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ANNUAL REPORT OF THE MARINE MAMMAL COMMISSION
CALENDAR YEAR 1978 A REPORT TO CONGRESS

Marine Mammal Commission
Washington, DC

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MARINE MAMMAL COMMISSION, CALENDAR YEAR 1978

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31 JANUARY 1979

Marine Mammal Commission
1625 I Street, N.W.
Washington, D.C. 20006

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CHAPTER I

INTRODUCTION

Background

This is the sixth Annual Report of the Marine Mammal Commission, an independent commission established under Title II of the Marine Mammal Protection Act of 1972 (P.L. 92-522, 21 October 1972). The Report covers the period from January 1st through December 31st, 1978.

In the Marine Mammal Protection Act, Congress set forth a national policy to maintain marine mammal populations at optimum sustainable populations, while maintaining the health and stability of the marine ecosystem. Title II of the Act charges the Marine Mammal Commission with responsibility for developing and reviewing information, actions, and policies to achieve these objectives.

Personnel

The three Commissioners, appointed by the President, are: Dr. Douglas G. Chapman (Chairman), Seattle, Washington; Dr. Richard A. Cooley, Santa Cruz, California; and Dr. Donald B. Siniff, Minneapolis, Minnesota. Senior staff members are: John R. Twiss, Jr., Executive Director; Robert Eisenbud, General Counsel; and Dr. Robert J. Hofman, Scientific Program Director.

Title II of the Act directs the Commission to appoint a nine-member Committee of Scientific Advisors on Marine Mammals, composed of scientists knowledgeable in marine ecology and marine mammal affairs. At the end of 1978, Committee members were: Dr. Paul K. Dayton, Scripps Institution of Oceanography; Dr. L. Lee Eberhardt, Pacific Northwest Laboratory, Battelle Memorial Institute; Dr. Joseph R. Geraci, University of Guelph; Mr. Karl W. Kenyon, Seattle, Washington; Dr. Gerald L. Kooyman, Scripps Institution of Oceanography; Dr. Daniel K. Odell, University of Miami; Mr. John H. Prescott (Chairman of the Committee), New England Aquarium; Dr. Tim D. Smith, National Marine Fisheries Service; and Dr. Robert B. Weeden, University of Alaska. During 1978, Dr. Robert L. Brownell, Jr., and Dr. Sam H. Ridgway (Committee Chairman until September 1978) completed their terms of service on the Committee.

Funding

The Commission was appropriated \$412,000 for FY 74, \$750,000 for FY 75, \$900,000 for FY 76, \$1,000,000 for FY 77, \$900,000 for FY 78, and \$702,000 for FY 79.

CHAPTER II

RESEARCH AND STUDIES PROGRAM

Introduction

The Act directs the Commission to continually review research programs conducted or proposed under the authority of the Act and to undertake or cause to be undertaken such other studies as it deems necessary or desirable in connection with its assigned duties. To meet these responsibilities, the Commission: conducts an annual survey of Federally-funded marine mammal research; reviews and makes recommendations on the marine mammal research programs conducted by the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the Bureau of Land Management, and other Federal agencies; convenes meetings and workshops to review and develop plans for marine mammal research; and contracts for research and studies to help identify domestic and international efforts needed to conserve and protect marine mammals and the ecosystems of which they are a part.

Survey of Federally-Funded Marine Mammal Research

In October 1978, the Commission sent questionnaires to 20 Federal departments or agencies requesting information on marine mammal research projects conducted, supported, or planned by the department or agency in fiscal years 1977, 1978, and 1979. Agency responses indicated that ten different departments or agencies are conducting or supporting research relevant to the conservation and protection of marine mammals. In addition to the Commission, they are the National Marine Fisheries Service, the Bureau of Land Management, the U.S. Fish and Wildlife Service, the Office of Naval Research, the Naval Ocean Systems Center, the National Science Foundation, the National Park Service, the Smithsonian Institution, the Department of Energy, and the National Sea Grant Program. The National Marine Fisheries Service, the Bureau of Land Management, and the Fish and Wildlife Service have the largest and most diverse marine mammal programs.

Although the information has not been completely analyzed, there do appear to be areas where research might be better coordinated, refocused, or expanded to meet needs more cost effectively. As discussed in the following chapters of this Report, it appears, for example, that proposed research by the Bureau of Land Management on bowhead whales should be better coordinated with other efforts and that additional research is needed to determine what must be done to encourage the recovery of endangered species such as the bowhead and other large whales, the West Indian manatee, and the Hawaiian monk seal.

Following verification of the accuracy of the preliminary report in early 1979, the Commission, in consultation with its Committee of Scientific Advisors, will consider the information and, as appropriate, recommend steps that should be taken to better develop, orient, and coordinate agency programs.

Research Program Reviews, Workshops, and Planning Meetings

In addition to the Survey of Federally-Funded Research described above, the Commission, in 1978, reviewed, commented on, and/or made recommendations concerning: the National Marine Fisheries Service's tuna-porpoise research program; the National Marine Fisheries Service's and the Bureau of Land Management's bowhead whale research programs; the National Marine Fisheries Service's North Pacific fur seal research program; and the Bureau of Land Management's environmental studies programs for the North- and mid-Atlantic, the South Atlantic and Gulf of Mexico, northern, central and southern California, Washington and Oregon, and Alaska. The Commission also convened and/or participated in meetings or workshops to: plan and design an aerial survey of the porpoise populations affected by the tuna purse seine fishery; identify research needed to determine what can be done to prevent the decline and encourage the recovery of the West Indian manatee; develop a comprehensive, goal-oriented research plan for the Hawaiian monk seal; plan and design a survey of cetaceans in the coastal waters off the North- and mid-Atlantic states; develop a plan for cooperative U.S./Mexican research on gray whales; identify research needed to protect and conserve living resources in the oceans surrounding Antarctica; design and plan a research program to assess and monitor the status of Tursiops

populations in the southeastern United States; and help the states of Washington and Oregon develop a program for assessing the nature and extent of marine mammal-fishery conflicts in the Columbia River. Details of these activities, and recommendations resulting therefrom, are provided elsewhere in this report.

Commission-Sponsored Research and Study Projects

Available information on the biology and ecology of marine mammals often is inadequate to determine precisely what domestic or international efforts are needed to achieve the goals of the Act. The Departments of Commerce and the Interior have primary responsibility, under the authority of the Act, for acquiring the biological and ecological data needed to make policy and management decisions. The Commission, as noted earlier, convenes workshops and contracts for research and studies to identify and evaluate threats to marine mammal populations and to supplement research conducted by the responsible agencies.

Since it was established, the Commission has contracted for more than 200 projects ranging in amount from several hundred dollars to \$125,000. The average contract cost has been about \$10,000. Total contract amounts were \$258,787 in FY 74; \$446,628 in FY 75; \$479,449 in FY 76; \$132,068 in the FY 76-77 transition quarter; \$523,504 in FY 77; and \$407,678 in FY 78. The research budget for FY 79 is \$192,000; the FY 80 budget would allow approximately \$130,000 for research.

Contract work undertaken by the Commission in 1978 is summarized below. Reports of earlier studies, available from the National Technical Information Service, are listed in Appendix B.

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

As indicated earlier, the Commission conducts an annual survey to identify marine mammal research conducted or supported by various Federal agencies. The contractor is organizing and summarizing the information provided by the agencies in FY 78. The report will be sent to the agencies and reviewed by the Commission, in consultation with its Committee of Scientific Advisors, to determine whether ongoing and planned research programs are coordinated, properly oriented, and adequate to meet information needs. If any programs, or parts thereof, are found to be duplicative, poorly designed, inadequately funded, or over funded, the Commission will advise the responsible agency or agencies as to appropriate corrective measures.

Workshop to Assess Marine Mammal Management Policies
and Practices
(C. W. Fowler, Utah State University)

The objectives of the Marine Mammal Protection Act are to maintain the health and stability of marine ecosystems and, when consistent with this objective, to obtain and maintain optimum sustainable populations of marine mammals. To help determine what, if any, additional actions might be taken to better meet these objectives, the Commission sponsored a workshop to review actions taken thus far to implement the Act. Participants, including marine mammalogists, population biologists, and ecologists from the United States and abroad, concluded that additional productive efforts can and should be undertaken to identify either optimal population levels or optimal ecosystem states. The workshop findings, as well as other relevant information, are being reviewed to determine what further work may be necessary to translate the ecosystem concepts embodied in the Act into fully operational policies and practices.

Review and Analysis of Information Concerning the
Conservation of Living Resources in the Southern Ocean
(J. L. Bengtson, University of Minnesota)

The Commission is concerned that the developing krill fishery in the Southern Ocean might adversely impact seals, whales, and other ecosystem components. This contractor compiled and evaluated available information on the species composition, distribution, movements, abundance, productivity, and food habits of the major animal groups (whales, seals, birds, fish, squid, and krill) that comprise the Antarctic marine food web. The report notes that krill harvesting could affect whales, seals, and other species that feed upon krill and that, until the data base is improved, harvesting should be limited and carefully monitored to insure that there are no irreversible impacts. Copies of the report were distributed widely in the U.S. and abroad. Information contained in the report was used, in part, to develop and support Commission recommendations concerning the negotiations discussed in Chapter IX.

Program Manager: Cooperative Government/Industry Dedicated
Vessel Research Program
(J. DeBeer, La Jolla, California)

On 30 December 1977, the National Marine Fisheries Service, the United States Tuna Foundation, and the Commission entered into a cooperative agreement concerning a research program to be conducted during 1978 on a tuna purse seiner provided by the tuna industry. The Commission was convinced that a program as broad and complex as the one planned for the dedicated vessel would fail unless it was under the day-to-day supervision of a full-time program manager. Therefore, as part of its overall contribution, the Commission, in consultation with the other parties to the agreement, contracted for a program manager. The success of the program, described elsewhere in this report, is attributable, in no small measure, to the continuous direction given by the program manager and the policy guidance provided by representatives of the National Marine Fisheries Service, the United States Tuna Foundation and the Commission. The program manager's report to the Commission will be completed in June 1979 and distributed to all interested parties.

Review and Analysis of Information Concerning the
Conservation and Protection of the West Indian Manatee
(P. Wray, Center for Action on Endangered Species)

Although available data indicate that human-caused mortalities and habitat alteration may be causing a significant decline in the Florida manatee population, relatively little had been done by 1978 to effectively cope with the problems. The Commission therefore contracted with this investigator to undertake a review and analysis of available information on the biology and ecology of manatees and of actions taken by Federal and state agencies to reduce mortalities and prevent habitat alteration. The contractor's report, as well as a substantial body of other information, was utilized by the Commission in developing its 23 August recommendation that the Department of the Interior take immediate and intensive efforts to protect manatees subject to United States jurisdiction (see Chapter V). The report has been provided to the Department of the Interior and other interested agencies and persons.

Hawaiian Monk Seals on Laysan Island
(B. W. and P. A. Johnson)

The Hawaiian monk seal, Monachus schauinslandi, is an endangered species whose range is limited to the leeward Hawaiian Islands and the waters surrounding them. Although the National Marine Fisheries Service and the U.S. Fish and Wildlife Service have initiated research to determine what actions are necessary to prevent the extinction of the species, neither agency has programmed sufficient funds to support all necessary studies. Therefore, in 1977 and again in 1978, the Commission, following consultation with the agencies, supported this study to help determine the numbers, age/sex classes, activity patterns, and behavior of monk seals on Laysan Island. The study has contributed significantly to our understanding of the biology and behavior of the monk seal, and should be continued for at least another year.

Status of the Gulf of California Harbor Porpoise,
Phocoena sinus
(K. S. Norris, University of California, Santa Cruz)

The Gulf of California harbor porpoise, endemic to the upper Gulf of California, has been taken incidentally in totoaba, croaker, and shark fisheries. Since no sightings have been reported in recent years, it appears that this species, never very abundant, may be severely depleted. The contractor, in cooperation with scientists from the Universidad Autonoma de Mexico, is conducting a survey of previously known habitats to determine how many, if any, animals remain. The Commission will review the survey report and make such recommendations as may be appropriate to foster cooperative U.S./Mexican efforts to prevent extinction of the species.

Initial Size of the Bowhead Whale Population in the
Bering Sea
(J. M. Breiwick, University of Washington)

Although surveys carried out in 1978 estimated 2,264 bowhead whales in the Bering and Chukchi Seas, the population's status, relative to its initial size, remained subject to speculation because no reliable estimates of population size prior to commercial exploitation existed.

In this study, the investigator is seeking to provide the best possible estimate of initial population size and to forecast how various levels of take and recruitment would affect the population's recovery to 50% of its initial size. Preliminary analysis of existing data suggested an initial population of 14,000 to 25,000 individuals. Given a kill of 15 animals per year, the preliminary analysis suggested that at least 50 years would be required for the population to reach 9,000 (50% of 18,000) if the present population numbers about 1,200 animals. The final report, to be completed in early 1979, will include calculations reflecting the revised estimate of current population size (discussed in Chapter III) and will be used by the Commission to help identify actions needed to protect and conserve the bowhead whale while also meeting the subsistence and cultural needs of Alaskan Eskimos.

Review of Information Concerning the Distribution,
Movements, and Abundance of Humpback Whales in Hawaiian
Waters
(L. M. Herman, University of Hawaii)

Local, state, and Federal governments have taken steps to protect the humpback whales that calve and breed in the coastal waters of Hawaii. To give the Commission a better basis for judging the adequacy of these actions, the contractor is compiling and summarizing available information on the numbers, distribution patterns, and movements of whales, and human uses of areas that appear particularly important to them. The contract report and other relevant information will be reviewed by the Commission, in consultation with its Committee of Scientific Advisors, to determine what, if any, further action may be needed to insure that the whales are not adversely affected by human activities.

Interaction Between Gray Whales and Boat Traffic in
San Ignacio Lagoon, Baja California
(S. L. Swartz, San Diego Society of Natural History)

Tour boats and fishing boats may harass and disturb the gray whales that calve and breed in the lagoons of Baja California. The purpose of this study, initiated in 1977 and continued in 1978, was to begin assessing how tour boats

and fishing boats may be affecting the distribution, movements, or behavior of gray whales in San Ignacio Lagoon. The report describes how whales react to boats and how disturbance could be reduced. It will be used by the Commission, along with other relevant information, to develop recommendations as to actions needed to protect and conserve gray whales and their calving/breeding habitats.

Reanalysis of Data on the North Pacific Sperm Whale Population
(C. W. Fowler, Utah State University)

Decisions by the International Whaling Commission concerning the maximum allowable catch of sperm whales and other species of large cetaceans are based upon estimates of population size and productivity. Population size generally is estimated from catch statistics which may be biased and may therefore result in biased estimates of population size. If the biases result in estimates which are greater than actual population sizes, quotas established by the IWC may be higher than the populations can sustain. The purpose of this study was to examine potential biases in data and methods used to estimate the size of the sperm whale populations in the North Pacific. Preliminary results suggest that population size has been over-estimated and that methods for estimating population size need to be refined. The final report, to be completed in early 1979, will be reviewed carefully by the Commission to determine what measures may be needed to insure that sperm whales and other species of large whales are not over-exploited.

Inventory of Whaling Logbooks and Journals
(S. C. Sherman, Brown University)

Data from old whaling records can be used to help estimate the pre-exploitation distribution and abundance of commercially exploited whales. To facilitate preservation and access to such data, participants in an International Workshop on Historical Whaling Records (12-16 September 1977) recommended that all existing whaling logbooks and journals be identified and catalogued. The Commission provided funds for the investigator to survey museums, libraries, and private collectors throughout the world and to develop computer programs for archiving, up-dating, and extracting information thus obtained. An annotated list of known journals and logbooks will be available by the summer of 1979.

Killer Whales in Puget Sound, Washington
(K. C. Balcomb, Moclips Cetological Society)

Capture of killer whales for public display, and other kinds of human activities (sport boating, commercial fishing and shipping, environmental pollution), may have caused or be causing a decline in the numbers of killer whales inhabiting Puget Sound. Available data are insufficient to determine the status of the Puget Sound population and this investigator was contracted by the National Marine Fisheries Service in late 1976 to photo-document individual killer whales and killer whale pods found in the Sound. The Service was unable to fully support the project in 1978 and the Commission, feeling the project should be continued, contracted with the investigator to continue data collection through the summer of 1978. Although the study should be continued for at least another three years, the Commission will be unable to provide continued support and has so advised the contractor and the National Marine Fisheries Service in the hope that the Service will be able to resume funding.

Research Planning Meeting: Marine Mammal-Fishery Interactions in Washington and Oregon
(M. L. Johnson, University of Puget Sound)

Participants in a Commission-sponsored workshop in December 1977 found that available information was inadequate to determine the precise nature and extent of marine mammal-fishery interactions in Alaska, Washington, Oregon and elsewhere. They noted that conflicts appear to be greatest in the Copper River Delta area of Alaska and on the Columbia River. They recommended that priority be given to research in these areas and the Commission subsequently provided funds to initiate a study in the Copper River Delta (see below), and contracted with Dr. Johnson to convene a meeting of scientists and representatives from the States of Oregon and Washington to develop a plan for assessing marine mammal-fishery interactions in the Columbia River. Subsequent to the meeting, held in March 1978, the States developed a research proposal which will be submitted to the National Marine Fisheries Service with the request that it be funded under Section 110 of the Act.

Marine Mammal-Fishery Interactions in the Copper River Delta of Alaska
(F. H. Fay and C. O. Matkin, University of Alaska)

This study, like the preceding planning meeting, was undertaken in response to recommendations from a Commission-

sponsored workshop on marine mammal-fishery interactions. The objectives of the study are to determine the best methods for assessing such interactions and to begin to determine how the Copper River salmon fishery affects and is affected by marine mammals. The study results will be reviewed and used, along with other relevant data, as a basis for Commission recommendations concerning marine mammal-fishery interactions in Alaska and other areas.

Marine Mammals and the Fishery Conservation and Management Act
(K. A. Green, El Paso, Texas)

Since some commercial and sport fisheries compete with marine mammals for fish resources and/or incidentally take marine mammals, management plans for certain fisheries should be designed to conserve marine mammals as well as fish. The objectives of this study are to determine whether marine mammals have been adequately considered in fishery management plans, developed pursuant to the Fishery Conservation and Management Act, and, if not, to determine actions needed to insure that fishery management plans are consistent with both the Fishery Conservation and Management Act and the Marine Mammal Protection Act. To help meet these objectives, the contractor is reviewing relevant provisions of the FCMA and the MMPA, consulting with appropriate representatives of the National Marine Fisheries Service and the Fishery Management Councils constituted pursuant to the FCMA, and evaluating selected fishery management plans to determine whether they provide for conservation of marine mammals. The report, due in early 1979, will be reviewed by the Commission and provided to the National Marine Fisheries Service and the Fishery Management Councils along with recommendations as to actions that appear necessary to insure the conservation and protection of marine mammals.

Aerial Survey of Bottlenose Dolphins in Coastal Waters from Port Aransas to Matagorda Bay, Texas
(J. S. Leatherwood, Naval Ocean Systems Center)

In its comments on a permit application to take four bottlenose dolphins from Copano Bay, Texas, the Commission noted that available information was insufficient to

determine whether the requested taking would adversely impact the population and that an aerial survey should be conducted before any further taking was authorized in the area. The Service concurred with the Commission's assessment that a survey was needed, but was unable to provide the necessary funds. Representatives of the public display community also agreed that a survey was desirable and, on their initiative, provided the necessary aircraft and personnel. The Commission contracted with the investigator to assist in the design, conduct, and analysis of the results of the aerial survey of bottlenose dolphins in coastal waters from Port Aransas to Matagorda Texas. The preliminary report indicates that there were at least 940 bottlenose dolphins in the surveyed area at the time of the survey (late March) and that additional surveys should be carried out to determine whether there is seasonal variation in the numbers of animals inhabiting the area. The National Marine Fisheries Service, in response to recommendations made by the Commission and the contractor, has initiated a program to assess and monitor the status of bottlenose dolphin populations in the southeastern United States.

Aerial Survey of Gray Whales in Laguna San Ignacio,
Baja California
(B. R. Mate, Oregon State University)

Aerial surveys probably are the most cost-effective way of obtaining information on the distribution and abundance of cetaceans and pinnipeds in coastal waters. The reliability of survey data can be affected, however, by many variables. In this study, the investigator attempted to determine how strip width, observer experience, aircraft speed, and aircraft altitude affect survey results. Study results will have broad applicability to survey problems and should help U.S. and Mexican scientists design a cost-effective program for monitoring the numbers of gray whales that annually calve and breed in the lagoons of Baja California.

Effects of Human Activities on Harbor Seals in Bolinas
Lagoon, Marin County, California
(D. G. Ainley and S. G. Allen, Point Reyes Bird Observatory)

Bolinas Lagoon is an important hauling and, perhaps, breeding ground for harbor seals. Since changes in human use of the lagoon may adversely affect the seal population

and/or its habitat, the Commission and the Marin County Department of Parks and Recreation jointly funded this project to determine how the numbers, movements, and productivity of seals are affected by changing human-use patterns. Time-lapse photography and other techniques are being used to monitor human and seal behavior at selected sites. Study results will be used to determine what, if any, actions are needed to minimize disturbance and conserve the population. Methodology and data from the study should be applicable to other areas and species.

The North American Harbor Porpoise, Phocoena phocoena
(J. H. Prescott, New England Aquarium)

Although the harbor porpoise is one of the most common cetaceans in coastal U.S. waters, the biology and ecology of the species, and its interactions with man, are poorly known. The contractor is compiling and evaluating available data to determine, as possible, whether man's activities are adversely affecting the species or its habitat. After reviewing the report, the Commission will advise the National Marine Fisheries Service as to actions needed to conserve the species.

Marine Mammals at the Farallon Islands
(D. G. Ainley and H. R. Huber, Point Reyes Bird Observatory)

Three pinniped species (the California sea lion, the northern elephant seal, and the harbor seal) recently have re-established breeding populations on the Farallon Islands while the population of a fourth species (the Steller sea lion) has decreased rapidly. These circumstances offer a unique opportunity to document how populations re-establish themselves after depletion and how such populations change over time. The investigators are conducting regular surveys and observations to determine how the distribution, numbers, and productivity of the various populations change over time. Originally undertaken as a Commission-sponsored project, the project is now supported jointly by the Commission and the National Marine Fisheries Service. Results should have general application to the management of pinniped populations and the Commission will recommend that the Service assume full funding responsibility beginning in 1979.

Experimental Manipulation of Sea Otter-Dominated Marine Communities

(P. K. Dayton, University of California, San Diego)

Although sea otter feeding habits are known to influence the structure and dynamics of nearshore marine communities, the precise cause-effect relationship between feeding habits and nearshore community structure is not known. In this study, kelp, crevice, and intertidal communities are being manipulated to determine how these communities respond to perturbation. It was initiated in late 1976 as part of a cooperative state/Federal program designed to determine how sea otters affect and are affected by their habitat. Results will be useful for determining the optimum sustainable population of sea otters in California and elsewhere.

CHAPTER III

THE BOWHEAD WHALE ISSUE

Introduction

Over-exploitation by commercial whalers reduced the bowhead whale (Balaena mysticetus) to extremely low levels throughout its range. It has been totally protected from commercial whaling for more than 40 years, and is listed as both "endangered" under the Endangered Species Act and "depleted" under the Marine Mammal Protection Act.

Although commercial exploitation of the Bering Sea population of bowheads did not begin until the mid-nineteenth century, they have been hunted for subsistence purposes by Eskimos for centuries. Recently, however, apparent increases in the numbers of bowhead whales landed, killed but lost, and struck but lost by Alaskan Eskimos led to increasing concern about the adverse impact of unregulated Eskimo hunting on the endangered bowhead population. This concern led to a decision by the International Whaling Commission (IWC) in June 1977 to ban the taking of bowhead whales for subsistence by all its member nations' people, including Alaskan Eskimos. Subsequently, in December 1977 and June 1978, the IWC modified the total ban in recognition of the subsistence and cultural dependence of Alaskan Eskimos upon bowheads, and established limited quotas for subsistence hunting during 1978 and 1979.

Although all of the difficult scientific, legal, and policy issues associated with this problem have not yet been resolved, substantial progress has been made, internationally and domestically, toward reaching an effective compromise that will meet the nutritional and cultural needs of Eskimos while protecting an endangered species. A detailed discussion of the activities of the Commission and others during 1977 is presented in the Commission's Annual Report for Calendar Year 1977. The Commission's activities during 1978 are discussed below.

Eskimo Whaling During 1978

As discussed in the Commission's previous Annual Report, the IWC agreed at its special meeting in December 1977 to restore the exemption for aboriginal hunting of bowhead whales. The exemption was limited, however, by establishing a quota of 12 whales landed or 18 whales struck, whichever should come first, and by prohibiting striking, taking, or killing calves and whales accompanied by calves.

In response to the IWC's action, the Marine Mammal Commission wrote to the National Marine Fisheries Service recommending that it implement the IWC's decision by developing a domestic management regime in close consultation with representatives of the Eskimos, whale protection and conservation groups, and other interested parties.

For this purpose, the Commission recommended that the Service support acceptance of the IWC's decision and that it be implemented pursuant to the Whaling Convention Act of 1949, in conjunction with a cooperative agreement with Eskimos involved with the bowhead whale issue. It further recommended that the proposal to promulgate regulations pursuant to Sections 101(b) and 103 of the Marine Mammal Protection Act be withdrawn. The proposed regulations, published on 25 November 1977, would have established quotas of 15 whales landed or 30 whales struck and, as such, would have been less protective than the IWC's regime and would have contravened its decision. The Commission expressed the view that the interests of all concerned would be best served by withdrawing the proposed rulemaking and proceeding to implement the IWC's decision without the delay and difficulty which would result from a formal hearing under Section 103.

The National Marine Fisheries Service published a notice in the Federal Register withdrawing the proposed Section 103 regulations on 30 January and published proposed regulations on 6 March to implement the IWC's decision under the Whaling Convention Act. In its comments to the Service dated 20 March the Commission recommended, among other things, that the regulations be modified so as to be consistent with the IWC's decision and commitments made by the United States at the December 1977 IWC meeting by: requiring the use of a harpoon or darting gun before using the shoulder gun; amending other provisions of applicable regulations to clarify their applicability to Eskimo whaling activity and to reflect the current provisions of the IWC Schedule; providing for the immediate

suspension, upon notification to Eskimo whalers, of all licenses to whale when either 12 whales are landed or 18 struck; and providing for the collection of certain biological specimens from whales landed.

The Commission's recommendations were adopted, in part, in the final regulations which were published by the National Marine Fisheries Service on 3 April. Some of the Commission's recommendations which were not included in the final regulations were addressed and incorporated in the regulations developed by the Alaska Eskimo Whaling Commission which was formed by Alaskan Eskimo whalers in 1977.

By the end of the spring 1978 whaling season, 10 whales had been landed and 5 whales had been struck but lost by Alaskan Eskimo whalers. This information and details about the United States' bowhead whale research and management program were presented to the members of the IWC at their Annual Meeting in London, June 1978 (discussed below). In response to the United States' request, the IWC adopted an amendment to the Schedule which increased the quota for 1978 from 12 landed or 18 struck to 14 landed or 20 struck. On 22 December the Federal regulations governing the taking of bowhead whales were amended to reflect the modified IWC quotas. By the end of calendar year 1978, 12 bowhead whales had been landed by Alaskan Eskimo whalers and a total of 18 whales, including the 12 landed, had been struck. This constituted a significant reduction from the figures for the 1976 spring and fall hunts (48 whales landed, 8 others killed but lost, and 35 others struck but lost) and from those for the 1977 spring hunt (26 whales landed and 82 additional whales struck but lost).

IWC Meeting, June 1978

Meeting of the Scientific Committee

The IWC's Scientific Committee considered the report submitted by the United States on the conduct and results of its bowhead whale research program in 1978 as well as other available information and analyses relating to the Bering Sea population of bowhead whales. The report presented the preliminary results of the bowhead whale research program (discussed in the Commission's previous Annual Report) involving a comprehensive ice-based camp, aerial, and vessel census. The report indicated that, based upon data available as of 30 May 1978, the number of whales migrating past Alaskan Eskimo whaling villages was in

the range of 1,783-2,785 whales, with 1,734 whales actually sighted and 2,264 whales considered the best estimate.

The Scientific Committee's Subcommittee on Protected Species reviewed the available information and expressed appreciation for the substantial United States' research program which had yielded the much-improved population estimate of 2,264 bowhead whales. The Subcommittee also drew attention to the fact that only 17 bowhead whale calves had been actually sighted, leading to an estimate of 29 calves or 1.3% of the total population. It noted that while the number of calves in the population may have been underestimated because of the difficulty of sighting them or because they migrate through the census area later in the season, there was no positive evidence with respect to these explanations and the Subcommittee expressed concern that the normal recovery process for this population may have been altered. In light of these circumstances, the Subcommittee urged the Scientific Committee to reconfirm its recommendations to the IWC that from a biological point of view, the only safe course would be to reduce the number of bowheads killed to zero, while noting that the IWC might wish to discuss subsistence and cultural needs and other considerations that are beyond the expertise of the Scientific Committee.

The Scientific Committee adopted the recommendations of its Subcommittee on Protected Species and reconfirmed its recommendations to the IWC that, from a biological point of view, the only safe course would be to reduce the kill of bowhead whales from the Bering Sea population to zero. It also noted and repeated the suggestion made to the special meeting of the IWC in December 1977 that the IWC might wish to discuss other considerations such as subsistence and cultural needs which are beyond the expertise of the Scientific Committee.

Meeting of the IWC

The members of the IWC considered the bowhead whale issue with reference to a special report submitted by the United States, the report of the IWC's Scientific Committee, and the Committee's statement that the members might wish to discuss non-biological considerations relating to subsistence hunting of bowhead whales. Representatives of the Marine Mammal Commission served on the U.S. delegation which included representatives of interested Federal agencies, Congress, the State of Alaska, Eskimos, and whale protection and conservation groups.

Based upon the results of its research and management program and in consideration of the subsistence and cultural dependence of Eskimos upon bowhead whales, the U.S. proposed that the IWC amend the Schedule and pass a resolution which would have allowed the U.S. to set annual quotas based upon a determination of the subsistence needs of the Eskimos, but with an upper limit of no more than 2% of the most reliable population estimate. After extensive discussion, the IWC's Technical Committee rejected the U.S. proposal and recommended instead that the IWC amend the Schedule so that the 1979 bowhead hunt would end when 24 whales had been landed. The Technical Committee, unable to agree on the number of whales that could be struck, made no recommendation with respect to that aspect of the quota. In plenary session, the recommendation was amended by the USSR and seconded by Denmark so that the hunt would cease when 24 whales were landed or 30 struck but it failed to gain the necessary 3/4 majority support. After several subsequent proposals also failed to gain the necessary 3/4 majority support, the IWC adopted by a vote of 9 in favor, 1 opposed, with 7 abstentions, a proposal by Norway, seconded by Iceland, to amend the Schedule to allow 18 whales to be landed or 27 struck in 1979.

Recognizing the complexity of aboriginal whaling issues and the desirability of developing an aboriginal whaling scheme, the IWC also adopted an amendment to the resolution proposed by the United States to establish guidelines for the management of aboriginal bowhead whaling. The Resolution, as adopted, calls upon a working group of the Technical Committee to examine the entire aboriginal whaling problem, and to develop proposals for a regime for the aboriginal bowhead hunt in Alaska and, if appropriate, a regime or regimes for other aboriginal whaling. These are to be submitted to the Commission for consideration at its next Annual Meeting (June 1979). The IWC also reaffirmed the Resolution it had adopted at its December 1977 meeting concerning the protection of bowhead and beluga whale habitats.

Near the conclusion of the meeting, the U.S. requested that the IWC consider, in light of the increased estimated size of the bowhead population, amending the Schedule to allow 2 additional whales to be taken in 1978 by changing the quotas for 1978 from 12 landed or 18 struck to 14 landed or 20 struck. The U.S. indicated that it recognized that its request was irregular under the IWC's rules of procedure and that it would not seek a vote on the request if any member objected to its

consideration. In the absence of any objection to consideration of the proposal, the IWC adopted the proposed amendment by a vote of 10 in favor and 1 opposed, with 6 abstentions.

Judicial Action

In July, shortly after the meeting of the IWC at which the quotas for Eskimo bowhead whaling during both 1978 and 1979 were increased, representatives of the Alaskan Eskimo whalers filed suit in the U.S. District Court for the District of Alaska to enjoin enforcement of the bowhead whaling regulations promulgated by the National Marine Fisheries Service to implement the IWC's decisions. Plaintiff Eskimos alleged, among other things, that the Federal regulations implementing the IWC's Schedule were not valid because the IWC had no jurisdiction over subsistence whaling and that the decisions of the IWC could not be implemented under the Whaling Convention Act.

On 11 January 1979 the District Court found that the Federal regulations promulgated to implement the IWC's Schedule were so directly linked to the conduct of U.S. foreign relations that the Court lacked subject matter jurisdiction to review their validity. The Court dismissed the Eskimos' suit in its entirety, leaving intact the authority of the Federal government to implement the IWC's decisions under the Whaling Convention Act.

Research

The Commission's activities during 1977 with respect to the development of an effective bowhead whale research program are discussed in detail in its previous Annual Report. Research activities continued to play a major role in the cooperative efforts to resolve the bowhead whale issue in 1978 and the Commission's activities are summarized below.

On 4 January the Commission wrote to the National Marine Fisheries Service noting that the Service's bowhead whale research plan provided a good basis for short-term research activities but that a good, long-range research plan must be, by nature, a changing document subject to review, revision, and improvement. The Commission therefore recommended that the Service continue to develop, in cooperation with the Eskimos, the State of Alaska, and other interested parties, detailed plans for implementation of bowhead whale research. The Commission also noted that it had recommended in September 1977 that a supplemental appropriation be sought, if needed,

to insure that adequate funds were available to continue bowhead whale research and that, if possible, this research not be done at the expense of other programs. The Commission requested information concerning actions either taken or contemplated with respect to the matter.

On 21 February, the Commission wrote to the National Marine Fisheries Service inviting representatives of the Service to join the Commission and its Committee of Scientific Advisors on Marine Mammals at their meeting in February to discuss various aspects of the program including issues relating to: overall planning, arrangements, and schedule of activities; funding; aerial, vessel, and ice-based camp census efforts; historical log book studies; acoustic studies; harvest monitoring; biological studies; stranding studies; exchange of data between U.S. and Soviet scientists; critical habitat identification; and the effects of outer continental shelf activities on bowhead whales. At the meeting, representatives of the Service's Northwest and Alaska Fisheries Center thoroughly reviewed program plans and activities with the Commission and Committee. In addition, representatives of the Commission met with representatives of the Service on several occasions to review and plan various aspects of the aerial survey and biological programs.

On 19 June, following completion of the spring 1978 research activities, the Commission wrote to the Service inviting representatives of the Service to join representatives of the Commission to review plans for bowhead whale research and recommending that a revised plan for the next two years be prepared for discussion. A meeting for this purpose was held and the Service issued a draft research plan for fiscal year 1979 on 29 August 1978. This plan, as well as the results of the 1978 research program, were discussed in detail with representatives of the Service at the Commission's meeting in September.

Shortly after reviewing the Service's bowhead whale research plan, the Commission learned that the Bureau of Land Management was in the process of contracting for studies to assess how bowhead whales might be impacted by oil and gas development activities in the Beaufort Sea. Since the National Marine Fisheries Service's and Bureau of Land Management's programs dealt with the same species in the same area, the Commission recommended that representatives of the two agencies meet to review and coordinate their respective programs.

On 20 September, representatives of the Bureau of Land Management briefed representatives of the Commission and the Service on the Bureau's plans for bowhead whale research. It was noted that having requested and received the Service's biological opinion concerning the possible impacts of oil and gas development on bowhead whales in the Beaufort Sea, the Bureau was in the process of contracting with the Alaska Eskimo Whaling Commission and the Naval Arctic Research Laboratory to conduct research on the bowhead whale. However, since several elements of the Bureau's proposed program appeared to be duplicative of research either already conducted or planned by the Service, it was agreed that appropriate program managers and task leaders from the Bureau and the Service would meet to develop a coordinated research plan.

Although representatives of the Bureau and the Service met several times after 20 September, the meetings did not result in a cooperative, goal-oriented program plan. Therefore, on 20 November, the Commission wrote to the Bureau requesting that a knowledgeable representative brief the Commission on the Bureau's existing and proposed research commitments, their relationship to research being carried out or planned by the National Marine Fisheries Service, and efforts to coordinate activities with the National Marine Fisheries Service and agencies of the State of Alaska, including the University and its Arctic Environmental Information and Data Center. The Commission noted that the scarce resources that are available for these and similar efforts must be applied to maximum advantage. It therefore recommended that the Bureau defer investing funds in bowhead whale research pending a determination that the proposed work is well-conceived and well-justified.

At a meeting on 30 December, Bureau representatives briefed representatives of the Commission and the Service on the Bureau's existing and proposed research commitments and its efforts to coordinate its activities with those of other agencies. The Bureau's research plan was not yet in final form and it was agreed that the plan, when completed, would be sent to the Commission for review and comment before any more funds were committed. The Commission expects to receive the Bureau's plan in early 1979 and, after reviewing it, will advise both the Bureau and the Service as to actions that appear necessary to coordinate efforts and prevent wasteful, duplicative research.

Interagency Coordination

The Commission has been pleased to cooperate with representatives of interested Federal agencies throughout 1978 to develop an effective, coordinated resolution of the bowhead whale issue. The Commission will continue to participate in efforts relating to research, the development of an aboriginal whaling scheme, preparations for the IWC meetings, and other aspects of the United States' bowhead research and management program.

The Commission has, however, been concerned about the need to coordinate the activities of the Department of the Interior relating to the bowhead whale issue with those of other Federal agencies and, for this purpose, wrote to Under Secretary of the Interior James A. Joseph on 29 December concerning relevant activities of the Department's Bureau of Indian Affairs, Fish and Wildlife Service, and Bureau of Land Management. The Commission noted that efforts to implement the recent IWC quota decisions and the IWC Resolution calling for the development of a proposed subsistence bowhead whaling scheme will require coordinated actions by the various components of the Federal government and that it believed that the Department of Interior should be involved in those efforts.

The Commission noted that it had received a report prepared for the Department's Bureau of Indian Affairs on the effect on Alaskan Eskimos of a limit on bowhead whale take and that it understood that the Department found that the report contained certain weaknesses and that further studies were needed. The Commission requested information as to what studies the Department had undertaken and the results of those studies as well as its plans, if any, for further studies.

The Commission also requested information about what steps the Department had taken to meet any subsistence needs of the Eskimos that it determines may not be satisfied should a sufficient number of bowhead whales not be available. In this connection, the Commission recommended that the Department pursue efforts to evaluate the necessity, feasibility, and desirability of using walrus, under the jurisdiction of the Department's Fish and Wildlife Service, for this purpose.

Finally, the Commission expressed concern about the potential adverse effect upon the bowheads, other wildlife resources, and the Eskimos who depend upon them as a result of contemplated

outer continental shelf activities under the jurisdiction of the Department's Bureau of Land Management. The Commission recommended that the Department review the matter and advise the Commission of how it intends to safeguard the welfare of the wildlife resources and Eskimos who may be adversely affected by the proposed activities.

Conclusion

The Commission's activities during 1977 and 1978 have been directed toward achieving the common goals of meeting the legitimate subsistence needs of Eskimos who hunt the bowhead whales and protecting the endangered bowhead population so as to allow its recovery, if recovery is still possible. The Commission has taken the position that such an accommodation is both feasible and desirable, and it has based its recommendations upon the following considerations: the high levels of taking, especially those which occurred in 1976 and 1977, threatened the bowhead whale population and were contrary to the best interests of the whales, United States' conservation efforts, and the Eskimos themselves; effective research on the status of the bowhead population, the impacts of various levels of taking, and methods of reducing the number of whales struck and lost is essential to the resolution of the problem; affected Eskimos must be fully consulted and involved to the greatest extent possible in development and implementation of research and management programs; efforts should be made to identify and provide the Eskimos with alternatives to the bowhead whale if the requisite actions to protect the endangered population result in an adverse impact upon the livelihood of those Eskimos; the Bureau of Indian Affairs, Department of the Interior, should be in the best position to develop reliable information concerning the need for bowhead whales and the feasibility and desirability of providing such alternatives; efforts should be continued in the International Whaling Commission to recognize the distinction between legitimate subsistence whaling and commercial whaling and to develop an appropriate management scheme that reflects the distinction; and the best approach for all concerned is to develop an effective research and management program that will help to resolve the unproductive conflicts, both domestically and internationally, and allow the United States to resume its major efforts in the International Whaling Commission relating to the protection and conservation of all cetaceans.

CHAPTER IV

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

The Marine Mammal Protection Act directs the Secretary of Commerce, in consultation with the Commission, to develop recommendations governing the incidental taking of marine mammals in waters subject to the jurisdiction of the United States and to seek 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. During 1978, the Commission devoted efforts to three aspects of incidental taking of marine mammals--the tuna-porpoise issue, incidental take permits for foreign fishermen, and international negotiations relating to the incidental taking of Dall's porpoises.

The Tuna-Porpoise Issue

The incidental mortality and serious injury of porpoises associated with commercial yellowfin tuna fishing has been the subject of major concern and controversy since passage of the Act. A detailed discussion of the Commission's activities and an historical summary of efforts to resolve the problem are presented in the Commission's Annual Reports for Calendar Years 1976 and 1977.

The Commission is pleased to report that while much of the controversy has subsided, the substantial progress achieved in 1977 has been continued during 1978. The Commission believes that this progress reflects the value and viability of efforts to achieve the goals of the Act.

The 1978 Fishing Season

As discussed in the Commission's previous Annual Report, final regulations governing the 1978-1980 fishing seasons were published by the National Marine Fisheries Service in the Federal Register on 23 December 1977 setting declining quotas of 51,945 animals in 1978, 41,610 in 1979, and 31,150

in 1980. In commenting on the quotas, the Commission noted that they were designed to serve as absolute upper limits and that it was expected that the actual porpoise mortality levels would be substantially below those upper limits. The data available at the end of 1978 indicate that this was, in fact, the case for the 1978 fishing season during which the total incidental porpoise mortality associated with U.S. commercial yellowfin tuna fishing was 14,243 animals. This record low kill constitutes a substantial reduction from the mortality levels for 1977 and preceding years. For reference, figures for the estimated porpoise mortality associated with the U.S. tuna fishing vessels since passage of the Act are set forth below:

<u>Year</u>	<u>Estimated Kill</u>
1972	306,000
1973	175,000
1974	99,000
1975	134,000
1976	103,600
1977	26,477
1978	14,243

The significant reduction in porpoise mortality during 1978 is especially encouraging in light of the fact that, as the total porpoise mortality declined, the U.S. tuna purse seine fishing fleet caught more tuna in 1978 than in 1977, suggesting that the skillful use of effective gear and motivation by fishermen can result in successful fishing operations and substantial reductions in porpoise mortality. It should be noted, however, that the 1978 fishing season appears to have been atypical in some respects. The increased total catch during 1978 was largely the result of an increase in the catch of skipjack tuna which are normally caught without "setting on porpoise." Of the total yellowfin tuna catch for 1978, only about 40,000 short tons were caught by "setting on porpoise," as compared to the more typical fishing season during which more than 100,000 short tons are usually caught in sets involving porpoise. In addition, the average kill rate increased from 0.25 porpoise per ton of yellowfin caught in association with porpoise in 1977 to 0.36 in 1978. These factors suggest that some of the reduction in total mortality

resulted from peculiarities of the 1978 fishing season during which both skipjack and yellowfin tuna could be caught by the U.S. fleet without setting on porpoise to a greater extent than during fishing seasons when the fish are associated with porpoises.

These and other aspects of the porpoise mortality reduction efforts will be evaluated when all the data from the 1978 fishing season are available. In the interim, it is expected that the porpoise mortality rates of individual vessels and the U.S. fleet as a whole will decline as the causes of "problem sets" are identified and resolved and as more vessels are equipped with the required net system and fishermen gain experience and skill in the use of the system.

Research

During 1978, the Commission met and consulted with other interested parties to plan and evaluate research efforts designed to reduce the incidental mortality and serious injury of porpoise and to assess the status of the affected porpoise populations. Some aspects of these efforts are discussed below.

Cooperative Dedicated Vessel Research Program

On 30 December 1977, the Commission entered into an agreement with the National Marine Fisheries Service and the United States Tuna Foundation (representing all segments of the tuna industry) concerning the dedication of a tuna fishing vessel to research activities designed to study the relationship and behavior of tuna and porpoise involved in the yellowfin tuna fishery, assess the status of affected porpoise populations, and further the objectives of the Act with respect to incidental taking of those porpoises. Among other points, the agreement provided that: the U.S. Tuna Foundation would make the M/V Queen Mary available during calendar year 1978, at its expense, for research; the Commission, in consultation with the National Marine Fisheries Service and the U.S. Tuna Foundation, would select and provide funds for a program manager to coordinate and manage the research program; and a Program Board, composed of representatives of each party to the agreement, would oversee implementation of the program.

Pursuant to the terms of the agreement, the following actions were taken early in 1978: the U.S. Tuna Foundation made the M/V Queen Mary available in January; with the concurrence of the U.S. Tuna Foundation and the National Marine Fisheries Service, the Commission contracted with Mr. John DeBeer to manage the program; a Program Board composed of Dr. W. W. Fox, Jr. (National Marine Fisheries Service), Mr. F. G. Alverson (United States Tuna Foundation), and Dr. R. J. Hofman (Marine Mammal Commission) was constituted; and a program plan was developed and agreed upon by representatives of the parties to the agreement.

Five cruises of the dedicated vessel were completed during 1978. Plans for these were developed by the program manager in consultation with participating scientists and the Program Board. Participating scientists were either staff members of or supported by the National Marine Fisheries Service, the National Science Foundation, Living Marine Resources, San Diego State University, the Naval Ocean Systems Center, Hubbs-Sea World Research Institute, New York University, Sea Life Park Hawaii, the University of Hawaii, and Science Applications, Inc. Cruise reports, prepared by project leaders after each cruise, are now being incorporated into the program manager's report on the five cruises. The report will be available in the summer of 1979.

Although all of the data collected will not be fully analyzed for many months, the program yielded significant results in many areas and demonstrated the utility of the "dedicated vessel" concept. It is now clear that certain kinds of gear and biological research are best carried out under real or simulated fishing conditions while other necessary research activities cannot be conducted effectively or efficiently if the research vessel is simultaneously engaged in competitive fishing in order to defray research and operational costs.

At the end of 1978, it was agreed that it would no longer be cost-effective to utilize a single dedicated research vessel throughout 1979 since some of the factors affecting porpoise mortality that will now require further research at sea are related to specific vessels or classes of vessels and no single vessel is sufficiently representative. Thus, it now seems desirable to utilize several different vessels for research in 1979 so that vessel-specific or vessel class-specific problems can be resolved.

In a letter of 26 October 1978 to the National Marine Fisheries Service, the Commission recommended that the Service review the results of the cooperative research program and develop a proposal for further cooperative research including, but not necessarily limited to, utilization of dedicated research vessels. The Commission recommended that a draft proposal be sent to representatives of the industry, the Commission, the National Science Foundation, and to other interested persons in the academic and the environmental communities for comment, and that the Service convene a meeting of representatives of these groups in late November or early December to agree upon a plan for cooperative research during calendar year 1979.

The U.S. Tuna Foundation and the National Marine Fisheries Service concurred with the Commission's views that data needs should be reassessed and that the cooperative program should be revised, as necessary, to meet those needs effectively. Representatives of the Service and the U.S. Tuna Foundation met several times in October, and the Service convened a planning meeting of representatives of the Foundation, Commission, Service, and the Inter-American Tropical Tuna Commission on 14 December. Since representatives of the Service were unable to prepare and circulate a draft proposal for consideration before the meeting, discussions at the meeting were limited to the identification of general areas for possible cooperative efforts and no agreement was reached on a specific plan for research in 1979.

Because it is convinced that cooperative, goal-oriented research is essential if the substantial progress in resolving the tuna-porpoise problem is to be continued, the Commission again recommended on 22 December that the Service reassess data needs, develop a proposal for cooperative research to be supported by the Federal government and tuna industry, circulate the proposal for review and comments, and convene a group of appropriate representatives to agree on a research plan for 1979. The Commission further noted that the proposal should be developed with reference to the fact that decisions concerning regulations governing the fishery must be made in 1980, if not sooner, and that the proposal should identify: (1) the interests and responsibilities of the National Marine Fisheries Service, National Science Foundation, U.S. Tuna Foundation, and the Inter-American Tropical Tuna Commission; (2) information needs

and research needed to meet those needs; (3) personnel, financial, and logistic support requirements; and (4) the method whereby the interests, responsibilities, and capabilities of the government and tuna industry can be integrated most effectively to achieve the desired goals.

Aerial Surveys

A comprehensive aerial and shipboard survey of porpoise in the eastern tropical Pacific Ocean was conducted by the National Marine Fisheries Service in 1977. The Commission had recommended that such a survey be conducted and representatives of the Commission and its Committee of Scientific Advisors consulted with representatives of the Service concerning the design, conduct, and analysis of the results of the survey.

A number of technical problems have been encountered in the course of efforts to analyze the survey data, and completion of the analyses and publication of the results have been delayed. One of the most serious problems has been that relating to the estimation of porpoise school size; the school size estimate resulting from the 1977 survey is significantly lower than estimates resulting from the 1974 survey and data collected aboard tuna purse seine vessels.

The Commission noted the importance of the school size estimate issue in its letter to the Service of 12 October and suggested methods by which it might be resolved. By letter of 26 October, the Commission noted the need for additional studies relating to this matter. During the course of its review of the Service's tuna-porpoise research program (discussed below), the Commission learned that the Service had not planned or implemented research efforts to resolve the critical questions relating to the estimation of school size. Therefore, in its letter of 22 December, the Commission strongly recommended that an intensive research program, as outlined in earlier Commission letters, be initiated immediately to ensure that reliable estimates of average school size are available in time for the Service's population assessment workshop which is tentatively scheduled for the summer of 1979.

The National Marine Fisheries Service will conduct a third aerial survey in 1979. Representatives of the Commission and its Committee of Scientific Advisors consulted

with representatives of the Service concerning planning for the survey at a meeting on 5 and 6 October. The Commission will continue to review plans for and conduct of the survey and will provide advice on data analysis and interpretation.

Review of the National Marine Fisheries Service Tuna-Porpoise Research Program

Each year, since 1975, representatives of the Commission have met with appropriate representatives of the Southwest Fisheries Center staff to review the Center's plans for tuna-porpoise research. The 1978 review was held on 15 December and the Commission commented, by letter of 22 December, that the program, as a whole, appeared to be well conceived, goal-oriented, adequately funded, and productive. The Commission noted, however, that it would be desirable to conduct more detailed planning in some areas and that the design of the overall program could be improved so as to take better advantage of the interests, expertise, and capabilities of persons and organizations outside the Service. Recommendations on actions to improve the program were included in the Commission's letter.

The Commission will continue to cooperate with the National Marine Fisheries Service to increase the productivity and cost-effectiveness of the tuna-porpoise research program.

General Permits for Foreign Fishermen to Incidentally Take Marine Mammals Within the 200-Mile Limit

As of 1 March 1977, the Fishery Conservation and Management Act amended the Marine Mammal Protection Act by extending its provisions to all waters within 200 miles of U.S. coasts. As a result, foreign fishermen who take marine mammals in the course of commercial fishing operations within the 200-mile fishery conservation zone must now obtain general permits under Section 104 of the Marine Mammal Protection Act.

This truly accidental taking of marine mammals (as distinguished from the taking which results from deliberately "setting on porpoises") has received little attention as compared to the efforts that have been expended in resolving the tuna-porpoise problem, discussed earlier in this Chapter. In

contrast to the detailed regulations and quotas governing fishing activities associated with the tuna-porpoise problem, regulations governing other forms of fishing have remained essentially unchanged since they were first issued in 1974. The regulations contain no quotas, provide that the fisherman may take steps short of causing injury or death of the marine mammal to protect his gear, catch, or person from damage, and provide that he may injure or kill the animal if the use of non-injurious methods fails to prevent substantial and immediate damage.

During 1978, the Commission concentrated its attention, with respect to incidental taking by foreign fishermen, on international negotiations relating to the incidental taking of Dall's porpoises in the course of Japanese commercial salmon fishing (discussed in the following section of this Chapter). In addition, the Commission reviewed an application for a permit submitted by Soviet fishermen (Sovrybflot, Moscow, U.S.S.R.) and transmitted comments to the National Marine Fisheries Service by letter of 1 March. The Commission noted that the actions it had recommended in 1977 to acquire and assess information which would serve as a basis for reliable scientific judgments about the impacts of such taking on the affected populations had apparently not been undertaken and it indicated that the available information concerning this application and others must be supplemented in view of the requirements of the Marine Mammal Protection Act, as it has been interpreted. The Commission indicated that it would be pleased to review this and other applications when the following information was made available: exactly what species and populations were affected by the fishing operations; were the references in the application to "taken" intended to mean killed and injured or only captured and released unharmed; what reports have been submitted pursuant to the terms of permits issued in 1977, and what do these reports indicate with respect to the taking that occurred; were U.S. observers placed aboard foreign fishing vessels under the terms of permits issued in 1977, as the Commission recommended and, if so, what data were obtained by the observers; and, generally, what were the plans of the Service to collect and analyze the available data and acquire the additional information required by the Act concerning the size and distribution of affected populations, their status, the extent of incidental taking, and the impact of taking upon those populations.

On 3 July the Service issued a general permit to Sovrybflot to allow Soviet fishermen to incidentally take marine mammals.

The Service will convene a workshop in early 1979 to review the available information on incidental taking of marine mammals by both domestic and foreign fishermen so as to identify the species and populations involved, estimate the numbers of animals killed and injured, identify the optimum sustainable population levels of those populations, and assess the impact of the taking on the species and populations involved. Representatives of the Commission will participate in the workshop which is designed to provide the basis for more reliable scientific judgments and appropriate modifications of the regulations governing incidental taking of marine mammals.

Incidental Taking of Dall's Porpoise in
the Course of Japanese Salmon Fishing

Dall's porpoises (Phocoenoides dalli) become entangled and die in the gill nets used by Japanese salmon fishermen in the North Pacific Ocean. Although most of the Japanese gill net salmon fishery is conducted in waters beyond the 200-mile U.S. contiguous fishery zone, a lesser portion of the Japanese salmon fishery has been conducted within 200 miles of the United States' coast. As a result of the passage of the Fishery Conservation and Management Act of 1976, Japanese salmon fishermen were required to obtain permits under the Marine Mammal Protection Act to incidentally take Dall's porpoises in the course of their fishing operations within the U.S. zone.

The Commission reviewed the application of the Federation of Japan's Salmon Fisheries Cooperative Association in 1977 and concluded that information on the status of Dall's porpoises and the expected impact of the proposed taking was not adequate to satisfy the requirements of the Act. It therefore recommended to the National Marine Fisheries Service by letter of 12 July 1977 that the application be denied. The Commission recommended that the applicant be advised of the desirability of a vigorous research program on the status of the affected population and extent of the kill, as well as on changes in fishing gear and methods that might reduce incidental kill. The Commission indicated that it would be pleased to reconsider the application if the requisite information should become available. On 27 July 1977, the Service denied the application for a permit to incidentally take Dall's porpoises.

Recognizing the potential impacts of incidental taking upon the population, representatives of the Commission attended a workshop convened by the National Marine Fisheries Service on 9 January 1978 to examine all available data and, if possible, assess the current status of Dall's porpoise populations affected by incidental taking in the Japanese gill net fishery both within and outside the 200-mile zone of the United States. The workshop report, issued in April, indicated that the participants were unable, on the basis of available data, to derive an estimate of the size of the affected populations, their rates of reproduction or natural mortality, or the levels of incidental taking from each of the affected populations. The participants were also unable to determine the total extent of incidental taking of Dall's porpoises but indicated that the estimate of 19,700 animals killed in 1964 was based upon the best data, although it was an underestimate. As a result, the participants were unable to assess quantitatively the current status of Dall's porpoises in the North Pacific Ocean.

In late January, shortly after the workshop on Dall's porpoise, the Commission learned indirectly that negotiations were being conducted between the United States and Japan relating to the International Convention for the High Seas Fisheries of the North Pacific. This Convention applies to the Japanese salmon fishery, and was scheduled to lapse before Japanese salmon fishing began in June 1978. The Commission was advised that consideration was being given to provisions which would allow Japanese vessels to fish for salmon within a portion of the United States' 200-mile zone as part of an overall reduction and redistribution of fishing effort and area.

In light of the obvious relationship between the salmon fishing that was being considered in the course of those negotiations and the incidental taking of Dall's porpoise, the Commission wrote to the Department of State on 8 February 1978 concerning the need to recognize the Dall's porpoise issue in the course of the negotiations. In reviewing the situation, the Commission noted that the report of the workshop participants found that the annual kill of Dall's porpoise in the Japanese fishery may be as high as 20,000 and it noted that a kill of 20,000 or even 10,000 animals may be seriously disadvantaging the population. The Commission expressed its concern that although representatives

of the National Marine Fisheries Service had been participating in the negotiations with the Japanese relating to the salmon fishery, the Department of State had not been made aware of the Dall's porpoise issue and it had not yet been raised in discussions with the Japanese. The Commission recommended that this important issue be discussed and resolved before any agreement was concluded that might result in the incidental taking of Dall's porpoise. In an effort to provide a potential solution to the problem, the Commission further recommended that the United States representatives: discuss the issue frankly with the Japanese representatives; develop language for inclusion in the agreement that would provide for observers, research, and other steps to resolve the Dall's porpoise problem in the near future; and explain to the Japanese representatives that the incidental taking of Dall's porpoise within the U.S. zone would be illegal and prosecuted unless and until an agreement with provisions modifying the requirements of the Marine Mammal Protection Act came into force.

The Department of State responded by letter of 17 February expressing appreciation to the Commission for drawing attention to the Dall's porpoise issue and agreement that it must be satisfactorily resolved in the course of the negotiations. The Department of State also provided language which the United States had proposed for inclusion in the agreement that would have exempted Japanese vessels from the requirements of the Marine Mammal Protection Act for a specified period, during which the United States and Japan would conduct research to determine the effect of the Japanese salmon fishery on marine mammal populations and work to reduce or eliminate the incidental catch of marine mammals in the fishery.

After reviewing the text of the proposed language, the Commission advised the Department of State that the U.S. position with respect to the Dall's porpoise issue should be strengthened so as to gain a greater commitment from the Japanese to specific research and development efforts and that a memorandum of understanding should be negotiated with the Japanese as part of the agreement to specifically provide, among other things, for: collection and analysis of all animals incidentally taken within the U.S. zone; collection of a representative number of animals taken outside the U.S. zone; placement of U.S. observers and scientists aboard Japanese fishing vessels; population census activities; provision of data on past and current incidental kill,

by area; field research and testing of equipment and techniques to reduce or eliminate incidental take in marine mammals; and provision by the Japanese of an appropriate "dedicated" vessel for the conduct of such studies.

In order to contribute to the development and implementation of a strengthened U.S. position with respect to this issue, a representative of the Commission participated as a member of the U.S. delegation in the final negotiations with the Japanese during the last week of March and early April in Washington, D.C. These negotiations resulted in the development of a Protocol amending the Convention and a Memorandum of Understanding on Dall's porpoise containing provisions substantially consistent with the Commission's recommendations. The Protocol and associated Memorandum of Understanding were signed in Tokyo on 25 April and, on the same day, U.S. and Japanese scientists met in Seattle, Washington to develop detailed plans to implement the three-year Dall's porpoise research and development program pursuant to the Memorandum of Understanding.

In May, the Commission presented testimony and comments to members of the House Merchant Marine and Fisheries Committee and the Senate Committee on Commerce, Science and Transportation concerning proposed legislation to amend the North Pacific Fisheries Act so as to implement the Protocol and associated documents. The Commission noted that because the great majority of incidental taking in the course of the Japanese fishery occurs outside the U.S. 200-mile zone, unilateral action by the United States in the form of a denial of a Marine Mammal Protection Act permit would not, by itself, affect the incidental taking outside that zone. It further noted that the amended Convention and associated Memorandum of Understanding provided the desirable binding institutional mechanisms for the conduct of effective research and development efforts that would otherwise be lacking. The Commission noted that the proposed legislation included provisions for action by the United States in the event that the populations were determined to be in jeopardy, the contemplated efforts to develop the requisite biological information were not being implemented, or feasible gear and techniques to reduce or eliminate incidental taking were not being adopted by the Japanese.

The legislation implementing the amended Convention and Memorandum of Understanding was enacted in July and the contemplated research and development activities were undertaken

pursuant to the Memorandum of Understanding. The Commission will cooperate with the National Marine Fisheries Service during 1979 in the review of the results of the research program and in the development of further measures to reduce incidental taking of Dall's porpoises.

CHAPTER V

ENDANGERED, THREATENED, AND DEPLETED SPECIES

Introduction

The Commission reviews the status of marine mammal populations and makes recommendations for appropriate actions and designations under the Marine Mammal Protection Act and the Endangered Species Act. Commission activities in 1978 are discussed below.

West Indian Manatee (*Trichechus manatus*)

Along with the Hawaiian monk seal, the right whale, and the bowhead whale, the West Indian manatee is among the most endangered of marine mammals inhabiting coastal waters of the United States. The population in Florida is thought to be about 1,000 and evidence suggests that it continues to decline. The observed mortality was 99 animals in 1977 and 79 animals in 1978. While the apparent decline in observed mortality may be somewhat encouraging, the observed mortality is certainly only a portion of the total actual mortality. If the population is only 1,000 animals and the present levels of mortality continue, the Florida manatee population will become extinct in the near future. Effective action must be taken now to control the human activities that are by far the greatest identifiable cause of manatee mortality in Florida. The human-related factors lessening the species' chances for survival in the southeastern United States include accidental death or serious injury resulting from collisions with boats or their propellers, entrapment in water level control gates, cold-related deaths due to sudden cooling of water near electric generating plants (when the warm water discharges which attract manatees in winter are interrupted), entanglement in fishing gear, and loss of habitat due to coastal development.

The West Indian manatee is one of only four remaining representatives of the Order Sirenia. The range and abundance of the other sirenians -- dugong (*Dugong dugon*), the West African manatee (*Trichechus senegalensis*), and the Amazon manatee (*Trichechus inunguis*) -- have shrunk dramatically in recent years. The Steller sea cow (*Hydrodamalis gigas*) became extinct in 1768. If sufficiently vigorous efforts are not made and the West Indian manatee is not saved in Florida and Puerto Rico, it will signal the loss of a species throughout a significant portion of its range entirely as a result of man's activities.

In recognition of the need for effective research and protection, the Commission recommended in 1976 that the Fish and Wildlife Service seek additional funds to expand its domestic and international sirenian program, and that it give consideration to convening a workshop on the West Indian manatee as soon as possible. The need for a workshop was further discussed in January 1977 when representatives of the Service and others involved in manatee research and conservation in Florida met with the Commission and its Committee of Scientific Advisors in Tampa and identified needs for research and protection which warranted immediate attention. In late 1977, the Service said that it would co-sponsor a workshop in early 1978.

At the Commission's February 1978 meeting, the manatee situation was discussed with representatives of the Fish and Wildlife Service. Based on those and subsequent discussions, the Commission wrote the Service on 8 March noting that: "1) within the Department, there appears to be no centralized authority directing efforts to ensure the protection and recovery of this species; 2) questions relating to jurisdiction, legal authority, and exercise of that authority still appear to be unresolved; and 3) the recovery team, first established in July 1976, appears to have been inactive." The letter expressed concern about high mortality rates and the fact that the Service appeared to have taken little or no affirmative action under either the Marine Mammal Protection Act or the Endangered Species Act to resolve problems threatening manatees, and recommended that a senior member of the Service's staff be assigned responsibility for promptly developing a strategy and a schedule for attacking the problems.

In developing a strategy and schedule, the Commission recommended that attention be paid to: convening a meeting, following the manatee workshop scheduled to take place in late March, of Federal and state officials with decision-making, regulatory, and management authority to agree upon specific protective actions; an analysis of legal authorities to protect the manatee; enforcement practices under the Marine Mammal Protection and Endangered Species Acts; support of state activities under Sections 109 and 110 of the Act; the existing budget and future projections for dollars and people devoted to manatee protection and conservation; actions taken or planned with respect to specific proposals to develop areas used by manatees; working arrangements with other Federal and state entities involved with manatees; plans for regulation of either boat access or speed in terms of known manatee concentrations; and the status of the manatee Recovery Team and Recovery Plan.

On 27-29 March, the Florida Audubon Society, the Florida Department of Natural Resources, the Fish and Wildlife Service, and Sea World of Florida co-sponsored a "West Indian Manatee Workshop" in Orlando, Florida. The report of the workshop summarized existing knowledge on the abundance, reproductive biology, feeding habits, and social behavior as well as research needs in these areas. The report also described mortality problems including collisions with boats and barges, entrapment in flood control structures, death from thermal shock, entanglement in fishing nets, vandalism, and possible impacts from oil contamination, and included brief discussions of research needs in some of these areas. The report also discussed manatee husbandry, captive breeding, and criteria for release of rehabilitated manatees. The report outlined research needs in mortality reduction, population assessment, reproductive biology, and ecology and physiology. It also contained six management recommendations: 1) that Federal and state agencies prepare, publish, and implement regulations to control boat speeds, behavior of divers, and public access; 2) that winter refugia be provided special protection through land acquisition; 3) that artificial refugia not be constructed until the manatee/artificial refugia relationship is better understood; 4) that consideration be given to the mandatory adoption of certain technological changes such as propeller guards on boat motors, protection devices at flood control gates, manila rope for hanging crab traps, and alternative weed control mechanisms where herbicide ingestion by manatees is likely; 5) that contingency plans for oil spill cleanups be developed; and 6) that increased efforts be devoted to public education.

Recognizing the needs for additional information on certain aspects of the problem and to focus more attention on the issue, the Commission contracted for a report entitled "The West Indian Manatee (Trichechus manatus) in Florida: A Summary and Analysis of Biological, Ecological, and Administrative Problems Affecting Preservation and Restoration of the Population." The report contains, among other things, sections on the biology and distribution of the manatee in Florida, discussions of direct and indirect threats, the need for public education, applicable law, and a critique of Federal and state actions including comments on law enforcement and the Recovery Team.

A reply to the Commission's 8 March letter was received on 1 May. It provided some information on a number of the points raised in the 8 March letter including the fact that the Recovery Team had been reorganized. After carefully reviewing the letter, the Commission decided to undertake, in consultation with its Committee of Scientific Advisors, further intensive reviews of Service activities related to the protection, conservation, and recovery of the West Indian manatee.

While the Commission was conducting its reviews, several things were done. In July, the State of Florida enacted the Florida Manatee Sanctuary Act, an Act which affords protection to manatees through the imposition of boating regulations in most of the major areas where manatees congregate during winter months. In addition, the State, assisted by the Fish and Wildlife Service and other interested groups and individuals, started an educational program.

On 28 June, the Service published proposed regulations to control boat usage within the Merritt Island National Wildlife Refuge. The Commission commented on 1 August expressing support for this initial effort to protect the manatee and citing the need for similar efforts elsewhere. The Commission also raised questions with respect to the clarity and enforceability of the regulations.

On 7 and 17 August, the Commission wrote the Chief of the Jacksonville District of the Corps of Engineers and the Chief of Engineers respectively, noting that any actions contemplated by the Corps which might have an impact upon manatees or other marine mammals were subject to the provisions of the Marine Mammal Protection Act, and that the Commission should be provided sufficiently timely notice of such actions to allow for formal comment.

The Commission concluded its reviews in August, and on 23 August wrote the Service of its findings. The Commission noted that although it was pleased and encouraged about the actions described in the Service's letter and with other activities initiated by the Service, it remained concerned that the total problem was not being attacked with the urgency that the Commission believed critical. Acknowledging the problem to be many-faceted and without easy solution, the Commission noted that in light of the high manatee mortality rates in 1977 and 1978, one could not help but

conclude that it was more important than ever that immediate and intensive efforts be undertaken to directly attack problems causing mortality. The Commission requested further information on and raised questions concerning: several aspects of Federal/State relations; the Service's comparative analysis of protection possible under the Marine Mammal Protection and Endangered Species Acts; funding under both the Acts; enforcement policies and practices; consistency of the State's program with the Marine Mammal Protection Act; details on Federal/State cooperative arrangements; the need for clear policy and procedural guidelines for both State and Federal agents; the effectiveness of current investigative practices; habitat acquisition; policies with respect to non-natural warm water refugia; the inconsistency of the seasonal application of the Florida Manatee Sanctuary Act with the actual temporal and spatial distribution of manatees; and other points.

With respect to the reorganized Recovery Team, the Commission noted that the Team's objectives needed to be better defined and that the Recovery Plan outline drafted by the Team did not appear to distinguish between acute management problems deserving immediate action and chronic problems requiring long-term solution. The Commission stressed that certain critical management actions could not await Recovery Plan publication, and recommended that the Team: 1) define the most serious problems affecting manatees; 2) review alternative methods of resolving those problems; 3) recommend immediate solutions in cases where available information is adequate; and 4) determine research priorities in a way that will meet the need for additional management-related information. The Commission also noted that the Team should regard manatee protection and conservation in Puerto Rico as part of its mandate. As a final comment, the Commission noted that the difficult questions of how to reduce mortality, whether through technological innovation or regulation of human activities, appear to remain unasked by the Team while manatees continue to die at an alarming rate. The Commission reiterated its recommendation of 8 March that a high-level group of State and Federal officials meet to review the recommendations in the report of the West Indian Manatee Workshop and to implement a coordinated State-wide program designed to reduce human-induced manatee mortality and injury.

The letter concluded with a request that representatives of the Service join the Commission and Committee at their meeting in September. The Commission outlined for discussion a series of questions on the manatee Recovery Team, the manatee Working Group, the Manatee Sanctuary Act, Merritt Island regulations, enforcement issues, habitat acquisition, warm water refugia policies, research plans, Federal/State cooperation, and funding.

The information provided by the Service during the course of the Commission's September meeting was inadequate to provide assurances that effective actions were being taken to protect and encourage the recovery of the West Indian manatee. No Recovery Plan was received in October, and on 9 November, the Commission wrote the Assistant Secretary of the Interior for Fish, Wildlife and Parks recommending that an intensive review of the Department's Marine Mammal Program be undertaken with initial emphasis upon the evaluation of that part of the program related to the West Indian manatee. The Commission also recommended that the review include, but not be limited to, the following aspects of the Department's overall marine mammal protection and conservation program: enforcement policies and practices; the permit process; the relationship between the Marine Mammal Protection Act and other relevant statutes such as the Endangered Species Act; the application by the State of Alaska for a waiver of the moratorium and return of management; policies and practices with respect to funding state research and management programs; and the California sea otter program. A response is expected in early 1979.

To summarize, more than six years after passage of the Marine Mammal Protection Act and five years after passage of the Endangered Species Act, manatee mortality continued to be alarmingly high. The species may well become extinct in the foreseeable future throughout its range in this country unless decisive, meaningful actions are taken to cope with the basic problem which has been and remains one of controlling human activities. During 1979, the Commission will continue to work with the Department of the Interior, the agency with responsibility under both Acts, as well as with other interested agencies and groups in hopes of accelerating efforts to save the West Indian manatee before it is too late.

Hawaiian Monk Seal (*Monachus schauinslandi*)

The Hawaiian monk seal (*Monachus schauinslandi*) is in grave danger of extinction. Furthermore, it may be the only member of the genus *Monachus* with a chance for surviving the 20th century. Of its congeners, the Caribbean species (*Monachus tropicalis*) is in all probability extinct, and the few remaining members of the Mediterranean species (*Monachus monachus*) live in areas subject to increasing disturbance and pollution. Thus, the fate of the genus may depend upon the ability of the United States to protect the Hawaiian species.

The Commission's Annual Report for calendar year 1977 describes recommendations made and actions taken with respect to designation of the species as "endangered" under the provisions of the Endangered Species Act and "depleted" under the provisions of the Marine Mammal Protection Act. The Report also discusses actions taken through January 1978 with respect to critical habitat designation.

Because of its concern for the welfare of this species and the endangered humpback whales which winter in Hawaii, the Commission held its September meeting in Hawaii so that full discussion with resident scientists and governmental officials could take place. In preparation for the meeting, the Commission wrote the National Marine Fisheries Service on 24 August 1978 setting forth a number of questions related to the development of an Hawaiian monk seal Recovery Plan, research, critical habitat designation, fisheries development, human activities within the Hawaiian Islands National Wildlife Refuge, and the effects of military activities on the monk seal.

At the meeting, extensive, useful discussions were held with representatives of the National Marine Fisheries Service, the Office of the Governor of Hawaii and State agencies, the U.S. Fish and Wildlife Service, and other interested and knowledgeable persons. During the discussions, it was learned: that the National Marine Fisheries Service had no plan to convene a group of experts to develop a Recovery Plan; that representatives of the State of Hawaii and the National Marine Fisheries Service had differing views as to actions needed to protect and encourage recovery of the species; and that available information on the biology and ecology of the species, and the cause or causes of its decline, is inadequate to determine precise actions needed

to insure its survival and recovery. Following the discussion, the Commission's Committee of Scientific Advisors expressed grave concern about the National Marine Fisheries Service's failure to initiate a comprehensive research program and recommended that the Commission convene a group of experts to develop a long-term, goal-oriented research plan for the Hawaiian monk seal.

Pursuant to the Committee's recommendation, the Commission, in consultation with the Committee, promptly organized and convened a meeting of experts to develop such a plan for its consideration. The meeting was held on 18 and 19 October 1978 and participants included representatives from the State of Hawaii, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the academic community.

The draft report, presently under review, notes that: the present status of the Hawaiian monk seal population is not adequately documented; the cause or causes of the population decline in the last twenty years are not completely identified; development of sport and commercial fisheries, and possibly other human activities in or adjacent to the leeward islands could pose a threat to the remaining monk seal population; virtually nothing is known of the at-sea movements, behavior, or marine habitat requirements of monk seals; and that current research programs and funds are insufficient to provide the kinds, quantity, and quality of information needed to determine the precise actions that can and should be taken to (1) prevent further declines, (2) encourage recovery, or (3) insure that human activities are not to the disadvantage of the monk seal population.

The report further notes the urgent need for a comprehensive research program and includes a recommended five-year research plan designed to: (a) determine factors that may be causing or contributing to mortality and/or decreased productivity of Hawaiian monk seals; (b) identify threats to the population or its habitat; (c) improve population assessment and monitoring; (d) determine habitat use patterns and requirements; and (e) identify, characterize and monitor the status of habitats that are of special biological significance to monk seals.

Humpback Whales (Megaptera novaeangliae) in Hawaii

Public interest in whale-watching has led to increased numbers of people concentrating in the inshore waters of Hawaii where humpback whales assemble to breed and calve.

Concerned by reports that these activities might be having adverse impacts on the whales, the Commission convened a workshop in Hawaii in July 1977 to consider the problem. Its goals were to: (1) identify human activities that might constitute harassment; (2) assess habitat requirements for humpback whales wintering in Hawaii; and (3) identify additional data and research needed to protect humpback whales and/or their habitat. Workshop participants addressed the potential effects of harassment, described the behavior of harassed whales, and identified five types of human activities which may influence whale distribution, habitat use, and/or reproduction. These include: boating and shipping; aircraft operation; pollution; marine construction; and dredging and dumping of dredge spoils. Of the five types of disturbance, the first three were considered most likely to adversely affect the whale population.

The participants at the workshop recommended that: (1) hydrofoils refrain from unnecessary high-speed maneuvers and be rerouted to avoid concentrations of whales; (2) boat operators be advised of the potential threats to whales, and of acceptable procedures and regulations governing approaches to and observations of whales; (3) military personnel be advised of potential threats to whales, and of regulations governing ship and aircraft operations near whales; (4) commercial and private aircraft pilots be advised of potential threats to whales, and of relevant regulations; and (5) a strong Federal enforcement presence be maintained during the winter whale season.

On 19 December 1977, the Commission recommended that the National Marine Fisheries Service immediately: (1) take necessary action to reroute hydrofoils around whale areas during the winter whale season; and (2) expand existing educational efforts to inform military and civilian boat and aircraft operators of the potential harm of certain activities, and the requirements of current regulations. Since workshop participants felt that data were inadequate to specify activities which constitute harassment, and were unable to say precisely what actions should be taken to identify and protect critical habitats, the Commission further recommended

that the National Marine Fisheries Service either conduct or contract for studies to identify: (1) areas of special biological significance to the humpback whales that winter in Hawaii; and (2) criteria for determining what human activities constitute harassment. As secondary objectives, the Commission recommended that studies be conducted to provide: 1) baseline data on the nature and frequency of human-whale interactions; and 2) better information on the abundance, movements, and habitat preference of humpback whales in Hawaii.

The Service, in its responses of 24 January and 24 April 1978, noted, among other points, that: the cessation of hydrofoil operations in Hawaii had been announced; written statements had been distributed and verbal presentations made to the military, the general public, environmental groups, commercial vessel tour operators, and aircraft operators outlining the reasons for concern and setting forth responsibilities; gray whale watching guidelines had been adapted for use with humpback whales; one Special Agent had been available to monitor activities during the 1976-77 season; and two Special Agents were monitoring activities during the 1977-78 season. The Service further stated that, in November 1977, the Southwest Region began an assessment and review, expected to be finished in April of May 1978, of a) existing guidelines and regulations, b) funds available for education and enforcement, and c) existing knowledge of the biology and ecology of humpback whales. The Service also expressed the views that existing research should adequately address humpback whale harassment in Hawaii and that there is a need for some type of habitat protection.

While the Service's two letters addressed many of the points raised by the Commission, the results of ongoing work, particularly the Southwest Region's assessment of various issues, had not been completed by August. Therefore, on 24 August, the Commission wrote the Service suggesting that the Commission's September meeting in Hawaii would be an appropriate time and place to review its progress relating to the protection of humpback whales in Hawaii. Specifically, the Commission raised as points for discussion: the status and results of the Southwest Region's various assessments; the outcome of 1977-78 enforcement efforts and plans for the 1978-79 season; availability of funds for enforcement; progress in further defining harassment; the results of the Service's research review and its findings as to future

needs; the Service's view as to whether protective actions, in addition to those provided by the Marine Mammal Protection Act and Endangered Species Act, are needed; and the Service's views as to those activities that should and should not be permitted if critical habitat or marine sanctuary designations seem appropriate.

The Commission's meeting provided an opportunity for useful discussions of the issue with representatives of the National Marine Fisheries Service, State of Hawaii, Maui County Whale Reserve Committee, and other interested and knowledgeable persons. During the course of the meeting, representatives of the National Marine Fisheries Service noted, among other points, that: the Service, with funds contributed by the Marine Mammal Commission, contracted for studies of Hawaiian humpback whale abundance; the analysis of data collected has not been completed; the Service will review the results of that analysis when they are available and decide whether or not to conduct further surveys; two public hearings had been held to solicit information on the need for regulations to control activities in areas of special biological significance for humpback whales in Hawaii; the Service had concluded that its enforcement should be increased and that immediate action is necessary to restrict human activities in certain specified areas; the Maalea Bay area had been identified as a particular area of significance for calving and nursing of humpback whales; the Service hoped to develop regulations to restrict human activity in this particular area in time for the 1978-79 season; the Service would continue its education efforts and cooperative efforts with other organizations; and the Service's enforcement program in the 1977-78 season was better than in previous seasons and the Service hoped to improve it still further. Representatives of other agencies and groups also indicated support for further research and educational activities and for the implementation of measures to protect humpback whales from human disturbance in areas of special biological significance.

Following its meeting, the Commission contracted for a summary of information concerning the abundance, distribution, and movements of humpback whales in the coastal waters of Hawaii and of human activities in areas that appear to be particularly important to them. In addition, representatives of the Commission consulted with representatives of the National Marine Fisheries Service concerning the interpretation of "taking by harassment", under the Marine Mammal Protection Act, as it applies to humpback whales in Hawaii. It is expected that the Service will publish a notice of interpretation in the Federal Register in early 1979 indicating that the conduct of certain activities in certain areas will

be considered to be harassment of humpback whales and, as a result, will be prohibited.

The Commission will continue to cooperate with representatives of the National Marine Fisheries Service and other interested persons in the review of research efforts and the implementation of measures to protect humpback whales in Hawaii.

Gulf of California Harbor Porpoise (Phocoena sinus)

The Gulf of California harbor porpoise, Phocoena sinus, is known from only twenty-one confirmed sightings since it was first identified as a separate species in 1958. The species has been found only in the upper Gulf of California.

Because Phocoena sinus is found only in Mexican waters, the Commission's earliest efforts to protect this species were through diplomatic channels. Starting in 1975, the Commission has repeatedly encouraged the Departments of State and Commerce to approach the government of Mexico to seek to secure whatever protective measures might be possible for the species. More recently, the Commission has sought to encourage that the welfare of this species be taken into account in the negotiation of a bilateral treaty with Mexico on the conservation and protection of marine mammals.

In 1976, the Commission cooperated with the Universidad Autonoma de Mexico in providing support for Mexican scientists to conduct a field survey of Phocoena sinus. No confirmed sightings were made during the survey. Therefore, on 14 July 1978, the Commission asked that the National Marine Fisheries Service consider funding, in cooperation with the Commission, a proposal put forward by U.S. and Mexican scientists to do a more thorough population census. The Commission emphasized to the Service the acute need that existed for a better understanding of the status of this species in order to provide it with adequate protection and the substantial benefits that might be realized in terms of contributing toward productive, cooperative research activities on marine mammals with Mexican scientists.

On 30 August, the Service wrote the Commission that Mexican scientists had advised the Service that the animal, found only in Mexican waters, should not be a subject of joint research. The Service said that it could not, therefore, consider supporting such research.

The Commission pursued the matter, and, in October, signed a contract enabling U.S. and Mexican scientists to undertake this critically needed census.

Caribbean Monk Seal (*Monachus tropicalis*)

The last reliable sighting of the Caribbean monk seal was in 1952, and an extensive aerial survey in 1973 failed to produce evidence of its continued existence.

The recent possible sighting of several Caribbean monk seals by fishermen in the Caribbean, however, prompted the Commission to recommend in 1977 that the species be formally designated as "endangered" pursuant to Section 4 of the Endangered Species Act and as "depleted" pursuant to Section 3 of the Marine Mammal Protection Act. These actions were proposed in order to insure that, should any living remnant of the population actually be discovered, the safeguards that can be provided under these Acts can be immediately implemented. Although the Services proposed rulemaking to designate the species as "endangered" in February 1977, no further action was taken. The Commission therefore reiterated its earlier recommendations on 14 November 1978.

West African Manatee (*Trichechus senegalensis*)

After reviewing available information on the status of the West African manatee (*Trichechus senegalensis*), the Commission recommended in November 1977 to the Department of the Interior that it designate the species as "threatened" under the Endangered Species Act.

Although West African manatees are protected by law in many countries in which they occur, subsistence hunting continues throughout their range and river damming, increased pollution, and increased boat and ship traffic are likely to have a further detrimental effect upon the species. In recommending designation of the West African manatee as "threatened", the Commission urged the Department of the Interior to work with the Department of State to take such steps as may be possible to encourage West African nations to protect remaining habitat and to undertake necessary research.

In February, the Service proposed rulemaking to designate the species as "threatened", but had taken no final action by 14 November 1978. Therefore, on that date the Commission repeated its recommendation of 18 November 1977 that the species be designated as "threatened".

CHAPTER VI

PERMIT PROCESS

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

Application Review

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

In 1978, the Commission made recommendations on 32 applications submitted to the Department of Commerce and 7 applications submitted to the Department of the Interior. The Commission's average review time of complete applications was 37 days (median, 38 days). Three applications which were received in late 1978 were under review at the end of the year, and are not included in the preceding statistics. Review of another permit application was suspended in December at the request of the Department of Commerce.

The Commission, in consultation with its Committee of Scientific Advisors, also made recommendations on three requests to modify permits and on five requests to proceed with the next phase of authorized activities after review of the permittee's progress reports by the Department, in consultation with the Commission. The average time required for Commission review of these matters was 23 days.

Based upon applications on which the Commission and the Departments took final action in 1978, applications submitted to Commerce were processed in an average of 93 days (median, 84 days), while those submitted to Interior were processed in an average of 139 days (median, 140 days). If calculated from the date of receipt of a complete application, the average processing times for the Departments were 71 and 100 days respectively. Those applications withdrawn prior to final Departmental action (one per Department) are not included in these statistics, and the two applications concerning animals subject to both Departments' jurisdiction were processed by and credited to the Department of Commerce.

Administration of the Permit Process -- Commerce

During 1978, the Department of Commerce made several useful improvements in the permit process, including the development and distribution in April of instructions for applying for permits under the Marine Mammal Protection Act, Endangered Species Act, and Fur Seal Act. These instructions, subsequently revised and redistributed in September, already appear to have eliminated much of the previously existing confusion as witnessed by a 60% reduction in the time required to find an application complete.

In 1978, the Department also instituted a system whereby an applicant can employ a "collector of record" to capture animals. If this is done, the application process is simplified in that the applicant can incorporate by reference in his application certain required information already approved by the agency as a result of its examining information originally supplied by the collector of record. This saves considerable time, and also reduces the amount of information that must be submitted with an application. In 1978, three collectors of record were designated and several others were under consideration at year end. Effective implementation of this system is simplifying the permit process for applicant and reviewer alike.

In 1978, the Department also took steps to computerize much of its permit data so as to help in: identifying problems in the permit process; monitoring compliance with permit requirements; and monitoring the level of takes from specific marine mammal populations.

Administration of the Permit Process -- Interior

A number of problems existed with Interior's administration of the permit system in 1978. Of the seven applications on which the Commission made final recommendations, six involved unnecessary processing delays by the Department of the Interior.

Some problems resulted from the Department's initially inadequate review of the application for completeness, and the average time required to resolve such problems was 30 days. Also, an average of 39 days (as opposed to Commerce's present average of 10 days) elapsed between the date that an application was initially received and the date that it was determined complete. The delays indicate a need to significantly upgrade the thoroughness and effectiveness of Departmental review and the efficiency with which identified inadequacies are remedied.

Starting in January 1977, the Commission commented on the need for the Department of the Interior to resolve certain questions concerning the relationship between Federal and state governments with respect to permits. In 1978, the issue arose several times with regard to applications submitted to the Department of the Interior. The Commission therefore requested, by letter of 21 June and 3 October, that the Department provide a written explanation of the legal basis and rationale for the Department's view of the respective roles of the Federal and state governments with respect to permits to take marine mammals. By the end of the year, the Department had not responded to the Commission's requests.

Administrative carelessness and oversight appear to be another problem. Letters to the Department frequently were misplaced or brought to the attention of the proper person after inordinate delays. Material coming out of the Department's permit office often was undated, transmitted after long delays, and/or transmitted without referenced enclosures.

The problems described above frustrate successful implementation of the permit system and are a disservice to permit applicants. To correct this situation the Commission recommended, by letter of 9 November, that the Department of the Interior conduct an intensive review and evaluation of its permit system. No response to the Commission's recommendation was received in 1978.

CHAPTER VII

MANAGEMENT OF MARINE MAMMALS BY THE STATE OF ALASKA

Under the Act, the Secretaries of Commerce and the Interior, in consultation with the Commission, may waive the moratorium on the taking and importing of marine mammals or marine mammal products, promulgate regulations, and return management to a state if such a waiver or return is determined to be consistent with the goals and provisions of the Act.

Application by the State of Alaska for a Waiver and Return of Management of Certain Marine Mammal Populations

As discussed in the Commission's previous Annual Report, the Commission participated in the hearings relating to the request by the State of Alaska for a waiver of the moratorium and return of management of nine species of marine mammals -- polar bear (Ursus maritimus), sea otter (Enhydra lutris), Steller sea lion (Eumetopias jubatus), bearded seal (Erignathus barbatus), harbor seal (Phoca vitulina), ribbon seal (Phoca fasciata), ringed seal (Phoca hispida), beluga whale (Delphinapterus leucas), and walrus (Odobenus rosmarus). The Commission recommended to the Directors of the National Marine Fisheries Service and Fish and Wildlife Service that they accept the recommended decision of the administrative law judge and return management to the State on condition that: a workshop be convened to evaluate data on affected marine mammal populations; the uncertainties about the relationship between State and Federal enforcement activities be resolved; an appropriate permit system be developed; the State's regulations be modified in several respects; and certain clarifications of statements in the judge's decision be made.

Under applicable law and regulations, the final decision as to whether to waive the moratorium and return management to the State must be made by the Secretaries or their representatives based exclusively upon "the record" of the proceedings which was complete as of 22 August 1977. They are precluded from engaging in ex parte discussions about substantive aspects of the matter with representatives of the Commission or any other party after the record has been closed and until a decision is published.

While recognizing the restrictions on ex parte communications involving the merits of the issues under consideration, there is no restriction on communications concerning the nature and timing of the decision process. The Commission therefore wrote the Directors of the National Marine Fisheries Service and Fish and Wildlife Service on 22 December 1977 noting that the record of the proceedings had been closed and the matter had been pending before them since 22 August. The Commission requested an explanation for the delay and, if a decision were not reached in early January 1978, a detailed explanation pursuant to Section 202(d) of the Act, of reasons why its recommendations had not been adopted. The Fish and Wildlife Service responded by letter of 6 January 1978 that adjustments in the final environmental impact statement had necessitated the delay, that the final impact statement would be issued in mid-January, and that the Director's decision would be issued following the thirty-day period for comments on the impact statement. The National Marine Fisheries Service also indicated, by letter of 16 January, that adjustments in the final environmental impact statement had necessitated delays and that the final decision was expected to be issued in March 1978.

By 20 June 1978, no decision had been issued and the Commission therefore wrote to the National Marine Fisheries Service to gain information on when the decision would be made. The Commission also expressed concern about the lack of action in response to the State's separate request for research and management funds, dated 28 March 1978, and the fact that it was not being considered because of its potential bearing on the pending matter. The Commission recommended that the Service reach a final decision on the State's request for return of management as soon as possible and recommended that it take certain steps, in the interim, to respond to the State's request for research funds.

Representatives of both Services joined the Commission and its Committee of Scientific Advisors at their meeting in September and indicated that a final decision on the State's request would be issued in early 1979. The Commission will cooperate with other interested parties in efforts to implement that decision, when it is issued, and representatives of the Commission will participate in the scientific workshop which will be convened in January 1979.

Management of Walrus by the State of Alaska

The moratorium on taking walrus was waived by the Director of the Fish and Wildlife Service in December 1975 and management of that species was returned to the State of Alaska in April 1976. Both the waiver and the return of management were reconsidered in the course of the proceedings relating to the other eight species discussed above for purposes of evaluating any new evidence that was available and making any adjustments that might be necessary to insure the consistency of the walrus management regime with that governing the other species.

During 1978, the Commission received materials from the Fish and Wildlife Service relating to the State's annual reports on its walrus management program during 1976 and 1977 and proposed changes in its regulations. The Commission's review of these materials identified several issues involving the taking of walrus for subsistence and other purposes, collection and analysis of catch statistics, enforcement, and research which were common to the management regime which should be applicable to walrus and the eight other species of marine mammals as well. The Commission determined that it would be inappropriate to attempt to resolve these issues with reference to walrus, alone, since they included unresolved issues which were before the Director of the Fish and Wildlife Service for decision in connection with the State's pending request. The Commission had anticipated that a final decision on the State's request would have been reached before the end of 1978 and therefore deferred action on the issues relating to the management of walrus until they could be considered and discussed with representatives of the Service, the State of Alaska, and other interested persons with reference to that decision.

In the absence of a final decision by the end of 1978, the Commission wrote to the Director in December setting forth the considerations noted above and indicating its understanding that a final decision would be announced in early 1979. The Commission recommended that the Service undertake efforts as soon as possible, following its decision, to meet with representatives of the State and others to discuss and resolve any outstanding issues relating to the management regime and indicated that it would be pleased to cooperate with the Service in the course of these efforts.

Although the resolution of certain issues relating to the walrus management regime were deferred, the Commission recognized the importance of attempting to gather information relating to the subsistence taking of walrus and other issues, even before a final decision on the State's request was issued. For this purpose, the Commission provided \$4,000 to the Rural Alaska Community Action Program to assist it in convening an Eskimo whaling conference for the purpose of addressing issues relating to the taking and use of walrus by Alaskan Eskimos. The conference was held in Gambell, Alaska on 23-25 August and an Eskimo Walrus Commission was subsequently established to coordinate activities, develop recommendations relating to the management regime, and enter into a dialogue with interested State and Federal agencies as well as other interested persons in order to resolve these issues.

In addition, as part of its continuing review of marine mammal research programs and needs, the Commission wrote to the Fish and Wildlife Service on 9 June to express concern about its decision not to conduct an aerial survey of walrus in 1980. The Commission noted that the Service's decision appeared to be based upon a determination that an aerial survey would not be cost-effective until certain questions regarding the distribution and hauling-out patterns of walrus and their relationship to sea ice were resolved. It noted that the questions could and should be resolved by field research efforts and recommended that specific efforts be undertaken. The Commission indicated that it seemed likely that a useful aerial survey could be conducted in 1980 and recommended that the Service reconsider its decision and convene a meeting of experts to review the overall problem. The Commission expects that this question, among others, will be considered by participants at the workshop on Alaskan marine mammal data and research needs in January 1979.

CHAPTER VIII

MARINE MAMMAL MAINTENANCE STANDARDS AND GUIDELINES

In 1974, the Commission recognized the need to develop uniform standards to measure the adequacy of captive marine mammal holding facilities and maintenance practices, and established a subcommittee of the Committee of Scientific Advisors to develop such standards based on the biological needs of captive marine mammals. Subsequently, the Commission solicited comments from specialists in the United States and abroad on the subcommittee's draft proposals. On 20 October 1975, the Commission's recommended Marine Mammal Maintenance Standards and Guidelines, designed to ensure the welfare of captive marine mammals in compliance with the provisions of the Marine Mammal Protection Act and the Animal Welfare Act, were transmitted to the Department of Agriculture with the recommendation that they be adopted.

On 19 August 1977, 22 months after the Commission's recommendations had been transmitted to the Department, "Proposed Standards and Regulations for Humane Handling, Care, Treatment, and Transportation of Marine Mammals" were published in the Federal Register by the Department of Agriculture. The published standards departed substantially from the Commission's original recommendations, and the Commission therefore recommended that they be revised. By March 1978, a revised text had not been prepared so the Commission wrote the Secretary of Agriculture on 6 March expressing concern over the delay and recommending that the Department: 1) promptly revise and publish the regulations; 2) hold hearings on the revised regulations; 3) further revise them as necessary in response to comments received; and 4) promulgate final regulations.

In April, a draft revised text was made available to the Commission for review. Further substantial revisions were clearly necessary, and the Commission therefore called for a meeting with representatives of the Department on 18-19 July to discuss needed revisions. Although all problems were not resolved to the Commission's satisfaction, progress was sufficient for the Commission to recommend that the Department immediately revise the standards and regulations in light of the agreed changes and publish them for comment as soon as possible.

On 20 July, the Commission briefed members of the House Subcommittee on Fisheries and Wildlife Conservation and the Environment on the results of the meeting with representatives of the Department of Agriculture. Representatives of public display facilities and animal welfare groups were present at the briefing and also provided comments.

On 4 August, the Commission received a revised copy of proposed standards and regulations from the Department. Since the draft did not reflect a number of changes agreed to during the July discussions, the Commission wrote the Department indicating those sections in need of further revision.

"Proposed Standards and Regulations for the Humane Handling, Care, Treatment, and Transportation of Marine Mammals" were published for comment once again by the Department of Agriculture on 19 September. On 20 November, the Commission transmitted detailed comments and recommendations on the proposal. In general, the Commission expressed support for many of the provisions of the proposed standards and regulations, but noted that the exemption mechanism proposed by the Department did not meet all of the objectives of the variance mechanism which the Commission had repeatedly recommended since October 1975. The Commission therefore recommended that the Department advise it of the specific reasons why the recommended variance mechanism was not adopted and that the Department provide additional information in the notice of final rulemaking concerning several aspects of the Department's exemption mechanism.

The Commission also noted in its letter of 20 November that it had devoted substantial time and effort to the development of the standards and regulations and that most, if not all, of the time and effort had been expended in repetitive comments and editorial corrections of the Department's proposals that should not have been necessary. The Commission indicated it had been given the impression that this matter had been afforded very low priority among the Department's programs. The Commission noted that the Department's proposed system contemplated: a field program of inspection, licensing, and enforcement; a research program on marine mammal care; the review of applications for exemptions; the development of new information so as to amend requirements when appropriate; and various other activities requiring the development of substantive expertise in marine mammal maintenance if the Department's responsibilities were to be met. The Commission therefore requested that the Department provide the Commission with

information concerning the Department's arrangements for the conduct of its marine mammal care program, including information on: the number of inspectors that will be utilized; the training, if any, that they will receive; the number of times facilities will be inspected; arrangements for staff commitments to the program in Washington, D. C.; the arrangements and funds available for research and evaluation of marine mammal care; and the arrangements for coordination with the National Marine Fisheries Service and Fish and Wildlife Service.

By the end of 1978, no response to the Commission's recommendations of 20 November had been received, and final standards and regulations for captive marine mammals had not been promulgated by the Department of Agriculture.

CHAPTER IX

INTERNATIONAL ASPECTS OF MARINE MAMMAL PROTECTION AND CONSERVATION

Section 108 of the Marine Mammal Protection Act directs the Departments of Commerce, Interior, and State, in consultation with the Commission, to seek to further the protection and conservation of marine mammals under existing international agreements and mandates various initiatives by the agencies to negotiate bilateral and multilateral agreements to achieve the purposes of the Act.

The Commission's activities in 1978 with respect to international aspects of the tuna-porpoise problem, bowhead whales, Dall's porpoises, and certain other issues are discussed elsewhere in this Report. Its activities with respect to Antarctic marine life, the International Whaling Commission, and data collection and analysis are discussed below.

Marine Mammals of the Southern Ocean

Introduction

As a result of discussions spanning many years, the Consultative Parties to the Antarctic Treaty resolved at the Ninth Antarctic Treaty Consultative Meeting (19 September to 7 October 1977) that a definitive regime for the conservation of Antarctic living marine resources should be concluded before the end of 1978 and that a special consultative meeting should be convened to develop a draft convention. The following discussion reviews the need for such a convention, preparations for the negotiations, the negotiations, and research that is needed to develop the information necessary to make sound decisions with respect to the conservation of Antarctic living marine resources.

The Southern Ocean, one of the most productive marine areas on earth, supports at least thirteen species of marine mammals, many of which have been heavily over-exploited and some of which are endangered. In spite of the endangered status of some marine mammal species, the Southern Ocean is relatively unperturbed by human activities at present when compared to other ocean areas. However, there is little doubt that its living resources are going to experience increasing pressures as a result of over-exploitation of known fishery resources elsewhere, extension of coastal state fishing jurisdictions, growing world demands for protein, and economic considerations. Several countries have already begun, for example, to harvest Antarctic krill (Euphausia superba), a shrimp-like crustacean which is the dominant herbivore in the Antarctic food web and the fundamental species in many Antarctic food chains. Because of technical and marketing problems, the profitability of krill exploitation is not established and existing levels of krill harvesting are relatively low. Before this situation changes, the opportunity should be seized to conclude a meaningful conservation convention to protect marine mammals and other living resources from activities that threaten to cause irreversible damage.

The Commission views the situation with concern for many reasons. Obviously, whales and seals do not exist in the Southern Ocean independently; they depend upon and influence other living and non-living components of the ecosystem. Therefore, one must consider the potential impacts of unregulated human activities not only in light of their effects on the target species, but also with reference to their effects on associated species and the ecosystem as a whole. Although the immediate impacts of fisheries directed at species high in the food chain can sometimes be predicted, the ramifications of harvesting a species near a food chain's base are exceedingly difficult to predict in light of the great number of uncertainties involved. In the case of krill and many of the species either directly or indirectly dependent upon krill for food, information on distribution, identity, abundance, and productivity is based largely upon conjecture and assumptions, rather than hard data. Thus, there is a real risk that extensive harvesting could deplete Antarctic krill populations and, more likely, adversely affect certain species of whales, seals, penguins, fish, and squid which depend, directly or indirectly, upon krill for food. It is not unreasonable to assume that the discovery, exploitation, development, and collapse phases which have

characterized most modern fisheries will also be experienced in the Antarctic, with attendant impacts not only on target species but dependent and related species as well, unless effective preventive actions are taken now.

Since late 1975, the Commission has sought to focus the attention of appropriate Federal agencies on essential conservation measures and research activities. Specifically, the Commission has directed its efforts towards ensuring that: 1) a convention on the conservation of living resources be concluded before unregulated taking of krill or other species has an adverse impact on whales, seals, other species, and the ecosystem of which they are a part; and 2) research be planned and undertaken to gather critically needed information on the composition structure, dynamics, and productivity of the Southern Ocean ecosystem.

In seeking to achieve these objectives, the Commission has made numerous recommendations with respect to a conservation convention and research activities, testified before Congress as to these needs, and published a comprehensive "Review of Information Regarding the Conservation of Living Resources of the Antarctic Marine Ecosystem" to make essential information available to responsible decision makers and other interested individuals. The Review (See Appendix B) discusses, among other points: physical attributes of the Southern Ocean ecosystem; major faunal groups therein; the history of Antarctic seal and whale exploitation; the potential effects of ecosystem manipulation on living resources; the reliability of existing data and estimates; and the risks associated with making management decisions based on limited information. Included in the review are summaries of available data on krill, eight species of Antarctic whales, six species of Antarctic seals, seven species of penguins, other species of seabirds, fish, and cephalopods.

The Convention

Early Commission Recommendations

In 1976 and 1977, the Commission recommended to the Department of State that it: 1) promptly undertake a review and re-evaluation of U.S. policy regarding the Antarctic; 2) pursue the development of a policy to conserve the living resources of the Southern Ocean and the development of an international convention to implement that policy; and 3) develop a draft environmental impact statement in preparation for the negotiation of such a convention.

The Draft Environmental Impact Statement (DEIS)

In February 1978, the Department of State published a "Draft Environmental Impact Statement for a Possible Regime for Conservation of Antarctic Living Marine Resources" in preparation for U.S. participation in international negotiations to develop a regime. The Commission, in consultation with its Committee of Scientific Advisors and other experts, reviewed the DEIS and commented by letter on 20 March. The Commission expressed concern about the timing of the DEIS's publication since the first round of substantive negotiations was to take place in February and March before comments on the DEIS were due and could be considered. The Commission therefore recommended that the DEIS be rewritten with reference to the comments received as well as the results of the first negotiation and that it be modified and reissued as a revised draft or supplement with delayed issuance of a final environmental impact statement pending consideration of comments on the revision.

In addition to its comments on the need for a revised DEIS, the Commission noted that: there is a need to elaborate on details of proposed and alternative approaches before possible environmental impacts could be assessed; the discussion in the DEIS should set forth meaningful conservation principles and practices and define the terms used; and discussions of necessary actions should be expanded. The Commission recommended that the expanded discussions should include, for example: acquisition of reliable information on the natural history, distribution, density, productivity, and feeding habits of species and/or populations likely to be directly or indirectly affected by harvesting or associated activities; acquisition of reliable information concerning species relationships and the biological and/or physical factors which presently are regulating the distribution and abundance of such species; identification of species and/or stocks to which conservation measures should be applied; development, implementation, and effective enforcement of quotas, regulations, etc. designed to ensure the conservation of affected populations and the ecosystem, and monitoring the status of affected species and populations.

The Commission also pointed out that

implicit in the discussion of the proposed action, and perhaps its greatest weakness, is the assumption that existing knowledge is adequate to implement a meaningful conservation regime allowing for substantial exploitation. The fact is that current information is not adequate to serve as the basis for reliable predictions concerning the impacts of substantial exploitation and that reliable information must be obtained and analyzed prior to substantial exploitation in order to avoid adverse environmental impacts. In light of the uncertainties and associated risks, the discussion here and elsewhere should be expanded to consider the desirability of a regime designed to provide the information needed for conservation of the resources while permitting effectively controlled, experimental harvesting in conjunction with the mandatory collection of needed data.

The Commission also recommended that the DEIS should be modified to discuss and evaluate at least one additional alternative that appeared to be preferable to the proposed action. The Commission suggested that such an approach be based upon the premises that: 1) any substantial harvesting will affect target species, associated species, and the ecosystem to some extent; 2) knowledge of populations and the ecosystem is presently inadequate to reliably predict and assess the impact of substantial harvesting; and 3) data must be gathered and analyzed in order to assess the impacts of substantial harvesting before it causes adverse impacts. For this purpose, the Commission recommended that the discussion be modified to consider this alternative course of action that would seek to negotiate a convention pursuant to which:

- 1) harvesting in the immediate future would be limited to those levels, areas, and species which are considered by the appropriate scientific body to be such that they will not cause any irreversible changes in ecosystem structure, species composition, or relative abundance of the target or associated species;

2) harvesting in the immediate future would be limited and designed as part of a scientific research program designed and approved by the appropriate scientific body so as to provide needed data on the impacts of harvesting on target species, associated species, and the ecosystem. To evaluate harvesting impacts, such research harvests would include the requirement to gather and analyze baseline data on populations in both experimental areas and in such "control" areas as may be designated by the scientific body;

3) exploitation and taking for research would be limited to those levels, areas, and species determined by the scientific body to be appropriate, until the commission or such body as may be established, based upon the recommendations of the scientific body, were assured that any increased harvest:

a) would not reduce the target species to a level at which it ceases to play a significant functional role in the ecosystem and certainly not below the level at which it is capable of maximum net productivity (MNP), calculated with reference to the initial (unexploited) population size;

b) would not result in ecosystem changes which might impair the ability of a target species to recover to its initial (unexploited) size and distribution. (For example, exploitation of a target species such as krill could give an associated species a competitive advantage which could lead to ecological replacement and a permanent change in ecosystem structure.); and

c) would not cause populations or associated species, as a result of harvesting the target species, to decline below the levels at which they are capable of maximum net productivity, calculated with reference to initial (unexploited) population size, or below levels from which they can recover to present population size, distribution, and functional role in the ecosystem.

4) the commission or such body as may be established would be required to base its determinations with respect to the criteria set forth above and upon the advice of the appropriate scientific body; and

5) it would be required that the scientific body be given sufficient data and analyses by the party proposing exploitation to provide the basis for assurance that the criteria set forth in (3) will be satisfied, and proposed harvest would not be permitted if the available data were inadequate to provide necessary assurances.

The Commission further recommended that the DEIS be modified to include expanded and, in some instances entirely new, discussions of: organization of the commission and its scientific advisory body; liaison with other international governmental and non-governmental organizations; provision for sanctions against nations exploiting resources in ways that would diminish the effectiveness of the convention's conservation program; the convention's relationship to relevant domestic statutes (e.g., the Marine Mammal Protection Act and the Endangered Species Act); the importance of formal relationships between the proposed convention, the International Convention for the Regulation of Whaling, and the Convention for the Conservation of Antarctic Seals to ensure compliance with conservation measures established under those conventions; mechanisms for review, in consultation with the scientific advisory body, of proposals to exploit and their potential impacts; mandatory observer exchanges; freedom to inspect vessels engaged in taking or processing as well as land stations engaged in processing or other support activities; mechanisms to ensure that harvesting, prior to the convention's entering into force, be carried out in accordance with the best scientific advice of an apolitical nature; and the importance of establishing ties with international conservation bodies in addition to the international fisheries bodies mentioned in the DEIS. The Commission also commented with respect to discussions of the food web, areas of special biological importance, the history of commercial harvesting in the Southern Ocean, scientific research, shipping traffic, environmental impacts of the proposed and alternative actions, conservation objectives, and management options.

The Department of State did not accept the Commission's recommendation that the DEIS be rewritten with reference to initial comments and the results of the first negotiation. The Department did, however, include discussions and changes in its Final Environmental Impact Statement in response to some of the Commission's other recommendations.

The Negotiations

As noted earlier, the Antarctic Treaty Consultative Parties agreed to certain Resolutions at the Ninth Consultative Meeting, 19 September to 7 October 1977.

In addition to agreeing that a definitive regime for the conservation of Antarctic marine living resources should be concluded before the end of 1978 and that a special consultative meeting should be convened to develop a draft regime, the Parties resolved that: the regime should explicitly recognize the prime responsibilities of the Antarctic Treaty Consultative Parties; the provisions of Article IV of the Antarctic Treaty should not be affected by the regime; the regime should provide for the effective conservation of the marine living resources of the Antarctic ecosystem as a whole; the regime should extend north of the Antarctic Treaty area when necessary for effective conservation; and the regime should take into account, but not apply to, species already regulated pursuant to existing international agreements.

In response to the Resolutions, Australia offered to host a special consultative meeting to develop a draft convention. The meeting was convened in Canberra from 27 February to 16 March. Representatives of the Commission participated in preparations for and served on the delegation to this and subsequent meetings. Through its representatives, the Commission advocated the strong, ecosystem-oriented, conservation approach outlined above.

Although a draft convention was developed at the Canberra meeting, all important issues were not resolved, and the meeting was reconvened in Buenos Aires, Argentina from 17 to 28 July. Again, all the issues were not resolved, and the U. S. therefore offered to host an informal consultation.

The informal consultation was held in Washington, D. C. from 17 to 28 September. Most, but not all, of the remaining issues were resolved at this meeting, and a second informal consultation is to be held in Bern, Switzerland in March 1979. The remaining issues do not appear to be insurmountable, and it is expected that a diplomatic conference will be convened in Canberra in May or June 1979 to conclude a convention.

At the request of several of the Consultative Parties, the meetings and the results thereof have been kept confidential. When a draft exists which all parties agree is a suitable foundation for a decisive meeting, it is expected that this draft will be made available to all interested parties.

Research

With respect to research activities, the Commission has made recommendations to the National Science Foundation, the agency with responsibility for funding and managing the United States' Antarctic research activities.

In 1975, in response to a request from the National Science Foundation that the Commission review an "Antarctic Krill Position Paper", the Commission advised the Foundation that: krill management should be approached from an ecosystem perspective; distribution, abundance, life history, and population parameters of affected species, including krill, are poorly understood and therefore do not provide a reliable basis for management decisions; any krill harvest should not be of such intensity as to cause the depletion of species higher in the food web; research in the area of "ecosystem response" should be given high priority; the distribution, abundance, and life histories of species that feed on krill should be fully described as quickly as possible; attention should be paid to establishing management regulations prior to exploitation; significant effort should be devoted to defining research needs and priorities; steps should be taken to carry out the needed research; and such other appropriate actions as might lead to an effective international agreement governing the krill fishery should be taken.

On 22 September 1976, the Commission again wrote the Foundation, summarized its 1975 comments, stated that national efforts should be concentrated on developing a convention designed to conserve Antarctic living resources, and pointed out that it viewed the threat to living resources to be both immediate and real. The Commission also noted that it found the 1975 "Antarctic Krill Position Paper" to be useful, and recommended that an expanded version of the paper be developed, through broad consultation, and put forward for discussion.

On 14 December 1978, the Commission recommended that the Foundation convene one or more groups of experts to render scientific judgments with respect to: a) the adequacy of the conservation principles in the draft convention developed at the special consultative meetings; b) the establishment of ecologically sound quotas, including consideration by areas, for krill harvests in case such information might

be needed; c) those data which the U. S. should insist be required from vessels engaged in either experimental or commercial fishing in order to develop needed information; d) appropriate actions in light of the SCAR/SCOR plan for Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS); e) the development of a long-term Southern Ocean research program with clearly defined objectives, carefully derived cost estimates, and a statement of ship and aircraft support needs; and f) essential conservation considerations for inclusion in any convention that might be negotiated to govern the exploration for and exploitation of non-living resources. The Commission also recommended that the Foundation augment its scientific representation on the U. S. delegation involved in negotiating the living resource conservation convention.

In order to contribute to research planning efforts, the Commission enclosed with its letter a paper which it felt would be useful in developing a comprehensive research plan. After commenting on the general need for a comprehensive, interdisciplinary, multi-national research program in the Southern Ocean, the paper identified, in general terms, various elements that should be considered in developing such a plan. With respect to whales, for example, it was noted that several endangered species of baleen whales depend on krill, that krill fishing is likely to be concentrated in the major feeding grounds of baleen whales, that fishing will likely occur during those months when whales are present and feeding, and that fishing effort is likely to be selectively focused on the same kinds of high density krill swarms upon which baleen whales are reported to feed. Noting that severely depleted stocks, such as those of blue, humpback, and fin whales, could be adversely affected by even low levels of krill harvesting, the paper suggested that high priority be assigned to assessing and monitoring the status of krill-eating whales, and that these efforts be first focused in the Scotia and Bellingshausen Seas.

Responses to the Commission's recommendations are expected from the Foundation in early 1979.

International Whaling Commission (IWC)

The Marine Mammal Commission consulted with the U.S. Commissioner to the IWC and others in preparation for the 30th meeting of the IWC in London (June 1978) and its special meeting in Tokyo (December 1978). Representatives of the Commission participated in both meetings of the IWC and its Scientific Committee during 1978. The Commission's activities in 1978 relating to the IWC and the bowhead whale issue are discussed in detail in Chapter III. A summary of the Commission's activities relating to other IWC actions in 1978 is set forth below.

June 1978 Meeting

In addition to the bowhead whale issue, the members of the IWC considered a number of difficult scientific and policy issues at their Annual Meeting in London. Application of the new management procedures, based upon recommendations of the Scientific Committee, led to the reduction of the quotas for sei whales in Areas I and IV of the Southern Hemisphere to zero, thereby protecting all sei whales in the Southern Ocean. With the exception of the quotas for minke whales in the Southern Hemisphere, which were increased from 5,690 to 6,221, and North Pacific sperm whales (discussed below), the quotas for all other stocks were reduced or set at the same levels as those for 1977.

Several particularly difficult issues arose in connection with efforts to establish quotas for sperm whales in the Southern Hemisphere and North Pacific Ocean. Because of the limited time available, the Scientific Committee was unable to complete its analysis of sperm whales in the Southern Hemisphere and it therefore recommended that interim quotas be established pending further analyses. The Commission adopted these recommendations and reduced the quotas by 10% for females in Divisions 2, 4, 6, and 8 and for males and females in Divisions 1 and 3. It also reduced the quotas by 25% for males in Division 5 and for both males and females in Division 7. The quotas for females in Division 4 and for both males and females in Division 9 were maintained at 0.

With respect to the North Pacific sperm whales, the analyses by the Scientific Committee led to a catch limit of 4,694 whales, a reduction from the quota of 6,444 for 1978 which had been established at the special meeting of the IWC in Tokyo (December 1977). The Scientific Committee noted, however, that because of a reduced male sex ratio observed in the western stock, the recruitment to that population would be reduced in the future and the number of females in the population would decline even if no whales were taken. In light of the concern about the status and trends of the North Pacific sperm whale populations and the request by the Japanese delegation for a special meeting to consider the North Pacific sperm whales further, the IWC agreed to hold a special meeting of the Scientific Committee to consider both the North Pacific and Southern Hemisphere sperm whale assessments and to defer decisions on quotas for North Pacific sperm whales until a special meeting of the IWC could be held in December. The IWC agreed to modify the Schedule to indicate that quotas for North Pacific sperm whales would be set before whaling operations began in 1979.

In addition to these actions relating to commercial whaling quotas, the IWC took steps leading to the development of an aboriginal whaling scheme and, in the interim, established limits on the number of bowhead, humpback, and gray whales taken by or for aboriginals of the United States, Greenland, and the U.S.S.R., respectively. Because the decision with respect to gray whales, like that relating to bowhead whales (discussed in Chapter III), was of particular interest to the United States, it warrants discussion in some detail.

As in the case of bowhead whales, the taking of gray whales for commercial purposes has been prohibited by the International Whaling Commission since the Convention entered into force in 1948. Taking of gray whales by or on behalf of aboriginals of IWC member nations for subsistence purposes has, however, been permitted.

Unlike the bowheads, however, the gray whales of the Eastern Pacific Ocean appear to have responded to protection from commercial whaling and increased in numbers. The Scientific Committee of the IWC reviewed the available information concerning the status and trends of the gray whale populations. It concluded that the best information available indicated that the population in the Eastern North Pacific Ocean had recovered to between 11,000 and 15,000

and appeared to be remaining stable in response to the levels of taking by the Soviets on behalf of their aboriginal people. The Scientific Committee therefore recommended that the eastern stock of gray whales be reclassified from the Protection Stock category to the Sustained Management Stock category with a catch limit of 178 whales -- the average known catch over the years 1968-1977. The Committee recommended that the Western Pacific (Asian) stock of gray whales remain classified as a Protection Stock with a zero quota and that non-IWC member nations be urged not to kill any whales from this stock.

The recommendation of the Scientific Committee, based upon the best available scientific evidence, posed a rather difficult dilemma for the United States and other delegations who were anxious to protect gray whales. The United States has led efforts within the International Whaling Commission to base quotas on the recommendations of the Scientific Committee with reference to the best scientific evidence available in accordance with the new management procedures which were developed in 1974 in response to the United States' efforts to establish a ten-year moratorium on commercial whaling. At the same time, the United States was opposed to the taking of gray whales for commercial purposes, even if the population had recovered to levels that could sustain some such taking.

In an effort to recognize the recommendations of the Scientific Committee and maintain the viability of the principle that quotas should be based upon scientific evidence, while also attempting to preclude commercial exploitation of gray whales, the United States delegation took two steps. First, the United States expressed concern about the possibility that reclassification of gray whales would lead member nations to commence taking them for commercial purposes and asked for an indication by delegates if any government intended to undertake such whaling activities. No delegate expressed any intention to take gray whales for commercial purposes. Secondly, the U.S. supported reclassification of the Eastern Pacific gray whale population with a notation in the Schedule that the 178 animals were available to be taken by or on behalf of aborigines of a member nation "but not for commercial purposes."

As a result of the action by the IWC, the previously unregulated taking of gray whales by the Soviets is now limited to a total of 178 whales each year and such taking must be for the use of aborigines. This and other taking will be reviewed by both the Scientific Committee and the IWC, with reference to its impact upon the population and the use that is made of the animals, in the course of their review of aboriginal whaling activities. In addition, the gray whale population of the Eastern Pacific Ocean is protected from commercial taking in the contiguous fisheries zones of the U.S., Canada, Mexico, and the Soviet Union and trade in gray whale products is prohibited by the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Finally, the IWC established a working group to consider modification of the new management procedures, instructed its Technical Committee to develop proposals for an expanded international observer scheme, and adopted resolutions on humane killing and on the capture of small cetaceans.

Review of Whaling Policies and Tactics

Following the June meeting of the IWC, the U.S. Commissioner initiated a review of the United States' current whaling policies and tactics in order to identify the need, if any, for changes in those policies and tactics. In an effort to contribute to this process, the Commission transmitted a detailed memorandum to the U.S. Commissioner, dated 27 October, commenting on certain aspects of the United States' whaling policies and tactics. The Commission noted, among other things, that: several of the most vexing problems relating to the IWC stemmed from a certain understandable but undesirable ambiguity as to whether or not the killing of whales is ethically acceptable; the answer to this question depends upon policy, rather than scientific, judgments; the arguments in support of a ten-year moratorium based upon an ethical judgment that commercial whaling is unacceptable, for example, are different than those in support of a ten-year moratorium based upon biological judgments that commercial whaling must be terminated in order to prevent the extinction of whales; the lack of clarity with respect to the basis for certain policies sometimes creates difficulties when attempts are made to use biological arguments to support non-biological policies; it would be desirable to clarify and develop a

more adequate articulation of the first and fall-back options as well as their ethical and scientific bases, and strategies for achieving them; these options include modifications of the IWC's new management procedures so as to require that populations of whales be maintained at higher levels than are secured by the procedures currently in force; the U.S. could also seek to modify the new management procedures to require a certain degree of confidence with respect to the impacts of proposed quotas upon the affected populations; the U.S. should press for all data called for by the Schedule, press for full-time scientific staff funded by IWC, and fund an ongoing data analysis team to analyze the available data and identify data needs and problems in the present models; the U.S. should press non-IWC member countries to join and/or comply with the IWC's conservation measures; and the U.S. should press to persuade Japan to close its markets to whale products from non-IWC countries, without which many such operations would probably cease.

These and other aspects of United States' whaling policies and tactics were discussed at a meeting of interested governmental and non-governmental parties on 30 October and a subcommittee was established to continue to review U.S. whaling policies and tactics. The Commission will continue to participate in these efforts during 1979.

Special Meeting of the IWC

The Scientific Committee of the IWC considered the data and models relating to North Pacific sperm whales at its special meeting in La Jolla, California, 27 November-8 December and conducted a less comprehensive assessment of sperm whales in the Southern Hemisphere because of the limited time available. The analyses led the Committee to recommend that quotas for females in both the eastern and western stocks be set at zero and that the Commission act conservatively with respect to males in both stocks, setting quotas up to, but no higher than the 5,105 level set for the 1978 season. In noting that the available data were not adequate to provide the bases for specific recommendations with respect to quotas for male North Pacific sperm whales, the Committee made it clear that it cannot provide the IWC with valid scientific recommendations unless adequate data and the means with which to analyze them are provided. It stated that unless the IWC makes immediate provision for the establishment and staffing of facilities for data collection and analysis, the IWC faces a serious threat that the Committee will be unable to provide the IWC with the scientific advice that is required. The Committee estimated that such staff and facilities would require an initial expenditure of 50,000 pounds Sterling (\$97,500) and annual operating costs of 20,000 pounds Sterling (\$39,000).

The members of the IWC considered the recommendations of the Scientific Committee at their special meeting in Tokyo, 19-20 December. After a number of votes and discussions during which proposals by the United States to set zero quotas for both male and female North Pacific sperm whales failed to gain the necessary majority, the IWC adopted a zero quota for females in both eastern and western stocks by a vote of 12 in favor and 3 opposed. A quota of 3,800 males (2,698 in the western stock and 1,102 in the eastern stock), including an 11.5% "by-catch" allowance for females that may be accidentally taken, was adopted by a vote of 8 in favor and 2 opposed with 5 abstentions. The IWC also agreed to amend the Schedule to require that whaling operations cease when the by-catch quota for females is reached, even if the total quota of 3,800 whales has not been taken. Thus, the quotas for North Pacific sperm whales were reduced from 6,444 for 1978 to 3,800 for 1979.

With respect to sperm whales in the Southern Hemisphere, the Scientific Committee recommended that the quotas for both males and females in Division 5 be set at zero. The IWC adopted this recommendation by a vote of 12 in favor and 1 opposed with 2 abstentions. The Commission was assured that no sperm whales would be taken by member nations in Division 5 during the 1978/79 season, even though the amendment of the Schedule would not become technically binding upon members until early April 1979 when the Southern Hemisphere whaling season ends.

In addition to these actions on quotas, the IWC also adopted an amendment to the Schedule requiring additional data on catching effort and it adopted a proposal by the United States relating to collection and analysis of biological specimens. The consideration of proposals by the United States that the Schedule be amended to prohibit whaling by any vessel that has not submitted the data required by the Schedule and to prohibit certain import and export activities with non-IWC member whaling nations was deferred until the next meeting of the IWC so that legal advice on these matters could be obtained. In the interim, the IWC adopted Resolutions relating to import and export activities of member nations.

Finally, the IWC adopted a budget for its 1978/79 fiscal year of 167,166 pounds Sterling (\$326,000). The United States pressed for approval of the larger budget that would have provided funding for at least some of the staff and facilities urged by the Scientific Committee but received the support of only one other delegation. Because of their critical importance, the Commission will recommend that vigorous efforts be undertaken in 1979, through the Department of State, to enlist support of IWC member nations for the requisite scientific staff and facilities.

Pelly Amendment

The Pelly Amendment to the Fishermen's Protective Act of 1967 authorizes the President, based upon a certification by the Secretary of Commerce, to ban the importation into the United States of fish products from nations whose nationals directly or indirectly conduct fishing operations in a manner or under circumstances that diminish the effectiveness of an international conservation program such as that of the IWC.

In its previous Annual Report the Commission indicated that it had advised the Secretary of Commerce, by letter of 11 February 1977, of its determination that the whaling activities of Peru and the Republic of Korea, neither of which had responded to repeated efforts to enlist their membership in the IWC, had diminished the effectiveness of the IWC conservation programs so as to warrant application of the Pelly Amendment to their fish products. The Commission recommended, for reasons set forth in its letter, that the Secretary certify these findings to the President for his consideration and potential prohibition of importation of Peruvian and Korean fish products.

The Secretary responded by letter of 18 April 1977 indicating that the National Marine Fisheries Service was gathering background information on the whaling activities of Peru and Korea as well as on the possible impact of a trade embargo. No further response was received in 1977 and, on 22 February 1978, the Commission wrote to the Secretary of Commerce requesting that she advise the Commission of her action in response to its recommendations.

The Administrator of the National Oceanic and Atmospheric Administration responded by letter of 13 March indicating that the background information to which the Secretary had referred would be sent to the Secretary for review in about two weeks and that she would consult with the Commission and other interested Federal agencies with respect to her recommendations to the President.

Beginning in August, representatives of the Commission met with representatives of the National Oceanic and Atmospheric Administration as well as representatives of other Federal agencies to discuss the certification issue and resolve the problems that had caused delays. The Commission made recommendations for revisions in the documentation

and other aspects relating to the certification which had not been fully supplemented to include relevant information on the whaling activities of Peru and South Korea since the Commission first recommended certification in February 1977. In addition, relevant and current information was provided on the whaling activities of Chile which warranted application of the Pelly Amendment.

On 14 December, the Secretary of Commerce transmitted a letter to the President certifying that the nationals of Peru, Chile, and the Republic of Korea were conducting whaling operations in a manner and under circumstances that diminished the effectiveness of the IWC conservation programs. The Secretary indicated that she would consult with the Secretaries of State and Treasury as well as the Chairmen of the Council on Environmental Quality and the Marine Mammal Commission, and would make a recommendation to the President about further activities prior to the end of the sixty-day period within which a report to Congress is due concerning any action that falls short of prohibiting the importation of all fish products from the certified countries.

On 29 December, the Republic of Korea deposited its instrument of ratification of the Convention for the Regulation of Whaling with the Department of State, thereby becoming a member of the IWC and subjecting all its whaling activities to the IWC's conservation measures as of that date. The Government of Peru has ratified the Convention and is expected to deposit its instrument of ratification with the Department of State and thereby join the IWC in the near future, but no later than the next meeting of the IWC in July 1979. The Government of Chile is reported to be completing its ratification process and is also expected to become a member of the IWC no later than its next meeting. The Commission will continue to consult with the Department of Commerce and other interested Federal agencies in the course of efforts to develop recommendations to the President as to whether or not to embargo the fish products of these countries.

In 1979, the Commission will recommend that the Department of Commerce, through the Department of State, undertake vigorous efforts to encourage non-whaling nations to join the IWC and thereby gain additional support for whale conservation. In addition, the Commission will recommend that the whaling activities of other non-IWC member nations be evaluated with reference to whether or not they diminish

the effectiveness of the IWC's conservation programs so as to warrant application of the Pelly Amendment. Finally, the Commission will recommend that information be solicited and evaluated to determine the extent to which whaling activities are being "directly or indirectly" conducted by nationals of Japan and other IWC member nations in a manner and under circumstances that diminish the effectiveness of the IWC's conservation programs so as to warrant application of the Pelly Amendment. For this purpose, the Commission will recommend that particular attention be paid to activities by nationals of Japan and other IWC member nations that involve the importation of meat or other products from whales taken by nationals of non-IWC member nations in violation of IWC's conservation measures, the funding or other participation in whaling operations that result in a violation of IWC's conservation measures, and the export of whaling equipment that is used in the conduct of whaling activities that result in the violation of IWC's conservation measures.

Renegotiation of the Convention for the Regulation of Whaling

A meeting to prepare for a conference of plenipotentiaries to renegotiate the Convention for the Regulation of Whaling or negotiate a new cetacean conservation convention was held in Copenhagen, Denmark, 4-8 July. A representative of the Marine Mammal Commission served on the U.S. delegation to the meeting which was attended by representatives of 21 nations, 17 of which were members of the IWC, and by representatives of 5 international organizations.

Discussions during the meeting were devoted to attempts to reach consensus on a variety of issues relating to alternative draft texts of a new convention for consideration by a subsequent meeting of plenipotentiaries. These discussions resulted in the identification of differences of views among interested participants concerning several issues, including: whether the convention should apply to all cetaceans or only large cetaceans; whether the convention should apply to incidental taking as well as direct harvesting of cetaceans and, if so, how; the nature and extent of coastal state jurisdiction over cetaceans covered by the convention; whether negotiation of a new convention is needed or only the revision by Protocol of the present Convention; whether further preparatory efforts should be conducted as a function of the IWC or as an independent undertaking; and whether the standard by which cetaceans would be conserved under the convention should be explicitly articulated and, if so, what the standard should be.

The participants agreed to establish a working group to meet in early 1979 to edit the alternative draft texts as agreed at the meeting and to provide additional alternatives when these will facilitate agreement. It was further agreed to convene a second preparatory meeting later in 1979 to review the products of the working group's efforts.

The Commission will continue to cooperate with other interested Federal agencies and interested non-governmental groups in efforts to develop an effective position for the negotiation of a convention that is consistent with the purposes and policies of the Marine Mammal Protection Act.

Data Collection and Analysis

Reliable information on the status, distribution, and trends of marine mammal populations as well as on the level of taking from those populations is essential to efforts to assess the extent and nature of existing problems and to the development of sound strategies to resolve problems that are identified. On 8 December, the Commission wrote to the National Marine Fisheries Service and the Fish and Wildlife Service about two related aspects of the need to compile such information and make it readily available in a useful form.

First, the Commission transmitted a copy of a report prepared under contract containing information on the catch of 120 species of marine mammals throughout the world. The Commission noted that this information had not previously been compiled in a comprehensive format and that the report constituted a significant contribution to the requisite data base. The Commission further noted that the information contained in the report should be updated annually so as to curate the information and keep it current with the use of a computerized data storage and retrieval system. For this purpose, the Commission recommended that the National Marine Fisheries Service assume responsibility to develop such a system and perform the necessary functions as soon as possible. The Commission recommended that the Fish and Wildlife Service provide such assistance as necessary to implement the data curation program with respect to the species over which it exercises jurisdiction.

Secondly, the Commission noted that although it is hopeful that the International Whaling Commission will take steps to meet the need for increased and improved curation and analysis of data relating to the taking of cetaceans, the need is so pressing that such efforts should not be delayed until a complete resolution of the problem is

developed by the IWC. The Commission therefore recommended that the National Marine Fisheries Service continue the efforts it had undertaken in connection with the special meeting of the IWC's Scientific Committee in La Jolla to solicit and curate relevant data in a format that will complement the IWC data curation system.

CHAPTER X

OUTER CONTINENTAL SHELF OIL AND GAS DEVELOPMENT

Activities and events (e.g., oil spills) associated with development of oil and gas resources of the outer continental shelf (OCS) may have direct and indirect effects on marine mammals and the ecosystems of which they are a part. The Bureau of Land Management (BLM) has lead-agency responsibility for predicting, assessing, and mitigating adverse environmental impacts associated with OCS development. The Commission maintains an overview of relevant BLM policies and activities, and advises the Bureau of actions that appear necessary to conserve marine mammals. Commission activities in 1978 which relate to OCS oil and gas development are discussed below.

Review of Environmental Impact Statements

The Commission, in consultation with its Committee of Scientific Advisors, reviewed and commented on draft environmental impact statements (DEIS's) concerning the following proposed OCS lease sales.

Proposed OCS Sale 65: Eastern Gulf of Mexico

The proposed sale includes 116 tracts (667,229.28 acres) of OCS lands offshore Florida, Alabama, Mississippi, and Louisiana. Manatees and more than 20 cetacean species, including the bottlenose dolphin, occur in or adjacent to the sale area.

The DEIS on the proposed sale did not contain sufficient information to assess the possible impacts of the proposed action on marine mammals or their habitats. The Commission therefore advised the Bureau, by letter of 31 March, that the DEIS did not adequately assess the possible adverse impacts of the proposed action on marine mammals and that the Commission was particularly concerned about possible adverse impacts on manatees in Florida and bottlenose dolphins throughout the area. The Commission recommended that certain marine mammalogists be consulted to assist in

preparing the final environmental impact statement, and indicated that it would carefully review the FEIS and, as appropriate, recommend withdrawing the sale, withdrawing certain tracts, and/or delaying the sale pending the acquisition and evaluation of additional data needed to assess the potential impact of the proposed action on marine mammals.

Proposed OCS Sale 58: Western Gulf of Mexico

The proposed sale includes 110 tracts (532,885 acres) of OCS lands offshore Texas, Louisiana, Mississippi, and Alabama. More than 15 species of cetaceans are known to inhabit or migrate through the area. Bottlenose dolphins are abundant in coastal waters and discrete populations may exist in some bays and estuaries.

After reviewing the DEIS, the Commission tentatively concluded that available information was inadequate to assess the possible adverse impacts of the proposed action on marine mammals. It was noted, however, that the National Marine Fisheries Service had conducted a threshold examination, pursuant to Section 7 of the Endangered Species Act, and advised the Bureau, by letter of 30 June, that the proposed action probably would not have an adverse impact on endangered species of marine mammals. This opinion suggested that the Service may have considered information not contained in the DEIS and the Commission therefore requested, by letter of 17 October, that the Service provide such additional information as may be available and explain the basis for certain aspects of its biological opinion.

On 15 November, the Commission advised BLM that it tentatively had concluded that there is insufficient information to assess the possible adverse impacts of the proposed action on marine mammals and that additional information had been requested from the National Marine Fisheries Service. The Service's response to the Commission's request for information was received on 24 November. The information and explanations provided by the Service appeared to confirm the Commission's preliminary determination that available data are insufficient to assess the possible adverse impacts of the proposed action on marine mammals. The Commission therefore is reviewing other threshold examinations conducted by the Service, and will advise both BLM and the Service of its findings in early 1979.

Proposed OCS Sale 48: Southern California

The proposed sale includes 217 tracts (1,141,818 acres) of OCS lands offshore Southern California. The area includes the Santa Barbara Channel, Tanner and Cortez Banks, and the Channel Islands. Six species of pinnipeds and at least 26 species of cetaceans inhabit or migrate through the area.

Although the DEIS indicated that as many as 32 species of marine mammals could be impacted by the proposed action, it did not adequately identify the extent of possible impacts or propose measures to mitigate them. The failure to more precisely identify possible adverse impacts and to develop mitigating measures designed specifically to conserve marine mammals appeared to be attributable to: (1) a general lack of information on the structure and dynamics of the marine ecosystems in and adjacent to the proposed lease-sale area; and (2) a specific lack of information on the possible effects of OCS-related activities (e.g., oil spills, chronic discharges, noise from drilling rigs) on various species of marine mammals or the ecosystems of which they are a part. The Commission recommended, by letter of 6 December, that the Bureau: (1) consult with the National Marine Fisheries Service, the Fish and Wildlife Service, and scientists familiar with the biology and ecology of marine mammals in the Southern California Bight to assist in assessing possible adverse impacts of the proposed action on marine mammals; and (2) postpone the sale until there is a better basis for assessing possible adverse impacts and for instituting mitigating measures and monitoring programs adequate to insure that further oil and gas development in the California Bight will not be to the disadvantage of marine mammals.

BLM's Environmental Studies Program

The Bureau of Land Management is required, under the amended OCS Lands Act, to conduct an environmental studies program designed to provide the information needed for prediction, assessment, and management of impacts on the human, marine, and coastal environments of the outer continental shelf and the nearshore areas which may be affected by oil and gas development. Pursuant to this requirement, the Bureau drafted study plans in 1978 for each of the five OCS regions. The Commission reviewed each of these with reference to the intents and provisions of the Marine Mammal Protection Act, and transmitted comments to the appropriate regional OCS offices by letters dated 7 July, 13 July, 18 July, and 26 July.

In addition to reviewing and commenting on the draft environmental studies plans, the Commission reviewed and commented on draft Request for Proposals (RFPs) prepared by the New York and New Orleans OCS offices to solicit proposals concerning marine mammals, turtle, and bird surveys in the North Atlantic, and the South Atlantic-Gulf of Mexico. Members of the Commission's staff attended and participated in: a two-day meeting to review and coordinate agency plans for OCS-related research in Alaska; several meetings of a Technical Proposal Evaluation Committee convened by BLM to review proposals submitted in response to RFPs; several meetings convened by BLM to discuss and develop a plan for assessing the effects of oil and other contaminants on cetaceans; a meeting of a Program Review Board convened by BLM to provide advice on its Cetacean and Turtle Assessment Program in the North and mid-Atlantic; and meetings to review and coordinate the Bureau's and the National Marine Fisheries Service's plans for bowhead whale research as discussed elsewhere in this report.

Review of Agency Policies and Practices

As noted above, OCS oil and gas development poses a major threat to certain marine mammal populations and habitats. Also as noted above, the Bureau of Land Management is the agency with primary responsibility for predicting, assessing, and mitigating the adverse effects of OCS development on the environment, including marine mammals. The National Marine Fisheries Service and the Fish and Wildlife Service are the agencies with primary responsibility for insuring the protection of marine mammals and endangered species under the authorities of the Marine Mammal Protection Act and the Endangered Species Act.

To help meet its overview responsibilities under the Marine Mammal Protection Act, the Commission, in 1978, initiated a general review of actions taken by the Bureau of Land Management, the National Marine Fisheries Service, and the Fish and Wildlife Service to insure that OCS oil and gas development is not to the disadvantage of marine mammals. As part of the review, the Commission has asked its Committee of Scientific Advisors to consider all available information on the effects of oil and OCS-related activities on marine mammals and to identify research that is needed. The review will be completed in early 1979 and the Commission subsequently will advise the agencies as to actions that should be taken to better protect marine mammals and the ecosystems of which they are a part.

APPENDIX A

COMMISSION RECOMMENDATIONS: CALENDAR YEAR 1978

- 4 January Interior, restating the need to clarify the respective authority and role of the Fish and Wildlife Service and the State of Alaska in issuing permits for scientific research and public display.
- 4 January Commerce, that a meeting be convened to brief interested parties on progress in efforts to resolve the bowhead whale issue; that particular attention be paid to the research program, funding, and implementation of a management regime; and that plans be developed for meetings and special activities that would be required over the next 18 months.
- 5 January Commerce, that development of a commercial clam fishery in the Bering Sea could adversely affect the North Pacific walrus population and/or the ecosystem of which it is a part; that no commercial clam fishery be established prior to the preparation and critical evaluation of an environmental impact statement on the proposed fishery; and that the Commission be advised as to whether or not a previous recommendation for an extensive review and evaluation of the Atlantic coast clam fishery had been adopted.
- 10 January Interior, modifications of scientific research permit applications, National Fish and Wildlife Laboratory.
- 12 January State, that several sources of funding to support the training of Mexican marine mammalogists be explored.
- 13 January Commerce, that it would be desirable to make funds available to send additional participants to the U.S./Mexican scientific meetings in La Paz, Mexico.
- 13 January Commerce, public display permit application, Sea-Arama, Marineworld.

- 13 January Commerce, concurring with the National Marine Fisheries Service that the beaches and water areas adjacent to Tern Island and Necker Island be considered for designation as critical habitat for the Hawaiian monk seal, and recommending that: a three-mile buffer zone around the islands and reefs utilized by monk seals be included in the designation of monk seal critical habitat; the National Marine Fisheries Service refrain from any actions which would result in the development of fisheries within the recommended critical habitat area until there is sufficient evidence that fishing activities will not be to the disadvantage of the monk seal populations; the Service review its existing programs to determine whether there are programs, already in existence, which might adversely affect monk seals; and a group of experts be convened to develop a recovery plan for the Hawaiian monk seal.
- 22 January Commerce, that consideration be given to including adequate funds in its budget to support participation by non-governmental scientists in the U.S./Mexico meetings on marine mammals.
- 23 January Interior, scientific research permit application, National Fish and Wildlife Laboratory.
- 24 January Commerce, scientific research permit application, Dr. Louis Herman; scientific research permit application, Mammals of the Sea Research Association.
- 8 February State, that the incidental taking of Dall's porpoise by Japanese Salmon fishing vessels be considered in the course of negotiations relating to the International Convention for the High Seas Fisheries of the North Pacific; that the Department develop language to be included in the negotiated agreement that would provide for observers, research, and other steps to resolve the problem; and that Japanese representatives be advised that

incidental taking of Dall's porpoises within 200 miles of the U.S. will be illegal and prosecuted unless and until an agreement which modifies the requirements of the Marine Mammal Protection Act comes into force.

13 February Commerce, modification of scientific research permit application, Dr. Bruce R. Mate.

13 February Commerce, that the National Marine Fisheries Service review and comment on the Draft Environmental Impact Statement for the Proposed 1978 Outer Continental Shelf Oil and Gas Lease Sale Off-shore Eastern Gulf of Mexico (OCS Sale No. 65) with reference to the protection and conservation of cetacean populations.

13 February Interior, that the Fish and Wildlife Service review and comment on the Draft Environmental Impact Statement for the Proposed 1978 Outer Continental Shelf Oil and Gas Lease Sale Off-shore Eastern Gulf of Mexico (OCS Sale No. 65) with reference to the protection and conservation of manatees.

16 February Interior, requesting that the Fish and Wildlife Service modify its standard letter transmitting permit applications to the Commission for review to provide certain data that will assist the Commission in conducting comprehensive evaluations of the permit process.

16 February Commerce, requesting that the National Marine Fisheries Service modify its standard letter transmitting permit applications to the Commission for review to provide certain data that will assist the Commission in conducting comprehensive evaluations of the permit process.

21 February Commerce, that the National Marine Fisheries Service advise the Commission of the steps being taken to resolve certain issues and problems relating to bowhead whale research and management.

22 February Commerce, requesting that the Secretary advise the Commission of her actions in response to its 11 February 1977 recommendation that she certify certain findings with respect to Peruvian and South Korean whaling operations and that she certify these findings to the President for his consideration and potential prohibition of importation of Peruvian and South Korean fish products pursuant to the provisions of the Pelly Amendment to the Fishermen's Protective Act of 1967.

27 February Interior, scientific research/public display permit application, Sea World, Inc.

1 March Commerce, application to take marine mammals incidental to commercial fishing operations, Sovrybflot, Moscow, U.S.S.R.; that the Commission be provided with certain information to review in conjunction with applications by foreign fishermen to take marine mammals incidental to commercial fishing operations.

2 March Commerce, public display permit application, Marineland, Spain.

3 March Commerce, scientific research permit application, Hubbs-Sea World.

6 March Agriculture, that the Department promptly rewrite and publish revised regulations for the maintenance of marine mammals in captivity; that hearings be held on these regulations; that they be further revised, as necessary, in response to comments; and that final regulations be promulgated as soon as possible.

8 March Interior, that the Fish and Wildlife Service develop a specific strategy and schedule for resolving the various problems relating to the protection and recovery of the West Indian manatee; that a meeting of Federal and State of Florida officials with decision-making regulatory and management authority be convened to discuss and develop specific protective actions; that the Service articulate a position with respect to certain legal issues concerning

manatee protection; and that the Service provide the Commission with certain information concerning various legal, scientific, and biological aspects of its manatee program.

- 9 March Commerce, modification of scientific research permit application, Northwest and Alaska Fisheries Center.
- 15 March Commerce, public display permit application, Mystic Marine Aquarium; public display permit application, Marine Animals Productions, Inc.; public display permit application, Mr. and Mrs. Lawrence J. Foerder; scientific research permit application, Dr. Howard Gelberg.
- 20 March State, that the Draft Environmental Impact Statement for a Possible Regime for the Conservation of Antarctic Marine Resources be substantially revised to reflect Commission comments and that it be expanded to include a discussion of other alternatives and the results of the preliminary negotiations in Canberra, Australia.
- 31 March Interior, Bureau of Land Management, that substantial changes be made in the Draft Environmental Impact Statement for OCS Oil and Gas Lease Sale No. 65, Eastern Gulf of Mexico, after consultation with knowledgeable marine mammalogists.
- 4 April Interior, noting that close cooperation with the National Marine Fisheries Service is necessary to effect a solution to the problems threatening the Hawaiian monk seal.
- 5 April Commerce, that certain changes be made in the National Marine Fisheries Service's North Pacific Fur Seal Program.
- 5 April Commerce, that certain steps be taken in preparation for the May 1978 negotiations with Mexico concerning a marine mammal agreement and requesting that the Service provide a response to the Commission's 21 December letter concerning this matter.

7 April Commerce, public display permit application, Marineworld/Africa.

7 April Commerce, request to proceed with activities pursuant to Permit No. 220.

11 April Commerce, public display permit application, Aquarium of Cape Cod; public display permit application, Marineland Oceanarium.

13 April Commerce, suggesting that changes be made in the draft agreement for the conservation of marine mammals between the United States and Mexico.

18 April Commerce, request to proceed with activities pursuant to Permit No. 135.

26 April Commerce, concurring in the establishment of an upper limit on the number of Tursiops truncatus to be collected from the coastal waters of Texas during 1978 and restating previous recommendations that a research program be developed to assess and monitor the status of Tursiops truncatus populations affected by live capture operations.

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

8 May Interior, scientific research permit application, Dr. Gerald L. Kooyman.

22 May Commerce, scientific research permit application, Dr. Gerald L. Kooyman; public display permit application, Gulfarium.

30 May Commerce, scientific research permit application, Hubbs-Sea World.

2 June Commerce, suggesting that certain revisions be made in the draft agreement for conservation of marine mammals between the United States and Mexico.

5 June Commerce, public display permit application, Sea Artists Enterprises, Walter Moser-Jackle Ltd.

- 9 June Interior, that the decision not to conduct an aerial survey of Pacific walrus during 1980 be reconsidered.
- 14 June Commerce, scientific research permit application, Dr. Donald B. Siniff.
- 15 June Commerce, public display permit application, Montreal Aquarium; public display permit application, Zoological Society of London.
- 15 June State, that a scientist with a strong background in ecology be appointed, in consultation with the Commission, to the U.S. delegation to the meeting to negotiate a convention on living resources of the Southern Ocean.
- 19 June Commerce, that a revised bowhead whale research plan for the next two years be made available to the Commission for review and comment.
- 20 June Commerce, that efforts be made to reach a final decision on the State of Alaska's request for return of management of marine mammals as soon as possible and that certain actions be taken to review the State's request for research and management funds under Sections 109 and 110 of the Act.
- 20 June Commerce, public display permit application, Mystic Marine Aquarium.
- 23 June Commerce, public display permit application, Sea World, Incorporated.
- 26 June Commerce, scientific research permit application, Hubbs-Sea World.
- 7 July Interior, Bureau of Land Management, that certain revisions be made in the 1 June 1978 planning document entitled "A Regional Studies Plan for the Gulf of Mexico and South Atlantic".

- 13 July Interior, Bureau of Land Management, that revisions be made in the planning document entitled "A Regional Study Plan for the North and Mid-Atlantic Regions for FY 1979-FY 1981".
- 14 July Commerce, that consideration be given to funding a proposed cooperative US/Mexican survey of Phocoena sinus which would contribute to a better understanding of the species and yield additional benefits by contributing to productive, cooperative research activities.
- 18 July Interior, Bureau of Land Management, that revisions be made in the planning documents entitled "Southern California Regional Studies Plan: Fiscal Year 1979" and "Northern California Regional Studies Plan: Fiscal Year 1979", dated 15 July 1978.
- 25 July Commerce, scientific research permit application, U.S.S.R. Department of Fisheries.
- 26 July Commerce, that certain issues relating to permit collection statements be clarified and resolved prior to implementing a system to designate approved collectors of record.
- 26 July Interior, Bureau of Land Management, that the "Alaska Outer Continental Shelf Regional Environmental Studies Plan" be revised in accordance with the Commission's comments.
- 1 August Interior, that regulations similar to those proposed relating to boating within the Merritt Island National Wildlife Refuge be instituted in other areas of Florida as well; and that additional information be provided concerning the intended interpretation and enforcement of the proposed regulations.
- 7 August Commerce, scientific permit application, Southwest Fisheries Center.

- 9 August Commerce, request to proceed with activities under scientific research permit, Northwest and Alaska Fisheries Center.
- 15 August Interior, that the discussions concerning sei whales, fin whales, and southern sea otters in the "Advance Notice of Potential Rulemaking on the Status of Native Species Protected by the Endangered Species Convention" be modified in accordance with the Commission's comments; and that the Fish and Wildlife Service support the retention of the West Indian (Caribbean) monk seal (Monachus tropicalis) on Appendix I of the Convention.
- 17 August Interior, modification of scientific research permit application, National Fish and Wildlife Laboratory.
- 18 August Agriculture, that revisions be made in the Department's draft revised text of proposed standards and regulations for the humane handling, care, treatment, and transportation of marine mammals.
- 23 August Interior, summarizing the Commission's review of Interior's efforts to protect the West Indian manatee, and recommending that immediate and intensive efforts be undertaken to resolve the problems causing mortality of manatees subject to United States jurisdiction.
- 5 September Commerce, public display permit application, Quinlan Marine Attractions; public display permit application, Nürnberg Tiergarten.
- 5 September Commerce, request to proceed with activities pursuant to Permit No. 220.
- 22 September Interior, public display permit application, Vancouver Aquarium, requesting that the Commission be advised of the reason for the excessive delays in processing the application and of the corrective steps, if any, taken to prevent the occurrence of similar problems in the future.

- 22 September Interior, scientific research permit applications, National Fish and Wildlife Laboratory.
- 3 October Commerce, suggesting that certain additions be made to the agenda for the special meeting of the International Whaling Commission in December.
- 4 October Interior, scientific research permit application, Mr. John Bengtson.
- 17 October Commerce, requesting that the National Marine Fisheries Service advise the Commission of the basis for its determination that proposed OCS Sale Nos. 51, 58, and 65 are not likely to have an adverse impact on endangered species of marine mammals.
- 24 October Commerce, scientific research permit application, State of Alaska.
- 24 October Commerce, public display permit application, Brookfield Zoo.
- 25 October Commerce, public display permit application, Dolfirodam, the Netherlands.
- 26 October Commerce, that a review of the cooperative government/tuna industry research program be undertaken and that a proposal for further cooperative research be developed; that a draft of this proposal be sent to the tuna industry, the Commission, the National Science Foundation, and other interested parties for comment; and that appropriate representatives from these various groups be convened in late November or early December to finalize and agree upon a plan for cooperative research to be carried out in calendar year 1979.
- 27 October Commerce, scientific research permit application, Dr. William W. Dawson.
- 8 November State, that appropriate consultations be undertaken with a view to appointing additional scientists expert in wildlife management, population dynamics, and ecology to the Non-Governmental Advisory Group on the Antarctic.

- 9 November Interior, that an intensive review and evaluation of the Department's marine mammal protection and conservation programs be undertaken, including the Department's: manatee program; enforcement policies and practices; permit system; use of relevant statutes such as the Endangered Species Act; processing of the application by the State of Alaska for a waiver of the moratorium and return of management; and policies and practices with respect to funding state research and management programs.
- 14 November Interior, restating recommendation of 18 November 1977 that Trichechus senegalensis be designated "threatened"; and that the Department, in cooperation with the Department of State, initiate and encourage research and education programs to preserve and protect manatees.
- 14 November Commerce, restating recommendation of 26 January 1977 that the Caribbean monk seal (Monachus tropicalis) be designated as "depleted" under Section 3(1)(A), (B), (C), and 102(b)(3) of the Marine Mammal Protection Act of 1972 and as "endangered" under Section 4 of the Endangered Species Act of 1973.
- 15 November Interior, Bureau of Land Management, noting that a preliminary review of the Draft Environmental Impact Statement for Proposed 1979 OCS Oil and Gas Lease Sale 58, Western Gulf of Mexico, indicates that there is insufficient information provided to assess the possible adverse impacts of the sale on marine mammals and that additional information has been requested from the National Marine Fisheries Service.
- 20 November Interior, Bureau of Land Management, that steps be taken to assure that the Bureau's bowhead whale research program is effectively coordinated with other relevant efforts; that, for this purpose, a representative of the Bureau meet with the Commission's Scientific Program Director to brief him on the program; and that the investment of funds in research related to the bowhead whale be deferred by the Bureau until such time as it has been determined that the proposed work is well-conceived and well-justified.

- 20 November Agriculture, that revisions be made in the Proposed Standards and Regulations for the Humane Handling, Care, Treatment, and Transportation of Marine Mammals, and that the Commission be provided with information concerning arrangements for the implementation of the proposed system.
- 28 November Commerce, collector of record statement, Mr. W. Zeiller; collector of record statement, Dr. E. Shallenberger.
- 30 November Gulf of Mexico Fishery Management Council, noting that the stonecrab fishery in Florida may pose a risk to manatees and recommending that the issue of incidental take be discussed in the Final Environmental Impact Statement and Fishery Management Plan for Stonecrabs (Gulf of Mexico).
- 5 December Army, commenting on the Draft Environmental Impact Statement on Department of the Army Permit Application No. 9563 (Proposed Deep Draft Inshore Port at Harbor Island, Texas); that the FEIS be prepared after consultation with the National Marine Fisheries Service; that, based upon this consultation, the Army determine: 1) whether it is necessary or desirable to postpone a final decision until the results of the National Marine Fisheries Service research program on bottlenose dolphin populations in the Gulf of Mexico are available; or 2) whether research, in addition to that which is being planned or conducted, will be needed to determine whether the proposed action will be to the disadvantage of marine mammals or the ecosystems of which they are a part.
- 6 December Interior, Bureau of Land Management, that substantial revisions be made in the Draft Environmental Impact Statement for OCS Oil and Gas Lease Sale 48 (Offshore Southern California) after consultation with the National Marine Fisheries Service;

and that final action be postponed until:
1) there is a better basis for assessing possible adverse impacts; and 2) there is reason to believe that mitigating measures and monitoring programs will be adequate to insure that activities associated with the proposed project will not be to the disadvantage of marine mammals.

- 8 December Commerce, that the National Marine Fisheries Service, using a report prepared for the Commission, assume responsibility for developing and maintaining a system to curate current information on the harvest of marine mammals throughout the world, and that the Service continue its efforts to solicit and curate relevant data on whaling in a format that will complement the International Whaling Commission's data curation system.
- 8 December Interior, that the Fish and Wildlife Service provide such assistance to the National Marine Fisheries Service as is necessary to implement the recommended data curation program with respect to the species under its jurisdiction.
- 11 December Commerce, public display and scientific research permit application, Sea World, Inc.
- 14 December National Science Foundation, that one or more groups of experts be convened to provide scientific and technical advice with respect to policy formulation and necessary actions to protect and conserve the Antarctic marine ecosystem; and that representation on the U.S. delegation involved in negotiating a living resource conservation convention be supplemented to insure strong scientific input.
- 14 December Army Corps of Engineers, that consultation with the Fish and Wildlife Service be initiated, pursuant to Section 7 of the Endangered Species Act, to insure that proposed activities

associated with Permit Application Nos. 78E-1673 and PB-OW-57 will not jeopardize the continued existence of the endangered West Indian manatee or result in the destruction or adverse modification of their critical habitat; and that further action on these applications be deferred pending the completion of that consultation.

- 22 December Commerce, that certain changes be made in the tuna-porpoise research program plan for FY 1979 and 1980.
- 29 December Interior, that if the Fish and Wildlife Service decides to continue the waiver of the moratorium and return of management of walrus and to grant Alaska's request for a waiver and return of management of other species, efforts be undertaken as soon as possible to meet with representatives of the State of Alaska and others to discuss and develop mechanisms to resolve outstanding issues.
- 29 December Interior, that the Department provide information concerning: completed and proposed studies on the effects of limited bowhead whale take on Eskimos; the steps taken to meet the subsistence needs of Eskimos that it determines may not be satisfied in the event that a sufficient number of whales are not available; the necessity, feasibility, and desirability of utilizing walrus meat to meet subsistence needs; and how the Department intends to safeguard the welfare of the wildlife resources and Eskimos who may be adversely affected by outer continental shelf exploration and development.

APPENDIX B
REPORTS ON COMMISSION-SPONSORED RESEARCH 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. Final report for MMC contract MM4AC002. NTIS pub. PB-274046. 46 pp. (\$4.50).

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, 1975-76. Final report MMC contract MM5AC020. NTIS pub. PB-266249. 32 pp. (\$4.50).

Ainley, D. G., H. R. Huber, R. R. LeValley, and S. H. Morrell 1978. Studies of marine mammals at the Farallon Islands, California, 1976-77. Final report for MMC contract MM6AC027. NTIS pub. PB-286603. 48 pp. (\$4.50).

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 pub. PB-289496. 161 pp. (\$8.00).

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 MM7AD011. NTIS pub. PB-286797. 33 pp. (\$4.50).

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 pub. PB-265547. 55 pp. (\$5.25).

DeBeer, J., F. Awbrey, D. Holts, and P. Patterson. Research related to the tuna-porpoise problem: summary of research results from the first cruise of the dedicated vessel, 26 January-16 March 1978. Final report for Cruise I for Commission contract MM8AC006. Southwest Fisheries Center Admin. Rep. LJ-78-14. 27 pp. 2/

1/ Prices shown are for printed reports and include postage within the U.S. Microfiche copies are \$3.00 each. When ordering, include the NTIS accession number, e.g., PB-274046. Make checks payable to the National Technical Information Service. Address: 5285 Port Royal Road, Springfield, Virginia 22161.

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

- 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 pub. PB-285615. 43 pp. (\$4.50).
- 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 pub. PB-273505. 38 pp. (\$4.50).
- 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 pub. PB-281024. 668 pp. (\$19.00).
- 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 pub. PB-275295. 24 pp. (\$4.00).
- 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 pub. PB-275297. 25 pp. (\$4.50).
- 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 pub. PB-275088. 34 pp. (\$4.50).
- Goodman, D. 1978. Management implications of the mathematical demography of long-lived animals. Final report for MMC contract MM8AD008. NTIS pub. PB-289678. 84 pp. (\$6.00).
- 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 pub. PB-270375. 111 pp. (\$6.50).
- Hui, C. A. 1978. Reliability of using dentin layers for age determination in Tursiops truncatus. Final report for MMC contract MM7AC021. NTIS pub. PB-288444. 37 pp. (\$4.50).

- Johnson, B. W. and P. A. Johnson. 1978. The Hawaiian monk seal on Laysan Island: 1977. Final report for MMC contract MM7AC009. NTIS pub. PB-285428. 43 pp. (\$4.50).
- 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 pub. PB-270376. 27 pp. (\$4.50).
- Leatherwood, J. S., R. A. Johnson, D. K. Ljungblad, and W. E. Evans. 1977. Broadband measurements of underwater acoustic target strengths of panels of tuna nets. Final report for MMC contract MM6AC001. Naval Ocean Systems Center Tech. Report 126. 19 pp. 3/
- Loughlin, T. 1978. A telemetric and tagging study of sea otter activities near Monterey, California. Final report for MMC contract MM6AC024. NTIS pub. PB-289682. 69 pp. (\$5.25).
- Mate, B. R. 1977. Aerial censusing of pinnipeds in the eastern Pacific for assessment of population numbers, migratory distributions, rookery stability, breeding effort, and recruitment. Final report for MMC contract MM5AC001. NTIS pub. PB-265859. 67 pp. (\$4.50).
- Miller, L. K. 1978. Energetics of the northern fur seal in relation to climate and food resources of the Bering Sea. Final report for MMC contract MM5AC025. NTIS pub. PB-275296. 32 pp. (\$4.50).
- Norris, K. S. and R. R. Reeves (editors). 1978. Report on a workshop on problems related to humpback whales (Megaptera novaeangliae) in Hawaii. Final report for MMC contract MM7AC018. NTIS pub. PB-280794. 90 pp. (\$6.00).
- Norris, K. S., W. E. Stuntz, and W. Rogers. 1978. The behavior of porpoises and tuna in the Eastern Tropical Pacific yellowfin tuna fishery: preliminary studies. Final report for MMC contract MM6AC022. NTIS pub. PB-283970. 98 pp. (\$6.00).
- Pitcher, K. W. 1977. Population productivity and food habits of harbor seals in the Prince William Sound - Copper River Delta area, Alaska. Final report for MMC contract MM5AC011. NTIS pub. PB-266935. 36 pp. (\$4.50).

3/ Available from the Naval Ocean Systems Center, San Diego, California 92152.

- Ralston, F. (editor). 1977. A workshop to assess research related to the porpoise/tuna problem, February 28 and March 1-2. Final report for MMC contract MM7AC022. Southwest Fisheries Center Admin. Rep. LJ-77-15. 119 pp., 6 appendices. ^{4/}
- Reeves, R. R. 1977. Exploitation of harp and hooded seals in the western North Atlantic. Final report for MMC contract MM6AD055. NTIS pub. PB-270186. 57 pp. (\$5.25).
- Reeves, R. R. 1977. The problem of gray whale (Eschrichtius robustus) harassment: at the breeding lagoons and during migration. Final report for MMC contract MM6AC021. NTIS pub. PB-272506. 60 pp. (\$5.25).
- Ridgway, S. H. and K. Benirschke. 1977. Breeding dolphins: present status, suggestions for the future. Final report for MMC contract MM6AC009. NTIS pub. PB-273673. 311 pp. (\$11.75).
- Schmidly, D. J. and S. H. Shane. 1978. A biological assessment of the cetacean fauna of the Texas coast. Final report for MMC contract MM4AC008. NTIS pub. PB-281763. 45 pp. (\$4.50).
- Shane, S. H. and D. J. Schmidly. 1978. The population biology of the Atlantic bottlenose dolphin, Tursiops truncatus, in the Aransas Pass area of Texas. Final report for MMC contract MM6AC028. NTIS pub. PB-283393. 142 pp. (\$7.25).
- Stoker, S. W. 1977. Report on a subtidal commercial clam fishery proposed for the Bering Sea. Final report for MMC contract MM7AD076. NTIS pub. PB-269712. 33 pp. (\$4.50).
- Swartz, S. L. and W. C. Cummings. 1978. Gray whales, Eschrichtius robustus, in Laguna San Ignacio, Baja California, Mexico. Final report for MMC contract MM7AC008. NTIS pub. PB-276319. 33 pp. (\$4.50).
- Swartz, S. L. and M. L. Jones. 1979. The evaluation of human activities on gray whales, Eschrichtius robustus, in Laguna San Ignacio, Baja California, Mexico. Final report for MMC contract MM8AC005. NTIS pub. PB-289737. 42 pp. (\$4.50).

^{4/} Available from Director, National Marine Fisheries Service, Southwest Fisheries Center, La Jolla, California 92038.

- Taylor, L. R. and G. Naftel. 1978. Preliminary investigations of shark predation on the Hawaiian monk seals at Pearl and Hermes Reef and French Frigate Shoals. Final report for MMC contract MM7AC011. NTIS pub. PB-285626. 41 pp. (\$4.50).
- Williams, T. D. 1978. Chemical immobilization, baseline hematological parameters and oil contamination in the sea otter. Final report for MMC contract MM7AD094. NTIS pub. PB-283969. 33 pp. (\$4.50).
- Wilson, S. C. 1978. Social organization and behavior of harbor seals, Phoca vitulina concolor, in Maine. Final report for MMC contract MM6AC013. NTIS pub. PB-280188. 116 pp. (\$6.50).
- Woodhouse, C. D., R. K. Cowen, and L. R. Wilcoxin. 1977. A summary of knowledge of the sea otter, Enhydra lutris L., in California and an appraisal of the completeness of biological understanding of the species. Final report for MMC contract MM6AC008. NTIS pub. PB-270374. 71 pp. (\$5.25).
- Wray, P. 1978. The West Indian manatee (Trichechus manatus) in Florida: a summary of biological, ecological, and administrative problems affecting preservation and restoration of the population. Final report for MMC contract MM8AD054. NTIS pub. PB-285410. 95 pp. (\$6.00).
- Yellin, M. B., C. R. Agegian, and J. S. Pearse. 1977. Ecological benchmarks of the Santa Cruz County kelp forests before the re-establishment of sea otters. Final report for MMC contract MM6AC029. NTIS pub. PB-272813. 135 pp. (\$7.25).
- Annual Report of the Marine Mammal Commission, Calendar Year 1973. 1974. Report to Congress. NTIS pub. PB-269709. 14 pp. (\$4.00).
- Annual Report of the Marine Mammal Commission, Calendar Year 1974. 1975. Report to Congress. NTIS pub. PB-269710. 30 pp. (\$4.50).
- Annual Report of the Marine Mammal Commission, Calendar Year 1975. 1976. Report to Congress. NTIS pub. PB-269711. 55 pp. (\$5.25).
- Annual Report of the Marine Mammal Commission, Calendar Year 1976. 1977. Report to Congress. NTIS pub. PB-269713. 102 pp. (\$6.50).
- Annual Report of the Marine Mammal Commission, Calendar Year 1977. 1978. Report to Congress. NTIS pub. PB-281564. 101 pp. (\$6.50).

The following reports on Commission-sponsored research activities are expected to be available from the National Technical Information Service in early 1979.

- Brownell, R. L., C. Schonewald and R. R. Reeves. In press. Report on world catches of marine mammals: 1965-1976. Final report for MMC contract MM6AC002.
- Cornell, L. H., E. D. Asper, K. Osborn, and M. J. White, Jr. In press. Investigations on cryogenic marking procedures for marine mammals. Final report for MMC contract MM6AC003.
- Dayton, P. K., B. D. Keller, and D. A. Van Tresca. In prep. Studies towards the understanding of the health and stability of some sea otter-dominated marine communities. Final report for MMC contract MM6AC026.
- Foster, M. S., C. R. Agegian, R. K. Cowen, R. F. Van Waggenen, D. K. Rose, and A. C. Hurley. In prep. Toward an understanding of the effects of sea otter foraging on kelp forest communities in central California. Final report for MMC contract MM7AC023.
- Geraci, J. R., S. A. Testaverdi, D. J. St. Aubin, and T. H. Loop. In press. A mass stranding of the Atlantic white-sided dolphin, Lagenorhynchus acutus: a study into the pathobiology and life history. Final report for MMC contract MM5AC008.
- Geraci, J. R. and D. St. Aubin. In press. The biology of marine mammals, insights through stranding. Final report for MMC contract MM7AC020.
- Green, K. A. In prep. Ecosystem description of the California current. Final report for MMC contract MM7AC006.
- Hofman, R. J. (editor). In press. A workshop to identify new research that might contribute to the solution of the tuna-porpoise problem. Proceedings of a Marine Mammal Commission-sponsored workshop held on 8 and 9 December 1975, at the University of California, Santa Cruz.
- Huber, H. R., D. G. Ainley, S. H. Morrell, R. R. LeValley and C. S. Strong. In prep. Studies of marine mammals at the Farallon Islands, California, 1977-1978. Final report for MMC contract MM7AC025.
- Irvine, A. B., M. D. Scott, R. S. Wells, J. H. Kaufmann, and W. E. Evans. In prep. A study of the activities and movements of the Atlantic bottlenose dolphin, Tursiops truncatus, including an evaluation of tagging techniques. Final report for MMC contract MM5AC018.

- Katona, S. K. and S. Kraus. In prep. Photographic Identification of individual humpback whales (Megaptera novaeangliae): evaluation and analysis of the technique. Final report for MMC contract MM7AC015.
- Kooyman, G. L. In prep. Development and testing of a time-depth recorder for marine mammals. Final report for MMC contract MM6AC019.
- Mate, B. R. In prep. Workshop report for marine mammal-fisheries interactions in the eastern Pacific. Final report for MMC contract MM8AC003.
- Norris, K. S. and J. D. Hall. In press. Development of techniques for estimating trophic impact of marine mammals. Final report for MMC contract MM4AC013.
- Odell, D. K. In prep. A preliminary survey of the ecology and population biology of the bottlenose dolphin in southeast Florida. Final report for MMC contract MM5AC026.
- Odell, D. K., G. H. Waring, and D. B. Siniff (editors). In press. Tursiops truncatus assessment workshop. Final report for MMC contract MM5AC021.
- Richardson, D. T. In prep. Assessment of harbor and gray seal populations in Maine. Final report for MMC contract MM4AC009.
- Ridgway, S. H. and W. F. Flanigan, Jr. In prep. An investigation of a potential method for the humane taking of certain marine mammals. Final report for MMC contract MM6AC030.
- Risebrough, R. W. In prep. A search for pollutants of petroleum origin in tissues of harbor seals, Phoca vitulina, in San Francisco Bay. Final report for MMC contract MM7AC007.
- Risebrough, R. W. In prep. Pollutants in marine mammals: a literature review and recommendations for research. Final report for MMC contract MM7AD025.
- Risebrough, R. W. In prep. Population biology of harbor seals in San Francisco Bay, California. Final report for MMC contract MM6AC006.
- Smith, T. D. and T. Polacheck. In prep. Uncertainty in estimating historical abundance of porpoise populations. Final report for MMC contract MM7AC006.