's fur seal research program, particularly those aspects dealing with net entanglement. The time required to schedule and hold a public hearing prevented the Service from carrying out the pilot study in 1986 and the proposed permit modification request subsequently was withdrawn.

A number of uncertainties concerning the National Marine Fisheries Service's North Pacific fur seal research program were raised during the review of the aforementioned permit applications. For example, the Commission was uncertain as to the relationship between the research activities described

in the permit applications and the development and implementation of a long-range fur seal conservation plan which the Commission had recommended in its earlier letters. Therefore, by letter of 15 July 1986, the Commission advised the Service that its annual meeting would be held in Anchorage, Alaska, on 28-30 October 1986 and that one of the agenda items would be a review of ongoing and planned activities related to the conservation of the Pribilof Islands fur seal populations.

To facilitate the review, the Commission requested that the Service provide: a review of fur seal research carried out by the Service in 1986; a detailed description and explanation of the design and objectives of fur seal research proposed to be carried out in 1987; the Service's proposal for a long-range conservation plan; and a description of steps that have been or would have been taken to finalize, adopt, and seek international cooperation in implementing the long-range conservation plan.

On 29 September 1986, the Service forwarded a draft North Pacific Fur Seal Research Plan containing sections on research needs, priorities, and plans for studies that were to have been conducted in FY 1986. The Service's cover letter noted that the plan constituted a first draft of the Fur Seal Conservation Plan recommended by the Commission. It further indicated that plans for FY 1987 would not be available for review at the Commission's meeting, but would be available for review at a fur seal research program review scheduled to be held in February 1987.

During the Commission's meeting in Anchorage on 28-30 October 1986, there was a general review of actions taken by the Service to address research and other issues bearing upon the conservation of the Pribilof Islands fur seal population. The review did not address all of the issues and concerns noted previously and, on 23 December 1986, the Commission wrote to the Service recommending further action on a number of fur seal issues. Among other things, the Commission noted that the draft research plan developed by the Service offered a useful start on a fur seal conservation plan, but that it had to be expanded to address management needs and long-term planning before it could be viewed as a conservation plan. The Commission again recommended that the Service constitute and convene a working group to prepare and oversee implementation of a long-term fur seal conservation plan. In addition, the Commission noted that the Service should convene the planned research program review as soon as possible so that the results could be used in planning the 1987 research program and that a description of long-term program objectives, tentative 1987 research plans, and other relevant materials should be

provided to invited participants at least two weeks in advance of the program review.

The 1986 Subsistence Harvest

As noted above and in the previous Annual Report, the U.S. had not acted to continue the Interim Fur Seal Convention prior to the scheduled beginning of the fur seal harvest in July and August 1985. In the absence of an international agreement binding upon the U.S., management authority for fur seals on the Pribilof Islands is derived exclusively from domestic laws, including the Marine Mammal Protection Act and the Fur Seal Act. Under these laws, the taking of fur seals for commercial purposes is prohibited. A take by Alaska Natives for subsistence purposes is, however, permitted with certain conditions. Under authority of these two laws, the National Marine Fisheries Service published emergency interim regulations on 8 July 1985 governing the 1985 subsistence take of fur seals by the Aleut residents of the Pribilof Islands. Those regulations governed only the 1985 harvest, and, because of the continued lack of action to ratify or renegotiate the Fur Seal Convention, permanent regulations were considered necessary to regulate the harvest in 1986 and future years.

On 7 August 1985, the Commission, in consultation with its Committee of Scientific Advisors, recommended that the National Marine Fisheries Service immediately begin the process of preparing proposed permanent regulations. Although the Service indicated in its 8 July 1985 interim regulations that proposed permanent regulations would be published by 30 September 1985, no action had been taken by the end of November 1985. Thus, by letter of 29 November 1985, the Commission repeated its recommendation that the Service promptly publish proposed regulations. By letter of 21 February 1986, the Service advised the Commission that proposed regulations would be published early in the spring of 1986. Concerned about the delay, the Commission re-emphasized the importance of implementing permanent regulations prior to the 1986 subsistence harvest season in its 12 March 1986 follow-up letter to the Service.

The Service published proposed permanent subsistence harvest regulations on 15 May 1986 and provided a 30-day period for public comment. The Commission provided comments to the Service on 16 June 1986 and recommended that the regulations be adopted subject to modifications concerning: the need for a procedure to extend the harvest season beyond 8 August of each year; authorization of a full subsistence harvest on St. George Island; measures that could be taken to improve research on the fur seal decline; and other matters.

Permanent subsistence harvest regulations were published in the Federal Register on 9 July 1986. They authorize a subsistence harvest on St. Paul and St. George Islands between 30 June and 8 August of each year. They also provide that the harvest season may be extended as late as 30 September if the Service determines that subsistence needs have not been met by 8 August. The regulations require that the Service make an annual determination of the expected range of harvest numbers on both St. Paul and St. George Islands prior to the harvest each year. For 1986, the estimated range of fur seals needed for subsistence purposes was 2,400 to 8,000 animals on St. Paul Island and 800 to 1,800 animals on St. George Island. If the lower limit of the projected harvest range is reached during any year, the regulations require that the harvest be suspended pending a determination by the Service of the need to take additional seals to meet subsistence requirements. The harvest also may be terminated before the lower limits are reached if the Service determines that subsistence needs have been met.

As required by the regulations, the 1986 harvest on both St. George Island and St. Paul Island ended on 8 August. As of that date, 119 animals had been taken on St. George Island and 1,228 had been taken on St. Paul Island. On 12 August, Alaska Natives on St. George Island requested an extension of the harvest deadline until 30 September 1986. In doing so, they explained that an insufficient number of animals had been taken for storage and consumption later in the year and that it had been difficult to obtain the services of experienced sealers during the regular season because most of them had been working at other jobs. On 21 August 1986, the Service convened a meeting of interested parties to discuss the extension request and, on 25 August, the request was granted.

Shortly after the extension request was granted, there were reports from St. George Island that about 85 dead fur seals had been found. Initial reports that these animals may have been improperly harvested resulted in suspension of the extension. After an initial investigation, it was determined that nearly all of the animals had died from unknown natural causes. The harvest extension was reinstated on 28 August. However, by the end of September, only five additional seals had been taken on St. George Island. The subsequent low number of animals taken reflected, in part, concern that the seals may be contaminated and unsafe to eat. At year's end, no definitive laboratory findings had been made available.

On 27 August 1986, the Tribal Government of St. Paul Island requested an extension of the harvest season to take up to 359 additional seals. Once again, the Service convened a meeting of interested parties and, on 23 September, granted

the extension request. An additional 71 seals subsequently were taken on St. Paul Island.

The subsistence harvest regulations require the Service to publish, by 1 April 1987, a summary of the 1986 harvest and a discussion of the number of seals expected to be taken in the 1987 harvest season. After a 30-day public review period, a final notice of expected harvest levels is to be published.

Designation of North Pacific Fur Seals as Depleted

In 1984, 1985, and 1986 the Commission recommended that the National Marine Fisheries Service formally designate the Pribilof Islands stock of North Pacific fur seals as depleted under the Marine Mammal Protection Act. The Service indicated apparent agreement that the Pribilof Islands stock is depleted in: the February 1985 Environmental Impact Statement on the Interim Fur Seal Convention; the 1985 Federal Register notice announcing that the petition to list fur seals as "threatened" under the Endangered Species Act had been denied; Federal Register notices published in 1985 and 1986 on subsistence harvest regulations; and the 20 August 1986 Federal Register notice concerning a request submitted by the Federation of Japan Salmon Fisheries Cooperative Association to incidentally take Dall's porpoise, fur seals, and sea lions in salmon fishing operations. In its 9 July 1986 Federal Register notice on the permanent subsistence harvest regulations, the Service stated that a depletion rule would be proposed no later than October 1986.

Two petitions to formally designate the fur seal as depleted were submitted to the Service in October 1986. On 24 October, the Kokechik and Qaluyaat Fishermen's Associations, representing Yup'ik Eskimo commercial and subsistence fishermen, requested that this action be taken and, on 30 October, a similar petition was filed by the Center for Environmental Education.

During the Commission's 1986 annual meeting held in Anchorage, Alaska, on 28-30 October, the recently appointed Director of the National Marine Fisheries Service announced that the Service had initiated the necessary steps to publish a proposed depletion designation. The proposed rule was published in the Federal Register on 30 December 1986. During the prescribed comment period in 1987, the Commission will submit comments on the proposed designation.

By the end of 1986, the Service had started to take action on most of the recommendations which the Commission had made over the course of the past two years. Under the leadership of its newly appointed Director, the Service had,

among other things: scheduled a fur seal program review early in 1987; initiated efforts to develop a fur seal conservation plan; established permanent regulations governing the subsistence harvest of fur seals; and taken steps to designate the Pribilof Island fur seal population as depleted under the Marine Mammal Protection Act. As further work on these and other related matters proceed in 1987, the Commission will continue to work with the Service and others to strengthen efforts to identify and eliminate or mitigate the cause or causes of the ongoing Pribilof Islands fur seal population decline.

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. The Convention is designed to control trade in animal and plant species that 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.

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 others Parties in controlling trade. 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.

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 appropriate, the Service consults with the Commission and others to address matters concerning the Convention.

The Fish and Wildlife Service is presently engaged in preparing the U.S. positions for the biennial meeting of Convention Parties to be held 12-24 July 1987 in Ottawa, Canada. By the end of 1986, no proposals concerning marine mammals had been published. On 4 December 1986, the National Marine Fisheries Service recommended that the northern

elephant seal (Mirounga angustirostris) be proposed for deletion from Appendix II. This recommendation is under consideration by the Fish and Wildlife Service. The Commission will consult with the Fish and Wildlife Service, the National Marine Fisheries Service, and others during 1987 concerning this and other matters related to the Convention and the forthcoming biennial meeting.

CHAPTER V

MARINE MAMMAL MANAGEMENT IN ALASKA

Since enactment of the Marine Mammal Protection Act in 1972, issues concerning marine mammals in Alaska have assumed greater significance and have been the focus of more attention than those in any other state. A number of states are confronted with important conservation problems that involve one or more species of marine mammals. Alaska, however, by virtue of the large number of marine mammal species found there, its extensive coastline, the use of marine mammals for subsistence purposes by Alaska Natives, and the many other management issues concerning marine mammals, presents extraordinary conservation challenges.

In recognition of this fact, the Commission has made marine mammal issues in Alaska a matter of high priority. In 1984 and 1985, for example, the Commission devoted 16 percent and 28 percent of its research budgets, respectively, to marine mammal issues in Alaska. In 1986, the Commission continued its heavy investment in Alaskan work and held its public annual meeting with its full Committee of Scientific Advisors in Anchorage in late October.

Marine Mammal Working Groups and Species Reports

The Marine Mammal Protection Act makes provision for management of marine mammals by the Federal Government and, under certain conditions described in the next section, by states. It has been the Commission's view that wherever management authority resides, such authority must rest upon a foundation of carefully described research and management programs. To develop recommendations for such research and management programs, the Commission established the Alaska Marine Mammal Working Groups in 1984.

In so doing, the Commission determined that the issue of who has management authority, while important, could not be allowed to further thwart the development of sound research and management programs. This had been happening for many years following passage of the Act. During that time, management had been sought by the State of Alaska for a number of species, granted to the State for walrus, and

shortly thereafter returned to the Federal Government. To focus attention on the species in question and not upon bureaucratic processes, the Commission stated in 1984 that, no matter who has the responsibility, certain facts are clear: (a) the development of research and management plans will always be heavily dependent upon the existence of carefully developed and generally agreed-upon species accounts and problem descriptions as base documents; (b) research upon which to base conservation and management of marine mammals can and must be carefully described; (c) the same holds true for needed management actions; and (d) to be useful, the species accounts with research and management recommendations have to have been cooperatively developed by representatives of all interested groups.

With the foregoing points in mind, the Commission, in cooperation with representatives of the Eskimo community, the State, the Fish and Wildlife Service, the National Marine Fisheries Service, the academic community, and private groups, established seven Working Groups composed of biologists, biometricians, Native and non-Native coastal residents, representatives of the conservation community, and representatives of State and Federal agencies. The Groups were charged with preparing: (1) comprehensive species accounts that summarize available information on population status and threats; (2) summaries of research activities that are either underway or planned; (3) summaries of existing and proposed management programs; (4) descriptions of recommended research activities; and (5) descriptions of recommended management programs. The final reports, which address the ten species for which the State had at one time planned to seek management authority, are designed to be of value to whichever governmental entity, State or Federal, may have management authority.

For purposes of facilitating and coordinating the efforts of the Working Groups, the Commission entered into a contract in 1984 with a marine mammal and resource management specialist in Juneau, Alaska. Under the contract, which was amended in 1985 and again in 1986, the contractor has responsibility for overseeing the development of the Working Groups' comprehensive reports and their publication. To further the effort, the Commission entered into additional contracts in 1985 and 1986 with persons to act as lead drafters of the reports on different species (see Chapter II of this Report and the previous Annual Report). Draft reports containing species accounts and research and management recommendations for nine of the ten species have been prepared, approved, and readied for publication. A report on the tenth species, the sea otter, will be finished early in 1987.

When published in March 1987, the comprehensive reports on all ten species will serve as basic action plans for near-term marine mammal management and research efforts in Alaska whether management authority resides with the Federal Government, the State of Alaska, or is a responsibility shared according to species. The reports will also provide the basis for annually updating research and management programs.

Background Information on Transfer of Management

To make clear the context within which the Marine Mammal Commission's actions to constitute and support Working Groups have taken place, the following background information and discussion of the transfer of management requirements of the Marine Mammal Protection Act may be useful.

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, transfer 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 that satisfies the requirements of section 109 of the Act for the conservation and management of the affected species. 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 of 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 mechanisms whereby determinations are made as to the maximum numbers of animals that can be taken for subsistence while still allowing the species to increase towards its optimum sustainable population. Furthermore, Alaska's program must include a State statute and regulations requiring that subsistence takings shall not be wasteful and that priority shall be given to subsistence rather than other consumptive uses of the species.

During 1982 and 1983, the State of Alaska took preliminary steps to request 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 to proceed with such a request. As a part of the process, the Alaska Department of Fish and Game conducted forty-nine formally announced public meetings to provide information on the transfer process requirements, to explain the likely consequences of a State management program, and to solicit comments from coastal residents and other affected parties. These meetings were completed early in 1985.

The State's review of the transfer of management issue was made more complex on 22 February 1985 when the Alaska Supreme Court, in its decision in Madison v. Alaska Department of Fish and Game, invalidated a Board of Fisheries regulation designed to identify eligibility for subsistence fishing in the Cook Inlet region. The decision called into question the sufficiency of the State's subsistence statute and regulations under the transfer of management requirements of the Marine Mammal Protection Act.

On 30 May 1986, the State enacted an amendment to its subsistence law intended to remove the discrepancies between State and Federal subsistence requirements. By letter of 18 November 1986, the Department of the Interior's Assistant Secretary for Fish and Wildlife and Parks informed the State that the amendment brought the State law into compliance with the subsistence requirements of the Alaska National Interest Lands Conservation Act. Those requirements are virtually identical to the subsistence provisions of section 109(f)(1) of the Marine Mammal Protection Act that must be satisfied before a transfer of management can be accomplished. Thus, it appears that the impediment to transfer of management imposed by the Madison decision has been removed.

At the 28-30 October 1986 meeting of the Commission and its Committee of Scientific Advisors in Anchorage, the Alaska Department of Fish and Game stated that no decision had been made on whether to proceed with a request for a transfer of management. It was further indicated that, after the November 1986 election, a new Governor would be responsible for making this decision and that the transfer of management issue would be identified as an important policy matter in the Department's transition report. The Department expressed its support for establishing a cooperative process for addressing marine mammal issues, regardless of whether the State or the Federal Government has management authority, and stated that the final Working Group reports would provide the best source of information on marine mammals in Alaska.

Federal Marking and Tagging Regulations

In 1981, the Marine Mammal Protection Act was amended to provide the Fish and Wildlife Service with authority to promulgate regulations requiring the marking, tagging, and reporting of marine mammals taken by Alaska Natives. Through these regulations, it should be possible to obtain better information on the numbers of marine mammals taken for subsistence and handicraft purposes. On 3 December 1985, the Fish and Wildlife Service published proposed marking and tagging regulations to implement the new statutory requirement. During the comment period, 32 public meetings were held throughout Alaska to discuss the proposed regulations and solicit comments from affected individuals and interested parties.

By letter of 3 March 1986, the Commission, in consultation with its Committee of Scientific Advisors, recommended that the regulations be adopted, subject to certain modifications. Among other changes, the Commission recommended that: (a) the data obtained as a result of the regulations should be summarized each year in the annual report which the Fish and Wildlife Service is required to submit to Congress under the Marine Mammal Protection Act; (b) the penalty provisions of the regulations should apply to the transportation and export of unregistered marine mammal parts; and (c) a cost-effective, administratively flexible approach should be established for designating the villages where authorized Service representatives would be stationed for sealing and reporting purposes.

At the end of 1986, final regulations had not been published. At the Commission's annual meeting held in Anchorage, Alaska, on 28-30 October 1986, the Regional Director for the Fish and Wildlife Service stated that the marking and tagging program would not be implemented until adequate funds became available.

Litigation

In a lawsuit filed in 1985 (Katelnikoff v. U.S. Department of the Interior), an Alaska Native challenged the validity of the Fish and Wildlife Service's regulatory definition of "authentic Native articles of handicraft and clothing." That definition requires that, in order to qualify for the Marine Mammal Protection Act's Native take exemption, handicraft articles fashioned from marine mammal parts and products must have been "commonly produced on or before December 21, 1972." The plaintiff's complaint alleged that the cut-off date has no basis in the Marine Mammal Protection Act.

The litigation arose as a result of a seizure by Fish and Wildlife Service and National Marine Fisheries Service enforcement agents of several articles of handicraft made by the plaintiff out of sea otter skins. The items -- which included teddy bears, hats and mittens, fur flowers, and pillows -- were confiscated because there is no record indicating that such articles were commonly produced by Alaska Natives before the regulatory cut-off date. The plaintiff claimed that, by seizing these items, the Federal Government deprived her of the right to take marine mammals for handicraft purposes.

On 21 July 1986, the U.S. District Court for the District of Alaska issued a decision in favor of the Fish and Wildlife Service. Relying on both the express provisions and the legislative history of the Marine Mammal Protection Act, the Court held that it was a reasonable exercise of the Service's authority to establish a 1972 cut-off date as part of its regulations. At the end of 1986, the plaintiff was seeking an expedited appeal of this decision.

CHAPTER VI

MARINE MAMMAL/FISHERIES INTERACTIONS

Interactions among marine mammals, finfish, shellfish, and other components of marine ecosystems present complex and often difficult problems for those responsible for making conservation and management decisions. One of the most widely known examples of such interaction problems -- the incidental take of porpoises in the yellowfin tuna purse seine fishery in the eastern tropical Pacific Ocean (discussed in Chapter VII) -- was one of the issues that prompted Congress to pass the Marine Mammal Protection Act.

The Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has devoted considerable attention and funding to efforts to identify, assess, and resolve problems caused by marine mammal/fisheries interactions. Activities prior to 1986 have been reported in previous Annual Reports. A brief summary of these earlier efforts and a description of activities in 1986 are provided below.

Background

Interactions between marine mammals and fisheries can take various forms and have significant adverse effects on the involved marine mammal populations, the involved fisheries, or both. Marine mammals can be caught and killed or injured, either accidentally or deliberately, during routine fishing operations. They can also be caught in lost and discarded fishing gear. Fishermen, on the other hand, can be affected when marine mammals take or damage fish caught on hooks, in traps, and in nets, or when their fishing gear is damaged or destroyed. Further, marine mammals and fishermen may compete in some areas for the same fish and shellfish resources. This can cause or contribute to depletion of the fish and shellfish resources and result in fundamental changes in the marine food web as well as have significant adverse effects on the competing marine mammals and fisheries.

Prior to enactment of the Marine Mammal Protection Act in 1972, regulated and unregulated hunting, bounty programs,

and various forms of harrassment were used in a number of areas to control the distribution, abundance, and behavior of marine mammals. The purpose was to eliminate or reduce damage and loss of gear and catch caused by marine mammals. As a result, in some areas, marine mammal populations were reduced to and held at very low levels. The Act imposed a moratorium on such activities and, in the ensuing years, marine mammals have become more abundant in some areas and/or less likely to avoid fishing boats and gear.

By the mid-1970s, there were reports of increasing interactions between marine mammals and fisheries, particularly in the Pacific Northwest. In December 1977, the Commission convened a workshop to gather and review available information on the nature, extent, and impact of interactions in Oregon, Washington, California, Alaska, and Hawaii. Workshop participants concluded that the most acute problems seemed to involve seals, sea lions, and the salmon gill net fisheries in the Copper River Delta of Alaska and the Columbia River in Washington and Oregon (for more information, see Matkin and Fay, 1980, and Mate, 1980, Appendix B). Following the workshop, the Commission, among other things, provided funds to initiate investigation of the interactions problem in the Copper River Delta and to begin development of a plan to investigate and, as necessary, resolve the interactions problem in the Columbia River and adjacent areas. The details and results of these and related studies are described in the Commission's Annual Reports for Calendar Years 1978-82.

In 1978-1981, additional studies were initiated by the National Marine Fisheries Service, the North Pacific Fishery Management Council, and the States of Alaska, Washington, Oregon, and California. Their purpose was to better determine the nature and extent of certain interactions in the Bering Sea, along the U.S. coast from Washington to California, and off the New England coast. The Commission, concerned that these studies might not be providing either comparable data or the types and quality of data needed for decision-making, convened a follow-up workshop in October 1981 to review and determine what steps should be taken to improve and coordinate ongoing and planned studies.

The report of that workshop (see Contos, 1982, Appendix B), published in April 1982, notes that: (1) it is not possible to make broad generalizations about marine mammal/fisheries interactions in different areas and each situation must therefore be considered individually; (2) because of the potentially complex nature of indirect (trophic) interactions among marine mammals, fisheries, and fish and shellfish resources, there is a substantial risk of making bad management decisions; (3) to minimize the risk of making bad

management decisions, marine mammals and fisheries should be managed cooperatively in areas where they may be competing for or otherwise affecting the same fish or shellfish stocks; (4) because funding is limited and direct interactions are less complex and therefore easier to assess and to deal with, higher priority should initially be afforded to research on direct rather than indirect interactions; (5) ongoing efforts to determine and document the nature and extent of impacts on both the involved fisheries and marine mammal populations should be expanded to identify and evaluate the relative cost and benefits of possible mitigation measures; and (6) when remedial measures are determined to be necessary, non-lethal measures should be considered before considering lethal measures.

The workshop findings have guided subsequent Commission activities as described below.

Interactions in California Coastal Waters

Investigations to determine the nature and extent of marine mammal/fisheries 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. As noted in previous Annual Reports, these investigations indicate that marine mammals are affecting a number of California fisheries including the commercial salmon troll fishery, the commercial passenger fishing vessel fishery, the Pacific herring seine fishery, the market squid dip net fishery, the drift net fishery for sharks, and the set net fisheries for halibut, croaker, and rockfish. They also indicate that substantial numbers of sea otters, harbor porpoise, sea lions, harbor seals, and other non-target species are being caught and killed, particularly in the gill net fisheries.

As noted in Chapter IX of this report and in previous Annual Reports, the California Department of Fish and Game and the California State Legislature have taken steps, beginning in 1982, to prohibit the use of gill nets at certain times and places so as to prevent or reduce the incidental take of sea birds, sea otters, gray whales, and other marine mammals. In addition, the National Marine Fisheries Service has modified its regulations governing incidental take to allow the owners and operators of commercial passenger fishing vessels to use seal bombs, cracker shells, and acoustic harassment devices to prevent California sea lions and other marine mammals from taking fish caught by passengers.

However, little has been done to identify and evaluate the relative costs and benefits of measures that might be taken to avoid or reduce the adverse effects of other interaction problems. This was noted during the Commission's meeting in San Diego, California, in October 1985. Following that meeting, the Commission and the California Department of Fish and Game agreed to cooperatively sponsor a workshop to determine and describe such additional measures as may be necessary to assess, avoid, and reduce impacts on both the involved fisheries and marine mammals.

The workshop was held at the Fort Mason Center, San Francisco, California, on 26-28 March 1986. It was planned and cooperatively supported by the Commission, the California Department of Fish and Game, the California Sea Grant Program, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service, and representatives of these groups participated in the workshop. Also participating were representatives of several commercial fisheries, the academic community, and several public interest groups. Workshop participants concluded that several fisheries and marine mammal populations are being affected so severely that measures may be necessary to reduce or mitigate interactions. For example, they concluded that the commercial passenger fishing vessel fishery, the commercial salmon troll fishery, and set gill net fisheries are being affected substantially by California sea lions and other marine mammals that take or damage caught fish. Likewise, they concluded that the incidental take of sea otters, harbor porpoise, harbor seals, and some other marine mammal species may be causing or contributing to population declines.

Participants recognized that prohibiting the use of gill nets in certain areas is having adverse economic impacts on some fishermen. They therefore recommended that a feasibility study and, if appropriate, an engineering/assistance program be carried out to assess the potential utility of converting small gill net vessels to alternative types of gear (e.g., Danish seines) to permit resumption of halibut and other finfish fisheries in areas where set net fisheries have been prohibited. The purpose of such conversions to other gear would be to prevent the incidental take of sea otters and other non-target species. Participants also noted that studies should be done to identify factors (e.g., the length of time that nets are left in the water) that may be causing or contributing to the incidental take of harbor porpoise, harbor seals, and other marine mammals.

Noting uncertainties about the effects of certain fisheries on marine mammals, workshop participants concluded that survey, reporting, and observer programs should be continued and, in some cases, expanded to provide more

reliable information on the species, numbers, ages, and sex of marine mammals being taken, both deliberately and incidentally, in set net, drift net, troll, and other fisheries. With respect to the numbers of animals, participants concluded that mark/resighting studies should be done to determine whether depredation of fish by California sea lions and harbor seals in the party boat, gill net, and salmon troll fisheries is being caused by a small number of "nuisance" animals that have learned that food is easily found around fishing operations or by a general cross-section of populations occurring in the fishing areas.

Participants pointed out that it might be possible to use non-lethal, aversive stimuli to frighten and keep seals and sea lions away from fishing gear and fishing areas. They noted that completed studies indicate that loud noises and other stimuli can keep seals and sea lions away from fishing gear and fishing areas for some periods but, unless the stimuli cause substantial pain, the animals eventually cease to respond. In some cases, animals may learn to associate the theoretically aversive stimuli with food and be attracted by them. Noting that it might be possible to avoid or delay such habituation, participants recommended that further studies be carried out to determine whether acoustic cues paired with shooting, loud sounds, or other aversive stimuli could suppress habituation and effectively condition California sea lions and harbor seals to avoid fish caught by salmon trollers or party boat fishermen.

With regard to aversive conditioning, participants also recommended that the California Department of Fish and Game carry out planned feasibility trials to determine whether lithium chloride-injected fish can be used under field conditions to induce and maintain taste aversion in California sea lions. Recognizing that the effects of lithium chloride on sea lions and other marine mammals are not fully understood, the participants recommended that additional captive animal studies be carried out to better determine the physical and physiological as well as psychological responses to lithium chloride.

Finally, workshop participants noted that additional studies are needed to better assess the effects of certain interactions and that long-term monitoring of both the involved fisheries and marine mammal populations is necessary to determine the effectiveness of measures taken to avoid or reduce adverse interactions.

The workshop report, published in June 1986, has been widely distributed and used by State and Federal agencies, fishermen, and environmental groups to help determine and initiate priority actions. In 1987, the Commission plans to

organize and convene one or more additional meetings to help in developing and adopting a cooperative State/Federal program to address marine mammal/fisheries interactions in California.

Interactions in Areas Off Alaska

The southeastern Bering Sea and other areas off Alaska include some of the world's richest fishing grounds and support a diverse assemblage of marine mammals. The expansion of both domestic and foreign fisheries in these areas beginning in the mid-1960s has increased the potential for marine mammal/fisheries interactions and has focused attention on possible competition between marine mammals and fishermen for the same fish and shellfish resources.

Steller sea lion/fishery interactions

Because of potential interactions, the Marine Mammal Commission and the North Pacific Fishery Management Council undertook cooperative efforts in 1980 to develop and implement an ecosystem approach to the management of marine mammals and fisheries resources in areas under Council jurisdiction. As part of this effort, the Commission and the Council jointly supported a workshop in October 1983 to review available information concerning biological interactions among marine mammals and commercial fisheries in the southeastern Bering Sea. Workshop participants also sought to determine whether existing data, theory, models, management techniques, and research/monitoring programs were sufficient to develop and implement ecosystem-oriented research and management programs for both marine mammals and fisheries in the area. In 1983, the Commission also provided funds to the North Pacific Fishery Management Council to help support a survey of Steller sea lion colonies affected by the winter joint venture fishery for pollock in the Shelikof Strait, Alaska (for details, see the Annual Reports covering Calendar Years 1983 and 1984).

Comparison of data from Steller sea lion surveys conducted in the 1960s, 1970s, and 1980s indicates that there have been substantial sea lion declines in several areas, particularly in the eastern Aleutian Islands and the western Gulf of Alaska. The significance and causes of these declines are not clear and, on 9-10 December 1986, the National Marine Mammal Laboratory held a workshop in Seattle, Washington, to evaluate the present status and trends of the Steller sea lion population in Alaska and to recommend research that would identify the cause or causes of the declines.

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(e) developing developing decoys to lure killer whales away from fishing vessels retrieving longline gear; (f) using explosives, rubber bullets, electric shock, emetics such as lithium chloride, or other aversive stimuli to condition killer whales to avoid fishing gear or fishing areas; or some combination of these measures. It was also noted that the same problem has been occurring in the Bering Sea since the 1960s.

During the telephone conference, Commission representatives pointed out that: there are no obvious solutions to the problem other than prohibiting longline fisheries at times and in places where killer whales are present; trial and error experimentation with explosives or other possible deterrents could result in habituation and positive rather than negative reinforcement, making the problem more difficult to overcome; better understanding of acoustic or other cues attracting killer whales to vessels retrieving longline gear might suggest ways for avoiding or reducing interactions; and a workshop involving the affected fishermen, cetacean biologists, acousticians, and other relevant experts might be the most effective way to determine how best to identify and evaluate possible ways to prevent or reduce interactions.

During the summer and fall of 1986, researchers from the Alaska Sea Grant Program conducted additional studies to assess and monitor the killer whales affecting and being affected by the sablefish fishery in Prince William Sound, and to determine whether entangling caught fish or other non-lethal means might be useful for preventing or reducing killer whale depredation of caught sablefish. In addition, the National Marine Fisheries Service continued to extract and analyze data from existing observer reports and asked observers placed aboard Japanese longline vessels operating in the eastern Bering Sea to record and report any interactions with killer whales. The results of these and prior studies were reviewed and discussed during the Commission's meeting in Anchorage, Alaska, on 28-30 October 1986. During the meeting, there also was discussion and general agreement on the desirability of holding a workshop to identify and describe the types of research that would be necessary or desirable to evaluate the potential costs and benefits of alternative approaches to the problem. Representatives of the Alaska Marine Advisory Program drafted terms of reference for a possible workshop and sought comments from representatives of the Commission, the National Marine Fisheries Service, and other organizations present at the Commission's meeting. A final determination on the proposal for a workshop will be made early in 1987.

In 1987, the Commission will continue to work with the National Marine Fisheries Service, the Alaska Sea Grant program, the Alaska Department of Fish and Game, and other interested parties to identify and implement such measures as may be necessary and appropriate to prevent or reduce interactions in both Prince William Sound and the Bering Sea.

CHAPTER VII

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. It also calls upon the Secretaries, again in consultation with the Commission, 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 and other marine mammals in gill and trammel nets in California coastal waters. The Commission's activities during 1986 related 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 IX of this Report. Interactions between fisheries and other marine mammals are discussed in Chapter VI.

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 1986. In mid-October 1986, the U.S. tuna fleet reached the inciden-

tal kill quota of 20,500 porpoises. Thus, it became necessary to direct even greater attention to the tuna-porpoise issue.

The 1986 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. On 7 December 1980, a general permit to take porpoise in compliance with the final regulations and the quota was issued to the American Tunaboat Association. By means of the 1984 amendments to the Marine Mammal Protection Act, Congress extended the annual quota, as well as the regulations and the general permit.

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	17,732
1985	19,205
1986	(preliminary estimate) 20,692

In 1986, the U.S. tuna fleet reached the allowable take level of 20,500 and was required to cease setting for tuna on schools of porpoise. There are several possible reasons why the quota was reached. One is that the tuna fleet experienced an increased number of problem sets which resulted in abnormally high levels of take. Perhaps more important, tuna fishermen made more sets on porpoise schools during 1986 than in 1985. This was because tuna found with porpoise tend to be large and large tuna brought a better price than smaller ones during the generally depressed 1986 tuna market.

The likelihood that the quota would be reached became apparent during the spring when porpoise mortality reports issued by the National Marine Fisheries Service indicated

that levels of take were exceeding the rates for comparable periods in previous years. Concerned about this development, the Commission wrote to the Service on 12 June 1986 to ask that special consideration be given to this problem. In addition, the Commission asked that a meeting be convened to address questions concerning the methodology for estimating mortality and enforcement options that could be used when the quota was reached. This meeting was convened by the National Marine Fisheries Service on 14 July; it was attended by representatives of the Service, the Commission, and the tuna industry. Representatives of concerned environmental groups were not invited to attend the meeting and, by letter of 18 July 1986 to the National Marine Fisheries Service, the Commission indicated its concern about the procedures that had been used to convene the 14 July meeting. The Commission pointed out that when one group of non-governmental parties, in this case the fishing industry, is invited to attend meetings of this type, other interested parties should be extended the same courtesy.

Questions concerning the methodology that should be used to estimate porpoise mortality in future years continued to be reviewed after the 14 July meeting and at a follow-up meeting held 6 December 1986. As a result of the deliberations, it was decided that the same methodology that had been used previously would be used again in 1987 and that additional review of alternative approaches would take place. In addition, the decision was made to provide 100 percent observer coverage for the first trip of the U.S. tuna fleet in 1987. This represents a significant increase over the level of observer coverage provided in 1986. The Service's actions on these points are consistent with the recommendations included in the Commission's letter of 23 December 1986. In that letter, it was recommended that further consideration be given to the methodology used to estimate mortality and that the level of observer coverage be increased.

As noted previously, by letter of 12 June 1986, the Commission expressed to the Service its concerns about the increased level of porpoise mortality and asked to be advised on the steps the Service intended to take to address the problem. In anticipation of the quota being reached, on 16 September 1986 the Service published in the Federal Register emergency interim regulations to enforce the quota. The regulations imposed a ban on catching, possessing, or landing yellowfin or bigeye tuna from the eastern tropical Pacific once the quota had been reached. An exception to the ban was established for vessels that voluntarily carried a National Marine Fisheries Service observer to verify compliance with the prohibition on fishing on porpoise. Finally, the regulations imposed a ban on the importation of tuna caught in the eastern tropical Pacific Ocean unless certain conditions were met to demonstrate that the tuna were not

caught by setting on porpoise. By letter of 3 October 1986, the Commission supported the regulations and recommended that permanent regulations including similar requirements be established for future fishing seasons.

Based on the reports from observers, the Service estimated that the quota would be reached on 21 October 1986. As required by the Service's tuna-porpoise regulations, a Federal Register notice was published on 14 October 1986 announcing that the prohibition on further take of porpoise would become effective on 21 October. As of that date, an estimated 20,728 porpoise had been killed during the 1986 season. The Service's emergency interim regulations went into effect on 21 October and no additional takes of porpoise were reported in 1986. In its 23 December letter to the Service, the Commission repeated its recommendation that permanent quota enforcement regulations be established.

At the end of 1986, the Service took the first step toward establishing regulations that would govern the performance of individual vessels and/or captains in the U.S. tuna fleet by issuing a position paper on alternative approaches. These standards, which would be set forth as regulations, are intended to address the problem that arose in 1986 when certain vessels and/or captains experienced exceptionally high kill rates. The standards would be implemented along with increased observer coverage to provide a more effective method for monitoring the operations of the U.S. fleet, reducing kill rates, and imposing appropriate sanctions, such as the revocation of certificates of inclusion, on captains and/or vessels with poor performance records. During 1987, the Commission will consult with the Service and other interested parties on this proposal and other matters concerning the incidental take of porpoise in the tuna purse seine fishery.

Foreign Nation Compliance Programs

During the 1984 reauthorization hearings on the Marine Mammal Protection Act, concern was expressed by the Commission, the National Marine Fisheries Service, the tuna industry, and the environmental community that progress realized by the U.S. fleet in reducing incidental porpoise mortality was being offset by the high kill rates of foreign fleets. It was felt that, if further progress were to be made in achieving the Act's goal of reducing incidental mortality to insignificant levels approaching zero, greater controls over foreign fleets would be necessary. As a result, Congress amended the Act to require that each nation exporting tuna to this country provide documentary evidence that it has adopted a program to regulate the incidental take of marine mammals that is comparable to that of the U.S. and that the average rate of incidental take by its fleet is

comparable to that of the U.S. fleet. Failure to meet these requirements may result in a ban on the import of tuna and tuna products from the nation involved.

On 21 July 1984, the Commission wrote the Service urging that it act promptly to promulgate regulations to implement the foreign nation certification requirements of the amendments. The Commission noted that prompt action was needed because the Service's existing foreign nation reporting and certification requirements were not as stringent as those included in the 1984 amendments.

By 1986, the Service still had not published proposed regulations. Concerned about the lack of progress, the Commission wrote to the Service on 22 May 1986, pointing out the need for immediate action. The Service responded by letter of 30 June 1986, stating that it was in the process of developing the proposed regulations. The Commission wrote to the Service again on 24 July, asking when the proposed regulations would be published and requesting that a pre-publication version of the proposed regulations be provided to the Commission for review.

While the Service was preparing its proposed regulations, it received a request from Mexico that the Marine Mammal Protection Act embargo imposed on the importation of its tuna products in 1981 be rescinded. On 21 May 1986, the Service published a Federal Register notice that a determination had been made that Mexico was in substantial conformance with the U.S. regulations governing the incidental take of marine mammals and that the importation prohibition had been rescinded for that country. The decision was made under the Service's existing foreign nation certification regulations, which did not conform with the requirements of the 1984 amendments.

By letter of 25 June 1986, the Commission notified the Service that it was inappropriate to render this decision under regulatory standards that are less stringent than those established by Congress in 1984. It also pointed out that the Service had not consulted with the Commission on the Mexican request and that it was not clear how the certification decision had been reached. In order to clarify the record, the Commission sought answers to a series of questions on the nature and scope of the Mexican tuna-porpoise program. The Service responded by letter of 4 September 1986, noting that, among other things: Mexico does not have an incidental take quota; a Mexican observer program was established in January 1986; and Mexican vessels are required to use some, but not all, of the porpoise-saving devices and techniques used by the U.S. fleet.

On 13 August 1986 the Service published in the Federal Register proposed regulations to implement the foreign nation

reporting and certification requirements of the 1984 amendments. The proposed regulations call for a performance-based approach that requires a showing that the foreign nation's regulatory program is comparable to that of the U.S. and that reliable data indicate that the level of take in the foreign fleet is comparable to that of the U.S. fleet. The proposed regulations state that a comparable level of take would be one that is not more than 50 percent higher than the U.S. level. For each nation that is certified as satisfying U.S. standards, an annual review would be conducted to assess whether the program remains in compliance.

By letter of 14 November 1986, the Commission advised the Service that it supported the adoption of the proposed regulations, subject to certain modifications. In its letter, the Commission recommended that the regulations specify that the only method of monitoring take levels that would be in compliance with U.S. standards is one that is based on observer data. The Commission also expressed its view that a level of take that is 50 percent higher than that of the U.S. is unacceptably high and does not satisfy the requirements of the 1984 amendments that the level of take be comparable to that of the U.S. fleet. Final regulations are expected to be published early in 1987. In 1987, all nations exporting tuna to the U.S. will be required to demonstrate compliance with the U.S. program.

With specific reference to the Mexican tuna fishery, the Commission recommended that the regulations should be implemented as soon as possible and that Mexico's program should be reviewed immediately under those standards to assess compliance with the requirements of the 1984 amendments.

Regulatory Amendments

As noted earlier, in 1984 Congress reauthorized and amended the Marine Mammal Protection Act. In addition to making the foreign nation compliance requirements more stringent, Congress extended indefinitely the general permit issued to the American Tunaboat Association in 1980 to incidentally take marine mammals in the course of purse seine fishing for tuna. The amendments also authorized the Secretary of Commerce to make appropriate adjustments to the permit terms and conditions that are set forth in the tuna-porpoise regulations and pertain to fishing gear, fishing practice requirements, and permit administration. Based on the legislative history, it is clear that the Congressional intent was that it would be appropriate for the Secretary to change a number of regulations and permit requirements to guidelines, provided that those changes further the goals of the Act.

On 2 May 1985, the National Marine Fisheries Service published in the Federal Register proposed amendments to the

tuna-porpoise regulations. The purpose of the proposed amendments was to provide greater flexibility in the application of porpoise-saving gear and techniques by either amending or deleting requirements found to be unnecessary or unworkable. The Service's proposal and the Commission's recommendations on this issue are described in the previous Annual Report.

Final regulations implementing the modifications to the gear and technique requirements were published in the Federal Register on 3 January 1986. In addition to making the proposed changes, the Service published a brochure that set forth guidelines on gear and fishing practices that could be used to reduce incidental take levels. As recommended by the Commission in its 7 November 1985 comment letter on the draft guidelines, the brochure emphasized the importance of the observer program and emphasized the goal of the Marine Mammal Protection Act that the incidental mortality of porpoise should be reduced to insignificant levels approaching zero. The guidelines were distributed to U.S. fishermen involved in the tuna purse seine fishery and other interested parties.

Research Activities and Research Planning

As noted in the Commission's previous Annual Report, the focus of research on porpoise stocks impacted by the yellow-fin tuna purse seine fishery has changed from assessing the stocks to monitoring indices of abundance in an attempt to detect population trends. This focus on monitoring was mandated by the 1984 amendments to the Marine Mammal Protection Act. Among other things, the amendment required that a monitoring program commence by 1 January 1985 and continue for at least five consecutive years.

During 1984, the Commission and the Service held a series of meetings to plan the monitoring program. Unfortunately, funding and logistic constraints prevented the start of the planned research vessel surveys in 1985. In July 1986, the survey program was initiated in accordance with the 1985 plan, with one major exception. The recommended survey plan called for annual surveys using two vessels and one helicopter for 120 days each year. Although the vessel surveys were carried out between July and early December 1986, the Service was unable to deploy a helicopter. With regard to the survey design, the Commission advised the Service by letter of 23 December 1986 that it should re-evaluate the anticipated effectiveness of the planned monitoring programs relative to the original goal of detecting possible trends in porpoise abundance. The Commission looks forward to receiving the results of these surveys for which only preliminary results are now available. The Commission will assist the Service in determining which methods of analysis will maximize the value of the data obtained.

As noted in the previous Annual Report, the ship surveys were only part of the monitoring program under development by the Service. The other two aspects consisted of (1) analyses of data collected by observers aboard tuna purse seiners, and (2) analyses of biological and behavioral data collected from both research and fishing vessels.

On 13 November 1985, a meeting was held to address the use of tuna vessel observer data to index trends of abundance of eastern tropical Pacific porpoise, and the final report of that meeting was received by the Commission early in 1986. The meeting participants, including representatives of the Commission, set priorities for research topics to be undertaken, and identified the five most important research needs: (1) apply appropriate line transect methodology to all available data; (2) study and apply data-dependent stratification procedures; (3) compare tuna vessel observer data and research vessel data for areas where both were collected simultaneously; (4) explore sampling properties of existing observer data by sub-sampling; and (5) examine environmental effects on abundance estimates.

The meeting emphasized the importance of cooperating with the Inter-American Tropical Tuna Commission and the industry in carrying out this phase of the monitoring program. Unfortunately, the Service did not designate a leader for this program for several months following the 13 November 1985 meeting. To date, there have been no reports on any of these recommended studies.

As noted above, in October 1986, the U.S. tuna fleet was required to stop fishing on porpoise schools because it had already taken the maximum number of porpoise allowed under the existing quota. This raised issues with respect to the methodology for calculating the in-season estimates of the porpoise kill and for extrapolating from these to project the date on which the quota would be reached. To this end, Commission representatives met with Service personnel on 14 July and 6 December 1986, as reported above, to provide advice on the methodology and to recommend research to evaluate possible alternative procedures. Some simulation studies were carried out in 1986 and further studies are planned for 1987. In addition, as recommended in the Commission's letter of 23 December 1986, additional research will be conducted to determine whether and how to refine the mortality estimation methodology. The Commission will participate in this and other research activities during 1987.

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 for salmon inside the U.S. 200-mile Fishery Conservation Zone. As noted in previous Annual Reports, the fishery is subject to provisions of a Memorandum of Understanding between the United States and Japan on coordinated research efforts, the Marine Mammal Protection Act, the North Pacific Fisheries Act, and general permit requirements.

A general permit authorizing the Federation of Japan Salmon Fisheries Cooperative Association to incidentally take up to 5,500 Dall's porpoise, 450 northern fur seals, and 25 northern sea lions per year was issued for the 1981-1983 fishing seasons. Through the 1982 amendments to the North Pacific Fisheries Act, which implements the Convention in the United States, the general permit was extended until 9 June 1987. The amendments required the Japanese to introduce new fishing gear and techniques to reduce the incidental take of porpoise. In addition, the National Marine Fisheries Service is required annually to prepare a detailed action plan concerning monitoring, research, development, and other necessary actions.

Under section 14(a)(2) of the North Pacific Fisheries Act, Japan is required to have introduced new gear or fishing techniques into at least 75 percent of its drift gill net fleet by the 1986 fishing season. The National Marine Fisheries Service has authority under the Act to determine what types of fishing gear or techniques offer the most practical and effective opportunity for reducing porpoise mortality and to specify which of those must be adopted by the Japanese fleet. Although it concluded that more research on gear modifications is required, the Service determined in 1984 that three-strand, air-tube thread should be used in the gill nets employed by the Japanese catcherboats. It is hoped that this gear modification will make it easier for porpoise to detect and avoid gill nets through echolocation. In 1987, all catcherboats will be required to use modified gear. Questions have been raised, however, about the effectiveness of the air-tube thread as a method for reducing Dall's porpoise mortality, and additional research is needed.

Estimates based on U.S. observer coverage of the Japanese fishing operations indicate that there has been no progress in reducing the level of Dall's porpoise mortality since the permit was issued. Incidental take estimates for each fishing season under the permit are shown on the following page:

Estimated Incidental Take of Dall's Porpoise

<u>Year</u>	<u>Estimated Take</u>
1981	1,850
1982	4,187
1983	2,906
1984	2,443
1985	2,760
1986	(preliminary) 2,352

The estimated take rate within the U.S. Fishery Conservation Zone is 0.47 porpoise per gill net operation.

As required by section 14(b)(2) of the North Pacific Fisheries Act, the National Marine Fisheries Service issued in 1986 an Action Plan that reviews developments in the fishery during 1985 and outlines research activities for 1986. The Plan calls for the Service to: (1) monitor the level of incidental take; (2) collect sighting data for estimating abundance; (3) collect specimen material for biological studies; and (4) analyze data collected in 1982-1985 on the behavioral response of Dall's porpoise to survey vessels. The Plan also announced the Service's determination that the permit holder, the Federation of Japan Cooperative Fisheries Association, complied with all conditions of the general permit and the North Pacific Fisheries Act in 1985.

The extension of the 1981 general permit under the North Pacific Fisheries Act will expire on 9 June 1987. In order to fish for salmon with gill nets in the U.S. Fishery Conservation Zone beyond that date, it will be necessary for the Federation to obtain a permit renewal pursuant to the requirements of the Marine Mammal Protection Act.

Anticipating the submission of a permit application from the Federation, the National Marine Fisheries Service published in the Federal Register of 22 January 1986 a notice of intent to prepare an environmental impact statement on the application. A National Environmental Policy Act scoping meeting was held on 6 March 1986. By letter of 12 May 1986, the Commission submitted scoping comments recommending, among other things, that the draft environmental impact statement address: the data gaps and research needs identified by the Administrative Law Judge during the 1981 permit proceeding; the effectiveness of the air-tube gear modifications; problems with the observer system; the effects of lost and discarded nets and other debris; ecosystem effects of the fishery; the status of affected fur seal stocks; and the impact of the proposed action on subsistence uses of marine resources. The Commission also expressed the view that all expenses associated with Dall's porpoise research and monitoring, including salaries and administrative and research costs, should be paid by the Japanese.

On 21 July 1986, the Federation submitted an application for a five-year general permit to incidentally take 5,500 Dall's porpoise, 450 northern fur seals, and 25 northern sea lions. The submission of the application was announced in the Federal Register on 20 August 1986. In that notice, proposed regulations to implement the permit were published and a formal hearing under section 103 of the Marine Mammal Protection Act was announced. The Draft Environmental Impact Statement on the permit request was issued on 29 August 1986.

A prehearing conference was convened by the Honorable Hugh J. Dolan, presiding officer for the formal hearing, on 3 November 1986. The parties to the proceeding represented at the conference were: the permit applicant, the Federation of Japan Cooperative Fisheries Association; Greenpeace, on behalf of several environmental organizations; the Kokechik and Qaluyaat Fishermen's Associations, representing the interests of Alaskan Eskimos; the Marine Mammal Commission; and the National Marine Fisheries Service.

By letter of 24 November 1986, the Commission commented on the Draft Environmental Impact Statement. The Commission noted that its formal recommendations on the proposed permit would be made after the formal hearing. The Commission stated that there continued to be serious research deficiencies and information gaps concerning the status of the affected stocks and the impacts of the fishery on marine mammal populations. Due to the significance of these data gaps, the Commission stated that it would be inappropriate to issue the permit for more than two years. The suggestion that Japan be required to pay all research and monitoring costs was repeated. In addition, the Commission commented that: (1) an additional alternative for issuing the permit in a form other than that requested by the applicant should be considered; (2) possible U.S. responses to the withdrawal of Japan from the International Convention for the High Seas Fisheries of the North Pacific if the permit is denied should be discussed; (3) the potential impacts of the high seas squid drift net fisheries on Dall's porpoise should be addressed in greater detail; (4) more reliable information should be provided on survey coverage; and (5) the ecosystem impacts of the fishery on salmon stocks and sea birds, as well as marine mammals, should be taken into account.

The formal hearing on the permit application took place in Seattle from 1-7 December 1986. Testimony was presented by expert witnesses for all of the parties. Commission representatives participated in the hearing.

Initial briefs on the permit application were filed with the Administrative Law Judge on 29 December 1986. In its brief, the Commission recommended that the permit to take Dall's porpoise be issued for two years, subject to conditions for research and monitoring the areas of greatest

concern. Due to the lack of reliable data on the status of the affected stocks, the Commission recommended that the permit not be issued for northern fur seals and northern sea lions. It also recommended that an ecosystem protection zone closed to gill net fishing by the Federation be established around the Aleutian Islands. Issuance of the permit was opposed by Greenpeace and the Kokechik and Qaluyaat Fishermen's Associations. The National Marine Fisheries Service supported the issuance of a five-year permit to take annually up to 4,200 Dall's porpoise and 450 fur seals from the Commander Islands stock.

Following the submission of reply briefs from the parties early in 1987, the Administrative Law Judge is to issue a recommended decision. A final decision of the application by the Administrator of the National Oceanic and Atmospheric Administration should be issued in time for the next fishing season, which is scheduled to begin in June 1987.

CHAPTER VIII

ENTANGLEMENT IN MARINE DEBRIS

The tendency of marine mammals and other marine species to become entangled in net fragments, packing bands, and other synthetic materials lost and discarded at sea has been recognized for many years. More recently, problems caused by the ingestion of plastic bags and plastic objects also have become apparent. Plastic debris represents a worldwide pollution problem affecting sea birds, turtles, fish, and invertebrates, as well as marine mammals. The problem appears particularly acute in the North Pacific Ocean where debris-related injuries and mortality may be contributing to declines in populations of North Pacific fur seals, Hawaiian monk seals, Steller sea lions, harbor seals, and a number of other marine species.

Since the early 1980s, the Marine Mammal Commission has played a major role in focusing domestic and international efforts to assess the extent and impact of entanglement on marine mammals and to identify ways to reduce or eliminate the problem. The Commission's past efforts, discussed in previous Annual Reports, are summarized briefly below. Activities of the Commission and others in 1986 are described in greater detail.

Background

The Nature of the Problem

Over the past 30 years, the use of plastics and other synthetic materials has developed at a rapid pace. In the U.S., for example, plastic resin production increased more than seven-fold between 1960 and 1985 (from 6.3 billion pounds per year to 47.9 billion pounds per year). As these materials have been developed, applied, and made available to more people, there has been a corresponding increase in the rate and quantity of plastic debris entering the marine environment. Many of these products degrade very slowly. Those that float remain suspended at the sea surface for extended periods of time, and those that sink may remain for decades on the sea floor.

As synthetic materials become more and more common in the ocean, they pose an increasingly significant threat to marine mammals, sea birds, turtles, fish, and other marine organisms. Animals become entangled in loops or openings of floating or submerged debris and they ingest items such as plastic bags that resemble natural prey items. Animals that become entangled may drown, lose their ability to catch food or avoid predators, or incur wounds from the abrasive, cutting action of attached debris. Ingested plastics may block digestive tracts, damage stomach linings, or reduce feeding drives.

Until recently, the magnitude of these threats was masked by the size of the ocean areas affected, the deceptively simple nature of the threat, the perception that chance encounters between marine animals and debris would be unlikely, and an absence of large numbers of marine animals being found on beaches or at sea strangled, drowned, starved, or choked by marine debris. It is becoming apparent, however, that plastic debris may be concentrated through disposal patterns and ocean currents in coastal areas where marine mammals and other species are most likely to occur. In addition, many species actively seek out marine debris because of the associated prey species attracted by the cover it provides, because it represents an object of play, or because the debris itself may resemble its natural prey. Thus, encounters between certain marine species and marine debris may be relatively common. Evidence of those interactions may not be readily apparent, however, because animals killed or incapacitated would likely be scattered widely and either be consumed by scavengers or decompose rapidly at sea.

Activities Prior to 1986

Beginning in the early 1970s, the Standing Committee of the North Pacific Fur Seal Commission repeatedly noted its concern about the increasing number of juvenile seals found on the breeding islands entangled in lost and discarded fishing gear. Although nations party to the Fur Seal Convention -- Canada, Japan, the United States, and the Soviet Union -- were somewhat responsive to this concern, efforts to address the problem were limited primarily to attempts to discourage fishermen from discarding fishing gear into the ocean and enjoyed questionable success.

By 1982, it was apparent that the rate of fur seal entanglement had not diminished and that the problem was much more serious than had been realized. A data analysis carried out at that time by a National Marine Fisheries Service scientist indicated that entanglement of fur seals was possibly the primary cause of the continuing five to eight percent decline in the North Pacific fur seal population. At

about the same time, it became apparent that Hawaiian monk seals also were becoming entangled in lost and discarded fishing gear and other debris and that this could be contributing to the monk seal decline. Elsewhere, data were being compiled that indicated that marine debris was a global problem affecting many species.

To provide a better basis for assessing the problem in the fall of 1982, the Commission recommended that the National Marine Fisheries Service convene a workshop to review available data and determine what could be done to address the problem. As noted in its previous Annual Reports, the Commission also provided the Service with the terms of reference, suggestions for a steering group, and the seed money necessary to organize the workshop. To encourage international participation, representatives of the Commission and the Service met with representatives of the Governments of Canada, Japan, Korea, Taiwan, and the Soviet Union. At that meeting, the Commission presented terms of reference for the workshop.

To identify some of the available mechanisms to mitigate the problem, the Commission contracted for a legal analysis of applicable domestic and international authorities (see Bean, 1985 in Appendix B). This is now considered the basic reference on legal aspects of this issue.

On 27-29 November 1984, the Workshop on the Fate and Impact of Marine Debris was held in Honolulu, Hawaii, and in July 1985 the National Marine Fisheries Service published the Workshop proceedings. The Workshop provided an excellent review of available information on the problem and, based on reported findings, Workshop participants identified an urgent need for: educating vessel operators and others about the marine debris problem; regulating the deliberate disposal of synthetic materials; and developing better quantitative data to assess the impact of debris on marine living resources.

Congress directed that \$1,000,000 be appropriated to the National Marine Fisheries Service in Fiscal Year 1985 to develop a comprehensive research and management program addressing the issue. To assist in developing the best possible program, the Commission convened a planning meeting in La Jolla, California, on 18-19 March 1985. Representatives of the Service, the North Pacific Fishery Management Council, and the environmental community participated in the meeting and, based on the results, the Commission provided the Service with an annotated program outline and detailed scopes of work for projects designed to promote public education and awareness, develop necessary scientific and technical information, and reduce the amount of debris entering the ocean. The Service subsequently adopted the

plan as the basis for the first year of its Entanglement Research Program. Subsequently, Congress appropriated an additional \$750,000 to continue the program in FY 1986.

In related activities during 1985, the Commission also: worked with the National Marine Pollution Program Office to incorporate the marine debris issue into the Federal Plan for Ocean Pollution Research, Development and Monitoring; provided partial support for projects to compile information on marine debris in ocean areas outside the North Pacific Ocean and to facilitate beach clean-up and public awareness; and cooperated with the U.S. Coast Guard on efforts to facilitate U.S. ratification of Annex V of the 1978 Protocol to amend the Convention for the Prevention of Pollution from Ships (see below).

Domestic Activities in 1986

With respect to domestic activities, the Commission continued to work closely with other Federal agencies and Congress to help identify and implement constructive action to address the marine debris issue. During 1986, particular attention was directed towards: the continued development and implementation of the U.S. Entanglement Research Program administered by the National Marine Fisheries Service; assisting the U.S. Congress with the identification and evaluation of potential Congressional action; and pursuing efforts to ratify Annex V of the 1978 Protocol Relating to the International Convention for the Prevention of Pollution from Ships (MARPOL).

The U.S. Entanglement Research Program

As noted above, Congress appropriated \$750,000 to the National Marine Fisheries Service in Fiscal Year 1986 for continuing the Entanglement Research Program begun in 1985. The Congress directed that the Service develop a program plan for allocating these funds in cooperation with the Commission and that the final plan receive the Commission's review and approval. In response to these directives, the National Marine Fisheries Service developed a recommended program plan that included detailed scopes of work and cost estimates for 23 different tasks ranked in order of priority. The proposed program plan was provided to the Commission for its review and approval on 31 December 1985.

Because the estimated cost of the 23 projects exceeded the available funding level, the Service proposed support for the 16 tasks which it considered to be of highest priority. These tasks included: continuing the information and education program begun in 1985 to advise the public and

relevant industries of the marine debris problem; developing a prototype system for receiving and disposing of vessel-generated wastes in ports; assessing photodegradation processes affecting plastics in the marine environment; assessing the effects of marine debris on benthic and mid-water species of marine life; continuing research on the entanglement of northern fur seal and Steller sea lion pups; collecting and cataloguing marine debris from the North-western Hawaiian Islands; assessing the dynamics and fate of lost and discarded gill net fishing gear; initiating a pilot study on interactions between northern fur seals and large fragments of fishing gear; assessment of fouling and sinking rates of lost and discarded net debris; determining the extent and effect of plastic ingestion by Hawaiian sea birds; cleaning up marine debris at selected northern fur seal haul-out sites; continuing efforts to develop standard methodology for surveying marine debris on beaches in Alaska; studying entanglement rates and survival of northern fur seal females; assessing the amounts and distribution of net debris generated by high-seas squid drift net fisheries in the North Pacific Ocean; and administrative support for managing the entanglement research program.

The Commission and its Committee of Scientific Advisors reviewed the recommended program plan and provided comments to the Service by letter of 21 March 1986. The Commission noted that the proposed plan clearly had been developed with great care and that it provided a sound basis for considering and selecting among identified priority tasks. It further noted that the priorities set forth appeared to be appropriate and justified and that the Commission concurred with the plan as drafted. It recommended that the Service immediately take steps to begin implementing the priority tasks. The Commission also noted that several of the tasks overlapped programmatic responsibilities of various other Federal agencies and suggested that the Service examine opportunities for obtaining partial support for certain projects from other sources.

On 2 April 1986, the Service notified the Commission that it had authorized \$595,000 for support of projects listed in the program plan. By early June, the Commission had not been advised as to steps taken to allocate the remainder of the \$750,000 appropriation. Therefore, the Commission wrote to the Service on 6 June 1986 requesting information on the status of program funding and the Service's plans for identifying priority needs for Fiscal Year 1987. The Service responded on 2 July noting that \$32,000 had been lost as a result of the Balanced Budget and Emergency Deficit Control Act of 1985 and that the remaining \$123,000 was in the process of being transferred to the field for allocation among the identified project tasks. The

Service also advised the Commission that a meeting to identify program needs for 1987 would be held in September 1986. Subsequently, Congress appropriated an additional \$750,000 to the National Oceanic and Atmospheric Administration to continue needed research and management measures in Fiscal Year 1987. It again directed that the Service develop a program plan with the cooperation and concurrence of the Marine Mammal Commission.

The Service's Fiscal Year 1987 Entanglement Research Program planning meeting was held on 24-25 September 1986 in Seattle, Washington. During the meeting, representatives of the Commission and the Service reviewed information on the status and results of tasks undertaken during 1985 and 1986. They also considered draft scopes of work for 19 proposed projects which the Service's Entanglement Program Manager had distributed in advance of the meeting. Among other things, it was agreed that a second meeting should be held involving other Federal agencies, industry groups, and environmental organizations to consider cooperative efforts that might be undertaken to facilitate development of appropriate mitigation measures. A Commission representative also participated in that meeting, which was held on 16-17 December in Seattle. Based on the results of these planning meetings, the Service is expected to develop a Fiscal Year 1987 Entanglement Research Program Plan which it will provide to the Commission for review and approval early in 1987.

U.S. Efforts to Ratify MARPOL Annex V

In 1978, negotiations were concluded on a Protocol amending the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL). The Protocol includes five Annexes, each of which addresses a certain type of vessel pollution. At the conclusion of the negotiations, the Protocol was opened for ratification by signatory nations. On 2 July 1980, the U.S. Senate gave its advice and consent to the Protocol, including Annexes I and II, and, on 22 July 1980, the President signed the instrument of ratification. The Protocol, including Annex I entered into force on 2 October 1983 and Annex II is scheduled to enter into force on 6 April 1987. The remaining three Annexes require separate ratification and have not entered into force.

Annex V, which provides for regulations to prevent pollution from garbage by ships, is of particular relevance to the problem of plastic pollution. Among other things, provisions of the Annex would prohibit, subject to certain exceptions, "...the disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags...." The importance of this Annex was highlighted in the aforementioned Commission

funded report on domestic and international authorities applicable to the problem of entanglement (see Bean, 1985 in Appendix B). Among other things, the report noted that the Annex had not been ratified by the U.S. and recommended that action be taken to do so.

On 21 November 1985, the Commission participated in a meeting convened by the U.S. Coast Guard to prepare for U.S. participation in the 22nd Session of the International Maritime Organization's Marine Environment Protection Committee (MEPC). This Committee is the international organization responsible for implementing the MARPOL Convention. During the preparatory meeting, representatives of the Commission, the National Oceanic and Atmospheric Administration, and the environmental community all urged that the U.S. take immediate steps to ratify the Convention. In response, it was agreed that following the 22nd Session of the MEPC, which took place on 2-6 December 1985, Federal agencies would meet to consider the appropriate course of action to seek ratification.

The follow-up meeting of Federal agencies was held on 14 January 1986. Representatives of the Commission, the Coast Guard, the Environmental Protection Agency, the National Oceanic and Atmospheric Administration, and the Department of Agriculture participated in the meeting and reviewed the results of the 22nd MEPC meeting (see below). With respect to U.S. ratification of Annex V, the Commission representative reaffirmed support for the action and this position was shared by the representatives of the other agencies. It was agreed that a summary position expressing the agencies' collective support for this action would be prepared and provided to the Commandant of the Coast Guard for his approval and that, subject to his approval, a public meeting of the Shipping Coordinating Committee would be convened. This Committee is a chartered advisory committee to the State Department established to solicit views from non-governmental groups concerned with international issues related to shipping and maritime activities. The Commandant of the Coast Guard concurred with the recommended position of the agency representatives, and a meeting of the Shipping Coordinating Committee to consider the desirability of ratifying MARPOL Annex V was scheduled for 2 July 1986.

Prior to the meeting of the Committee and in further support of Annex V, the Commission wrote to the State Department on 5 June 1986. In its letter, the Commission noted that the Annex had not yet been ratified by the U.S. and that, while several countries already had deposited their instruments of ratification, all criteria necessary to bring it into force had not yet been met. The Commission stated its view that implementation of Annex V would provide a

necessary and constructive contribution to worldwide efforts to mitigate the serious problems being caused by marine debris, and recommended that the State Department take all appropriate actions, including prompt ratification of Annex V, to bring it into force at the earliest possible date. The State Department responded by letter of 12 June 1986 noting that efforts would be taken to advance the ratification process and to highlight the problem in the upcoming MEPC meeting.

The meeting of the Shipping Coordinating Committee was convened by the Coast Guard at its headquarters in Washington, D.C., on 2 July 1986. During the meeting, there was general agreement that ratification of Annex V was an appropriate and desirable course of action. The 2 July meeting was held just before the 23rd Session of the MEPC held in London, England, on 7-11 July 1986. Considering the Committee's comments and the views already expressed by the Commission and other Federal agencies, the head of the U.S. delegation to the 23rd Session of the MEPC announced that, upon its return, the U.S. delegation would recommend to the Secretary of State that actions be taken by the U.S. Government to ratify MARPOL Annex V. This was done following the meeting and, at the end of 1986, it was the Commission's understanding that the necessary documentation to transmit Annex V to the Senate for its advice and consent was being reviewed by the State Department and would be forwarded to the President early in 1987.

Congressional Activities

Funds appropriated for the U.S. Entanglement Research Program in Fiscal Years 1985, 1986, and 1987 made it possible for the nature and extent of the problem to become better documented. In part because of this improved understanding, bills designed to address certain aspects of the problem were introduced in both the Senate and the House. The House also convened a hearing on plastic pollution in the marine environment.

Two bills were introduced in the Senate. The first, S. 2596, was introduced by Senator John H. Chafee and others on 25 June 1986. The bill, entitled the "Plastic Waste Reduction Act of 1986," would direct the Environmental Protection Agency to: conduct a study of adverse effects of plastic debris discarded into terrestrial, marine, and freshwater environments; develop recommendations on ways to reduce or eliminate the problems; and require that, within 18 months of enactment of the bill, materials used for packaging, transporting, or carrying cans, bottles, and other containers be made of naturally degradable materials. The second bill, S. 2611, introduced by Senator Ted Stevens, was

entitled the "Driftnet Impact Monitoring, Assessment, and Control Act of 1986." Among other things, this bill proposed establishing a net bounty system whereby persons who retrieve and return to port lost, abandoned, or discarded fishing nets from marine waters would be reimbursed from the Fishery Vessel and Gear Damage Compensation Fund.

In related actions in the House of Representatives, the House Committee on Merchant Marine and Fisheries, Subcommittee on Coast Guard and Navigation, held a hearing on the problem of plastic pollution in the marine environment. Its purpose was to review information on the effects of marine debris and to receive comments on further actions that should be taken. The hearing, held on 12 August 1986, was convened by Congressman Gerry E. Studds, Chairman of the Subcommittee. Representatives of the Marine Mammal Commission, the National Marine Fisheries Service, and the Coast Guard participated on a panel of involved Federal agencies.

The Commission's testimony identified four general categories of actions that should be taken: actions to prevent or reduce the disposal of plastics at sea; alternative methods for handling and disposing of plastic wastes produced on board ship; actions to clean up particularly important areas affected by marine debris; and research to assess and monitor the extent of marine debris problems and the effectiveness of mitigating measures. Among the specific measures identified by the Commission were:

- ratifying and implementing MARPOL Annex V and encouraging other nations to do likewise;
- continuing and expanding efforts to inform the public and relevant industries of the problem and the need to avoid disposal of plastic wastes into the marine environment;
- clarifying and strengthening laws and associated enforcement programs to restrict at-sea disposal;
- developing new ways and perhaps requirements for handling and storing plastic wastes on board ship (e.g., through devices for incinerating, compacting, and/or grinding ship-generated garbage);
- developing cost-effective and efficient systems and services for receiving and disposing of ship-generated garbage returned to port;
- investigating possibilities for recycling used nets;
- developing plastic materials which degrade in the marine environment;
- encouraging beach clean-up campaigns to promote public awareness and involvement and to reduce potentially harmful debris in areas where marine mammals, turtles, and sea birds are likely to be; and

- encouraging fishermen and others who incidentally recover plastic debris at sea to return that material to port for disposal on land.

At the time of the hearing, two related bills were introduced by members of the House. On 11 August, Representative William J. Hughes introduced H.R. 5380, a bill to establish the "Plastic Waste Study Act of 1986." The bill would direct the Environmental Protection Agency and the National Oceanic and Atmospheric Administration to undertake a joint 18-month study of the effects of plastic debris on the environment, including fish and wildlife, and to develop recommendations on ways to reduce or eliminate associated problems. The second bill, H.R. 5422, introduced on 13 August by Representative Leon E. Panetta, was identical to Senator Chafee's bill, S. 2596, mentioned earlier.

By letters of 15 August 1986 from Representative Walter B. Jones, Chairman of the House Committee on Merchant Marine and Fisheries, the Commission was asked to provide comments to the Committee on the two House bills. While not representing official Administration position, the Commission, by letters of 17 October 1986, noted that, with respect to H.R. 5380 (*i.e.*, the bill to establish the Plastic Waste Study Act), the proposed study of the problem had considerable merit and that it offered a constructive approach for identifying and developing appropriate solutions. In addition, given research on the problem already conducted or planned by the National Oceanic and Atmospheric Administration and the responsibilities of the Environmental Protection Agency, the Commission noted that calling for the study to be undertaken jointly by the two agencies seemed particularly appropriate and useful. It expressed support for the concept and suggested that the two agencies also be directed to consult with the Coast Guard on efforts to ratify and implement MARPOL Annex V and with relevant State agencies regarding their experience in developing and implementing laws pertaining to the use of degradable plastics, recycling used plastic containers, and other approaches to address the problem.

With respect to H.R. 5422 (*i.e.*, the bill to establish the Plastic Waste Reduction Act), the Commission, again not representing official Administration position, noted the proposal for a study of the problem by the Environmental Protection Agency would be more effective if it were conducted as a joint study with the National Oceanic and Atmospheric Administration, as proposed in H.R. 5380. Also, because the proposed study presumably would examine constraints and opportunities in applying degradable plastic technology, as well as the strengths and weaknesses contained in relevant state laws requiring the use of degradable

plastics, recycling plastic containers, and deposits on plastic bottles, the Commission suggested that, pending the results of the proposed study of alternative solutions, it might be premature to adopt a regulatory program to control plastic pollution. The Commission therefore concluded that the approach set forth in H.R. 5380 may be more appropriate than that of H.R. 5422 at this time.

International Activities

Plastic debris enters the world's oceans from ships and coastlines of all coastal nations and many of the most harmful plastic materials float and may be carried hundreds or thousands of miles from their point of origin by ocean currents. Therefore, successful resolution of the marine debris problem will necessitate cooperative action at the international level. Recognizing this, the Commission, in cooperation with other Federal agencies, has made a special effort to bring the problem of plastic debris to the attention of individuals and organizations of other countries through international workshops and meetings to review information on the problem; international bodies with regulatory authority for controlling the discharge of plastics into the sea; and international research programs that would help encourage and coordinate efforts to collect data on the amounts and effects of marine debris.

Workshops and Meetings

Because of the global significance of the marine debris problem, it is important to ensure that new information documenting the problem is available to the international community. This provides a logical basis from which to encourage cooperative action. A significant step in this regard was achieved through the International Workshop on the Fate and Impact of Marine Debris, held in November 1984 in Honolulu, Hawaii. At the Workshop, information on all aspects of the problem was considered collectively for the first time. The resulting findings and recommendations marked a turning point in recognition and perception of the significance of the problem. The Commission's role in proposing and organizing the Workshop is described in its past Annual Reports.

Recognizing the need to consider the results of research and analyses undertaken since the 1984 workshop, the problem of polluting marine areas with persistent plastics was the subject of two special sessions of the Sixth International Ocean Disposal Symposium held in Pacific Grove, California, on 21-25 April 1986. Partial support for the Symposium was provided by the National Oceanic and Atmospheric Administra-

tion. During the meeting, 12 papers, including a paper prepared by a member of the Commission staff (see Laist, In Press in Appendix C), were presented on various aspects of the plastic pollution issue. To ensure that results of these two sessions are made available to the international community, the National Oceanic and Atmospheric Administration's Office of Oceanography and Marine Assessment is coordinating efforts to include selected papers in a special edition of the Marine Pollution Bulletin to be published in 1987.

The results of the Honolulu workshop and, more recently, the ocean dumping symposium, indicated that significant progress was being made to assess the problem of marine debris in the North Pacific Ocean. Considerably less information, however, was available for other ocean areas. Therefore, to improve understanding of the problem in other oceans and to exchange relevant information, the Commission contracted for two studies to address the problem in the area of Australasia and the North Atlantic Ocean. In Australasia, the contractor sought to gather available data on the problem and, through meetings with scientists and government officials, to share information on ongoing efforts in the United States. The results indicate that few regional studies of the problem have been conducted to date. However, as awareness of the problem increases through exchange of information with scientists from other countries, further studies may be undertaken to provide a better basis for assessing and mitigating impacts.

The North Atlantic study seeks to obtain available information on the sources, fates, and effects of marine debris in the Northwest Atlantic, the North Sea, the Gulf of Mexico, and Caribbean Sea. Information on measures that have been or are being taken to document and mitigate the problem will be collected. Although the final report is not expected until 1987, preliminary results indicate that little published information is available relevant to the study area. As an additional effort to focus international attention on the problem, the Commission also encouraged the Department of State to have one of its staff members, who had been detailed to the International Maritime Organization, to devote his energies to the issue, and this was done with good effect in 1986.

Further efforts to share information on the problem with the international community were taken when a Commission representative presented papers and held informal discussions in New Zealand in November 1986. These took place at the University of Canterbury, the University of Auckland, the Fisheries Research Division of the Ministry of Agriculture and Fisheries, the Ministry of Conservation, and other government offices.

Since the Workshop on the Fate and Impact of Marine Debris in 1984, there have been substantial efforts in the U.S. and elsewhere to assess and determine how to address various aspects of the problem. To assure that the results of these efforts are known and used to determine continuing research and management priorities, the Commission wrote to the National Marine Fisheries Service on 23 December 1986 recommending, among other things, that the Service begin planning a second international workshop on the marine debris problem to be held sometime in 1988. Such a workshop would facilitate information exchange and encourage cooperating international programs to define and deal with the problem.

Relevant International Conventions

MARPOL Annex V -- As indicated above, entry into force and effective implementation of Annex V of the 1978 Protocol relating to the Convention for the Prevention of Pollution from Ships (MARPOL) offers an important opportunity to establish an international framework for controlling routine at-sea discharges of potentially harmful plastics and other debris. In order to enter into force, Annex V must be ratified by at least 15 nations representing 50 percent of the world's total commercial shipping tonnage. At the end of 1986, the Annex had been ratified by 26 nations representing 44.6 percent of the world's commercial shipping tonnage. Once the criteria for entry into force have been met, there would be a one-year grace period after which signatory nations would be obligated to have in place domestic regulations and programs that are consistent with the provisions of Annex V. As noted above, the U.S. has not ratified the Annex; however, steps have been taken to do so.

In addition, steps have been taken to strengthen the provisions of Annex V to make them more useful. As noted above, Annex V would prohibit, with certain exceptions, the disposal of synthetic fishing nets and other plastic items from ships. One of the exceptions would allow operators of fishing vessels to discard synthetic material produced incidental to the repair of fishing nets. To eliminate this exception, the U.S. delegation to the 22nd Session of the MEPC, held in London, England, in December 1985, proposed that Annex V be amended by deleting this exception. The proposal was agreed to by the MEPC Working Group on Optional Annexes, which further agreed that the proposal should be raised with the full Committee at its 23rd Session. Because Annex V had not yet entered into force but already had been ratified by a number of nations, it also was agreed that no additional changes in the language of Annex V, other than the proposal put forward by the U.S., should be considered until after the Annex had entered into force.

During the 23rd Session of the MEPC, held in July 1986, the U.S. raised its proposed amendment of Annex V with the full Committee and it was agreed that, upon entry into force of the Annex, the amendment would be considered through the International Maritime Organization's "tacit acceptance" process. Under this procedure, the proposed change would enter into force on a specified date unless a stipulated number of contracting parties expressly indicated their objection to the amendment. The tacit acceptance process is intended to speed adoption of measures that are non-controversial and it is expected that the U.S. proposal will be adopted easily.

Steps also have been taken to urge other nations to ratify Annex V. Prior to the 23rd Session of the MEPC, the U.S. Coast Guard, which serves as the lead U.S. agency on actions pertaining to the MARPOL Convention, submitted an information paper developed jointly by the Commission and the National Oceanic and Atmospheric Administration. The paper describes the problem and the need for responsive action. In addition, the head of the U.S. delegation encouraged favorable action by other contracting governments by calling attention to the severity of the marine debris problem, by announcing U.S. intentions to actively pursue ratification of Annex V, and by promising to distribute a more detailed paper on the problem and possible solutions in advance of the 24th MEPC meeting scheduled for 16-20 February 1987.

Looking forward to the 24th Session of the MEPC and recognizing U.S. commitments to further address Annex V matters, the Commission, in consultation with its Committee of Scientific Advisors, drafted a paper on proposed considerations and actions relating to implementation of Annex V. The paper was reviewed by prospective members of the U.S. delegation to the next MEPC meeting and it provided the basis for a working paper which the U.S. submitted to the MEPC in November 1986. Among other things, the paper reviews potential technical and administrative actions which would help resolve the problem and enhance implementation of Annex V. It also proposes that the MEPC consider developing recommended guidelines on measures to implement the Annex.

The London Dumping Convention -- The problem of plastic pollution and marine debris also has been raised during recent sessions of parties to the London Dumping Convention. Among other things, the London Dumping Convention (formally entitled the Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter) prohibits the at-sea disposal of persistent plastics which may interfere with fishing, navigation, or other legitimate uses of the sea. At the Ninth Session of Convention members in 1985, a resolution was adopted calling upon member countries to

collect information on the problems caused by plastic debris and to identify appropriate solutions.

At the Tenth Session of Convention members in October 1986, the problem was again raised and a paper summarizing follow-up actions on international efforts was submitted by the Secretariat of the International Maritime Organization. During the meeting, representatives of several nations and international organizations advised that they either had taken or were considering actions to address the problem by gathering relevant data on the problem, undertaking related public education and information efforts, and/or taking steps to ratify and comply with the provisions of MARPOL Annex V.

Convention for the Conservation of Antarctic Marine Living Resources -- As noted in Chapter IV, constructive action to identify and assess potential marine debris problems also has been taken within the context of the Convention for the Conservation of Antarctic Marine Living Resources. In preparation for the fifth meeting of the Commission and Committee of Scientific Advisors established by the Convention, the Marine Mammal Commission helped draft U.S. information and position papers on the problem. During the meeting, held on 8-19 September 1986 in Hobart, Tasmania, relevant information papers submitted by the U.S. and several other countries were reviewed. Among other things, it was agreed that: member countries would consider and take appropriate steps to ratify and implement MARPOL Annex V; steps would be taken to inform fishermen and others entering the Convention Area of the problem and the proper way to handle plastic trash; and, whenever feasible, potentially hazardous debris that is encountered in the Convention area would be collected and either returned to port or disposed of in a manner which would pose no further threat to ships or marine life.

Coordination of International Research

During 1986, the Marine Mammal Commission was invited to participate in the Sixth Session of the Intergovernmental Oceanographic Commission's Working Group on the Global Investigation of Pollution in the Marine Environment (GIPME). The Working Group acts as a mechanism for coordinating international efforts to monitor marine pollution. It does so in a number of ways including: development of manuals on procedures for collecting, recording, and archiving marine pollution data; support of training exercises in the use of those procedures; and conducting inter-calibration exercises designed to ensure that data collected by one country or organization is statistically comparable with those collected by others.

To date, the Working Group has focused its attention on chemical pollutants rather than solid wastes. Therefore, to help address the issue of plastic pollution, the Marine Mammal Commission, in consultation with the National Science Foundation, whose representative served as head of the U.S. delegation and chairman of the Working Group's Sixth Session, developed an information paper on the problem and various techniques used to monitor marine debris. The paper was distributed to Working Group members during its Sixth Session, held in Paris, France, from 25 September to 1 October 1986. In response, the Working Group requested its Group of Experts on the Effects of Pollutants to consider the desirability of preparing a manual on procedures for monitoring the amounts and effects of plastic pollutants.

In anticipation of the Working Group's potential support for developing such a manual, the Commission wrote to the National Marine Fisheries Service on 18 September 1986 suggesting that a project to develop a draft procedures manual be included as part of its Entanglement Research Program in Fiscal Year 1987. The Commission subsequently suggested that, if possible, the Service attempt to complete a draft of the manual in time to provide it to the Working Group's Group of Experts when it next meets in late 1987. In addition, the Commission wrote to the Chairman of the Group of Experts on Effects of Pollutants advising him of available information on the problem and of the Commission's understanding that the Service was planning to prepare a draft procedures manual on monitoring plastic debris at sea and on beaches. If a manual can be prepared and distributed to coastal nations and international research organizations, the resulting data should provide a much improved basis for assessing and monitoring the marine debris problem and for improving the effectiveness of international actions to reduce or eliminate it.

CHAPTER IX

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 1986, 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 population, the bowhead whale, the right whale, and the humpback whale. Attention also was focused on the endangered, and perhaps extinct, Caribbean monk seal, the harbor porpoise in California, and the five species of river dolphins. A review of the Commission's activities regarding these species and populations 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 this country, and perhaps the world, is found in Florida where the population is estimated to number something more than 1,200 animals. Although this figure is slightly higher than previously thought, there is still serious concern for the long-term survival of the manatee population because of high mortality levels. Despite continued efforts by Federal and State agencies and private organizations to reduce this level, known manatee mortality in the United States over the past five years has averaged well over 100 animals per a year. Among the most serious threats to the Florida population are increasing levels of boat traffic and associated collisions between manatees and boats, the loss of large numbers of manatees to thermal stress during periods of cold weather, and the continuing degradation and destruction of essential manatee habitat due to coastal and riparian development and other human activities.

The known level of annual manatee mortality in U.S. waters since 1977 is summarized in the following table. The figures include the number of manatee carcasses recovered by year and the number of animals known to have died but which were not recovered.

Manatee Mortality in the United States, 1977-1986

Year	In Florida	Outside Florida	Total	Barge/Boat Collisions
1977	113	1	114	--
1978	84	0	84	--
1979	77	1	78	24
1980	63	4	67	16
1981	113	3	116	24
1982	117	6	123	21
1983	80	0	80	14
1984	128	3	131	35
1985	120	9	129	35
1986	122	3	125	33

A few years ago an annual mortality of more than 100 animals was considered high. As this table shows, in recent years such levels have become typical. In light of the small size of the Florida manatee population, the continued loss of more than 100 animals per year represents a serious threat to the survival of the population. Collisions between manatees and boats is the largest source of human-related mortality and is increasing. Between 1980 and 1983, boat-related deaths averaged about 19 animals per year, or about 19 percent of the total known manatee mortality. Between 1984 and 1986, annual boat-related deaths averaged 34 animals, or about 27 percent of the total known manatee mortality. Clearly, further efforts are needed to minimize human-related mortality, particularly that caused by boat and barge collisions, and to protect essential habitat.

Since 1979, the Commission has devoted considerable time and funding on efforts to enhance protection and recovery of the West Indian manatee in Florida. In particular, the Commission's efforts were designed to assist cooperative manatee conservation programs being implemented by the Fish and Wildlife Service, the Florida Department of Natural Resources, the Florida Power and Light Company, and numerous public and private organizations. These activities have been described in detail in previous Annual Reports.

As a result of these cooperative efforts, a great deal has been accomplished since 1979. During the past two years in particular, the Florida Department of Natural Resources has strengthened its manatee protection program by securing a

dedicated source of State funding for manatee work, increasing its staff, and assuming responsibility for certain activities, such as the manatee salvage and necropsy program, previously carried out by the Fish and Wildlife Service. Similarly, the Fish and Wildlife Service has greatly intensified its efforts to control the development of new marinas and other boating facilities in or near essential manatee habitat by reviewing associated wetlands permit applications submitted to the U.S. Army Corps of Engineers. In cooperation with the State, the Service also has undertaken substantial planning and land acquisition efforts to add important manatee habitat to existing Federal and State refuges and reserves.

Despite these accomplishments, it became apparent in 1986 that the extraordinary pace of development associated with the State's rapid growth in human population was creating a very difficult management situation and that not all aspects of manatee protection were progressing as well as might be hoped. For instance, because of inadequate manpower, the Florida Department of Natural Resources' Marine Patrol was unable to adequately enforce the boat speed zones that the State had established to protect manatees. At the same time, it was becoming clear that some of the existing speed zones needed to be expanded and many new zones needed to be established. It also was apparent that parts of the Florida State Government with important decision-making responsibilities were not as well informed as might be wished about conservation needs for manatees and their habitat and that important opportunities to improve manatee protection were thereby being lost. For example, the State's dredge-and-fill permit program and its submerged lands leasing program did not appear to be considering potentially harmful effects of development projects on manatees as effectively as they could. At the national level, it was clear that, despite the considerable efforts of the Fish and Wildlife Service, permits were being approved by the Corps of Engineers for marinas and other boating facilities in Florida at a pace and in a manner that precluded effective consideration of possible impacts, particularly cumulative impacts, on manatees and their critical habitats. At the same time, the Service was substantially reducing funding support for its Sirenian Research Project, which provides a basic source of information on manatee ecology and demography that is used in the permit review process. Because of these facts, the Commission concluded that a thorough review of the entire manatee protection program was needed.

Accordingly, the Commission, with additional support from the Fish and Wildlife Service and the concurrence of the Florida Department of Natural Resources, contracted with a knowledgeable consultant to review recent progress and

current problems related to the West Indian manatee conservation program and to recommend steps that should be taken to strengthen it. The study is focused primarily on issues related to: the process followed by Federal and State agencies in authorizing dredge and fill permits and submerged lands leases for new marinas and boating facilities in essential manatee habitat areas; State and Federal efforts to acquire and protect essential manatee habitat; expanding the State's system of boat speed regulatory zones and the adequacy of enforcement efforts therein; and funding for essential research efforts.

Although a final report is not expected until early in 1987, a draft was available at the end of 1986. It addressed actions related to the administrative structure of the manatee program, the management and acquisition of State and Federal lands of special importance to manatees, modifying and enforcing the system of boat speed regulatory zones, public education, wetlands regulatory programs, and manatee research. To improve overall administration of the manatee program, the draft report recommends that: the Fish and Wildlife Service re-establish the Manatee Recovery Team to update the Recovery Plan and Comprehensive Work Plan developed in 1980; the Florida Department of Natural Resources upgrade its manatee protection program by creating a new Bureau of Marine Mammals; and the State Manatee Technical Advisory Council continue to serve as a forum for coordinating Federal, State, and private activities.

With respect to managing Federal and State-owned lands, including submerged lands, of particular importance to manatees, the draft recommended that: criteria for protecting manatees be developed to guide issuance of state submerged lands leases issued for marinas and other boating facilities by the Florida Trustees of the Internal Improvement Trust Fund; those lease applications be reviewed on a semi-annual or quarterly basis to improve consideration of cumulative impacts and coordinating leasing decisions with the Fish and Wildlife Service and the Florida Department of Natural Resources; and the Fish and Wildlife Service and the State of Florida increase efforts to plan for and pursue land acquisition projects, such as the refuge headquarters/visitor center on Kings Bay, in essential manatee habitat.

To strengthen control over boat speeds in essential habitat, the draft report recommends that: the Florida Department of Natural Resources request more field officers to enforce established boat speed regulatory zones; the Department, in coordination with the Fish and Wildlife Service, regularly review the system of boat speed zones to identify new areas and, as appropriate, to modify boundaries of existing zones; and the National Park Service establish

boat speed zones in areas of the Everglades National Park where vessel traffic and manatee collisions are most likely to occur.

The draft report also includes recommendations that: the Fish and Wildlife Service strengthen public education efforts by identifying and acquiring sites for strategically located visitor centers; the Save the Manatee Committee assume responsibility from the Florida Department of Natural Resources for conducting public awareness efforts; the Florida Department of Environmental Regulation, the U.S. Army Corps of Engineers, the Florida Trustees of the Internal Improvement Trust Fund, and the Fish and Wildlife Service coordinate their efforts to establish specific manatee protection standards for permit and leasing decisions for boating facilities in essential manatee habitat areas; the Fish and Wildlife Service increase funding for its Sirenian Research Project; the Fish and Wildlife Service and the Florida Department of Natural Resources ensure that funding for the manatee salvage and necropsy program is continued; and the Fish and Wildlife Service and Florida Department of Natural Resources develop additional site-specific research and management plans, such as the one developed for the Crystal River area, for other areas of Florida.

At the end of 1986, the Commission looked forward to receiving the final report early in 1987. It is anticipated that the report will be used by involved Federal and State agencies and private organizations, as well as the Commission and its Committee of Scientific Advisors, in deciding what additional steps should be taken to enhance and coordinate their respective efforts to protect the Florida population of West Indian manatees.

As noted in previous Annual Reports, the Marine Mammal Commission recommended in 1980 that the Fish and Wildlife Service undertake a pilot project to develop a site-specific research and management plan for manatees. The recommendation was based on the understanding that local planning and development patterns, as well as local manatee distribution and abundance, would determine specific manatee conservation strategies that should be adopted. The Service agreed with the recommendation and, with partial funding from the Commission, undertook a study to develop a proposed research/management plan for Crystal River manatees. The Plan was completed and adopted by the Service in 1984 and it has been provided to relevant State, Federal, and local authorities. It is currently used by the Service and other agencies in assessing decisions likely to affect manatees and their essential habitat in the Crystal River area.

In September 1986, the Fish and Wildlife Service updated its Implementation Schedule for the Crystal River Plan and a copy was provided to the Commission in October for its review. The Schedule reviews recent progress in implementing the Plan and identifies further actions to be taken during the coming year. Among other things, the Schedule notes that: the City of Crystal River has requested Service participation in a comprehensive planning process; pending development of a manatee protection plan specifying the number, size, and location of boating facilities in the Crystal River waterway, the Service will continue to review permits for area boating facilities on a case-by-case basis; and steps are continuing to coordinate and complete Federal and State efforts to acquire important manatee habitat along Kings Bay and the Homosassa River. At the end of 1986, the Service's Implementation Schedule was under review and, as appropriate, the Commission, in consultation with its Committee of Scientific Advisors, will provide comments to the Service early in 1987.

A small population of West Indian manatees, estimated to number about 100 animals, occurs in the coastal waters of Puerto Rico. Like the Florida population, the manatee population in Puerto Rico is designated as endangered under the Endangered Species Act. Under the Act, the Fish and Wildlife Service is required to prepare a recovery plan for the population and, on 22 May 1986, the Service provided the Commission with copies of its "Technical/Agency Review Draft Recovery Plan for the Puerto Rico Population of the West Indian (Antillean) Manatee."

The stated goal of the Plan is to maintain a viable population of manatees in Puerto Rico so that the species can be removed from the Endangered Species List. Among other things, the Draft Recovery Plan: reviews pertinent biological information on the Puerto Rican manatee population; identifies goals and objectives to guide recovery efforts; and lists and briefly discusses specific tasks for achieving those goals and objectives. The three objectives identified in the Plan are to: (1) reduce human-related mortality, especially that related to incidental entanglement in gill nets; (2) gather additional biological information so that specific criteria can be established for reclassifying manatees; and (3) develop the criteria for reclassifying manatees. The draft Plan includes an implementation schedule identifying the priority, duration, estimated cost, and agency responsibilities for carrying out each specific recovery task. Among the highest priority tasks identified by the draft Plan are: (a) expanding and improving the manatee carcass salvage program in Puerto Rico; (b) reviewing coastal development projects to identify and resolve possible impacts on manatees; (c) developing a public information and

education program; (d) undertaking replicate aerial surveys to detect trends in manatee abundance and distribution; (e) undertaking radio-tagging studies to determine manatee habitat use and movement patterns; (f) developing manatee protection plans for areas of specific importance; and (g) monitoring the condition of important manatee habitats.

The Commission, in consultation with its Committee of Scientific Advisors, reviewed the Draft Recovery Plan and, by letter of 23 June 1986, forwarded comments and recommendations to the Service. In its letter, the Commission noted that the Draft Recovery Plan provided a sound basis for carrying out required conservation actions for manatees in Puerto Rico and recommended that the Plan be adopted and implemented. The Commission further noted, however, that the Plan did not discuss the identified tasks in sufficient detail to determine precisely what should be done under each task, thus making it difficult to determine whether indicated funding levels were appropriate. To ensure that work performed under the various tasks would be well conceived and that estimated funding requirements would be sufficient to cover project costs, the Commission recommended that the Recovery Plan outline be used as a basis for developing a comprehensive work plan similar to the one developed in 1980 to facilitate implementation of the Recovery Plan for the Florida manatee population. As of the end of 1986, the Commission had not received a copy of the Service's Final Recovery Plan.

Hawaiian Monk Seal (*Monachus schauinslandi*)

The Hawaiian monk seal occurs entirely within United States waters in a limited area around the Northwestern Hawaiian Islands. It is in serious danger of extinction. During the 19th century, harassment and over-exploitation by sealers reduced the species to precariously low levels. A subsequent cessation of sealing, coupled with the species' isolated habitat in the Northwestern Hawaiian Islands, has enabled the Hawaiian monk seal to survive. However, the population has declined since the first systematic counts were made in the 1950s. The number of animals counted in 1983 was roughly half the number counted in 1958. The size of the current population is estimated to be between 1,200 and 1,500 animals.

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 Hawaiian monk seal and its habitat.

The Commission's efforts during the past several years to promote the protection and recovery of the monk seal have been described in past Annual Reports. Congressional concern for survival of the species has been evident from the special funding and attention it has directed to monk seal issues since Fiscal Year 1981. For that Fiscal Year, the Commission received a special \$100,000 appropriation to aid in developing and implementing an effective research and management plan for the Hawaiian monk seal. 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. Congress also provided the Commission \$150,000 for monk seal efforts in FY 1983, and, after developing a program plan for accomplishing priority research and management tasks, the Commission transferred the entire \$150,000 to the Service to carry it out. In FY 1984 and FY 1985, Congress increased the Service's appropriation for monk seal work to \$300,000 and \$350,000, respectively, and, in FY 1986, funding for the Hawaiian monk seal program was \$325,000.

Increased funding in the past several years and the sustained efforts of dedicated personnel at the Service's Honolulu Laboratory have enabled the Service to start a constructive research and management program to enhance recovery of the Hawaiian monk seal. Among other things, the program includes: the capture and temporary captive maintenance of female pups to improve their chances of survival and thereby promote the recovery of the population on Kure Atoll; the recovery of emaciated pups from French Frigate Shoals and their movement to the temporary captive maintenance facility on Kure Atoll for subsequent release at that location; removal of some male seals from Laysan Island to other locations to reduce mortality and injury of female monk seals apparently being caused by a disproportionately large number of male seals at that Island; removal of lost and discarded fishing gear and other marine debris potentially hazardous to monk seals from preferred haul-out beaches and adjacent waters; censusing seals at the major breeding islands to estimate the size and composition of island populations as well as trends; and tagging pups to determine pup production, survival, distribution, and movement patterns.

As described in previous Annual Reports, in 1980, the National Marine Fisheries Service issued a Draft Environmental Impact Statement proposing that certain waters and beaches in the Northwestern Hawaiian Islands be designated as critical habitat for the Hawaiian monk seal pursuant to the

Endangered Species Act. After review and comment by the Commission, the Hawaiian Monk Seal Recovery Team, and other concerned parties, the Service took no further action until December 1984 when it issued a Supplemental Environmental Impact Statement proposing that waters and beaches within the 10-fathom isobath surrounding certain islands and atolls in the Northwestern Hawaiian Islands be designated as critical habitat for the Hawaiian monk seal.

By letter of 15 February 1985, the Commission provided comments and recommendations to the Service on the Supplemental Environmental Impact Statement. In its letter, the Commission recommended that the seaward boundary of designated critical habitat be extended from the 10- to the 20-fathom isobath in order to protect areas believed to be important to monk seals for feeding purposes. A similar recommendation was provided to the Service by the Hawaiian Monk Seal Recovery Team, which in December 1984 reconfirmed its conclusion that critical habitat should include waters out to the 20-fathom isobath.

Under the provisions of the Endangered Species Act, the National Marine Fisheries Service has one year from the time of a proposed rulemaking in which to announce a final decision. As noted above, the Service's Supplemental Environmental Impact Statement proposing to designate Hawaiian monk seal critical habitat out to the 10-fathom isobath was issued in December 1984. More than a year later, final action on the matter had not been taken and, on 20 February 1986, a lawsuit was filed on behalf of two environmental groups and two individuals in Hawaii seeking action by the Service to designate critical habitat for the monk seal out to the 20-fathom isobath. Subsequently, by Federal Register notice of 30 April 1986, the Service promulgated a final rule designating critical habitat for the Hawaiian monk seal. The area designated included beach areas, lagoon waters, and ocean waters out to a depth of 10 fathoms around certain islands and atolls in the Northwestern Hawaiian Islands. The effective date of the rule was 30 May 1986.

As noted, the Commission and others had recommended that critical habitat be extended seaward to the 20-fathom isobath. On 27 June 1986, the Service responded to the Commission's 15 February 1985 letter recommending designation of waters out to the 20-fathom isobath. In its response, received by the Commission on 21 July, the Service set forth its reasons for limiting critical habitat to waters within the 10-fathom isobath. Among other things, the Service noted that it had determined that the decision was consistent with the definition of critical habitat and that there were no

special management considerations relative to the waters between the 10- and 20-fathom isobaths.

The Commission, in consultation with its Committee of Scientific Advisors, reviewed the Service's letter and related documents, and, by letter of 26 September 1986, advised the Service that it considered the proposed 10-fathom designation inappropriate because: (a) available information is sufficient to conclude that feeding in areas deeper than 10 fathoms is essential to the continued existence of the Hawaiian monk seal; (b) the Service appeared to have misinterpreted the statutory requirement regarding special management considerations and protection needs; (c) the Service overlooked a number of special management considerations and protection needs that already exist or may arise within the 20-fathom contour; and (d) the Service did not advise interested parties prior to announcing its final decision that the selection of the 10-fathom isobath contour was based on its perception that special management considerations and protection needs did not exist between the 10- and 20-fathom contours.

For the reasons noted, the Commission recommended that the Service: (a) re-open the critical habitat designation decision for public comment to consider the need for extending designated boundaries beyond 10 fathoms; (b) issue a specific request for public and agency comments on the special management considerations and protection needs that may be required within the boundaries of each alternative designation; and (c) extend the critical habitat designation out to the 20-fathom contour, as recommended previously by the Commission, the Hawaiian Monk Seal Recovery Team, and others. By the end of 1986, the Service had not responded either to the Commission's 26 September letter or to the lawsuit filed by environmental groups and others. The Commission, therefore, re-addressed a number of these points in its letter of 23 December 1986 to the Service (see below).

As has been discussed in previous Annual Reports, the Fish and Wildlife Service completed a draft Master Plan for Management of the Hawaiian Islands National Wildlife Refuge in 1984. The Commission, in consultation with its Committee of Scientific Advisors, reviewed the draft Plan and provided comments to the Service on 3 November 1984. In its letter, the Commission questioned, among other things, whether the proposed use of Tern Island as a support site for expanded fisheries in the area was compatible with other, higher priority Refuge objectives, such as protecting endangered and threatened species. In addition, the Commission recommended that, if it had not already done so, the Service initiate consultations with the National Marine Fisheries Service under section 7 of the Endangered Species Act on its proposed

use of Tern Island and its potential effect on monk seals and endangered sea turtles. Subsequently, section 7 consultations between the two Services were undertaken. As noted in the previous Annual Report, the resulting Biological Opinion recommended, among other things, that Tern Island logistical support for fishing activities be limited to levels existing at that time.

On 1 July 1986, the Service forwarded to the Commission and others the final "Hawaiian Islands National Wildlife Refuge Master Plan/Environmental Impact Statement." The Commission, in consultation with its Committee of Scientific Advisors, reviewed the Plan and sent its comments to the Service on 1 August 1986. In its letter, the Commission noted that the final Plan raised, for the first time, the possibility that the Service might decide at some future date to discontinue operation of the Refuge field station on Tern Island. Concerned about the impact that such an action might have on Hawaiian monk seals, the Commission advised the Service that it believed abandoning the Tern Island field station would be ill-advised and that its continued operation was essential for several reasons, including the fact that Service personnel on Tern Island provide a presence that discourages unauthorized use of beaches at French Frigate Shoals, which already has the highest pup mortality rate of any atoll within the species' range. In addition, the Commission noted that field station personnel provide valuable support for research and other projects necessary for the recovery of the Hawaiian monk seal and other endangered species.

In its letter, the Commission expressed hope that the Service would not find it necessary to consider closing the Tern Island station. The Commission asked that, if the results of any future review of station operations lead to consideration of closing the station, the Service provide the Commission, the National Marine Fisheries Service, and other interested parties an opportunity to comment on the results of that review. Furthermore, the Commission recommended that the Service not make any final decision on abandoning Tern Island unless it had first: (a) amended its Refuge Master Plan so as to describe the modified Refuge management system; (b) re-initiated a review of the revised system for managing the Refuge and its effect on endangered Hawaiian monk seals and sea turtles with the National Marine Fisheries Service under section 7 of the Endangered Species Act; and (c) provided the public with an opportunity to review and comment on the amended plan.

Because the Service did not respond to the Commission's 1 August letter, the Commission again wrote on 16 December 1986 to the Service expressing its grave concern about

potential abandonment of the field station. In its letter, the Commission noted that irreversible damage could be done if the field station were closed or if management responsibility were transferred to another agency. The Commission reiterated the recommendations included in its 1 August 1986 letter and stressed that any consideration of abandoning Tern Island only be taken after full consultation with all interested and involved parties, both governmental and non-governmental, including members of the Hawaiian Monk Seal Recovery Team.

For the past several years, the Northwestern Hawaiian Islands -- the area inhabited by the Hawaiian monk seal -- has been subjected to growing pressure by developing and expanding fisheries. In April 1985, the National Marine Fisheries Service sent to the Commission a Combined Draft Fishery Management Plan, Environmental Assessment, and Regulatory Impact Review for the Bottomfish and Seamount Groundfish Fisheries of the Western Pacific Ocean. The Commission, in consultation with its Committee of Scientific Advisors, reviewed the draft Plan and, by letters 12 April and 7 May 1985, sent its comments and recommendations to the Service. In its letters, the Commission expressed concern that the bottomfish fishery could affect monk seals in a number of ways that were not considered in the Environmental Impact Assessment. It recommended that the Assessment be expanded to provide information and analyses necessary to assure that the fishery would not have an adverse impact on the monk seal population.

On 4 October 1985, the Service sent to the Commission a revised Combined Draft Fishery Management Plan for the area. After reviewing the revised Plan, in consultation with its Committee of Scientific Advisors, the Commission wrote to the Service on 31 October 1985, expressing its concern that the proposed changes could seriously compromise efforts to control growing fishing pressure and thereby weaken protection for the endangered Hawaiian monk seal. In its letter, the Commission recommended a number of additional steps that should be taken to ensure, insofar as possible, that bottomfish fisheries in the western Pacific region do not adversely affect the Hawaiian monk seal population or its habitat.

On 8 April 1986, the National Marine Fisheries Service sent the Commission the final combined Fishery Plan and Assessment for the western Pacific region. The Commission, in consultation with its Committee of Scientific Advisors, reviewed the final Plan and, by letter of 24 July 1986, sent comments and recommendations to the Service. In its letter, the Commission noted that many of its earlier comments and recommendations had been incorporated and that the final Plan included a number of provisions that should help strengthen

protection for Hawaiian monk seals and other endangered species. The Commission further noted that additional information on the nature and magnitude of interactions between endangered species and the fishery must be developed in order to afford adequate protection and to assure that fishing activities will be consistent with the intents of the Marine Mammal Protection Act and the Endangered Species Act. Therefore, the Commission recommended that: (a) the Western Pacific Bottomfish Fishery Management Plan be amended, or a supplemental statement be added, to identify the need for a research and monitoring program on interactions between the fishery and Hawaiian monk seals and other protected species; and (b) the Service take steps necessary to design and implement an experimental fishing program to supplement and verify data received from fishermen as a result of a reporting requirement recommended in its Biological Opinion on the Plan. At the end of 1986, the Commission had not received a response to its 24 July letter.

The urgent need for continued and additional action to protect and encourage the recovery of the Hawaiian monk seal is obvious. As noted above, despite efforts to date, the monk seal population is in grave danger of extinction. Of its two congeners, the Caribbean monk seal may already be extinct and the Mediterranean monk seal, now scattered in small, isolated groups covering only a fraction of its historic range, is probably the most endangered pinniped in the world. Thus, without sustained, vigorous efforts by responsible Federal and State agencies, the public, and the fishing industry, one of only two genera of seals whose range is limited to the tropical environment may soon disappear. To lose such a species becomes even more inexcusable when one considers that it occurs entirely within the waters of one country, the United States, and should therefore be a more easily protected species than the Mediterranean monk seal, for example, whose range includes many countries.

While considerable effort has been made over the past few years to encourage recovery of the Hawaiian monk seal, the Commission is concerned that a number of critical management needs are being neglected. As is evident from preceding discussions, several major issues remain unresolved. These include: re-activation of the Hawaiian Monk Seal Recovery Team, which has not met since 1984; designation of critical habitat in areas essential to the species' survival; the future of the Fish and Wildlife Service's field station on Tern Island; and the management of fisheries in and adjacent to essential Hawaiian monk seal habitat.

Other problems also have arisen or continue to thwart recovery of the monk seal population. For example, certain

beach activities by Coast Guard personnel stationed at Kure Atoll to operate a LORAN facility appear to be a continuing source of disturbance for monk seals on breeding beaches. The Commission first raised the problem with the Coast Guard in 1975 and, while some steps have been taken to reduce or eliminate problems, the situation appears unresolved. In particular, off-duty personnel walking along potential monk seal breeding beaches may be discouraging maturing females brought through the pup capture and release program from remaining at the Atoll and using favorable pupping habitat. Needed actions in this regard continue to be the subject of discussions between the Coast Guard and the National Marine Fisheries Service.

Some of these problems could possibly have been avoided or minimized through operation of the Hawaiian Monk Seal Recovery Team. However, the National Marine Fisheries Service has not convened a meeting of the Recovery Team since 1984 and this potentially valuable forum for discussion and resolution of critical issues has therefore been moribund. Another problem persisting in 1986 was the Service's continued unwillingness to request adequate funds to support the monk seal research and management program despite the species' critically endangered status.

Therefore, by letter of 23 December 1986, the Commission, in consultation with its Committee of Scientific Advisors, provided the Service with a number of comments and recommendations concerning priority issues regarding monk seals. The Commission noted that, although a number of critical management issues had arisen in the past few years, essential parts of the Service's monk seal program appeared to have received less support and attention than was appropriate. The Commission recommended that the Service:

- re-evaluate the designation of critical habitat for the Hawaiian monk seal so as to include areas around certain islands and atolls of the Northwest Hawaiian Islands, including Maro Reef, out to the 20-fathom isobath;
- reconstitute the Hawaiian Monk Seal Recovery Team and ensure that it meet on a regular basis to update the Recovery Plan and provide the Service with appropriate recommendations on critical research and management issues;
- ensure that either the Fish and Wildlife Service or the National Marine Fisheries Service maintain personnel at the Hawaiian Islands National Wildlife Refuge field station on Tern Island at all times and that the Fish and Wildlife Service be prevented

from taking action to close or temporarily abandon this station unless and until full public discussion of the issues and section 7 consultations under the Endangered species Act have been concluded;

- undertake research to better document the nature and likelihood of interactions between monk seals and bottomfish fisheries;
- ensure that adequate funding for critical monk seal research and management actions is sought and provided pending recovery and removal of the species from the list of endangered and threatened species; and
- advise the U.S. Coast Guard that it should initiate consultations with the National Marine Fisheries Service under section 7 of the Endangered Species Act on the activities of U.S. Coast Guard personnel on Kure Atoll.

A formal response to the Commission's 23 December letter had not been received by the end of 1986. However, the newly appointed Director of the Service informally advised the Commission that the Service planned to examine both the Coast Guard activities on Kure Atoll and the Fish and Wildlife Service plans for abandoning Tern Island and, if circumstances warrant, to request that consultations under section 7 of the Endangered Species Act be initiated with both agencies. The Director also indicated a willingness to reconstitute the Hawaiian Monk Seal Recovery Team to evaluate research needs relative to monk seal habitat use patterns and to review progress on implementing the Hawaiian Monk Seal Recovery Plan. Based on the results of its reviews, the Service will determine if additional management actions are required to provide adequate protection. The Commission is encouraged by the positive steps being taken by the Service's new Director.

Caribbean Monk Seal (*Monachus tropicalis*)

The Caribbean monk seal's historic range was primarily the Caribbean Sea and the Gulf of Mexico, and its prehistoric range may have extended as far north as South Carolina. The species is thought to have been relatively abundant prior to the mid-19th century, but over-exploitation and loss of habitat resulting from human activities subsequently reduced its numbers to perilously low levels. The last confirmed sighting of the species in the United States occurred in 1922, and the last verified record of the species was that of

a small monk seal colony on Seranilla Bank, between Honduras and Jamaica, in 1952.

In 1979, the Caribbean monk seal was listed as endangered under the Endangered Species Act. Although the species may or may not have been extinct at that time, the listing was necessary to protect any surviving animals.

During 1985, the National Marine Fisheries Service reviewed available information on the Caribbean monk seal as part of its five-year status review pursuant to the Endangered Species Act. Based on its review, the Service concluded that the species was extinct and it therefore considered action to remove the Caribbean monk seal from the Endangered Species List.

In late 1984 and early 1985, there were a number of unconfirmed reports of sightings along the north coast of Haiti of what may have been one or more Caribbean monk seals. No other species of seal occurs naturally in waters surrounding Haiti and thus the reports may provide evidence that the species is not extinct. Alternatively, the reports could have been of a seal that had strayed south from northern waters (a rare sighting of a hooded seal was recently reported from Florida) or perhaps a trained California sea lion that had escaped from captivity. Therefore, in an attempt to assess these unconfirmed reports, the Commission contracted in 1985 for a survey of fishermen and other residents of northern Haiti to identify, document, and assess the reliability of recent and past sightings of the Caribbean monk seal or other seals. The preliminary results of the survey, which were provided to the Commission early in 1986, confirmed at least one recent and reliable sighting of a seal. From the observer's account, however, it was not possible to determine whether the animal was a monk seal or some other species of seal or sea lion.

On 12 February 1986, the Commission wrote to the National Marine Fisheries Service and provided it with the study findings. While the results did not provide conclusive evidence of the species' continued existence, the report of an unidentified seal from Haitian waters raises the possibility that the species is not yet extinct. Therefore, the Commission recommended that the Service take no steps to remove the Caribbean monk seal from the Endangered Species List. The Service subsequently advised the Commission that, based on the report and on the Commission's recommendation, it would take no action to remove the Caribbean monk seal from the Endangered Species List and that the status of the species would be re-examined in five years.

The Commission will continue to review any new information on the Caribbean monk seal that may become available.

The California Sea Otter Population (*Enhydra lutris*)

Because of its small size and limited distribution, the remnant sea otter population along the central coast of California is vulnerable to oil spills and other catastrophic events. For these reasons, the population 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, as well as protect sea otters, it also could reduce populations of sea urchins and other herbivores that 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 effects 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 1986 are summarized below.

Incidental Take

The incidental take of sea otters was unrecognized when the California sea otter population was designated as threatened in 1977. Documentation of the existence and possible significance of the problem was provided by the California Department of Fish and Game and others in 1982. In that year, the Commission provided funds to the California

Department of Fish and Game to augment ongoing studies of the problem and to help coordinate work being supported by various organizations in order to expedite collection of needed data. 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. The Commission continued funding for this work during 1984 and the major portion of 1985. As noted in previous Annual Reports, the reports submitted by Commission-funded observers and the studies undertaken by the California Department of Fish and Game provided the first reasonably good documentation of the magnitude of the incidental take problem. In a report issued in 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 the large-mesh nets that are set for halibut within the 15-fathom depth curve. A complete breakdown of estimated 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. Data covering the years 1984-1986 are now being compiled by the Department.

Estimated Mortality of Sea Otters Taken
Incidental to California Gill and Trammel Net Fisheries

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

Thousands of sea birds as well as sea otters and other marine mammals are caught in gill and trammel nets off the coast of California. In an effort to address the incidental take problem, the State of California has imposed area closures to prohibit gill and trammel net fishing in certain areas. In 1982, the use of entangling fishing nets within the 10-fathom isobath in Monterey Bay was prohibited by State legislation. This closure was intended primarily to reduce

the incidental take of sea birds. In the spring of 1984, the closure was extended to 15 fathoms.

In response to the increasing evidence of the incidental take of sea otters, the California Department of Fish and Game imposed a temporary emergency closure prohibiting the use of entangling fishing nets with mesh sizes larger than three inches within the 15-fathom isobath from Monterey south to the Santa Maria River mouth. This closure was made permanent in May 1985 and was modified to apply to nets with a mesh size of 3.5 inches or larger.

After these closures were imposed, sea otter mortalities incidental to gill and trammel net fishing continued to be reported. In July and August 1985, seven confirmed and three probable deaths were observed in waters 15 fathoms or deeper. In response, the California Department of Fish and Game promulgated another emergency regulation that established a 20-fathom closure for the 17 miles of coastline between Cape San Martin and Piedras Blancas. This closure was in effect from August through December 1985. In total, ten confirmed and three probable entanglement-related mortalities were observed in 1985.

Between 17 July and 9 September 1986, 20 sea otters were found dead in the Monterey Bay area. Thirteen of these were thought to have been killed as a result of entanglement in set gill nets. In response to public reaction, a California Department of Fish and Game patrol vessel was assigned to the area. During its first patrol, enforcement officers aboard the vessel arrested a fisherman retrieving a net illegally set in 10 fathoms of water. Since that incident, and the resulting publicity, sea otter mortality in the area has decreased.

In September 1986, the State of California enacted permanent 20-fathom closures in two areas -- the first from Pico Creek in San Luis Obispo County to Cape San Martin in Monterey County and the second from Pfeiffer Point to Point Sur in Monterey County. In the area between these two zones and in Monterey Bay, the 15-fathom closure remains in effect. In order to fish with gill or trammel nets between 15 and 20 fathoms in those areas, however, advance notice must be filed with the California Department of Fish and Game so that arrangements can be made to monitor the fishing activity. In addition to these closures, the State Legislature established a \$450,000 low-interest loan program for fishermen impacted by closures enacted to protect marine mammals and birds. Loans obtained under this program are to be applied to the development and purchase of alternative fishing gear.

The potential use of alternative gear instead of gill nets to catch halibut and other fish in the area in and near the sea otter range was discussed as part of the Commission-sponsored Workshop on Measures to Address Marine Mammal/Fisheries Interactions in California, held 26-28 March 1986 in San Francisco. Workshop participants identified a number of types of alternative gear that could possibly be used, including Danish seines and pair trawls. Participants recommended that a feasibility study be undertaken and, if successful, an engineering/assistance program be carried out to determine the possible utility of converting small gill net vessels to alternative types of gear. This Workshop is discussed in greater detail in Chapter VI of this Report.

Sea Otter Amendment to the Endangered Species Act and the 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 Marine Mammal 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 the Marine Mammal Protection Act, and compliance with a number of Federal and State laws. Details of the Fish and Wildlife Service's translocation proposal are set forth in previous Annual Reports.

As part of the environmental impact statement preparation process, the Fish and Wildlife Service initiated a formal scoping process and held public meetings on 23 and 24 July 1984 in Santa Barbara and Monterey, California, respectively. 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 preparing the environmental impact statement. The Review Team was 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 Review Team were held on 4 June, 6 August, and 4 October 1984. Non-governmental participants in these meetings included representatives of environmental groups, the oil and gas industry, and sport and commercial fishing organizations. The meetings were used to discuss a variety of issues related to translocation, including topics that should 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.

In order to facilitate public input and provide for the development of a thorough and balanced decision-making document, the Service issued two preliminary draft environmental impact statements to the Interagency Project Review Team and interested parties for review and comment. The first preliminary draft was issued early in 1985 and, based on the comments received and other factors, a revision was prepared and issued in February 1986. Once again, comments were obtained from the Review Team and other interested parties. Included with each preliminary draft environmental impact statement was the draft proposed experimental population rulemaking that would implement a final decision to translocate. Comments were also obtained on the draft proposed rulemaking.

The Fish and Wildlife Service's translocation proposal was given Congressional consideration during 1985 hearings on reauthorization of the Endangered Species Act. These hearings took place on 14 March 1985 before the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the House Committee on Merchant Marine and Fisheries and on 18 April 1985 before the Senate Committee on Environment and Public Works. Testimony was presented by interested parties on the need for one or more translocations and the resource management conflicts that are likely to be associated with translocation.

In an effort to achieve consensus on how the translocation decision-making process should be carried out and what some of the legal consequences would be if the translocation were successful, the House Committee on Merchant Marine and Fisheries convened several meetings of involved agencies and interested parties. In part as a result of these meetings, the Committee approved H.R. 1027, a bill reauthorizing the Endangered Species Act. On 27 July 1985, the House of Representatives passed the bill, Section 5 of which set forth detailed requirements for establishing a translocated population of sea otters. On 4 December 1985, the Senate Committee on Environmental and Public Works approved a reauthorization bill that did not include the House-passed sea otter amendment.

At the end of 1985, Congress enacted legislation to provide for the continuing appropriations to the Department of the Interior and other agencies. As part of this measure, Congress included a requirement that the Fish and Wildlife

Service move forward with its decision-making on the proposed translocation, notwithstanding the fact that the Endangered Species Act had not been reauthorized.

Complying with the directive to proceed with the National Environmental Policy Act review of the proposed action, the Service issued a Draft Environmental Impact Statement on 31 July 1986. This document identifies translocation to San Nicolas Islands in the Channel Islands as the proposed action and sets forth alternatives based on a number of different legal scenarios, including translocation in accordance with the requirements of H.R. 1027. Proposed experimental population regulations were published in the Federal Register on 15 August 1986. By separate letters dated 17 November 1986, the Commission commented on both documents. In its comments, the Commission expressed its support for the proposed action to translocate up to 250 sea otters to San Nicolas Island and recommended that implementation begin in 1987.

In October 1986, the House Committee on Merchant Marine and Fisheries added the sea otter translocation amendment, section 5 of H.R. 1027, to H.R. 4531, legislation concerning extension of the Wetlands Loan Act. This bill passed the Senate on 18 October and was signed into law by the President on 7 November 1986. Enacted as section 1 of Public Law 99-625, the sea otter translocation amendment serves as a free-standing provision of the Endangered Species Act. This means that its requirements will continue to apply even if the sea otter were to be delisted under the Act. The purpose of the amendment is to encourage the development and implementation of a plan for the establishment of at least one sea otter colony outside the present range in California. Within that context, it resolves resource management conflicts that could arise as a result of a translocation.

The sea otter translocation amendment requires development by regulation of a plan that includes pertinent information on the manner in which the translocation will be carried out. That plan is required to specify a translocation zone that would meet the habitat needs of the translocated animals and provide a buffer from the possible adverse effects of activities that may occur outside the zone. Animals found within this zone would be subject to all applicable protections of the Endangered Species Act and the Marine Mammal Protection Act. The plan is also required to specify a management zone. This area is to surround the translocation zone and represents the area from which otters are to be excluded. Sea otters found within this zone are to be removed by feasible, non-lethal means and are provided with fewer legal protections than those that are found within the translocation zone. The final significant component of

the translocation plan is to be a general description of the expected relationship between the successful establishment of a translocated population and the status of the species under the Endangered Species Act.

In order to remove constraints under the Marine Mammal Protection Act that sea otters be taken only for research purposes, the sea otter translocation amendment provides that actions necessary to effect the relocation or management of sea otters under the plan shall not be considered violations of either the Endangered Species Act or the Marine Mammal Protection Act. In an effort to provide as much certainty as possible concerning offshore oil and gas development, and other activities, the sea otter translocation amendment provides for an early consultation procedure to be initiated and completed prior to the translocation. Only those activities that had advanced to a stage where, in the judgment of the Secretary, meaningful consultation could take place would be subject to this requirement. Anticipating implementation of a translocation plan in 1986, the sea otter translocation amendment set 1 April 1986 as the deadline for requests for early consultation.

As a result of enactment of this amendment, the Service will revise the Environmental Impact Statement to indicate that, if it is decided to translocate sea otters, action will be taken in accordance with the requirements of Public Law 99-625. The Final Environmental Impact Statement is expected to be issued by mid-1987.

Humpback Whale (*Megaptera novaeangliae*)

Humpback whales, which are found in most of the world's oceans, have been severely reduced in number as a result of commercial whaling. Commercial hunting of the species has been banned by the International Whaling Commission since 1966, and, in 1970, the species was designated as endangered under the U.S. Endangered Species Act. However, a small number of humpback whales are still taken in Greenland and Bequia for subsistence purposes. In these and other areas, the species' potential recovery also may be threatened by human activities such as commercial and recreational vessel activity, offshore oil and gas development, commercial fisheries, and coastal development.

In view of potential adverse impacts of human activities on humpback whales and other endangered whales, the Commission recommended to the National Marine Fisheries Service in 1984 that the Service prepare recovery plans for these species. In March 1985, the Service advised the Commission that it had decided to defer preparation of recovery plans

for great whales due, in part, to its uncertainty as to whether or how recovery plans would enhance protection of the animals.

In 1985, the Commission received the report of a research project it had supported on humpback whales in Hawaii (see Appendix B, Glockner-Ferrari and Ferrari, 1985). The results of that project suggested that use of inshore waters off Maui by humpback whales, particularly by cow/calf pairs, has decreased substantially over the past several years, possibly due to increased vessel traffic and other human activities in the area. In part as a follow-up to that study, the Commission provided funds for two additional studies in 1985 aimed at obtaining further information on the distribution of humpback whales in Hawaii and the possible effects of human activities on the species and its habitat. In addition, on 31 December 1985, the Commission wrote to the National Marine Fisheries Service, formally recommending once again that the Service develop, adopt, and implement a recovery plan for endangered humpback whales, as well as endangered right and bowhead whales, which occur substantially in U.S. waters.

During 1986, the Commission received interim reports on the two research projects referred to above. Draft final reports of both studies were submitted to the Commission prior to the end of 1986. One study, involving aerial surveys of humpback whales in the inshore waters of Hawaii, further supported the findings of earlier studies that humpback whales may no longer be using areas that they previously had used and which have been subject to increasing levels of boat traffic. The second report provided an assessment of various human activities that may adversely affect the humpback whale population in Hawaii. It identified several relatively new recreational activities that are becoming increasingly popular in Hawaiian waters and which may adversely impact humpback whales. One such activity is the growing use of jet skis in nearshore waters off Maui, which are also frequented by humpback whale cow/calf pairs. Jet skis are small one- or two-person vessels that are propelled by water jets. They are generally operated in an erratic fashion at high speeds and produce a variable high-pitched noise. While there is little documented information on the effects of jet ski operations on humpback whales, such activities could cause whales to avoid certain areas that may be particularly important for breeding, calving, and calf-rearing. The growing popularity of jet skis in an area used by whales suggests a potentially serious problem.

The importance of Hawaii's coastal waters to humpback whales for calving, nursing, and breeding is clearly

recognized. In order to protect the whales from deliberate or inadvertent harassment, in 1979 the National Marine Fisheries Service published a "Notice of Interpretation of Harassment of Humpback Whales in Hawaiian Waters." This Notice provides guidelines for approaching whales and advises boaters of proper conduct when in the vicinity of humpback whales. Among other things, the Notice advises the public that the following activities may be considered as a source of harassment for humpback whales in Hawaii: (a) operating an aircraft closer than 1,000 feet vertical distance and 300 feet horizontal distance to a humpback whale; (b) approaching (either in a vessel or swimming) within 100 yards of a humpback whale or closer than 300 yards of a whale on a designated calving/breeding ground; (c) traveling faster than a humpback whale, or the slowest whale in a group of whales, while between 100 and 300 yards of the whale or whales; and (d) making multiple changes in vessel speed while between 100 and 300 yards of a humpback whale. These actions are prohibited under the Notice.

Since the Notice was published in 1979, vessel traffic in Hawaiian waters has increased substantially. In recent years, there have been numerous reports of vessels and aircraft approaching humpback whales closer than the distances prescribed in the Notice of Interpretation. In order to more effectively protect humpback whales and to reduce the level of disturbance of the population, the Service, by Federal Register notice of 24 November 1986, proposed formal regulations to replace the 1979 Notice of Interpretation. The proposed regulations would apply within 200 nautical miles of the Islands of Hawaii and would prohibit, except under permit: (a) operating an aircraft within 1,000 feet vertical distance of a humpback whale; (b) approaching by any means within 100 yards of a humpback whale; (c) causing a vessel or other object to approach within 100 yards of a whale; or (4) disrupting the normal behavior or prior activity of a whale by any other act or omission.

The Commission, in consultation with its Committee of Scientific Advisors, reviewed the proposed regulations and, by letter of 23 December 1986, forwarded its comments and recommendations to the Service. In its letter, the Commission expressed strong support for the Service's efforts to establish formal regulations governing vessel and aircraft operations in the vicinity of humpback whales. The Commission pointed out, however, that the proposed regulations would provide protection standards that, in some ways, are less stringent than those in the 1979 Notice of Interpretation. In particular, the proposed regulations would eliminate the special protection afforded humpback whales on designated calving and breeding grounds and, as a result, the

Commission concluded, may provide insufficient protection for cow/calf pairs.

Therefore, in its 23 December letter to the Service, the Commission recommended that: (1) the proposed regulations be revised to more closely reflect the protection standards included in the 1979 Notice of Interpretation; (2) areas traditionally used by cow/calf pairs be identified and designated as areas where vessel approaches closer than 300 yards are prohibited; (3) consideration be given to prohibiting jet ski and parasailing activity in areas where cow/calf pairs have commonly been observed; (4) in addition to the 1,000-foot vertical separation, a horizontal limitation of at least 300 yards be placed on aircraft approaches to humpback whales; and (5) the Service identify and undertake research and monitoring studies to assess the effectiveness of measures undertaken to protect humpback whales in Hawaiian waters as well as to identify any other measures that may be needed.

In addition to proposing formal regulations to govern vessel and aircraft operations, the National Marine Fisheries Service informally advised the Commission in October 1985 that it planned to convene a series of meetings to determine whether and how to go about developing a conservation plan for the North Pacific humpback whale population. The first meeting, involving principally National Marine Fisheries Service personnel, was held in Honolulu on 6-7 November 1986. Subsequent meetings, expected to be held in 1987, will involve representatives of other Federal agencies, State and local governments, potentially affected industries, and concerned environmental groups.

The Commission believes that recovery plans and recovery teams are important for identifying and facilitating cooperative Federal, State, and private actions necessary to protect and encourage recovery of endangered and threatened species. Therefore, by letter of 23 December 1986 to the National Marine Fisheries Service, the Commission repeated its recommendation that the Service develop, adopt, and implement recovery plans for right, humpback, and bowhead whale populations that occur in U.S. waters. With respect to humpback whales, the Commission also recommended that the Service take appropriate action to monitor whale vessel traffic as well as whale distribution, abundance, and behavior patterns off the southwest coast of Maui and wherever else necessary in Hawaii so as to provide the basis for detecting and mitigating the potential adverse effects of vessel traffic and other forms of disturbance on the recovery of the North Pacific humpback whale population.

Although it was not possible for the Service to respond by year's end to the Commission's 23 December letter, the new Director of the Service informally advised the Commission that the Service would designate recovery teams and prepare recovery plans for both humpback whales and right whales during 1987. The Commission looks forward to working with the Service in its efforts to further identify and initiate appropriate actions to ensure the protection and conservation of humpback whales in U.S. waters.

Bowhead Whale (*Balaena mysticetus*)

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

Consideration by the International Whaling Commission

As described in the Marine Mammal Commission's previous Annual Reports, the International Whaling Commission (IWC) reviews information on the status of the Bering Sea stock of bowhead whales and establishes quotas on the aboriginal/subsistence take of whales from this as well as other whale stocks. In 1977, the IWC adopted a total ban on the take of bowhead whales by Alaska Eskimos. Later that same year, it modified its ban in recognition of Eskimo subsistence and cultural needs. Since 1977, a series of limited quotas have been adopted by the IWC to meet the needs of Alaska Eskimos while allowing the bowhead whale stock to increase towards its maximum sustainable yield level. In 1983, the IWC adopted a two-year block quota of 43 strikes for the 1984 and 1985 bowhead whaling seasons with a stipulation that no more than 27 strikes be made in either year. As noted in Chapter IV of this Report, the IWC again considered aboriginal/subsistence whaling quotas for bowhead whales during its 1985 meeting.

During the 1985 meeting, the IWC was advised by its Scientific Committee that, based on improved information concerning the size of the stock, the best estimate of the size of the Bering Sea stock of bowhead whales had been revised upward to 4,417 animals (range 2,613 to 6,221). No new information, however, was available on the natural mortality rate or annual net recruitment rate for the population, and the Scientific Committee therefore

recommended to the IWC that any new catch limits be set with caution. In view of this and other information on the take of whales by Alaska Eskimos, the IWC adopted a three-year block quota which modified its previous quota covering the 1985 bowhead whaling season and set new quotas for the 1986 and 1987 seasons. The new block quota provides that 26 whales may be struck in each of the three years and that strikes not used in any one year may be used during the following year. No more than 32 strikes, however, are to be made in any one year.

Eskimo Whaling

In order to provide Alaska 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. The agreement recognized 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. The quotas set by the IWC and the results of the Eskimo hunts since 1977 are shown in the table below.

Quotas and Catch of Bowhead Whales
By Alaska Eskimos, 1977-1987

Year	Quota*		Actually Landed	Struck But Lost	Total Whales Struck	
	Landings	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			26****	11	6	17
1986	26****	26****	19	9	28	
1987			--	--	--	

* In general, in establishing quotas on both the number of whales landed and 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 to 1983, with a further stipulation 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.

**** In 1985, a block quota of 26 strikes per year was set for the three years 1985 to 1987, with the stipulation that strikes not used in any one year may be used the following year, provided that no more than 32 strikes occur in any one year.

Seismic profiling, drilling, and other activities associated with offshore oil and gas exploration and development may affect the movements and behavior of bowhead whales. The Alaska Eskimo Whaling Commission is concerned that this could force subsistence hunters to travel greater distances during the fall bowhead hunt, increasing the risk that hunters could be killed or injured. To minimize such risks, the Alaska Eskimo Whaling Commission and components of the Alaska oil and gas industry entered into a cooperative agreement on 9 July 1986 which provides that, during the fall bowhead hunt in the Beaufort Sea, industry vessels conducting seismic and other operations in the area will establish and maintain radio communication with Native hunters to minimize possible interference with subsistence hunters. The agreement also provides, subject to approval by the National Oceanic and Atmospheric Administration, that the industry will: (1) attempt to tow caught whales to a suitable butchering site to prevent meat from spoiling (if an industry boat is available near the kill site); (2) cache emergency supplies (gasoline, food, etc.) at selected areas for use by subsistence hunters; (3) provide emergency assistance to subsistence hunters during adverse weather conditions; and (4) assist in transporting whale meat and muktuk to prevent spoilage and maximize consumption.

On 1 August 1986, the National Oceanic and Atmospheric Administration entered into a Memorandum of Understanding with the Alaska Eskimo Whaling Commission, approving the cooperative agreement between the AEWC and the industry for the fall 1986 bowhead hunt.

Research Planning and Coordination

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 the U.S. bowhead whale research program has been delegated to the National Marine Mammal Laboratory of the National Marine Fisheries Service. Additional research concerning bowhead whales has been conducted or supported by the Alaska Eskimo Whaling Commission, the North Slope Borough, the oil and gas industry, the State of Alaska, and the Minerals Management Service. Since 1977, IWC action to adopt subsistence whaling quotas for bowhead whales has carefully considered and reflected research results. Likewise, the Minerals Management Service has used research results to identify and avoid or mitigate the possible adverse effects of offshore oil and gas activities on bowhead whales.

The role of the Marine Mammal Commission in developing a comprehensive research plan and initiating efforts to coordinate related bowhead whale research projects has been described in its Annual Reports for Calendar Years 1977 through 1979. Acting on a Commission recommendation, the National Marine Fisheries Service assumed responsibility in 1981 for annually organizing and convening the necessary coordination meetings involving the agencies listed above. The Service was unable to organize a program review/coordination meeting in 1986. The Minerals Management Service, recognizing the importance of coordinating field studies to the maximum extent practicable, held a meeting of principal investigators prior to the beginning of the 1986 summer field season to discuss and agree on procedures for coordinating activities during the season.

At its meeting in Anchorage, Alaska, on 28-30 October 1986, the Commission and its Committee of Scientific Advisors reviewed research and other matters bearing upon the conservation and protection of bowhead whales. As part of the review, representatives of the National Marine Fisheries Service, the Minerals Management Service, the Alaska oil and gas industry, and the North Slope Borough provided brief summaries of research and other activities that have been conducted and are planned by their respective organizations. Among other things, the National Marine Fisheries Service indicated that the Service's research effort has focused since 1985 on photo-identification and photogrammetric studies to determine the population age structure and annual recruitment rate of the Bering Sea bowhead whale population. These studies are scheduled to be completed in 1987 and at least a preliminary report is expected to be available for the 1987 meeting of the International Whaling Commission.

Minerals Management Service representatives noted that, since 1978, the Service had supported a wide range of bowhead studies including studies to determine: seasonal distribution and abundance in or near areas that could be affected by offshore exploration and development activities; the possible effects of oil on baleen filtering efficiency; the effects of seismic exploration on bowhead movement and behavior; and the characteristics of potentially important bowhead feeding areas in the eastern Beaufort Sea. They also noted that in 1987 the Service planned to continue certain survey and monitoring programs and to initiate additional studies to: determine the behavior of a control group of bowhead whales in the eastern Arctic (Davis Strait) not exposed to OCS activity; assess the possible effects on bowheads of sound generated by production platforms and undersea pipelines; acquire and store bowhead tissues for contaminant analysis; and investigate the adherence of oil to the skin of bowhead whales.

The industry representative noted that much had been learned in the past ten years and with several possible exceptions available information was sufficient to assess and determine how to avoid the possible adverse effects of exploration and development activities on bowhead whales. The principal exception in his view is the lack of data on the behavior of bowheads during migration near full-scale drilling operations. The industry believes that drilling should be permitted with a monitoring program in place to experimentally determine bowhead response to full-scale drilling activity. Efforts in this regard were initiated in 1986 and, in the industry's view, should be continued for several years.

The North Slope Borough has played an active role in identifying and supporting needed research. In 1987, the Borough plans to continue supporting: a visual census of bowheads migrating off Point Barrow in spring; acoustic listening studies to locate whales migrating beyond the visual sighting distance from shore-based observers; attachment of radio-tags to harpoon floats to facilitate location of whales harpooned by Native subsistence hunters; and morphological studies to improve knowledge of the basic biology and health of bowhead whales. The Borough also plans to hold a fourth Conference on the Biology of the Bowhead Whale in Anchorage, Alaska, on 4-6 March 1987.

The conferences organized by the North Slope Borough provide an important opportunity to review research results and identify critical gaps in knowledge of the biology, ecology, and management of bowhead whales. Commission representatives will attend the Conference, consult with representatives of other Federal and State agencies, industry, and native groups attending the Conference, and advise the Commission as to any additional actions necessary to protect and encourage recovery of the Bering Sea bowhead whale population.

Right Whale (*Eubalaena glacialis*)

The right whale is the most endangered of the world's large whales. As a result of commercial whaling in the 19th and early 20th centuries, only a few small groups of animals remain. The North Pacific population is thought to number in the tens of animals, and off the northeast coast of the United States, the right whale population may number no more than a few hundred. Although the species has been protected from commercial whaling since the 1930s, there is no evidence of substantial population increases. In addition, the species preference for coastal areas exposes it to

environmental pollution and a number of human activities that pose additional threats both to the whales and their habitat.

Beginning in 1979, the Commission has initiated numerous actions to enhance protection of the right whale and other endangered large cetaceans. As examples, the Commission has supported a number of studies and workshops on various matters related to conservation and protection of right whales and their habitat worldwide. These efforts have been described in previous Annual Reports. More recent activities are summarized below.

In December 1984, the Commission recommended to the National Marine Fisheries Service that it prepare, adopt, and implement recovery plans for endangered great whales, including right, humpback, and bowhead whales, which occur substantially in U.S. waters. In March 1985, the Service advised the Commission that it was deferring action on preparation of recovery plans for endangered whales, due in part to its uncertainty as to whether or how recovery plans would enhance protection of the animals. By the end of 1985, there had been no further action by the Service.

To help develop a prototype conservation plan for right whales and other endangered large whales, the Commission funded two workshops in 1985 aimed at identifying actions that should be taken to protect and encourage recovery of the right whale population in the northwest Atlantic. On 31 December 1985, the Commission sent the Service the final reports of these workshops. In the accompanying letter, the Commission repeated its recommendation that the Service develop, adopt, and implement recovery plans for endangered large whales. With respect to right whales, the Commission recommended that the Service: (a) adopt the report of the workshops as a preliminary recovery plan; (b) convene a meeting to consider ways to implement priority right whale research and management tasks; and (c) constitute a recovery team to oversee implementation of the recovery plan.

Congress has recognized the need for further research on the northwest Atlantic right whale population. In Fiscal Year 1986, it provided a special appropriation of \$500,000 to the National Marine Fisheries Service to support the first year of a planned five-year right whale research project. As a result of the Deficit Reduction and Balanced Budget Act of 1985 and other factors, this amount was subsequently reduced to \$383,000. This funding initiative was continued in Fiscal 1987 when Congress approved a special appropriation of \$250,000 for right whale research.

In order to determine the best use of these funds, the Service established a Right Whale Scientific Advisory Group

in which the Commission was invited to participate. The Group met for the first time on 15 May 1986, in Woods Hole, Massachusetts. Among other things, it was asked to review research proposals submitted to the Service's Northeast Fisheries Center and to develop priority rankings for specific research projects. Since then, the Service has continued to consult with the Commission on the most effective use of available funds.

Recently available data indicate that the coastal waters of Georgia and northern Florida are important winter habitat for at least part of the small remnant population of right whales in the western North Atlantic. The area also serves as an important calving ground for right whales. In light of these findings, the Georgia Conservancy contacted the Commission late in 1985 regarding its interest in convening a workshop of involved scientists, regional resource managers, and environmental groups to review available biological information on right whales and to consider its implications with respect to ongoing and planned coastal development along the southeastern coast of the United States. The Commission agreed that such a workshop would be useful and provided funds to the Conservancy to help organize and convene the meeting.

Subsequently, the U.S. Right Whale Workshop was held on 19-20 February 1986, at Jekyll Island, Georgia. The objectives of the Workshop were to: (a) review available biological information on the status of the northwest Atlantic right whale population with particular reference to the abundance, distribution, and habitat use patterns of those whales which winter off the southeastern U.S. coast; (b) identify human activities and agency responsibilities that could affect the calving activity of right whales in the area; and (c) identify and rank potential measures that might help ensure that human activities do not adversely affect right whales or their essential habitat.

Among the potential actions that might be considered to help protect right whales in the Georgia/north Florida area, workshop participants identified the following: establishing a right whale conservation network through the formation of a recovery team; revitalizing the southeast U.S. right whale sighting and stranding network; improving communications among scientists, Federal and State agencies, environmental groups and others; determining whether areas of the southeastern U.S. should be designated as critical habitat under the Endangered Species Act; and clarifying actions necessary to facilitate enforcement of applicable laws and regulations, particularly those relating to harassment.

As noted above, the Commission remains convinced that preparation of a recovery plan is of utmost importance for identifying and coordinating priority research and management actions for this and other endangered species of large whales. By mid-December 1986, the Commission had received no formal response to its letter of 31 December 1985 to the National Marine Fisheries Service urging development of such a plan. Nor was the Commission aware of any action on the part of the Service either to adopt the report as an interim recovery plan or to constitute a right whale recovery team. Therefore, on 23 December 1986, the Commission wrote the National Marine Fisheries Service, briefly reviewed its previous recommendations that the Service develop recovery plans for great whales, and again recommended that the Service: (a) prepare and adopt recovery plans for the right, humpback, and bowhead whale populations in U.S. waters; (b) constitute and convene the necessary recovery team(s) to help develop and oversee implementation of the recovery plans; and (c) seek the necessary funds to carry forward into Fiscal Year 1988 and beyond the priority right whale research and management projects undertaken in Fiscal Year 1986.

As noted earlier in this chapter in the discussion of humpback whales, the new Director of the National Marine Fisheries Service informally advised the Commission at year's end that the Service would designate a recovery team and prepare a recovery plan for right whales in 1987. The Commission, greatly encouraged by the commitment of the Director to address the issue, looks forward to working with the National Marine Fisheries Service and others to ensure that all possible steps are taken to further protect and conserve this highly endangered species.

Harbor Porpoise (Phocoena phocoena)
(Central California Population)

The harbor porpoise is one of the world's smallest cetaceans. It is found in coastal areas throughout most of the Northern Hemisphere, including the waters off Europe, the Far East, and the east and west coasts of North America. Because it prefers inshore waters, the species is particularly vulnerable to impacts from human activities, such as coastal set net fisheries and water pollution.

Over the past few years, expanding gill net fisheries off central and northern California for halibut, rockfish, and shark have resulted in the incidental take of harbor porpoise, as well as sea otters, sea birds, and other non-target marine species. The California Department of Fish and Game estimated that incidental take of harbor porpoise in these gill net fisheries increased from approximately 20

animals during the 1980/1981 fishing season to about 300 in 1983. Subsequent monitoring suggests an incidental take of more than 200 harbor porpoise a year during 1984 and 1985.

Efforts by the Commission and others to focus attention on the situation have been discussed in previous Annual Reports. As has been noted, the impact of the incidental take depends, in part, on the size and age/sex composition of the population or populations being affected, as well as the number, age, sex, and reproductive status of the animals being taken. On the west coast of North America, harbor porpoise are found in coastal waters from central California northward to Alaska. However, it is not known whether the harbor porpoise found in the affected area are part of a single large population or constitute one or more small, local populations.

In 1985, the Commission and its Committee of Scientific Advisors developed a proposed scope of work for a radio-tagging and tracking project aimed at obtaining information required to determine whether there are one or more discrete populations in the area affected by the fisheries. On 6 December 1985, the Commission forwarded the proposed scope of work to the National Marine Fisheries Service. In its cover letter, the Commission recommended that the proposed project be carried out by the Service. To help defray costs, the Commission offered to transfer funds to the Service to initiate the first phase of the project during Fiscal Year 1986, with the understanding that the Service would provide the funding in subsequent years to complete the project.

On 15 January 1986, the Service responded to the Commission's 6 December letter and proposed scope of work. In its response the Service noted that, before making commitments for long-term funding, a feasibility study should be undertaken to determine if harbor porpoise can be effectively captured, tagged, and tracked so as to generate data useful for assessing long-range and long-term patterns of movement. The Service further noted that its Southwest Fisheries Center had contracted for an investigation of contaminant loads in stranded harbor porpoise and that, if the results demonstrated regional patterns in contaminant loads, this might provide a less expensive means for differentiating possible movement patterns and stock discreteness of harbor porpoise populations off the west coast. It further noted that a preliminary assessment of this method was expected to be available in March 1986.

On 26-28 March 1986, the Commission, in cooperation with other Federal and State agencies, convened a "Workshop on Measures to Address Marine Mammal/Fisheries Interactions in California." The findings and recommendations of Workshop

participants are discussed in Chapter VI of this Report. As regards harbor porpoise, Workshop participants concluded that priority action should be taken to compile and evaluate available information concerning population discreteness, abundance, productivity, and incidental take in California coastal waters, and that this information should be used to determine what, if any, level of incidental take might be authorized while ensuring that no potentially discrete harbor porpoise population is reduced below its maximum net productivity level. The Workshop participants further concluded that, if available information appears insufficient to make these determinations, additional fishery surveys, demographic studies, and/or taxonomic and genetic studies should be done, as a matter of priority, to determine whether the harbor porpoise population or populations in California have been or are being affected adversely by incidental take in coastal set net fisheries. The Workshop also identified ways by which fishermen might be able to reduce the incidental take of harbor porpoise through use of alternative fishing practices and/or alternative gear.

Following the Workshop, the Commission reviewed the results of discussions pertaining to harbor porpoise and the Service's 15 January response to its proposed radio-tagging and tracking program for harbor porpoise. Based on its review, the Commission concluded that radio-tagging and tracking may provide information necessary to determine the relative discreteness of harbor porpoise populations in California. Such information might also be useful in identifying ways in which interactions between harbor porpoise and fisheries might be avoided. Therefore, the Commission contracted for a study to assess and, as possible, develop and test techniques for capturing, marking, radio-tagging, and tracking harbor porpoise in the waters off central and northern California. This study is discussed in greater detail in Chapter II of this Report.

By the end of 1986, there had been little apparent progress toward determining and mitigating the impact of the incidental take on the harbor porpoise. Accordingly, on 23 December 1986, the Commission wrote to the National Marine Fisheries Service again expressing its concerns. In the letter, the Commission noted that, as of that date, the Service had not: (1) assessed the status of the affected population or populations of harbor porpoise; (2) determined if the incidental take has caused or may be causing any populations to be reduced or maintained below their level of maximum net productivity; or (3) issued a general permit authorizing any incidental take of the species. The Commission pointed out that, in addition to the biological impacts on the populations, the lack of a general permit made all taking of harbor porpoise along the U.S. west coast

illegal and the persons catching harbor porpoise subject to civil and criminal penalties.

In its 23 December letter, the Commission recommended that the Service: (a) ensure that the ongoing status of stock assessment for harbor porpoise be completed by January 1987; (b) depending on the result of that review and before coastal gill net fisheries begin again in May, take the necessary steps either to authorize a specified level of incidental take or prohibit further taking; and (3) ensure that harbor porpoise take under a general permit is reported promptly, that data and samples necessary to assess the effects of the take are provided to the Service and/or the California Department of Fish and Game, and that monitoring efforts are sufficient to accurately determine the level, locations, and age/sex composition of any incidental take.

The Service should complete its stock assessment early in 1987 and, depending on the results of the assessment, take steps to prohibit or authorize incidental take. The Commission, in consultation with its Committee of Scientific Advisors, will review the status report and the Service's proposed actions and make recommendations as may be required to meet the provisions of the Marine Mammal Protection Act.

River Dolphins (Family Platanistidae)

The Platanistidae family of toothed whales and porpoise is comprised of five species commonly known as river dolphins. This family includes the only species of cetaceans whose natural habitat is limited to fresh-water environments. The species and their distribution are: Platanista gangetica, known as the Ganges susu or blind river dolphin and found in India and Bangladesh; P. minor, the Indus susu, found in the Indus River system of Pakistan; Inia geoffrensis, the boto or Amazon dolphin, found in the Amazon and Orinoco River basins in South America; Lipotes vexillifer, the baiji or white flag dolphin, presently found along the middle and lower Yangtze River in China; and Pontoporia blainvillei, the franciscana, found in the coastal waters of the Atlantic from Argentina to Brazil. Pontoporia is the only member of the family Platanistidae that inhabits salt water.

The little information available on the population status and ecology of river dolphins suggests that all five species may be threatened to varying degrees with extinction due to subsistence hunting, incidental take during the course of fishing operations, and/or human-caused destruction and degradation of their habitat. Construction of dams and other riparian development in important river dolphin habitat, such

as is now being undertaken or planned in Brazil, Nepal, and China, pose potentially serious threats to the continued survival of several of these species. Although none of the five river dolphin species is currently listed as threatened or endangered under the U.S. Endangered Species Act, the baiji, Ganges susu, and Indus susu are listed on Appendix I of the Convention on International Trade in Endangered Species of Fauna and Flora, and the boutu and franciscana dolphins are listed on the Convention's Appendix II.

In view of potential threats to the species, the Commission provided funds during 1986 to help convene an international Workshop on the Biology and Conservation of the Platanistoid Dolphins, which was held October 26-November 6, 1986, in Wuhan, China. The Workshop report and recommendations are expected to become available early in 1987. However, a preliminary report has suggested that, among other things, international regional working committees should be established to review problems facing river dolphins in the Indian subcontinent and South America and to promote regional planning.

On 23 December 1986, the Commission wrote to the National Marine Fisheries Service recommending that the Service: (a) consider establishing a small working group to evaluate species of river dolphins in light of the five criteria for listing under the U.S. Endangered Species Act; (b) evaluate all available information, including the results of the Workshop to be published early in 1987 and the findings of any working group, and take such steps as may be appropriate to list the separate species of river dolphins as threatened or endangered under the Endangered Species Act; and (3) encourage and assist other nations in efforts to protect declining river dolphin populations and habitats critical to their survival.

During 1987, the Commission expects to review the final report of the Wuhan Workshop and to work with the National Marine Fisheries Service and others to identify and, as possible, assist in implementing measures to protect river dolphins. In this regard, the newly appointed Director of the Service had, by year's end, advised the Commission of his intention to have status reviews done with a view to possible listing under the Endangered Species Act.

CHAPTER X

OUTER CONTINENTAL SHELF OIL AND GAS DEVELOPMENT

Activities and oil spills associated with exploration and development of offshore oil and gas resources may adversely affect 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, detecting, and mitigating the adverse effects of OCS exploration and 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 those actions will not be to the disadvantage of marine mammals and other wildlife. The Commission reviews relevant policies and activities of these agencies and recommends actions that appear necessary to protect marine mammals and their habitats. The Commission's activities in this regard in 1986 are discussed below.

Proposed OCS Lease Sale #97 Beaufort and Chukchi Seas

Lease Sale #97, tentatively scheduled for January 1988, involves up to 3,930 blocks (approximately 8.6 million acres) of submerged lands in the Beaufort and Chukchi Seas off the North Slope of Alaska. Eight species of marine mammals occur in the area, including two endangered whale species, the bowhead whale and the gray whale. The Minerals Management Service's Draft Environmental Impact Statement on the proposed action, provided to the Commission and others for review and comment in November 1986, concludes that possible effects on endangered and non-endangered marine mammals are likely to be minor. The draft Statement further concludes that the cumulative effects of offshore oil and gas development activities on endangered whales in the area are likely to be moderate.

The Commission, in consultation with its Committee of Scientific Advisors, reviewed the draft Statement and, at the end of 1986, was preparing comments for submission to the Minerals Management Service. Although the draft Statement considers many of the possible impacts of the proposed

action, the Commission believes that there are a number of unrecognized uncertainties concerning the likelihood and extent of some potential effects. For example, the DEIS provides information indicating that oil spills are not likely to occur and contact large numbers of either endangered or non-endangered marine mammals and in some cases concludes or implies that the proposed action therefore would have negligible or minor impacts. It does not always recognize that the effects of an oil spill are independent of the probability that a spill will occur and that it therefore is inappropriate to conclude that the effects will be negligible or minor because the probability of occurrence is negligible or minor.

The Commission also believes that some potential impacts are difficult or impossible to identify or assess from available information. Therefore, it will recommend that the Service modify the draft Statement to acknowledge the uncertainties concerning the likely effects of the proposed action and that the Final Environmental Impact Statement consider: (a) the possible effects of garbage disposal from platforms on polar bears; (b) the possibility that oil spills, disturbances, etc., will cause walrus, polar bears, ice seals, and other species to move to adjacent and already occupied areas, increasing animal densities in those areas to levels that will damage or deplete food supplies; and (c) the possible cumulative effects of subsistence harvesting and other activities, as well as oil and gas exploration and development, on bowhead and beluga whales, polar bears, walrus, and seals. The Commission also will recommend that the Minerals Management Service consider developing and implementing monitoring programs aimed at detecting possible unforeseen impacts before those impacts can reach unacceptable levels.

Canadian Oil Exploration on Georges Bank

Early in 1986, the United States learned of Canadian industry proposals to carry out exploratory drilling for oil and gas on the Canadian portion of Georges Bank. Such activities could affect fishery and other resources on the U.S. portion of Georges Bank and the United States made inquiries to determine the nature of the proposals and steps that had been or would be taken to ensure that the activities, if permitted, would not have significant adverse environmental impacts. To help address its concerns, the United States was given an Environmental Evaluation of the proposed action.

The Commission staff reviewed the Environmental Evaluation and, by letter of 15 August, provided comments to the Department of State on those parts of the evaluation relating to marine mammals. In its comments, the Commission noted that the environmental evaluation identified the species of

cetaceans and pinnipeds that could be affected but did not provide a complete or comprehensive assessment of the possible effects of drilling and related activities on those species. Among other things, the Commission noted that the evaluation did not address the possibility that oil spills could indirectly affect marine mammals by affecting their food supplies and that disturbance from ship and aircraft operations, seismic profiling, drilling, and other related activities, as well as oil spills, could have adverse effects on marine mammals and the ecosystems of which they are a part.

On 18 December 1986, representatives of the Department of State, the Minerals Management Service, the Coast Guard, the Environmental Protection Agency, the National Oceanic and Atmospheric Administration, the Commission, and others met to consider issues that should perhaps be raised with the Canadian Government. A follow-up meeting is expected to take place early in January 1987, at which time the group will attempt to identify and, as possible, agree on the critical issues raised by the Canadian proposal and how these should be addressed.

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 Assessment 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, in consultation with its Committee of Scientific Advisors: 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.

In July 1986, the Commission participated in a meeting of the Minerals Management Service's Outer Continental Shelf Advisory Board Scientific Committee and participated in a workshop on the Service's Marine Mammal and Endangered Species Studies Program held in conjunction with the meeting. At the Service's request, the Commission representative reviewed relevant provisions of the Marine Mammal Protection Act, outlined the organization and responsibilities of the Marine Mammal Commission and its Committee of Scientific Advisors, and reviewed past Commission efforts to assist the Minerals Management Service in determining, evaluating, and avoiding the possible adverse effects of offshore exploration and development on marine mammals and the ecosystems of which they are a part.

With regard to possible impacts, a Commission representative pointed out that marine mammals and other wildlife could be adversely affected by: (1) disturbance and noise from ship and aircraft operations; (2) dumping, dredging, drilling and other activities associated with platform, pipeline, support facility, and storage facility construction and operation; (3) oil from well blow-outs, pipeline breaks, tanker accidents, and chronic discharges associated with routine operations; and (4) contaminants in drilling muds and waste discharge. He reviewed some of the major accomplishments of the Service's environmental studies program and, among other things, pointed out that studies supported by the Service have: (1) documented the marine mammal species that regularly occur in and near areas that could be affected by offshore oil and gas exploration and development in Alaska, central and southern California, New England and the mid-Atlantic states, and the Gulf of Mexico; (2) demonstrated that physical contact with oil may have significant adverse effects on species dependent upon fur for insulation (e.g., fur seals, sea otters, and polar bears); (3) provided experimental evidence indicating that physical contact with oil is not likely to have more than transitory effects on cetaceans; (4) demonstrated that noise from seismic profiling, drilling, etc., can effect the movements and behavior of ring seals, bowhead whales, gray whales and possibly other cetaceans; and (5) provided the data needed to serve as baselines for detecting changes and trends in the distribution, movements, and relative abundance of bowhead whales and other endangered cetaceans, and to identify reasonable and prudent alternatives necessary to assure that endangered and threatened species of marine mammals are not jeopardized by offshore exploration and development activities.

Although much has been accomplished, a number of critical questions have not yet been answered. These relate primarily to uncertainties concerning: (1) the numerical and functional relationships between marine mammals and species lower in the marine food webs of which they are a part; (2)

the likely effects of noise, oil, and other contaminants on primary and secondary marine mammal prey species, and key species lower in the relevant marine food webs; (3) the adequacy of existing and possible future means for containing and cleaning up oil spills under ice, and during high winds and sea states; (4) the locations and characteristics of any feeding areas, breeding areas, resting areas, or migratory routes that are unique and essential for the survival or welfare of marine mammal species and populations; (5) the nature and likelihood of the possible cumulative effects of offshore exploration and development on migratory species such as the humpback, bowhead, right, and gray whale; and (6) the types of long-term monitoring programs best suited to validate conclusions concerning the potential effects of exploration and development activities, and to detect possible unforeseen effects on marine mammals and the ecosystems of which they are a part.

With regard to the last point, the Commission representative pointed out that it could be prohibitively costly, if not impossible, to obtain all information necessary to accurately predict both the direct and indirect effects of exploration and development activities on marine mammals and the ecosystems of which they are a part. To avoid costly programs and delays, while insuring that exploration and development activities do not have unforeseen and unacceptable impacts, he noted that it should be possible to design long-term monitoring programs which would detect possible unforeseen effects before they reach unacceptable levels.

In 1987, the Commission will continue to review proposed OCS exploration and development activities, and advise the Minerals Management Service and other agencies as to steps that should be taken to insure that such activities do not have adverse effects on marine mammals or the ecosystems of which they are a part.

CHAPTER XI

MARINE MAMMALS IN CAPTIVITY

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 were promulgated by the Department of Agriculture under the Animal Welfare Act in response to the Commission's recommendations of 20 October 1974. They were the subject of lengthy and extensive correspondence, consultation, and rulemaking, all of which are discussed in the Commission's past Annual Reports.

The Standards require dealers, exhibitors, operators of auction sales, carriers, and intermediate handlers to comply with minimum standards relating to maintenance and transportation of marine mammals in captivity. The same Standards apply to research facilities as well. All persons or facilities maintaining marine mammals in captivity in the United States, be they for purposes of public display or scientific research, must obtain a license from the Department of Agriculture's Animal and Plant Health Inspection Service 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 succeeding 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 28 June 1984, the Animal and Plant Health Inspection Service published 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 recent years, the Commission has worked with the Animal and Plant Health Inspection Service, the Fish and Wildlife Service, and the National Marine Fisheries Service to assist in implementation of the care and maintenance standards. In 1985, for example, the four agencies sponsored a three-day training seminar for Animal and Plant Health Inspection Service inspectors to provide them with background that is likely to assist them in performing their duties.

In addition, the Commission occasionally becomes involved in on-site inspections of marine mammal facilities. On 4 October 1985, representatives of the Committee of Scientific Advisors and the National Marine Fisheries Service assisted the Animal and Plant Health Inspection Service in an on-site review of a public display facility with a history of compliance problems under the Standards for the Humane Handling, Care, Treatment and Transportation of Marine Mammals. The inter-agency team's findings were transmitted to the Department of Agriculture, Office of General Counsel, for action. On 7 July 1986, the Department of Agriculture filed a complaint against the facility seeking a cease and desist order for violations of the Standards, civil penalties, and suspension or revocation of the facility's license. The facility answered the complaint on 24 July 1986, denying the actionable allegations. A hearing is scheduled for early in 1987.

In August 1985, the Commission convened a Working Group to address the problems that are becoming apparent as a result of additions to captive populations of marine mammals from captive-born and beached/rehabilitated stock. Particular emphasis was placed on behavioral, biological, and legal issues associated with the release of captive-born marine mammals to the wild. The Working Group was directed to collect relevant data and information, identify and address behavioral and biological issues, analyze related legal questions, and suggest needed research, as well as desirable statutory, regulatory and administrative changes. Participants in the Working Group include members of the Commission's staff and the Committee of Scientific Advisors on Marine Mammals. At the end of 1986, the Working Group was in the process of refining a draft version of the report. When completed, this draft will be provided to other government agencies and interested parties for review.

Also in 1985, the Commission staff, utilizing data obtained from the National Marine Fisheries Service, began an analysis of the survival patterns for three species of captive cetaceans. The purpose of this study is to estimate the average annual survival rate for each of the three species (bottlenose dolphins, white whales, and killer whales), to determine whether survival rates are significantly different in different institutions, and to compare findings with the literature on the survival of captive and free-ranging cetaceans. A draft of the study report was reviewed during 1986. The final report is expected to be issued early in 1987.

On 4 December 1985, the Fish and Wildlife Service published in the Federal Register proposed regulations governing the humane and healthful transport of wild animals and birds. These regulations are intended to satisfy the requirements of the 1981 amendments to the Lacey Act, which governs the importation and shipment of wild animals and birds in interstate commerce. The 1981 amendments required, among other things, the implementation of transportation standards for all wild animals and birds. Separate regulatory requirements have been proposed for the transport of marine mammals. The Commission commented on the proposed regulations by letter of 4 February 1986. Several proposed changes to the standards involving marine mammals were set forth in the Commission's letter, including the recommendation that the standards be at least as stringent as the corresponding provisions of the Standards for the Humane Handling, Care, Treatment and Transportation of Marine Mammals promulgated under the Animal Welfare Act. By the end of 1986, final regulations had not been published.

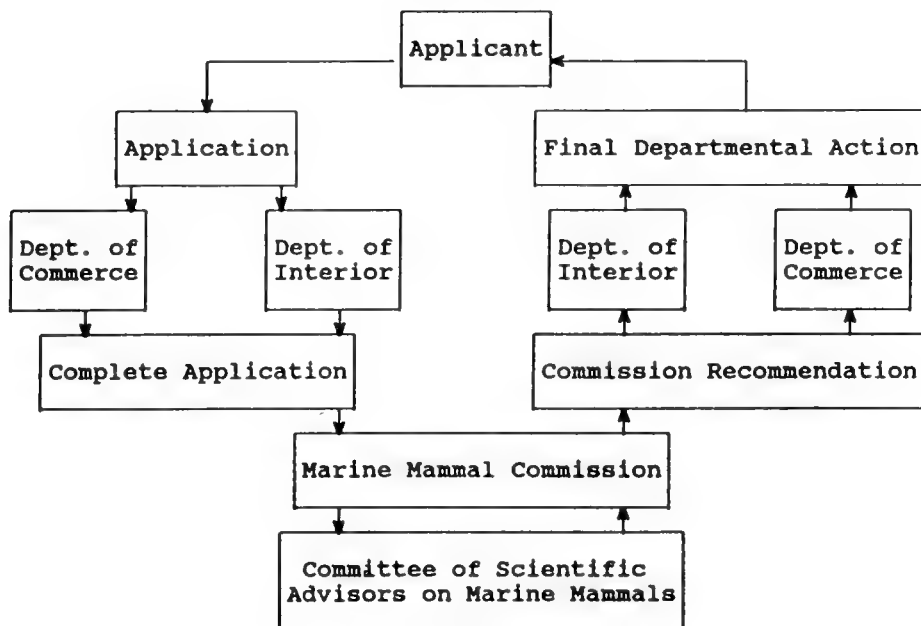
CHAPTER XII

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, an application is reviewed by the Marine Mammal Commission in consultation with its Committee of Scientific Advisors on Marine Mammals.

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 the application in the Federal Register, and transmittal to the Commission; (2) review of the application by the Commission, in consultation with its Committee of Scientific Advisors, 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 following is a schematic representation of this process.



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 1986, the Commission made recommendations on 40 applications submitted to the Department of Commerce, including three applications that were received in 1985 but which did not receive final action until 1986, and 17 applications to the Department of the Interior, including one application that was received in 1985 but which did not receive final action until 1986. The Commission's average review time for complete applications was 37 days (median, 34 days). Not included in the preceding statistics are recommendations on three applications that were awaiting final action by the Department of Commerce at year's end and three applications that were under Commission review at year's end. Also not included are nine applications (seven from the Department of Commerce and two from the Department of the Interior) on which review was suspended at year's end pending receipt of additional information. The Commission, in consultation with its Committee of Scientific Advisors, also made recommendations on 28 requests to modify permits and other related permit actions during 1986. The average time required for Commission review of these matters was 20 days.

For the 40 applications processed by the Department of Commerce during 1986, it took an average of 117 days (median, 92 days) from the date the application was received by the Department until final action was taken. The 17 permit applications submitted to the Department of the Interior were processed in an average of 90 days (median, 92 days). If calculated from the date of receipt of a complete application by the Departments, the average processing times for the Departments of Commerce and the Interior were 92 and 65 days, respectively, compared to 89 and 99 days, respectively, in 1985.

Administration of the Permit Process

In certain geographic areas there is growing demand for permits to take animals from a single stock. This is the case, for example, with respect to bottlenose dolphins off the southwest coast of Florida where public display collectors and researchers conduct activities in the same area. In the past, the Commission has recommended that the cumulative effects of these takes be monitored so as to ensure that the affected stocks would not be adversely

impacted. During 1986, it became apparent that this competing demand also was creating the potential for jeopardizing ongoing research activities as a result of research animals possibly being taken in the course of public display collections.

In an effort to resolve this potential problem, the Commission wrote to the National Marine Fisheries Service on 8 October 1986 and recommended that procedures be established as a part of permit application review to identify these potential conflicts and develop acceptable resolutions. A follow-up meeting between Commission and Service representatives was held on 24 October and the matter was discussed on 30 October at the Commission's Annual Meeting in Anchorage. In both meetings, the Service indicated that it was giving the Commission's recommendations further consideration. By letter of 23 December 1986, the Commission reiterated its concern about this matter and requested an additional meeting with the Service. The Commission expects to resolve concerns about this potential problem early in 1987.

Working Group on the Permit System

In July 1985, the Commission established a Working Group composed of members of the Commission staff and the Committee of Scientific Advisors on Marine Mammals for purposes of preparing a report on how the Marine Mammal Protection Act permit system could be improved. The Working Group was asked to identify problems that have arisen with regard to the review of applications and the issuance, modification, and enforcement of marine mammal permits, as well as to recommend such statutory, regulatory, and administrative changes as might be appropriate to address the problems.

A draft of the Working Group's report was reviewed by the Committee of Scientific Advisors and considered during the October 1985 meeting of the Commission and Committee in San Diego. Informal comments on the draft report were received from the Animal and Plant Health Inspection Service, the National Marine Fisheries Service, the Fish and Wildlife Service, and several non-governmental parties.

Based on those comments, the draft report was revised during 1986 and issued for formal review by interested parties. Comments received during the formal review have been addressed and incorporated into a revised draft which is undergoing final review by the Commission. The report is expected to be issued early in 1987.

Permit-Related Litigation

On 21 October 1986, Greenpeace filed a lawsuit challenging Permit No. 563 issued by the National Marine Fisheries Service to take up to 86 killer whales (Orcinus orca) by harassment for purposes of scientific research. The research called for obtaining skin biopsies from up to 45 killer whales. The permit was issued on 22 August 1986 and had been approved, subject to recommended conditions, by the Commission.

In the lawsuit, Greenpeace alleges that the Service violated the National Environmental Policy Act by failing to: (a) prepare either an environmental assessment or an environmental impact statement on the permit application; (b) develop alternatives to the proposed taking that would involve less impact on the affected animals; and (c) provide a reasoned explanation for the decision not to prepare an environmental impact statement or environmental assessment. The plaintiff also alleges that the Service violated the Marine Mammal Protection Act by failing to obtain sufficient evidence to make findings on whether the permit would be consistent with the purposes and policies of the Act and that it would advance a bona fide scientific purpose.

The Department of Justice filed an answer to the complaint on 18 December 1986. Dispositive motions are expected to be filed early in 1987.

APPENDIX A

COMMISSION RECOMMENDATIONS: CALENDAR YEAR 1986

- 2 January Commerce, public display permit application, Oklahoma City Zoological Trust.
- 7 January Commerce, modification of two scientific research permits, Southwest Fisheries Center.
- 8 January Interior, public display permit application, Manitoba Department of Tourism.
- 8 January Commerce, scientific research permit application, Deborah A. Glockner-Ferrari and Mark J. Ferrari.
- 15 January Commerce, transmitting to the National Oceanic and Atmospheric Administration an overview of significant issues concerning future U.S. policy directions and activities related to the International Whaling Commission (IWC) and recommending, among other things, that the U.S. take all feasible steps to insure the long-term future of the International Whaling Convention and improve the effectiveness of the IWC.
- 23 January Commerce, scientific research permit application, Cascadia Research Collective.
- 27 January Commerce, commenting to the National Marine Fisheries Service on modification of a scientific research permit and recommending that the proposed procedure be considered an experimental one and be authorized only if certain conditions are met.
- 28 January Commerce, scientific research permit application, Southwest Fisheries Center.

- 4 February Interior, commenting to the Federal Wildlife Permit Office on a proposed rulemaking for the "Humane and Healthful Transport of Wild Animals and Birds to the United States" and recommending that the proposed regulations be adopted, subject to certain modifications.
- 4 February Commerce, public display permit application, North Wind Undersea Institute.
- 10 February Commerce, modification of public display permit, Connyland.
- 10 February Commerce, authorization to continue activities under scientific research permit, Oregon Department of Fish and Wildlife.
- 12 February Commerce, commenting to the National Marine Fisheries Service on its decision to remove the Caribbean monk seal from the List of Endangered Species, noting that available evidence is not conclusive that the species is extinct, and recommending that the Service take no steps to remove the Caribbean monk seal from the List of Endangered Species.
- 14 February Commerce, commenting to the National Marine Fisheries Service on actions needed to promote recovery of the North Pacific fur seal population; restating Commission recommendations transmitted to the Service by letter of 29 November 1985; urging that the Service undertake certain steps prior to a scheduled April 1986 meeting of concerned governments to identify and mitigate the cause(s) of the ongoing fur seal population decline; and requesting that the Service advise the Commission by 21 February 1986 of its steps to adopt and implement the Commission's earlier recommendations.
- 18 February Commerce, scientific research permit application, Robert Elsner.
- 28 February Commerce, transmitting to the National Oceanic and Atmospheric Administration the Commission's nominations for members of the U.S. delegation to the 1986

meetings of the International Whaling Commission and its Scientific Committee.

28 February

Commerce, scientific research permit application, Kenneth S. Norris, Randall S. Wells, and William T. Doyle.

3 March

Interior, commenting to the Fish and Wildlife Service on proposed "Reporting and Sealing Requirements for Alaskan Natives"; recommending that the proposed rules be adopted with certain modifications; and further recommending that the Service conduct a public information program to ensure that Alaskan Natives are aware of applicable reporting and sealing requirements and related biological concerns.

4 March

Commerce, scientific research permit application, Lanny H. Cornell and Edward D. Asper.

4 March

Commerce, modification of scientific research permit, Oregon Department of Fish and Wildlife.

4 March

Commerce, scientific research permit application, Susan Kruse and William T. Doyle.

5 March

Commerce, commenting to the National Marine Fisheries Service on the developing conflict between the black cod fishery and killer whales in Prince William Sound, Alaska, and recommending that, if the Service had not already done so, it: (a) initiate research to document the nature and extent of the problem; (b) assure that the affected fishermen are aware of and are complying with the pertinent sections of the Marine Mammal Protection Act; and (c) identify and evaluate non-lethal measures that could be used to prevent or reduce interactions between fishermen and killer whales.

5 March

Commerce, scientific research permit application, Kenneth S. Norris, Randall S. Wells, and William T. Doyle.

- 6 March Interior, modification of scientific research permit, Donald B. Siniff.
- 7 March Commerce, commenting to the National Oceanic and Atmospheric Administration on the draft plan for whale research prepared by the Marine Research Institute, Reykjavik, Iceland; noting that data to be obtained from the proposed experimental catch of whales may not significantly increase understanding of the subject whale stocks beyond that which should already be possible through analysis of existing data and samples; and suggesting that the proposed sampling program may be ill-conceived and fundamentally flawed.
- 12 March Commerce, commenting to the National Marine Fisheries Service on efforts to halt the decline of the North Pacific fur seal population; restating the recommendations made by the Commission in its letters of 29 November 1985 and 14 February 1986; requesting that the Service advise the Commission as to: (a) research tasks considered necessary to determine and mitigate the cause of the continuing fur seal population decline; (b) the level of funding available for fur seal research in Fiscal Year 1986; (c) precisely what activities will be supported with these funds; and (d) what necessary research cannot be carried out due to insufficient funding; and again recommending, among other things, that the Pribilof Islands population of North Pacific fur seals be designated as depleted under the Marine Mammal Protection Act.
- 13 March Interior, scientific research permit application, Rio Grande Zoological Park.
- 14 March Interior, modification of scientific research permit, Fish and Wildlife Service, Alaska Office of Fish and Wildlife Research.
- 19 March Commerce, scientific research permit application, Jeffrey D. Goodyear.

19 March Commerce, modification of scientific research permit, Robert Elsner.

19 March Commerce, commenting to the National Marine Fisheries Service on an application from the Sportfishing Association of California for a general permit to take marine mammals by harassment and recommending that the permit be approved, subject to certain modifications and restrictions.

21 March Commerce, commenting to the National Oceanic and Atmospheric Administration on the Fiscal 1986 Recommended Entanglement Program Plan; noting, among other things, that the Plan provides a sound basis for considering and selecting priority tasks for funding and that the priorities set forth in the Plan are appropriate and justified; urging that the Service explore opportunities for cooperative funding from other federal agencies; and recommending that the Service take immediate steps to implement the priority tasks.

1 April Commerce, scientific research permit application, Gerald L. Kooyman.

3 April Interior, commenting to the Fish and Wildlife Service on the draft rulemaking document entitled "Proposed Establishment of an Experimental Population of Southern Sea Otters" and noting that the document provides a well-reasoned approach to the regulatory requirements that apply to a translocation of southern sea otters.

4 April Commerce, scientific research permit application, James H. Hain.

4 April Commerce, scientific research permit application, Gerald L. Kooyman.

9 April Interior, scientific research permit application, Rio Grande Zoological Park.

10 April Interior, scientific research permit application, Monterey Bay Aquarium.

16 April Commerce, scientific research permit application, Douglas Wartzok.

17 April Interior, modification of scientific research permit, Denver Wildlife Research Center.

30 April Commerce, modification of scientific research permit, Northwest and Alaska Fisheries Center.

1 May Commerce, public display permit application, Blank Park Zoo.

1 May Interior, authorization to continue activities under scientific research permit, Donald B. Siniff.

5 May Commerce, scientific research permit application, Richard C. Connor.

6 May Commerce, authorization to continue activities under scientific research permit, Bruce R. Mate.

6 May Commerce, public display permit application, Jay C. Sweeney.

6 May Commerce, scientific research permit applications, Bruce R. Mate.

7 May Commerce, scientific research permit application, A. Rus Hoelzel.

12 May Commerce, commenting to the National Marine Fisheries Service on plans to prepare an Environmental Impact Statement concerning the taking of marine mammals incidental to the Japanese high seas salmon drift gill net fishery in the North Pacific Ocean and making certain recommendations regarding the scope and content of the proposed EIS.

16 May Commerce, commenting to the National Marine Fisheries Service on the request from the National Ocean Industries Association to extend until 1991 its authorization to take small numbers of marine mammals incidental to offshore oil exploration in the Beaufort Sea, and recommending, among other things, that

the Service provide notice and opportunity for public comment on its proposed findings that such taking will have a negligible impact on the species and its habitat and its availability for taking for subsistence uses, and that the public comment period for the proposed rule-making be extended to at least 45 days to allow interested parties in Alaska ample time to prepare comments.

- 20 May Commerce, public display permit application, Loro Parque, S.A.
- 22 May Commerce, scientific research permit application, Southwest Fisheries Center.
- 22 May Commerce, commenting to the National Marine Fisheries Service on the lack of progress in establishing reporting requirements for foreign nations exporting to the United States yellowfin tuna harvested with purse seines in the eastern tropical Pacific Ocean, and requesting that the Service advise the Commission on the status of these regulations.
- 27 May Commerce, scientific research permit application, Brendan P. Kelly.
- 27 May Commerce, scientific research permit application, James R. Gilbert.
- 5 June State, commenting to the Bureau of Oceans and International Environmental and Scientific Affairs on the need for international cooperation to reduce or eliminate the discharge of plastic materials into the world's oceans; recommending that the U.S. take all appropriate actions to bring into force Annex V of the Convention for the Prevention of Pollution from Ships, including ratification of the Annex; and requesting that the Commission be advised of steps that will be needed to bring the matter before the U.S. Senate.
- 6 June Commerce, commenting to the National Marine Fisheries Service on interactions between the sablefish longline fishery

and killer whales in Prince William Sound, Alaska, and recommending that the Service work with certain experts and affected fishermen to determine and test possible solutions to the problem.

- 11 June Interior, scientific research permit application, Janmark, Inc.
- 11 June Interior, scientific research permit application, Hubbs Marine Research Institute.
- 16 June Commerce, commenting to the National Marine Fisheries Service on proposed regulations governing the taking of North Pacific fur seals by Alaskan Natives for subsistence purposes, and recommending that the regulations be adopted with certain modifications.
- 20 June Interior, scientific research permit application, Donald B. Siniff.
- 23 June Interior, commenting to the Fish and Wildlife Service on the draft recovery plan for the Puerto Rican population of the West Indian manatee, and recommending that: (a) the draft recovery plan be adopted with certain modifications, and (b) that the Service develop a comprehensive work plan for accomplishing identified tasks and further recommending that the work plan be submitted to the Commission and other interested parties for review and comment.
- 25 June Commerce, modification of scientific research permit, Southwest Fisheries Center.
- 25 June Commerce, commenting to the National Marine Fisheries Service on its recent action certifying that Mexico is fishing in compliance with pertinent provisions of the Marine Mammal Protection Act, and requesting certain information on: (a) the Service's progress in implementing new regulations pursuant to the 1984 amendments to the Act, and (b) Mexico's current fishing practices.

- 15 July Commerce, scientific research permit application, Northwest and Alaska Fisheries Center.
- 15 July Commerce, requesting from the National Marine Fisheries Service certain information on the Service's research plans regarding the North Pacific fur seal population for use in the Commission's review of this subject during its scheduled meeting in October 1986.
- 17 July Interior, scientific research permit application, Robert L. Brownell, Jr.
- 17 July Interior, scientific research permit application, Donald B. Siniff.
- 17 July Commerce, scientific research permit application, Loro Parque, S.A.
- 23 July Commerce, commenting to the National Marine Fisheries Service on the Final "Combined Fishery Management Plan, Environmental Assessment, and Regulatory Impact Review for the Bottomfish and Seamount Groundfish Fisheries of the Western Pacific Region"; noting that the Plan contained a number of provisions that should help strengthen protection for Hawaiian monk seals; further noting, that the Plan did not provide adequate assurances that potential interactions between the fishery and Hawaiian monk seal will be identified and avoided; and recommending that: (a) the Western Pacific Bottomfish Fishery Management Plan be amended or a supplemental statement be added to identify the need for a research and monitoring program on interactions between the fishery and the Hawaiian monk seal and other protected species; and (b) the Service take steps necessary to design and implement an experimental fishing program to supplement and verify data received from fishermen as a result of the reporting requirement recommended in the Biological Opinion on the Plan.

30 July Commerce, request for additional clarification of research plans under scientific research permits, Southwest Fisheries Center.

31 July Commerce, commenting to the National Marine Fisheries Service on planned research to experimentally entangle a certain number of North Pacific fur seals; noting that the proposed research is not likely to yield any useful information; recommending that the Service not support the research; and restating its recommendation that a pilot study be conducted to determine how questions concerning the likelihood of entanglement might best be addressed.

31 July Commerce, scientific research permit application, Steven D. Feldkamp and Daniel P. Costa.

31 July Commerce, scientific research permit application, Pacific Whale Foundation.

31 July Interior, modification of scientific research permit, John Fletemeyer.

31 July Commerce, modification of scientific research permit, Northwest and Alaska Fisheries Center.

31 July Commerce, scientific research permit application, Carle Foundation Hospital.

1 August Interior, commenting to the Fish and Wildlife Service on the final "Hawaiian Islands National Wildlife Refuge Master Plan/Environmental Impact Statement"; noting that the Plan raises the possibility that the Service, at some future date, might decide to abandon the Refuge field station on Tern Island; further noting that continued operation of the Tern Island field station is essential for the protection and recovery of the endangered Hawaiian monk seal; and recommending that the Service not make a final decision on abandoning the Tern Island station unless it has first:
(a) amended its Refuge Master Plan so as to describe the modified Refuge manage-

ment system; (b) re-initiated a section 7 review of the revised system for managing the Refuge and its effect on endangered Hawaiian monk seals and sea turtles with the National Marine Fisheries Service; and (c) provided the Commission, other Federal agencies, and the public with an opportunity to review and comment on the proposed plan.

- 11 August Commerce, modification of a scientific research permit, LGL, Limited.
- 13 August Interior, scientific research permit application, Hubbs Marine Research Institute.
- 19 August Interior, scientific research permit application, Anthony R. DeGange.
- 21 August Interior, six public display permit applications: Kanazawa Aquarium; Nagasaki Biopark; Kamogawa Sea World; Okhotsk Aquarium Foundation; Shimoda Floating Aquarium; and Minamichita Beachland Aquarium.
- 22 August Commerce, modification of scientific research permit, California Department of Fish and Game.
- 25 August Commerce, scientific research permit application, Sidney Lees.
- 26 August Commerce, modification of scientific research permit, Richard H. Lambertsen.
- 29 August Commerce, authorization to continue activities under scientific research permit, Warren M. Zapol and Robert C. Schneider.
- 5 September Interior, modification of scientific research permit, Robert L. Brownell, Jr.
- 9 September Commerce, public display permit application, Zoo Negara.
- 10 September Commerce, public display permit application, Lloyd A. Borguss.

15 September Commerce, commenting to the National Oceanic and Atmospheric Administration on a Fishery Management Study; expressing its support for certain recommendations contained therein; and suggesting that the study be expanded to consider, among other things, preparation of fisheries management plans earlier in the fishery development process and authority for placing observers on U.S. fishing vessels.

18 September Commerce, forwarding to the National Marine Fisheries Service's Marine Entanglement Research Program a procedures manual for monitoring tar balls and suggesting that the Service consider developing a similar manual on plastics as the U.S. contribution to the International Oceanographic Commission's series of pollution monitoring documents.

26 September Commerce, commenting to the National Marine Fisheries Service on its plan to designate critical habitat for the Hawaiian monk seal and recommending that the Service: (a) re-open the critical habitat designation decision for public comment to consider the need to extend the designation beyond 10 fathoms; (b) issue a specific request for public and agency comments on the special management considerations and protection needs that may be required within the boundaries of each of the designation alternatives; and (c) extend the critical habitat designation out to the 20-fathom contour as recommended in the Commission's 15 February 1985 letter; and requesting that, if the Service does not adopt these recommendations, it provide the Commission with a detailed explanation of the reasons why.

29 September Commerce, scientific research permit application, North Gulf Oceanic Society.

29 September Commerce, modification of scientific research permit, Donald B. Siniff.

29 September Commerce, public display permit application, Ringling Brothers - Barnum & Bailey Circus.

29 September Commerce, scientific research permit application, William A. Watkins.

29 September Commerce, scientific research permit application, Janice M. Straley.

3 October Commerce, scientific research permit application, Kenneth S. Norris, Randall S. Wells and William T. Doyle.

3 October Commerce, commenting to the National Marine Fisheries Service on its interim regulations on "Taking and Importing of Marine Mammals," expressing support for their promulgation, and recommending that the Service adopt the interim regulations as permanent final regulations.

9 October Commerce, modification of scientific research permit, Dolphin Research Center.

14 October Interior, public display permit application, Vancouver Public Aquarium.

14 October Commerce, modification of scientific research permit, Washington Department of Game.

14 October Interior, public display permit application, Nagasaki Aquarium.

17 October U.S. House of Representatives, commenting to the Committee on Merchant Marine and Fisheries on H.R. 5422, "The Plastic Waste Reduction Act of 1986," and H.R. 5380, "The Plastic Waste Study Act of 1986"; suggesting that certain provisions of H.R. 5422 might be premature; and expressing support for H.R. 5380 with certain minor modifications.

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

22 October Commerce, scientific research permit application, Gerald G. Joyce.

22 October Commerce, scientific research permit application, Kenneth S. Norris, Randall S. Wells, and William T. Doyle.

3 November Interior, modification of scientific research permit, Denver Wildlife Research Center.

4 November Interior, modification of scientific research permit, U.S. Fish and Wildlife Service, Alaska Office of Fish and Wildlife Research.

5 November Interior, scientific research permit application, Robert L. Brownell, Jr.

7 November Commerce, public display permit application, Dolphins Plus, Inc.

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

14 November Commerce, commenting to the National Marine Fisheries Service on proposed "Regulations Governing the Taking and Importing of Marine Mammals" and recommending that the proposed regulations be adopted with certain modifications.

17 November Interior, commenting to the Fish and Wildlife Service on proposed regulations for the "Proposed Establishment of an Experimental Population of Southern Sea Otters" and recommending that the proposed regulations be adopted with certain modifications.

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

20 November Commerce, authorization to continue activities under scientific research permit, Warren M. Zapol and Robert C. Schneider.

20 November Interior, public display permit application, Chicago Zoological Society.

20 November Commerce, public display permit application, Mystic Marinelife Aquarium.

20 November Commerce, public display permit application, Gulf Exhibition Corp.

20 November Commerce, public display permit application, Marine Animal Productions.

20 November Commerce, authorization to continue activities under scientific research permit, National Marine Mammal Laboratory.

24 November Commerce, commenting to the National Marine Fisheries Service on the Draft Environmental Impact Statement on the Incidental Take of Dall's Porpoise in the Japanese Salmon Fishery; noting among other things, that: based on available information, there appeared to be critical uncertainties and data gaps with respect to the proposed take; the Service and the permit applicant should act promptly to complete necessary research to resolve these uncertainties; it would be inappropriate to issue a permit for more than two years; and a formal Commission recommendation would be set forth at an appropriate point in the formal rulemaking procedure.

5 December Commerce, two scientific research permit applications, Northwest and Alaska Fisheries Center.

5 December Commerce, scientific research permit application, Louis M. Herman.

17 December Commerce, scientific research permit application, Brent S. Stewart.

18 December Commerce, scientific research permit application, U.S. Navy.

22 December Interior, commenting to the Fish and Wildlife Service on plans to close the Refuge field station on Tern Island and restating recommendations made in its 1 August 1986 letter that the Service take no final action to do so unless it had first modified the Master Plan for the Hawaiian Island National Wildlife Refuge, conducted section 7 consultations with the National Marine Fisheries

Service on the effect of the action on Hawaiian monk seals, and provided the Commission and others with an opportunity to comment on the action.

23 December

Commerce, commenting to the National Marine Fisheries Service on the "Proposed Regulations Governing Approaching Humpback Whales in Hawaiian Waters" and recommending, among other things, that the proposed regulations be revised to more clearly reflect the protection standard in the 1979 Notice of Interpretation of Harassment of Humpback Whales in Hawaii; consideration be given to prohibiting jet skis and parasail activity in areas where cow/calf pairs have commonly been observed; and the Service undertake monitoring studies to assess the effectiveness of measures taken to protect humpback whales in Hawaiian waters.

23 December

Commerce, commenting to the National Marine Fisheries Service on priority needs regarding marine mammals and recommending needed research and management activities concerning: Hawaiian monk seals, endangered whales, North Pacific fur seals, the problem of marine debris, incidental take of harbor porpoise off California, the incidental take of porpoise in the course of commercial tuna fishing operations, Antarctic marine living resources, river dolphins, and marine mammal permit procedures.

APPENDIX B

REPORTS OF COMMISSION-SPONSORED ACTIVITIES AVAILABLE FROM THE NATIONAL TECHNICAL INFORMATION SERVICE (NTIS)¹

- 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)
- Bean, M.J. 1985. United States and international authorities applicable to entanglement of marine mammals and other organisms in lost or discarded fishing gear and other debris. Final report for MMC contract MM2629994-7. NTIS PB85-160471. 65 pp. (A04)

¹ 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.

- 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)
- 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)
- Bishop, J.B. 1985. Summary report of gill and trammel net (set-net) observations in the vicinity of Morro Bay, California, 1 November 1983 - 31 August 1984. Final report for MMC contract MM2629900-2. NTIS PB85-150076. 18 pp. (A02)
- 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. Final report for MMC contract MM2324792-1. 36 pp.²
- 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.³
- Contos, S.M. 1982. Workshop on marine mammal-fisheries interactions. Final report for MMC contract MM2079341-0. NTIS PB82-189 507. 64 pp. (A04)

² Available from Director, National Marine Fisheries Service, Southwest Fisheries Center, La Jolla, California 92038.

³ Available from Polar Research Board, National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

- 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)
- 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. 1978. 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)
- Glockner-Ferrari, D.A., and M.J. Ferrari. 1985. Individual identification, behavior, reproduction, and distribution of humpback whales, Megaptera novaeangliae, in Hawaii. Final report for MMC contract MM262975-5. NTIS PB85-200772. 41 pp. (A03)
- Gold, J. 1981. Marine mammals: A selected bibliography. Final report for MMC contract MM1801254-3. 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)
- Hofman, R.J. (Editor). 1985. Workshop to assess methods for regulating the distribution and movements of sea otters. Report of a Marine Mammal Commission-sponsored workshop held 25-26 October 1984 in San Francisco, California. NTIS PB85-229250. 39 pp. (A03)
- 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)
- Jameson, G.L. 1986. Trial systematic salvage of beach-cast sea otter, Enhydra lutris, carcasses in the central and southern portion of the sea otter range in California. Final report for MMC contract MM2629849-8. NTIS PB87-108 288. 60 pp. (A04)
- Jeffries, S.J. 1986. Seasonal movement and population trends of harbor seals in the Columbia River and adjacent waters of Washington and Oregon, 1976-1982. Final report for MMC contract MM2079357-5. NTIS PB86-200 243. 41 pp. (A03)
- 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)
- Johnson, B.W., and P.A. Johnson. 1981. The Hawaiian monk seal on Laysan Island: 1978. Final report for MMC contract MM8AC008. NTIS PB82-109 661. 17 pp. (A02)
- 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 richardi) in the waters of the State of Washington: 1976-1977. Final report for MMC contract MM6AC025. NTIS PB83-159 715. 53 pp. (A04)
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APPENDIX C

SELECTED LITERATURE PUBLISHED ELSEWHERE RESULTING FROM COMMISSION-SPONSORED ACTIVITIES

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