

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

MARINE MAMMAL PROTECTION ACT


Report of the Department of the Interior

The Marine Mammal Protection Act of 1972 (16 U.S.C. 1361, 86 Stat. 1027 (1972)) stated in section 103(f) that "Within six months after the effective date of this Act [December 21, 1972] and every twelve months thereafter, the Secretary shall report to the public through publication in the Federal Register and to the Congress on the current status of all marine mammal species and population stocks subject to the provisions of this Act. His report shall describe those actions taken and those measures believed necessary, including where appropriate, the issuance of permits pursuant to this title to assure the well-being of such marine mammals."

The responsibility of the Department of the Interior is limited by section 3(12)(B) of the Act to those mammals that are members of the orders Carnivora (polar bear, sea otter, and marine otter), Pinnipedia (walrus), and Sirenia (manatees and dugong). Accordingly, published herewith is the report of the Department of the Interior for the period June 22, 1977, to March 31, 1978, on the administration of the Act with regard to those mammals.

Issued at Washington, D.C., and dated

SEP 18 1978


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Director

ADMINISTRATION OF THE MARINE MAMMAL PROTECTION ACT OF 1972

June 22, 1977, to March 31, 1978

Report of the Department of the Interior

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Prepared by
U.S. Fish and Wildlife Service
Department of the Interior
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Administration of the Marine Mammal Protection Act of 1972

June 22, 1977, to March 31, 1978

INTRODUCTION

AUTHORITY

Pursuant to the requirements of section 103(f) of the Marine Mammal Protection Act of 1972 (86 Stat. 1027; hereinafter, the "Act"), this report describes administrative actions and the status of certain species of marine mammals. The report covers the period June 22, 1977, through March 31, 1978, and is presented in three parts: administrative actions, species status reports, and appendixes.

Reports for previous years described events that occurred from June 22 of one year to June 21 of the following year, the latter being the date on which the report was due to be released. Some of these reports could not be completed on schedule because of difficulties in synthesizing or projecting information before the end of the report year. The reporting period for this year has been changed to eliminate these difficulties. In making this change, the Service follows the precedent set in 1975 by the Department of Commerce's National Marine Fisheries Service (NMFS).

Under section 3(12)(B) of the Act, the Department of the Interior is responsible for the following marine mammals: polar bear, sea otter, marine otter, walrus, manatees, and dugong. On July 8, 1977, the Secretary of the Interior, through the Assistant Secretary for Fish and Wildlife and Parks, redelegated authority for the functions prescribed by the Act to the Director, U.S. Fish and Wildlife Service, as prescribed in 242.1.1 of the Departmental Manual.

MARINE MAMMAL COMMISSION

Title II of the Act established a Marine Mammal Commission and a nine-member Committee of Scientific Advisors. The Act prescribes extensive consultative roles for the Commission and the Committee with the Secretaries of the Interior and Commerce. Contact with the Commission, through its staff, is on an almost daily basis. The formal review of permit applications, section 110 grant proposals, and moratorium-waiver requests are accomplished through established procedures.

The Commissioners are:

Douglas G. Chapman, Chairman, Seattle, Wash. Dr. Chapman is Dean of the College of Fisheries, University of Washington, Seattle, Wash.

Richard A. Cooley, Santa Cruz, Calif. Dr. Cooley is the Academic Assistant to the Chancellor at the University of California, Santa Cruz, Calif.

Donald B. Siniff, St. Paul, Minn. Dr. Siniff is a Professor in the Department of Ecology and Behavioral Biology, University of Minnesota, St. Paul, Minn.

The Marine Mammal Commission is an independent body and reports to the Congress annually.

CONGRESSIONAL HEARING

The Honorable Robert L. Leggett, Chairman of the House Subcommittee on Fisheries and Wildlife Conservation and the Environment, called a hearing on February 7, 1978, on H.R. 10730 and H.R. 10731. These bills proposed extending the appropriation authorization of sections 110(c) (research) and 114(b) (administration) of the Marine Mammal Protection Act for fiscal years 1979, 1980, and 1981. Robert S. Cook, Deputy Director of the Fish and Wildlife Service, testified before the subcommittee and answered questions on the Service's funding under the Act and on its enforcement and marine mammal research activities.

PART I--ADMINISTRATIVE ACTIONS

MARINE MAMMAL PROTECTION ACT AMENDED

Because the original 5-year term of appropriation authorizations for the Marine Mammal Protection Act (MMPA) expired on September 30, 1977, a 1-year extension for fiscal year 1978 was signed into law on October 18, 1977 (Public Law 95-136, 91 Stat. 1167). The extension increased the Department of the Interior authorization ceiling for section 110(c) (research) from its fiscal year 1977 level of \$833,000 to \$1.2 million; for section 114(b) (administration), from \$525,000 to \$850,000. The extension also set fiscal year 1978 authorization ceilings for the Department of Commerce's marine mammal activities and for the Marine Mammal Commission, and it added a new subsection 102(f) to the Act, declaring that

"It is unlawful for any person or vessel or other conveyance to take any species of whale incident to commercial whaling in waters subject to the jurisdiction of the United States."

WAIVER OF THE MORATORIUM FOR NINE SPECIES OF MARINE MAMMALS

Alaska's 1973 request to the Secretary of the Interior to waive the moratorium and return to the State management of Alaskan populations of polar bears, sea otters, and walruses coincided with a similar request to the Secretary of Commerce for northern sea lions, harbor and spotted seals, ringed seals, bearded seals, ribbon seals, and beluga whales. The Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration's (NOAA's) National Marine Fisheries Service (NMFS) are cooperatively considering the requests for their respective agencies. In March 1976, they filed with the Council on Environmental Quality a jointly prepared draft environmental impact statement on the proposed action and on proposed regulations; on March 27, 1978, they filed the final statement with the Environmental Protection Agency.

The draft statement, together with relevant public comments and responses to those comments, became part of the hearing record on which Administrative Law Judge Malcolm P. Littlefield based his recommended decision issued on June 30, 1977. The rest of the record comprised briefs and reply briefs of interested parties as well as testimony of participants at public hearings in Alaska and Washington, D.C. (See 1977 annual report.) On July 20, the Service reported in the Federal Register receipt of Judge Littlefield's recommendations and solicited written public comments on them (42 F.R. 37215-see appendix A).

In general, Judge Littlefield found that the Alaskan populations of the three species under Interior's jurisdiction are within the range of "optimum sustainable population"--a term and concept in the MMPA which refers to the relationship between the numbers of animals and the ecosystem of which they are a part. Because he found that such actions would be in accord with the terms and policies of the MMPA, he recommended that the moratorium be waived for the polar bear and sea otter; that their management be returned to the State, subject to stipulated modifications of State laws and regulations; that the maximum annual retrieved taking of polar bears and sea otters not exceed 170 and 3,000, respectively; and that the waiver for Pacific walrus, originally implemented in 1976, be continued at the same annual taking level of no more than 3,000 retrieved animals.

The FWS and NMFS are now reviewing Judge Littlefield's recommended decision, the comments received thereon, and the hearing record, in preparation for the FWS Director's and NOAA Administrator's decisions on whether or not to waive the moratorium and return management, and if so, to what extent and under what conditions. These decisions are expected later this year.

WALRUS WAIVER

The walrus part of Alaska's 1973 waiver request was severed from the original petition in 1975, and appropriate procedures were developed to treat the walrus waiver as a separate action, although one still subject to review when the overall request is acted on. After all prescribed steps were completed and the requirements satisfied, the Service implemented the walrus waiver and returned management of the species to the State in April 1976.

The first annual report under the State's management program, for calendar year 1976, was received on June 6, 1977. Following its review both internally and by the Marine Mammal Commission (in its consultative role), the Service requested additional information from the State on October 13, 1977, and again on January 24, 1978. The final installment of the State's reply was received on March 20, and the complete report is now being reviewed in the Service and by the Marine Mammal Commission to determine if State laws and regulations still comply with Federal regulation requirements.

MARINE MAMMAL CARE AND MAINTENANCE STANDARDS

On August 19, 1977, the Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) published proposed "Marine Mammal Care and Maintenance Standards and Regulations" in the Federal Register (42 F.R. 42044-42054). These standards were prepared under authority of the Animal Welfare Act of 1970 (7 U.S.C. 2131 et seq.), and they marked the

culmination of 5 years of cooperative work by the Service, the NMFS, the APHIS, and the Marine Mammal Commission.

Because segments of the marine mammal public display industry objected to some of the provisions, the APHIS solicited comments from interested persons at informal hearings in Los Angeles, Calif., Miami Springs, Fla., and College Park, Md. (on September 26, September 29, and October 18, respectively). In response to these and written comments received during the proposed-standards comment period, the APHIS determined that the proposed standards should be rewritten and repropoed; revised standards are expected to be proposed later in 1978.

When implemented, the standards would govern the humane handling, care, treatment, and transportation of live marine mammals maintained in captivity for purposes of research, testing, experimentation, or exhibition. Specifically, they are intended to provide each individual marine mammal with at least the minimum acceptable conditions consistent with its good health and well-being and with regard to its physical requirements and behavioral characteristics.

WEST INDIAN MANATEE

The West Indian manatee is a highly endangered species that is suffering severely at the hands of humans, especially in Florida where its activities are often not compatible with human activities. Of the 183 dead animals recovered there by Service and University of Miami salvage teams between 1974 and the end of 1977, the salvagers could determine the causes of death for 88. Fifty-eight of these were killed, directly or indirectly, by human activities: 30 by collisions with motor boats or barges, 11 by human structures such as automatic flood gates at salinity dams and canal lock gates, 6 by undetermined trauma, and 11 by other human causes such as ropes and fishing nets, lines, and hooks.

During the report period, the Service intensified its efforts to identify causes of death and to initiate steps that will reduce manatee mortality and injury. Misunderstandings or jurisdictional disagreements between State and Federal agencies were settled, and cooperative State, Federal, and private conservation efforts were launched to develop general and specific procedural and protection plans and strategies. A "manatee working group"--comprising representatives of State and Federal agencies, conservation organizations, and several private organizations and individuals--identified in a September meeting the need for a public information and education program to increase public awareness and enlist voluntary public compliance with manatee conservation and protection measures; the group developed and evaluated components of such a program then and at subsequent meetings in November and February. The Manatee Recovery Team was reactivated in January, was undergoing reorganization

at the close of the report period, and is expected to produce its recovery plan in the next reporting period. Consultations between Service and Corps of Engineers representatives produced coordination and operational changes needed to reduce manatee mortality and injury associated with dredging projects. In March, State and Service officials explored and agreed on the direction and scope of State law enforcement and public affairs programs, land acquisition philosophy, and proposed State legislation--considering also skindiver-caused harassment and remedial measures. In the same month, the Service began developing prototype boat-speed regulations to protect manatees in the Merritt Island National Wildlife Refuge; began formulating its law enforcement strategy plan; and convened a workshop on the West Indian manatee, which is described more fully in the "Research" section. As the report period closed, the coordinated individual and joint activities of State, Federal, and private groups were escalating rapidly to gather needed baseline data and to increase the effectiveness and scope of manatee protection through stronger legislation, regulations, law enforcement, and public information and education.

MARINE OTTER

On March 29, 1978, the Service issued a final rule designating the marine otter of Chile and Peru (Lutra felina) as a marine mammal and, therefore, the recipient of additional Federal protection under the MMPA. This action was announced in the Federal Register (43 F.R. 13065--see appendix B), and it finalized the rulemaking proposed on June 16, 1977 (42 F.R. 30659). Although the species has been listed since June 1976 as endangered under the Endangered Species Act of 1973 (ESA), its new designation enables the United States to conduct or support research on native populations and, through international agreements, to monitor the status of these populations. In some cases, the MMPA also imposes stiffer penalties and greater restrictions on the use of listed species than does the ESA.

LEGAL ACTIONS AGAINST THE DEPARTMENT OF THE INTERIOR

In February 1977, the residents of Togiak, Alaska, initiated class civil action No. 77-0264 in the Federal District Court for the District of Columbia, charging the United States, the Secretary of the Interior, and the Director of the Fish and Wildlife Service with violating their rights and failing to perform statutory responsibilities relative to the walrus waiver mentioned earlier in this report. On September 9, 1977, the Department of Justice filed a motion to dismiss the plaintiffs' request for declaratory relief to void the waiver regulations that removed the exemption for Alaska Natives from the provisions of the MMPA. On November 26, the plaintiffs filed a memorandum in opposition to the motion to dismiss, and on January 3, 1978, the Justice Department filed a reply to the memorandum. At the end of the report period, the action was pending oral arguments.

ENFORCEMENT

The Service's Division of Law Enforcement is responsible for enforcing the MMPA provisions for the species under Service jurisdiction. Most of the enforcement effort is based on reported or alleged Act violations, but Division of Law Enforcement special agents also apprehend Act violators and conduct initial investigations of illegal importations of marine mammals or marine mammal products. Further, they assist the NMFS by making similar apprehensions and investigations in cases involving species under that agency's jurisdiction, referring the results of these efforts to the NMFS for its consideration and appropriate action. Pursuant to a NMFS-Service memorandum of understanding, however, the Service retains jurisdiction over those investigations that involve endangered marine mammal species and initiates appropriate civil and criminal actions.

Ninety-eight investigations were pending at the start of the report period, during which Fish and Wildlife Service special agents initiated 271 new investigations. A total of 255 investigations were closed, while 114 were pending at the end of the period. Two hundred and seven of the closed cases, primarily sealskin importations, were referred to the NMFS after FWS agents made initial investigations and seized illegal importations valued at approximately \$5,800.

Eight cases were presented to the Justice Department for criminal action, but all were declined, resulting in no criminal dispositions during the report period. Eleven cases were presented for civil action, 4 being transferred to the NMFS and 7 resulting in Service-initiated civil proceedings that were still pending at the end of the period.

Investigations closed during the period involved the following animal types and numbers: Polar bear, 29; sea otter, 3; walrus, 10; manatee, 1; seal, 191; and whale, 21.

SCIENTIFIC RESEARCH AND PUBLIC DISPLAY PERMITS

The Act declared a moratorium on the taking or importing of marine mammals and marine mammal products, but it included exceptions that allow scientific research on these animals as well as taking them for public display. Such research and taking, however, may be conducted only if there are no adverse effects on the health and well-being of the involved marine mammal species and populations and the marine ecosystems of which they are a part.

Section 101(2)(1) of the Act and section 18.31 of the Code of Federal Regulations, which govern the taking and importing of marine mammals under Fish and Wildlife Service jurisdiction, authorize the Director

(by delegation) to issue permits for scientific research and public display purposes, but only after the applications have been reviewed by the Marine Mammal Commission and its Committee of Scientific Advisors on Marine Mammals.

During the report period, the Service received four new permit applications, six requests for amendments, and one request to reopen an application that had been denied; it also processed nine additional applications that were pending at the end of the previous report year. Five new permits and nine amendments to new or existing permits were issued (one amendment was not solicited); two new permit applications and two amendment requests were denied; one application was abandoned and one withdrawn; and one application is pending. The permits issued or amended are summarized below.

Scientific Research Permit Applications

Amendments to permit PRT 2-122. (University of Minnesota, Minneapolis, Minn., Dr. Donald B. Siniff.) The original permit for research on sea otters (Enhydra lutris) was issued on July 12, 1976, was amended first on October 22, 1976, and was scheduled to expire on December 31, 1977. Two more amendments were issued during the report period: the first on June 24, 1977, authorizing the use of the drugs Innovar, M-99, CI-744, and fluorothane to restrain Alaskan sea otters while data are collected and transmitters attached; the second on December 13, 1977, extending the expiration date of the permit to December 31, 1978.

Amendments to permit PRT 9-25-C. (National Fish and Wildlife Laboratory Field Station, Gainesville, Fla., Dr. Howard W. Campbell.) The original permit for research on West Indian manatees (Trichechus manatus) was issued on September 25, 1975; was previously amended on October 1, 1975, January 20, 1976, and March 23, 1977; and expires on June 30, 1980. Two more amendments were issued during the report period, the first on July 5, 1977, increasing from 12 to 13 the number of animals authorized to be captured, tagged, held, transported, and released to develop and implement tagging techniques. The second amendment, issued on January 20, 1978, increased this number from 13 to 14. It also authorized subsequent tagging of any additional rescued and rehabilitated animal before releasing it to the wild and removed the restriction against sonic tagging 10 wild manatees at a rate of no more than 2 at a time.

Amendment to permit PRT 2-87. (Aquatic Institute of Research, Inc., Cape Coral, Fla., M. H. Sherin.) The original permit for research on West Indian manatees (Trichechus manatus) was issued on September 8, 1976, and was amended on October 22, 1976, to expire on December 31, 1980. One unsolicited amendment was issued during the report period, on November 9, 1977, requiring the permittee to obtain written authorization from

the Service before returning captive animals to the wild; the condition was added to correct an oversight in the original permit. On March 6, 1978, the Service authorized the release of the one animal being held at the facility, provided that it was freeze branded before being released in an area approved by an attending Service representative.

New permit PRT 2-319. (California Department of Fish and Game, Sacramento, Calif., E. C. Fullerton, Director.) The permit authorized the capture, tagging, weighing, collection of blood samples, measuring, sexing, and release of 100 sea otters (Enhydra lutris) (approximately 50 males and 50 females) for each of 2 years in California and adjacent Pacific coastal waters. It also authorized for the first year the above activities with 40 additional animals (approximately 30 males and 10 females) which will then be held and transported for release preferably in the Sand Hill Bluff area north of Santa Cruz, Calif.; these 40 animals will be taken from several different areas in the present range. The permit was issued on August 26, 1977, and expires on September 30, 1979.

New permit PRT 2-844 and amendment. (National Fish and Wildlife Laboratory, Washington, D.C., Dr. Clyde Jones, Director.) The permit authorized the capture, tagging, sexing, measuring, and release of 35 sea otters (Enhydra lutris) (5 adult males, 10 young males, 10 adult females, and 10 young females) for each of 2 years along the California coast between Point Piedras Blancas and Cambrio [Cambria] and between Point Buchon and Pecho Rock. The research is to help determine sea otter movements and activities, increase knowledge on their reproductive cycles, and develop a group of individually recognizable animals of known age in the population. No pups weighing less than 18 pounds and no females with such pups will be tagged. Animals that die accidentally owing to authorized activities may be used for appropriate measurements and to determine age, sex, reproductive condition, stomach contents, parasite loads, and cause of death; research on stomach contents and parasite loads must be coordinated with the California Department of Fish and Game to avoid duplicating research efforts. The permit was issued on November 7, 1977, and expires on November 1, 1979.

An amendment to this permit was issued on December 29, correcting a place name misspelled on the original permit and removing the prohibition against tagging females with pups weighing less than 18 pounds.

Amendment to permit PRT 2-650. (University of Minnesota, Minneapolis, Minn., Dr. Donald B. Siniff.) The original permit for research on California sea otters (Enhydra lutris nereis) was issued on June 2, 1977, and was scheduled to expire on June 30, 1978. An amendment was issued during the report period, on December 21, 1977, extending the expiration date to December 31, 1978.

Public Display and Scientific Research Permit Application

Amendment to permit PRT 2-90. (The Seattle Aquarium, Seattle, Wash., H. Doug Kemper, Jr., Director.) The original permit to capture sea otters (Enhydra lutris) for public display and propagation purposes was issued on August 10, 1976; was previously amended on August 18, 1976, and May 4, 1977; and was initially scheduled to expire on February 28, 1977. Another amendment was issued during the report period, on September 22, 1977, extending the expiration date again--this time to October 15, 1977.

Public Display Permit Applications

New permit PRT 2-263. (Vancouver Public Aquarium, Vancouver, B.C., Canada, K. Gilbey Hewlett, Curator.) The permit authorized the taking and export of five sea otters (Enhydra lutris) from the area of Prince William Sound, Alaska. It was issued on July 7, 1977, and expired on December 30, 1977.

New permit PRT 2-653 and amendment. (San Antonio Zoological Gardens and Aquarium, San Antonio, Tex., Louis R. DiSabato, Director.) The permit authorized the importation of one polar bear (Ursus maritimus) from the Metro Toronto Zoo, Ontario, Canada. It was issued on October 7, 1977, and was scheduled to expire on March 15, 1978. An amendment, issued on March 29, extended the expiration date to June 30, 1978.

New permit PRT 2-1486. (Sea World, Inc., San Diego, Calif., Dr. Lanny H. Cornell.) The permit authorized the taking of eight Pacific walrus (Odobenus rosmarus) pups for public display at San Diego. The pups will be taken from those orphaned by subsistence hunting in the vicinity of St. Lawrence Island, Little Diomed Island, and mainland Alaska. The permit was issued on March 14, 1978, and expires on December 31, 1980.

CERTIFICATES OF REGISTRATION

Section 18.23 of the Code of Federal Regulations provides that marine mammals taken by an Indian, Aleut, or Eskimo for the purpose of creating and selling authentic native articles of handicraft and clothing may be transferred to a registered tannery, either directly by an Indian, Aleut, or Eskimo, or through a registered agent. Similarly, marine mammals taken by Alaskan Natives for subsistence may be sent to a registered tannery for processing and subsequent return to an Alaskan Native.

Any tannery or person who wishes to act as an agent may apply for registration. During the report period, the Service issued one new certificate of registration for an application pending at the end of the previous report year. It also received four requests to renew

certificates, of which two were issued and two are pending. The new or renewed certificates are summarized below.

New certificate RA-19. Bryan MacLean, Wainwright, Alaska. This certificate, issued on July 20, 1977, and expiring on December 31, 1979, authorizes the holder to receive or acquire polar bear skins from Alaskan Natives or other marine mammal registered agents and to sell or transfer same to Alaskan Natives or other marine mammal registered agents. The holder may ship skins from Pt. Lay, Wainwright, and Barrow, Alaska, to New Method Fur Dressing Company, San Francisco, Calif., and return.

Renewed certificate PRT 2-2106-RA. Chase Arctic Trading, Inc., North Pole, Alaska, Fred E. Chase. This is a renewal of Registered Agent Certificate RA-16. It authorizes the holder to receive or acquire and sell or transfer polar bear hides from and to Alaskan Natives or other registered agents. The certificate was issued on February 14, 1978, and expires on December 31, 1979.

Renewed certificate PRT 2-2199-RA. Alaskan Custom Taxidermy, Anchorage Alaska, Jack Wood. This is a renewal of Registered Agent Certificate RA-8. It authorizes the holder to receive or acquire and sell or transfer polar bear hides from and to Alaskan Natives or other registered agents. The certificate was issued on March 14, 1978, and expires on December 31, 1979.

RESEARCH

The marine-mammal research-related objectives of the Fish and Wildlife Service are to actively carry out the Service's mandates under the Marine Mammal Protection Act and to determine the ecological effects of energy-resource-development-related human activities on marine wildlife. In order to meet these objectives, considerable survey work, accumulation of information, and detailed analyses of population data remain to be accomplished. Review of worldwide marine mammal research literature and preparation of status reports continue to be important efforts in the overall research program.

On August 10-12, 1977, the New England Aquarium and the Ontario Veterinary College, University of Guelph, convened in Athens, Ga., a Workshop on Marine Mammal Stranding. The Marine Mammal Commission-sponsored workshop drew participants from the Service as well as from Canada's Department of the Environment, the NMFS, the Smithsonian Institution, the Naval Undersea and Ocean Systems Centers, the Veterans Administration, universities, museums, and marine mammal public display and care facilities. These participants analyzed the nature and occurrence of strandings and current stranding theories; examined the results of stranding-based studies on the biology, life history, parasites, and diseases of marine mammals; detailed the retrieval, care, and special problems of live strandlings;

reviewed the components and needs of established and projected regional stranding networks and special salvage programs; and evaluated the need and desirable role for a national stranding data center.

Scientists from the Service, Alaska, Canada, and the University of Minnesota met in Anchorage, Alaska, on February 18, 1978, to discuss and coordinate research on polar bears. Service and State representatives reviewed their respective generalized polar bear research programs, objectives, and priorities--assuming that the MMPA moratorium is waived and polar bear management is returned to Alaska. The Canadian participant noted the desirability of investigating the discreteness of polar bear populations in Alaska and Canada, offered field and logistical support for American studies early this summer, and promised help in coordinating research between Canada and the United States. The University of Minnesota participants discussed waiver-related administrative procedures, population estimation methodologies, optimal population assessment intervals, the merits of extended monitoring of radio-tagged bears, components of a long-range research program, denning-habitat study strategy, and specific research plans for the 1978 fiscal year.

Responding to a pressing need to thoroughly examine the status and future of the West Indian manatee in U.S. waters, the Service's Division of Wildlife Research, National Fish and Wildlife Laboratory (NFWL), convened a workshop on these animals on March 27-29, 1978, in Orlando, Fla. Under the cosponsorship of the Florida Audubon Society, Florida Department of Natural Resources, NFWL, and Sea World of Florida, workshop participants reviewed the status of the U.S. population, identified and assessed the causes of manatee mortality, reviewed present and proposed research, evaluated present and proposed research in the light of management needs, and evaluated the state-of-the-art in manatee husbandry and captive propagation. Participants included representatives of the Florida, North Carolina, and Puerto Rico governments, a Florida municipal agency, universities and private industry, the public display industry, conservation groups, the U.S. Bureau of Land Management, the National Aeronautics and Space Administration, and the Service's NFWL, Office of Wildlife Assistance, Region 4 and Jacksonville Area Offices, and Miami Springs Law Enforcement Office.

Research recommendations identified information needs under four broad categories, each of which contained specific problems and suggested ways to solve them. Problems addressed under "A. Mortality reduction" included (1) causes of man-induced manatee mortality and (2) development and application of technology to control known mortality factors; under "B. Population assessment": (1) census of the manatee population, (2) status of individual congregations at winter refugia, and (3) identification of possible genetically separate stocks in Florida; under "C. Reproductive biology": (1) determination of age and growth, (2) age at sexual maturity and frequency and duration of breeding, gestation,

and lactation, and (3) rate of reproduction; and under "D. Ecology and physiology": (1) physiological requirements with respect to air and water temperatures and salinity, (2) identification of preferred foods and the relative digestibility and nutritional quality of these foods, (3) nature and extent of habitat currently used by manatees, and (4) factors unrelated to human activity that contribute to manatee mortality.

One of the management recommendations called for reexamining the generally ignored recommendations noted by Daniel S. Hartman in his report on the "Distribution, status, and conservation of the manatee in the United States"; the report was prepared in 1974 for the NFWL. The six recommendations that workshop participants identified as needing immediate attention included: developing and implementing cooperative Federal and State regulations to control boat speeds, divers' behavior, and public access in areas of critical importance to manatees; maximizing protection of winter manatee-congregation areas, largely through land acquisition; not constructing new facilities that could create artificial winter refugia until more is known about the interrelations between manatees and existing facilities; applying existing technology and developing new technology that will reduce manatee injury and mortality; increasing attention to insuring that manatee protection is considered in oil spill contingency plans and in routing shipping associated with offshore drilling and product transport; and expanding and improving public education efforts to enhance public awareness of the need for manatee conservation.

Research conducted in-house and by contract is summarized below.

In-house

1. Polar bear investigations:

- a. Biology and ecology of Alaska coastal populations.
- b. Den ecology and distribution.
- c. Biological parameters of bears of Chukchi Sea.
- d. Biology and ecology of bears of Arctic Ocean.
- e. Summer distribution and ecology of bears.
- f. Discreteness of populations.
- g. Satellite tracking of bears.
- h. Parasites and environmental contaminants in bears.
- i. Estimation of Alaska population size and productivity.
- j. Impact of resource development on bears.
- k. Reproductive biology of populations.
- l. Annual status report.

2. Sea otter and marine otter investigations:
 - a. Annual and seasonal distribution, abundance, and composition of populations of sea otters and other marine mammals in Prince William Sound, Alaska.
 - b. Distribution and abundance of recently established sea otter populations.
 - c. Biology and management needs for California sea otters.
 - d. Interactions between sea otters and the nearshore communities.
 - e. Parasites and environmental contaminants in sea otters.
 - f. Annual status reports on the sea otter and marine otter.

3. Walrus investigations:
 - a. Biological activities of Pacific and Atlantic walruses.
 - b. Parasites and environmental contaminants in walruses.
 - c. Annual status reports on Pacific walrus and Atlantic walrus.

4. Manatee and dugong investigations:
 - a. Biological consequences of manatee uses of sanctuaries and unprotected environments.
 - b. Causes of manatee mortality and study and salvage of stranded manatees and other marine mammals.
 - c. Development of manatee tagging and tracking technology.
 - d. Definition of ecosystem relationships of the manatee.
 - e. Basic sensory and physiological parameters of the West Indian manatee.
 - f. Sirenians' compatibility with urbanization.
 - g. Parasites and environmental contaminants in manatees and dugongs.
 - h. Basic reproductive and behavioral characteristics of West Indian manatees.
 - i. Influence of warm water on manatee distribution and manatee movements around powerplant effluents.
 - j. Distribution and status of all manatee taxa and populations; annual reports.
 - k. Survey of dugong distribution, status, and conservation problems; annual report.

5. Other marine mammals: Biological studies, in cooperation with the NMFS, to determine status of Hawaiian monk seal population.

6. Marine mammal tagging Federal information clearinghouse procedures and practices.

Contracts

1. Survey dugong populations in the Philippine Islands. Investigator: Walter Auffenberg (\$1,600).
2. Study nearshore fish communities of Attu Island. Investigator: Fisheries Research Institute, University of Washington (\$24,000).
3. Logistical support for Hawaiian monk seal survey. Ship charter: Gary Naftel (Easy Rider) (\$12,100).
4. Develop and field- and lab-test radio telemetry packages and systems for all marine mammal species under Interior's jurisdiction. Investigator: University of Minnesota (\$49,850).
5. Salvage stranded manatees and investigate flood-control-dam mortalities in southern Florida. Investigator: Daniel K. Odell (\$15,000).
6. Study sea otter community interactions and problems in the California area. Investigator: David Irons (\$3,500).
7. Analyze existing polar bear data and perform field research at Radstock Bay, Devon Island, Canada. Investigator: Douglas DeMaster (\$9,000)

[Addendum for 1976-77 reporting period: Investigate status of Alaskan polar bear populations and polar bear population modeling. Investigator: James Gilbert (\$2,500).]

ENDANGERED SPECIES

On September 22, 1977, the Service republished in the Federal Register the critical habitat for the West Indian manatee in Florida (42 F.R. 47040), repeating the designation published in 1976 and reproduced in appendix D of last year's annual report. Surveys by the Service's Division of Wildlife Research are producing extensive new information on habitat distribution and manatee needs which, together with comments received following the 1976 rulemaking, the Service is reviewing preparatory to issuing a revised critical habitat designation.

The West Indian manatee recovery team, largely inactive since its formation in July 1976, was reactivated in January 1978 and reorganized following the March 1978 Workshop on the West Indian Manatee (see "Research"). Its present composition includes: Team Leader: John C. Oberheu (FWS, Jacksonville Area Office); Members: Dr. Robert L. Brownell, Jr. (FWS, National Fish and Wildlife Laboratory (NFWL), Washington), A. Blair Irvine (FWS, NFWL, Gainesville Field Station), Dr. Daniel F. Jackson (Florida International University), Dr. Peter C. H. Pritchard (Florida Audubon Society), and Maj. Lewis W. Shelfer, Jr. (Florida

Marine Patrol); Consultant: Dr. Howard W. Campbell (FWS, NFWL, Gainesville Field Station). The draft recovery plan is expected to be completed in the next reporting period and will then be circulated for agency review by the Service's Regional Director for Region 4 (Southeastern United States); the final plan must receive the FWS Director's approval before it goes into effect. All agencies identified as cooperators will be assigned certain tasks in the plan; the Service will implement those tasks assigned to it and will also coordinate implementation by other agencies.

In February 1978, the Service responded to a request from the Bureau of Land Management (BLM) to evaluate the impact of several proposed Outer Continental Shelf (OCS) oil and gas lease sales on endangered and threatened wildlife species, one species being the West Indian manatee. These consultations, required under section 7 of the ESA, involved OCS sales 43 (South Atlantic-Georgia Embayment) and 45 (Eastern Gulf of Mexico).

The Director concluded in a biological opinion issued on February 21 that proposed sale 43 and subsequent exploration and development would probably not jeopardize the continued existence of the manatee or destroy or adversely modify its critical habitat. He noted, however, the unavailability of such site specific information as the location and intensity of boating activity needed to support exploration and development. Because the manatee's critical habitat in northeast Florida's Nassau and Duval Counties includes Jacksonville Harbor and the mouth of the St. Johns River (probable centers of support operations), any activity or program authorized, funded, or conducted in this area by a Federal agency may necessitate renewed section 7 consultations if new or more detailed information becomes available on new or modified activities that may affect the manatees or their habitat.

The Director reached the same conclusion of probable nonjeopardy to animals and their critical habitats for sale 45 off Florida's west coast. In another biological opinion, issued on February 24, he again noted the unavailability of specific information on individual actions--especially bidding activities--and repeated the possible need for renewed section 7 consultations.

On March 6, 1978, the Service solicited information on native American wildlife species currently listed on appendixes I and II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (43 F.R. 9168). Information was also solicited from other countries through U.S. Embassies. The marine mammals under Service jurisdiction for which information was requested include the southern sea otter, West Indian manatee, and dugong (now on appendix I) and the polar bear (now on appendix II). The information will be used to determine on which appendix, if any, species should be listed. This determination will be made at the 1979 Costa Rica meeting of CITES member countries. (See discussion of other CITES actions under "International activities.")

A study of the endangered marine mammal and other species of the southeastern coastal plain was initiated during the report period, funded jointly by the Offices of Biological Services and Endangered Species. This study, conducted by the Division of Wildlife Research's National Fish and Wildlife Laboratory, will assess the abundance, migration routes, and habitat preferences for those mammal and bird species determined to be threatened or endangered from the Chesapeake Bay south along the Atlantic coast to the Rio Grande in the Gulf of Mexico. Because the study is in progress, no species accounts are available at the present time, but the study is expected to be completed by the end of fiscal year 1978.

OUTER CONTINENTAL SHELF ENVIRONMENTAL STUDIES PROGRAM

The Department of the Interior's Outer Continental Shelf (OCS) Environmental Studies Program for oil and gas development is administered by the Bureau of Land Management (BLM). Through the BLM-NOAA Outer Continental Shelf Environmental Assessment Program (OCSEAP), the Service has been designated to coordinate the marine mammal and sea bird investigations in Alaska. The two projects, managed by the Service's Office of Biological Services, will develop a strong ecological data base to be used by BLM to evaluate probable impacts on natural resources from developing petroleum reserves in Alaskan waters.

Continuing surveys of cetaceans in Prince William Sound (PWS) and the adjacent nearshore areas of the Gulf of Alaska are being conducted jointly by Service and National Marine Fisheries Service investigators. Their objectives are to determine relative numbers and seasonal distribution of the principal cetaceans using PWS, their major foraging and accumulation areas, and their critical habitats in PWS and its vicinity. Intensive aerial and surface censuses are used to determine abundance and habitat use; animals marked with static tags visible from vessels are used to determine movements of individuals; and Dall's porpoises are captured and tagged for short-term studies of their movements and foraging behavior. Among the results to date, species sighted and identified include finback and minke whales (Balaenoptera physalus and B. acutorostrata), humpback whales (Megaptera novaeangliae), gray whales (Eschrichtius robustus), killer whales (Orcinus orca), Pacific white-sided dolphins (Lagenorhynchus obliquidens), harbor porpoises (Phocoena phocoena), and Dall's porpoises (Phocoenoides dalli). Although cetaceans appear to use PWS seasonally, such use is more extensive than was originally thought; for example, at least 35 humpback whales inhabit PWS for about 8 months of each year, between April and November. The largest numbers of humpbacks occur in the southwestern area from July through November. In 1977, 282 individuals were sighted on 59 occasions; 8 were successfully tagged. Finbacks, the largest whales sighted in PWS, were seen on 9 occasions, which represents a counted population of 40 animals. Seven of the 12 finbacks observed in Hinchinbrook Entrance in June 1977 were successfully tagged. This species appears to limit its use of PWS to April, May, and June--most animals apparently staying in the sound for a few days during their summer migration into

Soviet waters in the western Bering Sea. Over 10,000 gray whales, the most primitive of baleen whales, migrate through the northern Gulf of Alaska twice each year. Although the grays cannot be considered residents of PWS, they pause in both major entrances of the sound and thus are exposed to the increasing crude-oil-carrying shipping from Valdez. Minke whales, the smallest of the North Pacific baleen whales, were sighted on 55 occasions, numbering 98 animals. Minke whales were sighted frequently throughout PWS from May through October, and one or more could almost always be observed west of Hinchinbrook Entrance near Montagne Point. Killer whales were observed on 34 occasions, numbered 453 animals, and could be seen year-round although only rarely east of longitude 147° W. A distinctive curve in the trailing edge of the dorsal fin on virtually every large male killer whale may represent a genetic trait, thus raising the possibility of a resident and genetically isolated population of killer whales in PWS. Disturbance or exploitation of a resident population of killer whales would be more deleterious than disturbance or exploitation of a genetically mixing population. One group of more than 55 animals was sighted in May, 12 of which may have been newborn calves. Pacific white-sided dolphins, observed in last year's surveys, were not sighted this year. Surface waters in PWS were colder this year, which may have affected the distribution of these animals, or at least the prey on which they feed. Harbor porpoises were infrequently encountered anywhere in PWS between May and September; however, a large population occupied the area in and near Hinchinbrook Entrance from mid-September until late April, and 89 animals were sighted there in September 1977. During the year, 219 individuals were sighted on 136 occasions. Clearly the numerically dominant cetacean in PWS, Dall's porpoises were sighted throughout the year. One thousand six hundred and sixty-five individual porpoises were sighted on 490 occasions this year; 23 of these animals were successfully tagged. Adult porpoises accompanied by calves have been seen only in spring (March-April) and late summer (August-October).

The studies on the pelagic distribution and abundance of marine birds in Alaskan waters have yielded, as incidental byproducts, substantial information on the seasonal distribution and abundance of marine mammals. Observations of mammals--obtained incidental to marine bird aerial and surface censuses, sea watches at key locations, and colony studies--are being summarized to prepare an index on the distribution and abundance of these animals.

ECOLOGICAL CHARACTERIZATIONS OF U.S. COASTAL AREAS

The Service's Office of Biological Services is managing a group of studies known as ecological characterizations, funded by Environmental Protection Agency pass-through funds. Four characterizations are currently being prepared under contracts.

1. Ecological characterization of the Chenier Plain of southwest Louisiana and southeast Texas. Investigator: National Coastal Ecosystems Team.

2. Ecological characterization of the Sea Islands and coastal plain of South Carolina and Georgia. Investigator: South Carolina Marine Resources.
3. Ecological characterization of the coastal region of Maine. Investigator: Energy Resources Company.
4. Ecological characterization of the Pacific Northwest coastal region. Investigator: Ryckman, Edgerley, Tomlinson, and Associates.

An ecological characterization is a structured synthesis of existing information on the functional relationships of ecosystem processes and components. This ecosystem information base is formatted to help decisionmakers in comprehensive coastal resource planning and management. Each of the four characterizations now underway will contain a section on marine mammal life histories, species abundance and distribution (including limiting factors), migration routes, statistics on harvest by man, and habitat preferences and requirements. The Chenier Plain characterization is scheduled for completion in fiscal year 1978; the other three characterizations, in fiscal year 1979. Long-range plans call for the eventual characterization of all United States coasts.

INTERNATIONAL ACTIVITIES

The international marine mammal program is an integral part of the Service's overall program. The Service continues its efforts to achieve the objectives of the Marine Mammal Protection Act through international cooperation. The following accounts detail the principal thrust of the international program during the report period.

International Whaling Commission (IWC)

At the 29th annual meeting of the IWC in Canberra, Australia, on June 20-24, 1977, the commission struck from the International Whaling Convention Schedule the exemption on subsistence taking of right whales by aboriginal people and set a zero quota for the 1977-78 whaling season. Because the ban affected the traditional take of bowhead whales by the Indians, Aleuts, and Eskimos of Alaska--the responsibility for whose rights resides with the Secretary of the Interior--the Department of the Interior recommended to the Secretary of State on October 10 that the United States lodge a formal objection to the ban on the basis of a position developed through discussions among Service scientists and officials of the Bureau of Indian Affairs and the offices of the Assistant Secretaries for Indian Affairs and for Fish and Wildlife and Parks. The United States decided, however, not to object before the October 24 deadline for doing so, electing instead to request the IWC to reconsider the ban at its special meeting in Tokyo, Japan, on December 6-7. Although still contrary to the recommendations of the IWC's

Scientific Committee, the commission voted at the special meeting to reinstate a limited 1978 season that would allow Alaska Natives to land 12 bowheads or strike 18 animals, whichever occurs first, provided that no calves or females with calves are taken.

Representatives of the Service and the Offices of the Secretary and Assistant Secretary for Fish and Wildlife and Parks participated in the U.S. delegation at the special meeting and will continue to supervise and monitor projects that involve Natives' subsistence bowhead hunting. The decision to reinstate the subsistence take will be reviewed at the June 1978 IWC meeting in London, England. Another meeting will be held in Copenhagen, Denmark, on July 4-7, 1978, to prepare a new International Whaling Convention.

U.S.-Brazil Amazonian Manatee Research

Following the August-September 1977 U.S.-Brazilian exchange of correspondence on manatee research in Brazil, the two Brazilian agencies involved, Instituto Brasileiro de Desenvolvimento Florestal (IBDF) and Instituto Nacional de Pesquisas da Amazonia (INPA), agreed to develop an agreement on the division of management and research responsibilities. The Department of the Interior has offered to assist in the research by providing short-term consultants.

Scientific Consultation on the Conservation and Management of Marine Mammals and their Environment

On September 9, 1977, the chairman of the Advisory Committee on Marine Resources Research (ACMRR) submitted the final report and 12 recommendations of the ACMRR Working Party to the Director General of the United Nations Food and Agriculture Organization (FAO). The report was finalized at the last meeting of the working party on January 21-25, 1977, in La Jolla, Calif., and marked the culmination of the studies reviewed at the 1976 Scientific Consultation in Bergen, Norway (see last year's annual report). It was published in October 1977 as FAO Fisheries Report 194.

Assisted also by the United Nations Environment Program (UNEP), the advisory committee's work involved reviewing the status of populations of large whales, small cetaceans and sirenians, and pinnipeds and sea otters. It also involved reporting on the management of activities affecting these animals in the oceans and on needed additional scientific research.

Convention on Nature Protection in the Western Hemisphere

The first of five meetings to be convened by the Organization of American States (OAS) was held on September 12-16, 1977, in Puerto

Madryn, Argentina. Marine mammal specialists from the FWS, the NMFS, Argentina, Brazil, Chile, Uruguay, the International Union for Conservation of Nature and Natural Resources, and the U.N.'s Food and Agriculture Organization prepared recommendations on marine mammal sanctuary areas and priority research and on bilateral and multilateral marine mammal conservation agreements between Western Hemisphere nations.

The five meetings will involve experts in different areas of nature protection to revitalize the 1940 convention, increased use of which President Carter recommended in his May 23, 1977, environmental message to the Congress. After the five meetings of experts are concluded, the OAS will organize a conference of convention representatives late in 1979 to review the experts' findings and recommendations and to make final recommendations to member nations.

International Council for the Exploration of the Sea (ICES)
Marine Mammal Committee

Representatives of the Division of Wildlife Research's National Fish and Wildlife Laboratory met with Danish and Canadian fisheries officials at the ICES meeting in Reykjavik, Iceland, on September 29, 1977, to discuss walrus research in northern and western Greenland and eastern Canada. The Thule district of northwest Greenland and probably the northern Hudson Bay-Foxe Basin area of Canada seem to be the only parts of the North Atlantic presently supporting substantial walrus populations.

The Danish representatives reviewed some results of limited but highly promising work in 1975 and 1977 in the Thule district where researchers have accompanied local hunters, observed the walrus hunt, and collected biological materials from the killed walruses. All participants agreed that this work should be continued, and if possible expanded, because of the substantial walrus population, the high level of traditional subsistence living in the area, and the invaluable cooperative spirit that has developed between the Danish research team and the hunters. One of the two approaches discussed for further work would confine research efforts to walruses; the other, more elaborate approach would emphasize walruses but would also consider other species (especially narwhals and possibly ringed seals) as well as social, economic, and cultural aspects of Polar Eskimo life. It was agreed to draft two alternative work plans and submit them to international funding agencies for review and possible financial support.

In addition, the Service offered to explore avenues for obtaining logistical support of highly desirable surveys of the size, range, and movements of walruses in Smith Sound and Kane Basin between Greenland and Ellesmere Island.

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

Twenty-five nations were represented at the Special Working Session of the convention in Geneva, Switzerland, on October 17-28, 1977. Attendees included delegates from 20 member nations and observers from 5 nonmember countries and 25 organizations (including the International Whaling Commission (IWC)). The session produced recommendations for consideration at the second CITES conference scheduled for March 1979 in San José, Costa Rica.

Among its actions, the session approved a project to develop an identification manual, produced a framework for a set of international guidelines on preparing and shipping live specimens of species listed on convention appendixes, identified proposed criteria for determining registration of scientific institutions under the "museum exchange" exception, developed a standard format for proposals to amend the appendixes, and supported member-nation reviews of species currently listed on appendixes I and II. (See note under "Endangered species" for information on U.S. review of listed native American species.) The session also recommended the inclusion of IWC and CITES observers at each other's meetings and supported consultations between member nations and the IWC Scientific Committee on listed cetacean species.

Argos Satellite System for Polar Bear Tracking
and Monitoring

On November 2-3, 1977, a Service representative attended the Argos satellite meeting in Paris, France, to appraise the feasibility of using that system in the Service's polar bear tracking studies. Argos is a cooperative project of the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, and the French Centre National d'Etudes Spatiales (CNES), which has prime responsibility for its development and operation. The system will employ two satellites in continuous orbit through 1986 and is intended primarily for environmental monitoring. It can also be used, however, for animal tracking and could provide location data (accurate to within 3 kilometers for a platform at a known elevation above sea level), as well as physiological and environmental data and transmitter data such as battery voltage. The polar bear transmitter developed for the U.S. Nimbus 6 satellite system would require only slight modifications to be used with the Argos system.

U.S.-U.S.S.R. Agreement on Cooperation in the Field of
Environmental Protection, Marine Mammal Project

The purpose of this project is to develop collaborative research on the biology, ecology, and population dynamics of marine mammals of mutual concern to both countries and thereby contribute to sound management

and conservation of these animals. The Service and the NMFS coordinate U.S. participation in the Marine Mammal Project, which is part of the agreement's "Area V, Protection of Nature and the Organization of Preserves."

At the sixth meeting of the U.S.-U.S.S.R. Joint Committee in Washington, D.C., on November 14-18, 1977, the committee considered progress under the agreement between November 1976 and November 1977, and it reviewed cooperative plans for the next year beginning in November 1977. Under the Marine Mammal Project, the United States is scheduled to present a draft of the first volume of the proposed compendium of papers on cooperative research between 1972 and 1977 for review by the Soviets at the July 1978 project leaders' meeting in Russia; this volume will deal with research on pinnipeds and sea otters. The Soviets have also invited three U.S. specialists to participate in a U.S.S.R. research cruise in the Bering and Chukchi Seas during June-August 1978 to study the biology and distribution of walruses and ice seals. In addition, both nations are beginning a two-phase effort to implement a comprehensive cataloging program for marine mammal specimens in U.S. and Soviet museums. Phase 1 involves compiling and exchanging lists of collections in the United States and the Soviet Union; phase 2, which will begin at the 1978 project meeting, will involve planning for the cataloging of uncataloged specimens. Additional studies under the Marine Mammal Project, involving exchanges of scientists and observers, are described in the current NMFS annual report on the Administration of the MMPA for the species under its jurisdiction.

On December 12-14, 1977, the U.S. Steering/Planning Committee met in San Diego, Calif., to review the Memorandum of the Sixth Joint Committee meeting in November and to discuss topics to be considered at the July 1978 Joint Marine Mammal Project meeting in the Soviet Union. The participants also discussed U.S. proposals for future joint research; future walrus surveys by both the United States and the Soviet Union; reciprocal opportunities for field work by Americans and Russians; and the structure and function of the Steering Committee--especially its membership and rotation schedules, the need for a more formal record of its activities, the way the committee operates and uses information from the scientific community, and the scope and effectiveness of its efforts to inform that community about the U.S.-U.S.S.R. agreement.

U.S.-Mexico Informal Talks on Marine Mammals

The Service represented the Department of the Interior at the U.S.-Mexico bilateral discussions in Mexico City on January 11-12, 1978. These informal discussions were held to explore the possibility of a U.S.-Mexico agreement on the conservation of marine mammals. The U.S. delegation also comprised officials of the Departments of Commerce and State and a conservation group representative; the Mexico delegation comprised Department of Fisheries scientists and administrators.

After both delegations described and discussed their respective marine mammal programs, concerns, and conservation laws and regulations, the Mexican delegates formally agreed, in principle, with the U.S.-prepared "basic principles of conservation and management," and both delegations agreed on an official meeting summary and on specific recommendations which acknowledged the need for a bilateral agreement. The main points of agreement included needs to: identify marine mammal species of interest to both countries; develop and set priorities for obtaining needed distributional, environmental, and behavioral information on these species; develop and coordinate individual and joint research programs; study and control harassment of marine mammals by commercial and pleasure watercraft; coordinate efforts to solve problems in existing gray whale protection areas and consider establishing additional protection areas; conduct coordinated marine mammal surveys along the coasts of both countries; educate and train Mexican scientists and technicians in marine mammal conservation; implement an effective data exchange system; and consider specific sources of funding by both countries and from international organizations.

Marine mammals under Interior's jurisdiction that would be subject to a bilateral agreement include the West Indian manatee and the southern sea otter, whose historic range extended into Mexican waters. Presently, manatees are not protected by Mexican law, and a few are taken each year for scientific research but mainly for public display outside Mexico. Mexicans are now studying areas in Tabasco, Campeche, and Chiapas as potential manatee sanctuaries which could be established under a new Department of Fisheries-developed law being reviewed in the Mexican Congress.

Excess Foreign Currency Programs--Dugong Studies in Egypt, India, and Pakistan

In fiscal year 1977, the Service received Congressional authorization to use excess foreign currencies held by the U.S. Government in Egypt, India, and Pakistan. This authorization was requested under section 8 of the ESA, which allows such funds to be expended on projects deemed by the Secretary of the Interior to be necessary or useful for the conservation of endangered or threatened species.

Following on the April 1977 study mission to Egypt noted in last year's annual report, during the current report period a contract was signed with Cairo's Giza zoo, which will enable the Egyptians to convene an international workshop at which scientists from all parts of the world can share their expertise to help solve Egypt's conservation problems. Two other contracts will enable the Egyptians to prepare public awareness programs and to fund surveys and gather data on species not yet listed, develop wildlife management plans, and propose parks or other protected areas.

On January 15-27, 1978, a joint Service-National Park Service study mission visited India to initiate a program comparable to Egypt's. The program for research, management, training, and public awareness efforts would also involve marine mammals; namely, the dugong and Ganges River dolphin. On February 5-14, another mission visited Pakistan to initiate a similar program for the dugong and Indus River dolphin in that country.

During 1977, the Service received informal sighting reports of dugongs off the coast of Bahrain in the Persian Gulf, but no comprehensive status reports or population surveys were done. The Food and Agriculture Organization also reported incidental take of Persian Gulf dugongs by fishermen in Abu Dhabi, Bahrain, and Qatar.

International Union for Conservation of Nature and Natural Resources (IUCN), Interim Committee on Marine Mammals

The interim committee held its first meeting in York, England, on January 17-20, 1978. The committee was established in June 1977 to examine the international-level scientific advices and research programs recommended in 1976 at the Scientific Consultation on the Conservation and Management of Marine Mammals and their Environment (see discussion on p. 20); to propose new or improved advices and programs, defining the future IUCN role especially as it involves the IUCN's Survival Service Commission Polar Bear, Sirenian, Marine Otter, Pinniped, and Cetacean Specialist Groups; to review projects and proposals of these groups, particularly as they contribute to an integrated, inclusive IUCN marine program; and to continue on an interim basis, until permanent arrangements are made, the marine mammal monitoring and evaluation that led to the Scientific Consultation recommendations.

Major topics explored at the meeting included biological, methodological, and implementational considerations of alternative management objectives to "maximum sustainable yield" (MSY); the adequacy of present data and management of the three North Atlantic stocks of harp seals, and requirements for improved management; the tuna/porpoise problem; the adequacy of present International Whaling Convention provisions and implementation, and requirements for improvement; management of sirenians; the 12 Scientific Consultation recommendations; and the future work of the interim committee.

Agreement on the Conservation of Polar Bears

This agreement commits the United States and the other signatories, Canada, Denmark, Norway, and the U.S.S.R., to protecting polar bear ecosystem habitat components, especially denning and feeding areas and migration patterns. It further commits them to managing polar

bear populations in accordance with sound conservation practices based on the best available scientific data, and it prohibits hunting, killing, and capturing bears except for limited specific purposes and by limited methods.

When Denmark deposited its ratification of the agreement with the depository government, Norway, on January 25, 1978, it became the fifth and final contracting party to do so. (The agreement entered into force in the United States in November 1976.) In 1978, Norway's 5-year ban on hunting polar bears ended, but that country remains committed to the agreement.

International Meeting on Marine Mammals of Baja California

The third international meeting was held in La Paz, Baja California, Mexico, on February 15-16, 1978, under the sponsorship of the Center for Biological Investigations of Baja California. The formal papers presented the first day were open to the public. Participants met in separate working groups the second day to discuss manatee, cetacean, and pinniped research problems of mutual concern. The reports of these groups were accepted at a general session later that day.

The manatee working group recommended continuing the census program begun in 1977 to determine further the distribution and status of manatees in Mexico. The group also decided to ask that the Mexican Department of Fisheries protect manatees in the Gulf of Mexico and create a manatee sanctuary. Posters requesting information on these animals are being revised and will be distributed throughout the manatees' probable range in Mexico.

Agency for International Development (AID) Projects That May Impact on Marine Mammals

During the report period, the Service and AID began developing guidelines for Service participation in evaluations of proposed AID projects, some of which may impact on marine mammals. Consultations required by section 7 of the ESA will identify mitigations that will minimize or eliminate the adverse effects of these projects on the animals.

PART II--SPECIES STATUS REPORTS

INTRODUCTION

Status reports have been prepared for the eight species over which the Secretary of the Interior has jurisdiction under the terms of the Act. Information about each species is summarized under seven major headings: distribution and migration, abundance and trends, general biology, ecological problems, allocation problems, regulations, and current research. A partial bibliography for each species is included at the end of this part.

The Act defines a marine mammal as "any mammal which (A) is morphologically adapted to the marine environment (including sea otters and members of the orders Sirenia, Pinnipedia and Cetacea), or (B) primarily inhabits the marine environment (such as polar bears); and for the purposes of this Act, includes any part of any such marine mammal, including its raw, dressed, or dyed fur or skin."

SPECIES LIST

Carnivora

Ursidae

Ursus maritimus (Polar bear)

Mustelidae

Enhydra lutris (Sea otter)

Lutra felina (Marine otter)

Pinnipedia

Odobenidae

Odobenus rosmarus divergens (Pacific walrus)

Odobenus rosmarus rosmarus (Atlantic walrus)

Sirenia

Trichechidae

Trichechus manatus (West Indian manatee)

Trichechus inunguis (Amazonian manatee)

Trichechus senegalensis (West African manatee)

Dugong dugon (Dugong)

STATUS REPORTS

Polar bear (Ursus maritimus)

Distribution and migration. Polar bears occur only in the Northern Hemisphere, nearly always in association with Arctic sea ice. Centers for six geographically isolated polar bear populations in the main Polar Basin are Wrangel Island-western Alaska, northern Alaska, northern Canada, Greenland, Spitsbergen-Franz Josef Land, and central Siberia. Separate populations also occur farther south in Hudson Bay, Canada.

Bears are most abundant near the southern edge of the sea ice, but they occur throughout most of the Polar Basin and have been recorded as far north as lat. 88° N. They make extensive north-south movements related to the seasonal position of the southern edge of the ice. In winter, bears off Alaska commonly occur as far south as Bering Strait and occasionally reach St. Lawrence Island and even St. Matthew Island in the Bering Sea. In summer, north of Alaska the edge of the ice pack and bears commonly occur between lat. 71° and 72° N. Pregnant females concentrate for winter denning and bearing young on large offshore Russian islands, northern Canadian islands, and certain Spitsbergen islands. Pregnant females are also known to den and bear young along the northern Alaskan coastline and the northern coastline of western continental Canada, but in these denning sites individual females are widely dispersed.

Abundance, trends, and harvest. Total world-population estimates, which range from a low of 10,000 by the Soviets to a high of 20,000 by the Norwegians, are based on broad assumptions and should be considered as very general. The abundance of bears off the Alaska coast and the magnitude of sustained long-term harvests suggest that the 20,000 figure may be low.

During the 1930's, 1940's, and 1950's, Alaska Natives harvested about 120 bears annually. Trophy hunting that utilized aircraft developed in the 1950's, and the average annual kill gradually increased to 250 during the period 1961-72. The number of bears reported per hour of flying by Alaska hunting guides did not show a trend during 1956-69, the period when guides provided reliable data. Sex composition for 1961-72, when 87 percent of the bears were taken with the use of aircraft, was 70-80 percent males. Selective hunting utilizing aircraft reduced the percentage of mature males in the population. A high percentage of females with young in the population, however, indicated a healthy rate of reproduction. Age composition of bears harvested west of Alaska during the aircraft hunting era did not show a trend. Age composition of bears harvested north of Alaska declined in 1970 and 1971 and then increased in 1972, reflecting high harvests in 1966 and 1967, followed by hunting restrictions and reductions in harvest after 1967. Approximate harvests after passage of the Marine Mammal Protection Act of 1972, which permits

hunting only by Natives for subsistence or as a source of material for traditional articles of Native handicraft or clothing, were 7 in 1973, 50 in 1974, 60 in 1975, 167 in 1976, and 81 in 1977. The higher harvest in 1976 is largely the result of heavy ice conditions, which made more bears available to Eskimos on St. Lawrence Island and in villages along the northwest coast.

Russians believe that polar bear populations in the Soviet Arctic declined during the first half of this century but have now stabilized since hunting was stopped in 1956 and harvests were limited to 10 to 15 cubs per year for zoos. In 1973, the Norwegian Government imposed a 5-year moratorium on the hunting of bears in Svalbard (Spitsbergen), where formerly about 300 were taken each year. The annual harvest in Canada is about 600; in Greenland, 125 to 150. Thus, the annual world harvest is now about 900.

General biology. Polar bears, other than family groups of females and young, are solitary most of the year. During the breeding season in late March, April, and May, males actively seek out females by following their tracks on the sea ice. Bears are serially polygamous, and a male remains with one female a relatively short time and then seeks another. Delayed implantation probably occurs.

Pregnant females seek out denning areas in October and November. Known denning concentration areas occur on Russian, Canadian, and Svalbard (Spitsbergen) islands. Bears also den along sections of the Greenland coast and the north Alaska coast. Some denning occurs on heavy pack ice north of Alaska. Bears most commonly den under banks along the coast or rivers or on slopes where snow drifts. A denning female commonly forms a depression in the snow and then enlarges a denning chamber as snow drifts over her. Young, weighing less than 1 kilogram, are born in December. A litter of two is the most common; one, quite common; and three, rare. The female and cubs break out of the den in late March or early April, when cubs weigh about 7 kilograms. They make short trips to and from the opened den for several days as the cubs become acclimated to outside temperatures. If the den is on land, the family group then travels to the sea ice. In most sections of the Arctic, young remain with the mother for about 28 months.

The age at which a female produces her first litter ranges from 4 to 8 years. Some females breed again about the time they separate from their young and, therefore, can produce a litter every third year. Other females have longer intervals between litters. Males can first breed when 4 years old. Most bears do not live beyond 25 years. Mature females off the Alaskan coast weigh 200 to 300 kilograms; mature males, 300 to 600 kilograms. Animals west of Alaska are larger than those north of Alaska. Polar bears feed primarily on ringed seals and also on bearded, harp, and hooded seals. They occasionally eat carrion, including whale, walrus, and seal carcasses, and small mammals, birds, eggs, and vegetation when other food is not available. Approximately 60 percent of Alaskan bears

harbor Trichinella spiralis, apparently obtained by eating seals and other marine mammals, garbage, and possibly carcasses of other bears. Polar bear liver is toxic if eaten because of high vitamin A content.

Ecological problems. Long-term climatic trends probably have a major impact on bear populations. Warming trends restrict areas that are suitable for denning and feeding, and cooling trends favor expansion of populations. Ice movement, especially in the fall when females are seeking maternal den sites, may also affect populations. Females may be forced to bear young in locations less favorable for denning when ice, which provides access to favorable denning sites, forms late in the season. Years of light snow, or wind conditions that prevent formation of deep snow drifts, may also affect denning success for both polar bears and ringed seals--one of their principal foods. Because of this dependency on ringed seals, any ecological change affecting seals could also affect bears.

Human development, especially that associated with oil and gas extraction, poses the greatest immediate threat to polar bears. Oil exploration and drilling in denning areas could cause bears to den in less suitable areas. Oil spills from offshore drilling or transporting of oil through ice-covered waters could reduce the insulating effectiveness of their fur and also adversely affect lower components in their food chain. Ice would hinder or prevent containment of a spill, and currents could distribute oil over large areas.

Recent studies indicate that significant numbers of bears have traditionally denned and produced young along Alaska's north coast. Increased human activity will perhaps cause fewer bears to come ashore to den, thereby forcing them to den in less favorable sea-ice sites, or it may cause animals to desert land dens earlier than normal when cubs would be less able to survive. Areas where oil and gas development may be impacting now or could impact in the future include the Alaska Naval Petroleum Reserve, the Alcan Route, the Arctic National Wildlife Range, State coastal and nearshore oil- and gas-lease lands, Federal Outer Continental Shelf oil- and gas-lease lands, and lands eligible for selection under terms of the Alaska Native Claims Settlement Act. Thus, the potential for development exists along the entire north Alaska coast from Pt. Hope to the Canadian border.

Mercury and low levels of DDT and PCB's have been found in tissue samples of all Alaskan bears checked for these contaminants.

Allocation problems. In the United States, the polar bear evokes varied and often emotional feelings about its management and use, ranging from complete protection, to limited harvest for subsistence, to maximum sustained harvest primarily by trophy hunters. At present, non-Native residents of the Arctic coast believe they are being discriminated against because

only Natives are allowed to hunt. New conflicts will arise as development proceeds in the Arctic and causes more direct encounters between bears and people and more disturbance to bears during critical stages in their life history.

The U.S.S.R. believes that bear stocks off the Siberian coast have been reduced, and it restricts taking to a few cubs for zoos. Until recent years, Norwegian sealers killed bears as predators; Svalbard (Spitsbergen) trappers used baited set guns to obtain hides to sell; and trophy hunters took bears from Norwegian boats in the summer. The present feeling in Norway is that these uses should no longer be permitted. In Greenland, the harvest is limited to Eskimos or long-term residents and is primarily for subsistence and personal use of skins. The Canadian harvest has traditionally been by Eskimos for subsistence and to obtain skins for sale.

Trophy hunting from the ground, although encouraged by managing agencies in part of Canada, has not developed to any great extent because Natives, whom trophy hunters must employ as guides, can realize more profit from selling skins than from guiding.

Regulations. Past management practices in Alaska have included seasons, bag limits, a permit system, limit on the number of hunts individual guides could participate in, and protection for the young and for females with young. Two management areas were established, one to the west of Alaska and one to the north of the State. Residents were allowed to hunt bears at any time for food, provided aircraft were not used. Hides and skulls of all bears taken had to be presented to the Alaska Department of Fish and Game within 30 days of taking for examination, sealing, and removal of a tooth for age determination. The State of Alaska banned the use of aircraft for hunting polar bears after July 1, 1972, and lengthened the season to encourage sport hunting from the ground.

The Marine Mammal Protection Act of 1972 transferred management authority for polar bears to the Federal Government and limited the harvest to Alaskan coastal Eskimos for subsistence or for manufacture of traditional Native articles of clothing or handicraft. This removed restrictions on the Natives' harvesting young bears and females with young. A request by the State of Alaska to waive the moratorium and return management of polar bears and certain other marine mammals, as provided for in the Act, is pending. The management plan proposed by the State would provide for both recreational and subsistence hunting, and total annual take would be restricted to no more than a yet to be determined but very conservative number of animals. The open season for both types of hunting would extend from January 1 through May 31. Hunting that utilizes aircraft would be specifically prohibited. The closed season during the summer would preclude use of boats. The bag limit for recreational hunting would be one bear every 4 years by permit only. Residents utilizing bears for food could take one bear each year without a permit. Young and females accompanied by young would be protected.

The U.S.S.R. has not allowed polar bear hunting since 1956. Norway stopped set-gun and trophy hunting in 1971 and enacted a 5-year moratorium in 1973 on all harvesting because of a change of attitude in Norway and because studies indicated the bear population was smaller than previously believed. In Greenland, only Eskimos or long-term residents may take bears and must use traditional ground methods of hunting. In Canada, prior to 1968 Eskimos hunting from the ground took bears with few restrictions. Since then, harvests have been regulated by establishment of hunting districts with quotas. In certain districts, trophy hunters may purchase a permit to take a bear from a district's quota, provided a Native resident is used as a guide. In September 1976, the United States ratified the Agreement on Conservation of Polar Bears. Other member nations are Canada, Denmark, Norway, and the Soviet Union. The agreement allows bears to be taken only in areas where they have been taken by traditional means in the past and prohibits use of aircraft and large motorized vessels as an aid in taking. The agreement also calls for both national research and cooperative international research and management, especially on populations occurring on the high seas or within more than one national jurisdiction; provides protection for ecosystems of which polar bears are a part; by resolution seeks special protection from hunting for denning females, females with cubs, and cubs; and by resolution asks for an international system of hide identification to better control traffic in hides. The last-noted goal is now being achieved through the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Current research effort. The governments of Canada, Denmark, Norway, Russia, and the United States are conducting intensive long-term investigations. In most countries, shorter term projects funded by universities and grants complement government programs. Research programs are coordinated internationally by the Polar Bear Specialist Group under the auspices of the International Union for the Conservation of Nature.

Sea otter
(Enhydra lutris)

Distribution and migration. Populations in waters of the United States are resident (the sea otter is not migratory) along the west coast of North America, from central California north to Prince William Sound, and westward along the Aleutian Islands to the Commander Islands, along the southern Kamchatka Peninsula, and among the Kurile Islands. The sea otter seldom ranges offshore beyond the 30-fathom (about 55-meters or 180-feet) depth curve.

Abundance and trends. Since sea otters were completely protected early in the 20th century, they have increased and become reestablished in a substantial portion of their historic range. In the late 19th century, sea otter populations had been reduced by the fur trade to a few hundred animals at widely scattered locations. In 1973, the Alaska Department of Fish and Game published estimates of sea otters in each game management unit; these estimates totaled between 101,050 and 121,050 animals. From recent surveys, the sea otter population in California was estimated to be about 1,800 animals and ranged from Año Nuevo Island north of Santa Cruz to beyond Point Buchon on the south.

During the period 1965-72, sea otters from Amchitka Island and Prince William Sound were translocated to southeastern Alaska, British Columbia, Washington, Oregon, and the Pribilof Islands. Among translocated otters, young have been observed in southeastern Alaska, British Columbia, Washington, and Oregon. Recent surveys of these areas indicate a thriving population of more than 500 animals north of Sitka in southeast Alaska, but the number at other sites remains low--from about 10 to 60 animals--and the success of translocation at these sites remains questionable.

General biology. The sea otter is the largest member of the family Mustelidae, reaching a length of 148 centimeters and a weight of 45.5 kilograms. It becomes sexually mature at about 4 years of age and bears a single young, weighing approximately 2.3 kilograms, about every 2 years. The pup nurses for 6 to 12 months but during this period often takes solid food gathered by the mother. The mother is very attentive to her young. Most of the young are born during the summer, but births and mating may occur in any season. Breeding behavior is promiscuous; the mating male and female remain together for as long as 3 days. The dense underfur is about 25 millimeters long; the guard hairs, about 6 millimeters longer. A healthy animal may accumulate body fat, but there is no layer of blubber. The sea otter is, therefore, dependent for insulation from cool (1.7° C to 10° C) marine waters on the air blanket retained among the dense underfur fibers.

Mortality at Amchitka Island (the only area studied intensively) is greatest in winter and early spring. A dense population there depleted food organisms, and starvation occurred during stormy weather. Young

animals accounted for 70 percent of the mortality. The remaining 30 percent were dominantly animals showing signs of old age. Most of the dead animals exhibited signs of starvation and enteritis. Internal parasites include Trematoda (4 spp.), Cestoda (2 spp.), Nematoda (1 sp.), and Acanthocephala (5 or possibly 6 spp.)

Ecological problems. Human activities that are changing the environment will no doubt affect sea otters. Oil pollution of waters occupied by sea otters probably would be fatal to them. Pesticide residues have been found in California sea otters, but the effect is unknown.

Allocation problems. Conflict exists over management of the sea otter population off the coast of California. Because sea otters reduce the abundance of prey species, some of which are desired by humans, commercial and sport users of these resources prefer that the abundance and range of sea otters be limited. Preservation groups would like sea otters reestablished throughout their historic range.

There is no commercial or subsistence harvest of sea otters at present.

Regulations. The sea otter is protected by the Marine Mammal Protection Act of 1972 (Public Law 92-522). In California, the sea otter population is listed as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205), and the State also lists it as a completely protected animal.

Current research and funding. The U.S. Fish and Wildlife Service employs three full-time biologists on sea otter studies. The States of Alaska and California no longer employ biologists full time on sea otter studies but do carry out censuses. The privately endowed Owings Foundation employs a full-time sea otter naturalist. Additional research is supported by the Marine Mammal Commission.

Marine otter
(Lutra felina)

Local common names. Gato marino, chungungo, hullaque, nutria de mar, and chinchimen.

Taxonomy. Two subspecies of marine otter have been described: L. f. felina from southern Chile has a slightly darker brown ventral surface than does L. f. peruviansis from northern Chile and Peru. Sufficient specimens are not currently available to permit detailed studies on the validity of these subspecies.

Distribution and migration. This species inhabits the coastal waters along the west coast of South America from central Peru (at least as far north as lat. 12° S.) south to Cape Horn, Chile. Nothing is known about its seasonal movements. It occurs mainly in the littoral region but is also known to ascend rivers to at least 650 meters above sea level.

Abundance and trends. Darwin found this otter to be abundant in the Chonos Archipelago and among the islands off the southwestern shores of Tierra del Fuego. It has diminished greatly in numbers since Darwin's time, but in 1923 the Chicago Field Museum Expedition found it to be common along the southern end of Chiloe Island, Chile. Nothing is known about the number of marine otters along the northern coast of Chile, but in Peruvian waters the population is estimated to be between 200 and 300. In the Cape Horn and southern Tierra del Fuego region, this species has been practically exterminated. One specimen was collected at Wollaston Islands, Tierra del Fuego, over 25 years ago.

General biology. The following external measurements have been recorded for the marine otter: head and body, 570 to 787 millimeters (mm); tail, 300 to 362 mm; and total length, 910 to 1,149 mm. An adult male taken at the southern end of Chiloe Island weighted 4.1 kilograms. Marine otters feed on the freshwater prawn, Criphiops caementarius; Darwin reported that they feed also on fish, "small red crab," "cuttle-fish," and the inhabitants of "volute shells." Sexual dimorphism was not detected in a small sample of marine otter specimens. All species of Lutra except L. provocax and L. felina are allopatric (occupying different geographic areas), and all except L. felina, a littoral marine species, are probably ecological equivalents. Lutra felina is the smallest and the most distinct species in the genus and, according to one investigator, "probably evolved from a stream-dwelling species that adapted to a marine environment after isolation in coastal habitats as a consequence of progressive aridity in middle latitudes of South America's west coast."

Parasites and diseases. Nothing is known about parasites or diseases in this species.

Allocation problems. In Peruvian waters, these otters are often shot by fishermen because of the alleged damage they do to the stocks of freshwater prawns. In Chile, especially south of Isla de Chiloe, these animals are hunted regularly by fishermen for their skins.

Ecological Problems. No specimens have been examined for pesticide residues or heavy metal contaminants.

Regulations. This species is listed as endangered in the Red Data Book of the International Union for the Conservation of Nature. On June 14, 1976, the marine otter was listed as an endangered species and, therefore, was afforded protection under the U.S. Endangered Species Act of 1973, which prohibits its importation into the United States for purposes other than scientific research and propagation. On July 1, 1975, it was listed also in appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, and on March 29, 1978, it was designated to be a marine mammal and thereby entitled to additional protection under the U.S. Marine Mammal Protection Act of 1972. In Peru, the marine otter has been found in three areas being considered as a coastal park, but it is not known if the species is local enough in habits to remain in any one of these areas throughout the year.

Current research and funding of marine otter studies. Contracts are being established by the U.S. Fish and Wildlife Service in Peru and Chile. Carlos Cabello of the Corporacion Nacional Forestal, Chile, is studying marine otters around Isla de Chiloe, Chile.

Pacific walrus
(Odobenus rosmarus divergens)

Distribution and migration. The entire population winters on the seasonal pack ice of the Bering Sea where animals are distributed from eastern Bristol Bay to the area southwest of St. Lawrence Island. The exact distribution varies with the extent and quality of sea ice. The majority of breeding females apparently occurs in the north-central Bering Sea.

The northward migration begins in April; the exact timing of migration probably is heavily dependent upon the pattern of sea ice recession, which may vary greatly from year to year. At least 15,000 males presently remain on or near Round Island in northern Bristol Bay. This number has probably increased by 2,000 to 3,000 over the past several decades.

Following the northward migration into the Arctic Ocean, walrus disperse along the ice edge from about Pt. Barrow west to the Kolyma River in the east Siberian Sea. Apparently the routes of migration and the summer distribution vary considerably among years, depending upon seasonal conditions.

During the southward migration, walrus frequently haul out to rest at Big Diomedes and Penuk Islands and along the Soviet coastline until the pack ice becomes accessible. During the fall of 1975, biologists from the Soviet Union located nine such coastal haul-out areas between the north coast of Chukotka and Cape Olyutorski.

Abundance and trends. The Pacific walrus population has increased during the past several decades, following a decline in abundance caused by over-exploitation. The population may have numbered as few as 40,000 to 50,000 by about 1950. Aerial surveys of walrus were begun in 1960, the most recent survey being a coordinated effort between the United States and the Soviet Union. Over 96,000 walrus were counted at coastal hauling areas along the Soviet coastline, and another 30,000 to 40,000 were estimated to occur along the ice edge west of the international dateline. Another 75,000 were estimated to occur east of the dateline. However, these estimates are, at best, very crude.

The take of walrus by the Soviet Union in 1976 was 1,271 animals, not including those killed or wounded but lost; the harvest cannot exceed 2,000, the present annual quota. The comparable 1976 retrieved harvest in Alaska, conducted almost exclusively for subsistence purposes by Alaska Natives, comprised 2,989 animals--slightly below the annual quota of 3,000 permitted under the return of management to the State in 1976. Revised walrus hunting regulations approved in May 1977, however, are intended to reduce future annual harvests to less than the maximum of 2,300 that the State intends to be its upper retrieved-take limit.

General biology. Only one group of pinnipeds, the elephant seals, is larger than the walrus. Adult males weigh an average of about 1,160 kilograms, and their mean standard length is about 316 centimeters. Adult females weigh an average of about 900 kilograms and have a mean standard length of about 270 centimeters. In a sample of newborn young, the maximum weight was 77 kilograms; the maximum length, 137 centimeters.

The first ovulation of females usually occurs between 5 and 8 years of age. Males become fertile at an age of 7 to 8 years but are not physically mature until they are at least 10 years old. The walrus is polygamous. The gestation period is about 15 months, including an approximately 3-month-long period of delayed implantation. The young are usually born in May during the northward spring migration. The females and young are very gregarious; males are gregarious at times other than the breeding season. Walruses often attain ages of 30 or more years.

Walruses are not buoyant and must rest on ice or land at fairly frequent intervals. By means of pharyngeal pouches that may be inflated, however, they are able to sleep while floating upright at sea for short periods of time.

Clams are the most important food. The stomach of one adult male contained about 23 kilograms of Mya truncata siphons and 16 kilograms of Clinocardium nuttalli feet. Other food includes echinoderms, annelids, coelenterates, sipunculids, echiuroids, priapulids, arthropods, and tunicates. Occasionally, adult males may eat the flesh of other pinnipeds or cetaceans. The walrus diet appears to vary seasonally.

Internal parasites recorded from walruses include Trematoda (3 spp.), Cestoda (3 spp.), Nematoda (6 spp.), and Acanthocephala (4 spp.). All walruses are infested with external parasites. Small numbers of adult male walruses become carnivorous and feed on seal flesh. Probably it is this abnormal feeding behavior that accounts for trichinosis infection in from 1 to 10 percent of the more than 1,000 male walruses sampled from 4 Arctic regions. Incidence of uterine cysts and other disease conditions is low, as far as is known, and such diseases and abnormalities appear to be unimportant.

Ecological problems. Petroleum will undoubtedly be exploited from the Bering Sea and Arctic Ocean. The effect of this activity on walruses or the resources they require is unknown. Their extensive benthic food resources are also subject to human exploitation, which could compete with the needs of the walruses or disturb benthic communities within which they feed. Also of concern is the harassment of walruses when they haul out in summer on the Walrus Island State Game Sanctuary (Togiak Bay), Bristol Bay. During the summer of 1976, the Alaska Department of Fish and Game stationed two of its personnel at Round Island.

Allocation problems. Siberian and Alaskan natives kill 5,000 to 6,000 walrus annually for subsistence. None were taken during 1976 for display. Loss of walrus during hunting is about 40 to 50 percent.

Additional waste occurs in the utilization of the products of retrieved walrus. If ivory is the primary objective, actual use amounts to as little as 1 to 3 percent of full potential utilization. When meat and hides are used, utilization is as high as 90 percent of the carcasses. During recent years, ivory hunting has become an increasingly important problem.

Regulations. In 1976, management of Pacific walrus was returned to the State of Alaska. Revised State hunting regulations, approved by the U.S. Fish and Wildlife Service in May 1977, established restrictive quotas by specific geographic areas within the most heavily hunted game management units.

Current research. The U.S. Fish and Wildlife Service has an ongoing research program on Pacific walrus. Investigators from the University of Alaska and Johns Hopkins University are currently studying walrus under funded grants from several agencies. The Alaska Department of Fish and Game maintains observers during the hunting seasons at coastal villages of Alaska to monitor the kill and to collect information on the population.

Atlantic walrus
(Odobenus rosmarus rosmarus)

Distribution and migration. Walruses are circumpolar in distribution. In the North Atlantic, small numbers are found along the east coast of Greenland, at Svalbard (Spitsbergen) Franz Josef Land, and throughout the Barents and Kara Seas. A larger, geographically isolated population occurs in the eastern Canadian Arctic and western Greenland. Presently, walruses are rarely found along the coast of North America south of Labrador. Scattered groups are located in Hudson Strait and on the southeastern coast of Baffin Island. In Hudson Bay, the main population is found around Coats, Bencas, and Southampton Islands and in Fisher and Evans Straits. Another apparently larger population exists in northern Foxe Basin. Scattered concentrations occur in Lancaster and Jones Sounds and throughout the Canadian Archipelago as far west as Cornwallis Island. The Thule district of northwestern Greenland has large numbers of walruses year-round, and they occur at least seasonally along the western Greenland coast south to Sukkertoppen. Atlantic walruses in general seem to be less strongly migratory than the Pacific subspecies, with the possible exception of those along the coast of western Greenland.

Abundance and trends. Very few walruses remain in the eastern North Atlantic, where the total population numbered in at least the high tens of thousands in historic times. Less than 500 were counted at Novaya Zemlya in 1969-70, and this population continues to decline. The walrus may be nearing extinction around Franz Josef Land. The species was virtually exterminated in Svalbard; a group of about 10 animals has been seen regularly in recent years on northern Spitsbergen. A total population of about 200 walruses in northeastern Greenland may be stable.

Exploitation of walruses in Canada has diminished owing to cultural and technological changes within human communities. The northern Hudson Bay herds, estimated at approximately 3,000 in 1961, are probably stable. The population in Foxe Basin appears to be larger, although no reliable estimate is available. Little is known of the status of walruses in other areas of the eastern Canadian Arctic.

Although still hunted intensively by the Polar Eskimos, the walrus population in Greenland's Thule district remains substantial. South of Thule, however, the Greenland population appears to have declined considerably since the 1940's because of human encroachment and hunting. Western Greenland is probably the area most critically in need of assessment.

General biology. Most of what is known about the biology of the Atlantic walrus comes from studies at Southampton Island in the 1950's. Calves average 122 centimeters in length at birth and weigh about 67 kilograms.

Adult females have an average length of about 260 centimeters and an average weight of about 570 kilograms, whereas males attain an average length of 305 centimeters and an average weight of about 910 kilograms. Seldom do the tusk lengths exceed 36 centimeters for males, 25 centimeters for females. Adult males may be distinguished from females by cutaneous tubercles of the head and neck, a broader muzzle, and more powerful muscles of the neck and shoulders.

The reproductive biology of the Atlantic walrus is not well understood. During most of the year, herds of adult males are spatially segregated from the herds of adult females with calves and immatures. Females apparently reach sexual maturity at an age of about 4 years and males at about 6 years, although neither may become reproductively active until several years later. Implantation is delayed for approximately 3 months, and gestation lasts about 1 year.

Ecological problems. Disturbances associated with economic development of the Soviet Arctic may be inhibiting the recovery, or even the maintenance, of the badly depleted walrus resource there. The same may be true in the mineral-rich Svalbard area. Exploration for and exploitation of oil and gas have been contemplated in northern Hudson Bay, Baffin Bay, and Lancaster Sound. The effect of these activities on walruses or their requisite resources is unknown. Reduction of the benthic fauna in areas inhabited by walruses may have a negative impact on their population. Human population growth throughout much of the Atlantic walrus' present and past range probably continues to limit its recovery, although the exact mechanisms by which various human activities affect walruses remain obscure.

Allocation problems. No commercial harvest of Atlantic walruses takes place today. Only subsistence hunting continues. Nothing is known about continued use of Atlantic walruses by Siberian Eskimos. Insignificant catches are made by aboriginal inhabitants of eastern and western Greenland (south of Thule). The total aboriginal harvest in Canada has approximately halved in recent years, owing primarily to the replacement of dog teams with motorized toboggans. Other factors may include a decreased reliance on "country food" and opportunities for employment other than subsistence hunting. Ivory acquisition appears to be the primary incentive for native hunting of walrus in Canada today. Only in the Thule district of Greenland (and possibly the Igloodik district in northern Foxe Basin, Canada) is walrus hunting a major element of native subsistence. Dog teams there still require large amounts of walrus meat and skin, and human consumption of meat and stomach contents is significant. Some trade in ivory and skin continued in Greenland until at least 1971.

Regulations. Canada established regulations in 1928 which limited the killing of walruses to Eskimos for food and clothing. These regulations have since been amended several times, but their main intent has not been changed. Walrus hunting regulations were established in Greenland

in 1957. These limit hunting to Danish citizens who reside in Greenland. From June 1 to January 1, all hunting for males in the West Ice is forbidden, and from April 1 to January 1, no females and calves may be taken in the same area. Hunting on land is forbidden in certain areas at certain times. Greenland National Park in northeastern Greenland encompasses most of the walrus' range on that coast and provides some protection.

In the Soviet Arctic, walrus hunting has been forbidden, with some exceptions, since 1949. Aboriginal hunting is still allowed but presumably under strict controls. The Soviet-Norwegian Sealing Agreement of 1958 forbade the hunting of walruses east of Cape Farewell by citizens of either country. Norway had instituted a Walrus Decree in 1952 which prohibited hunting by Norwegians. Nature reserves established by Norway in certain parts of Svalbard offer walruses some protection from human interference.

Current research. No field studies of the Atlantic walrus have been carried out since 1961. Modest, mainly opportunistic monitoring programs are conducted by the Soviet and Norwegian governments. The Grønlands Fiskeriundersøgelser in Denmark collects catch statistics for all of Greenland. In Canada, the Fisheries and Marine Service reports estimated catches by settlement. In addition, Dr. Arthur Mansfield, Arctic Biological Station, is supervising behavioral and ecological studies of walruses, primarily in northern Hudson Bay. In 1977, Randall R. Reeves completed a report on the status, distribution, and natural history of the Atlantic walrus for the FWS Division of Wildlife Research's National Fish and Wildlife Laboratory.

West Indian manatee
(Trichechus manatus)

Distribution and migration. Trichechus manatus inhabits rivers, estuaries, and coastal areas of the tropical and subtropical regions of the New World Atlantic (fig. 1). It is commonly found from northern Florida in the United States to the northern coast of Brazil. Manatees are seasonally present in Georgia and rarely in South Carolina and North Carolina, but occasional stragglers have been reported historically as far north as Old Orchard, N.J. (lat. 40° N.) (fig. 1) and as far south as Espirito Santo, Brazil (lat. 20° S.).

Within the United States, the year-round range of T. manatus is largely confined to peninsular Florida, but distribution varies seasonally (fig. 2), and most manatees are grouped near sources of warm water during the winter. Along the west coast, they congregate in Crystal River and Homosassa River in Citrus County, in warm water effluents in Tampa Bay and the Alafia River, Hillsborough County, in the Caloosahatchee and Orange Rivers, and along the southwest coast from Naples to the Everglades National Park. On the east coast, large numbers of animals congregate near Titusville, in Lake Worth, and in Port Everglades; smaller groupings are found in the upper reaches and near the mouth of the St. Johns River and at several points along the coast. Congregation sizes fluctuate as members leave to forage, especially during warm periods. In a 1975-76 winter aerial survey conducted simultaneously statewide, 38 percent of the manatees were observed in saltwater, 43 percent in brackish water, and 19 percent in freshwater.

The winter distribution of manatees appears to have expanded in recent years. Historical records suggest that manatees formerly wintered in southern Florida, below approximately latitude 27°52' N. (Sebastian Inlet). Today, more than 100 manatees winter on the east coast in Brevard County, and at least 10 other animals were counted in Duval County in February 1976. Approximately 70 animals winter in Kings Bay, Citrus County, on the west coast. Manatees may be diverted from southward fall movements by warm effluents near grassbed areas north of their historical winter range.

As the water warms in spring, the congregations disperse throughout Florida into accessible water more than 1 meter deep. Some animals move north into Georgia and beyond, while others are occasionally found along the Florida Panhandle--generally no farther west than the Aucilla and Port St. Joe Rivers, although single sightings from Pensacola, Fla., and Lake Pontchartrain, La., were reported in 1975-76. Offshore sightings along the Florida coast are sometimes reported.

In the western Gulf of Mexico, manatees occasionally range along the coast of Mexico and rarely into Texas. They are more commonly found south of Tamulipas or Veracruz, within the Bay of Campeche, and on both sides of the Yucatan Peninsula. Distribution appears to be continuous along the coast from Belize to Costa Rica, including Lake Isabella in

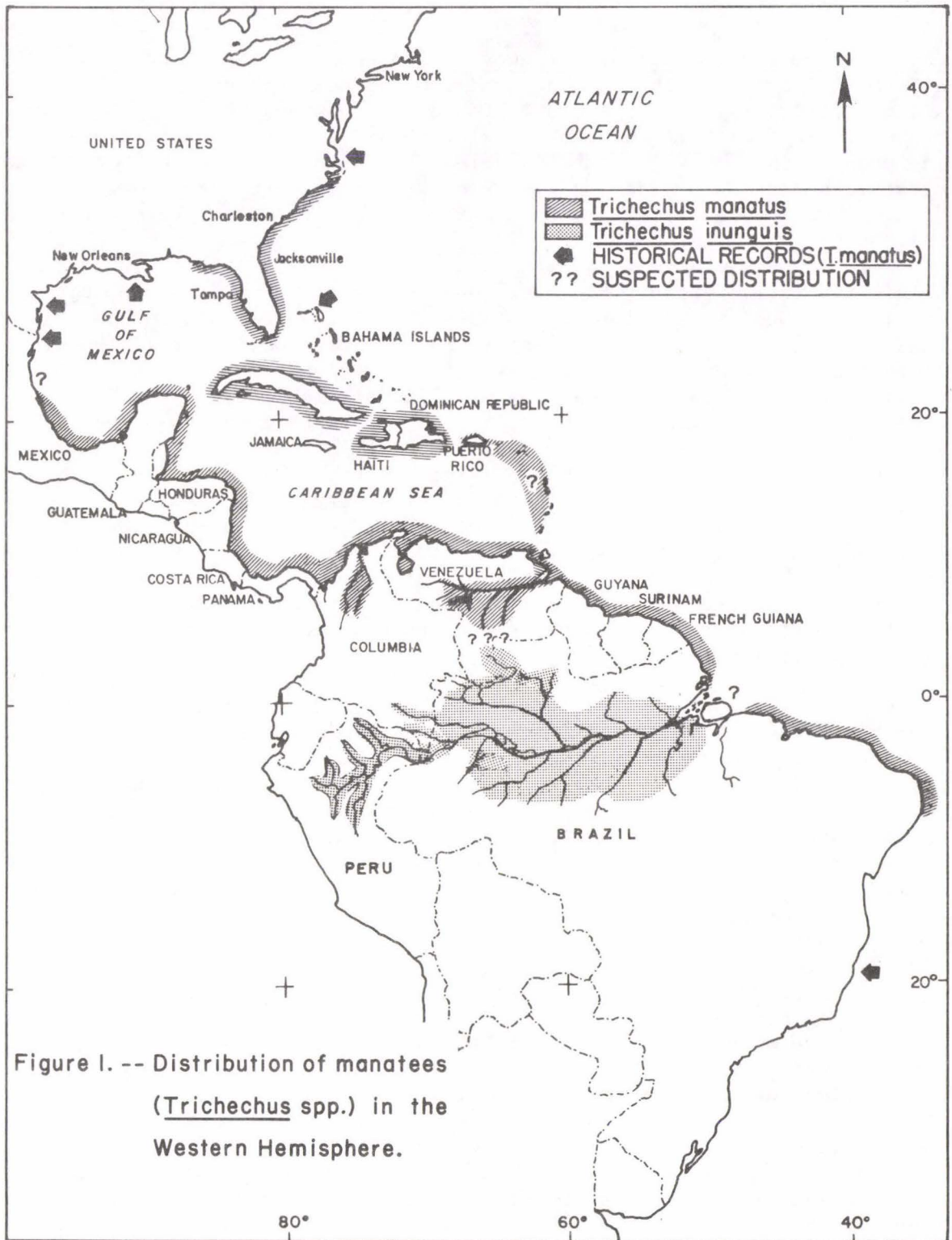


Figure 1. -- Distribution of manatees (Trichechus spp.) in the Western Hemisphere.

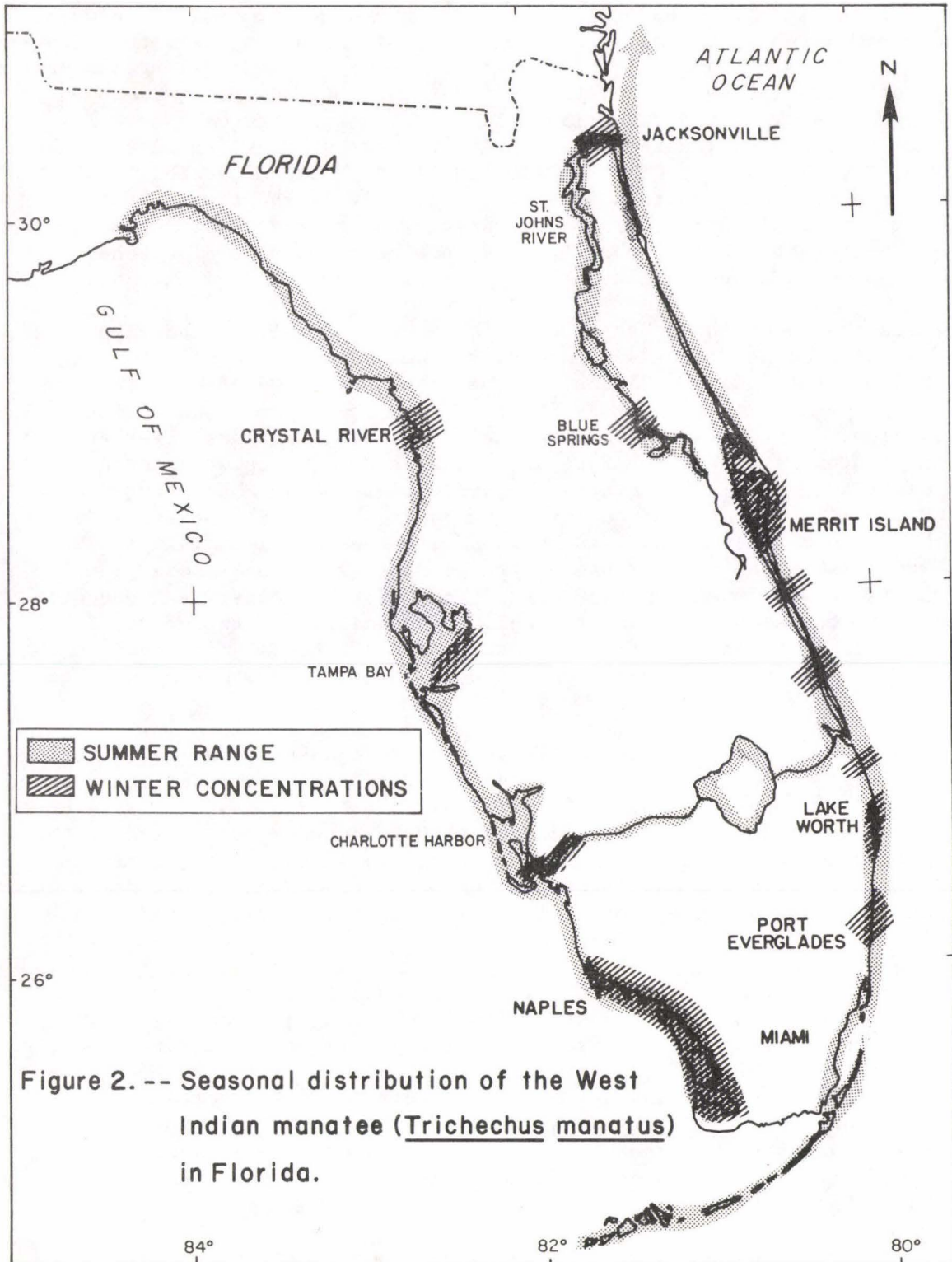


Figure 2. -- Seasonal distribution of the West Indian manatee (*Trichechus manatus*) in Florida.

Guatemala. Only isolated populations are thought to remain in Panama, presumably in Chiriqui Bay, the Changuinola River, Gatun Lake, the Sicaola River, and possibly the Cocle River. Manatees may be found along the eastern coast of Colombia and in the Atrato, Leon, Suriquí, and Meta Rivers and the Magdalena River and its tributaries. T. manatus frequents the lower Orinoco drainage of Venezuela, including its tributaries, the Apure, Arauca, Payara, Capanaparo, and Claro Rivers, as well as Lake Maracaibo. In Guyana and Surinam, manatees are found primarily in the rivers of the coastal plain. In Brazil, manatees range along the coast as far south as Mangue Seca (lat. 12° S.), but they may not be continuous along the north coast, owing to unsuitable habitat.

Manatees are found throughout the Caribbean Sea, usually in small numbers, in coastal regions near rivers and away from population centers. They occur along both coasts of Cuba and are seen most frequently at the Hatiguanico River in the Zapata Swamp, and in the Ensenada de la Bara. In Jamaica, manatees are most frequently found in the Black River area in the southwest and in the Portland Point area of the south-central coast. The distribution in the Dominican Republic seems to be concentrated around the Manzanillo-Miches area on the north coast and the Rio Ocoa-Oviedo area on the south coast. Nothing is known of manatees in Haiti, but at least some animals probably interchange with those from the Dominican Republic. Little is known of manatees in Puerto Rico. Small groups are frequently sighted on the south coast near Guanica, Guayanilla, La Parguerra, Jobas Bay, Roosevelt Roads Naval Station, the mouth of the Fajardo River on the east coast, and near Guanajibo on the west coast. One sighting was recently reported from Trinidad.

Abundance and trends. Aerial surveys of Florida coasts and rivers during the period 1972-76 and interview data in 1975-76 indicate that the manatee population may number about 1,000 animals. Almost 800 manatees were counted in a concentrated aerial survey in early 1976, but the percentage of the population not observed is unknown. Documented mortality and limited reproductive potential make a decreasing population likely, but relative abundance cannot be determined because substantive previous studies are lacking.

In Mexico, interviews with local fishermen indicate that the manatee, although present throughout most of its former range, has drastically declined from past population levels. Sighting reports are rare, and the status of the population is uncertain. Populations in Belize seem to be decreased but stable. Manatees are reported to be fast decreasing in Guatemala but are still present at least in Lago Isabella. Their present status in Honduras is unknown, while estimates for Nicaragua range from a few score to several hundred. Numbers are believed to be low in Panama and Costa Rica.

Manatees are currently decreasing in many Colombian rivers and are extremely rare in the Santa Marta district and in the llanos of eastern

Colombia. They have been extirpated from Taganga Bay, the Canal de Dique, and the Ciénaga de Guajaro. In Venezuela, manatees are considered to be neither abundant nor rare in the lower Orinoco Basin. Estimates of some thousands, but not tens of thousands, of manatees have been made for Guyana, but populations are reportedly reduced in both Guyana and Surinam.

In the Caribbean, manatees are uncommon to rare in most areas and are thought to be declining. Past hunting pressures in the Caribbean, Mexico, and Central and South America are apparently responsible for the present diminished manatee populations. However, present-day laws forbidding the slaughter of manatees--and probably also the scarcity of these animals--have reduced hunting to primarily a subsistence level, and little commercial exploitation occurs. In Mexico, for example, 23 major central markets were visited, and only 1 sale of manatee meat was reported within the last 10 years. As a result, remaining populations may have stabilized.

General biology. The West Indian manatee is large, fusiform, thick skinned, and almost hairless. The forelimbs are paddle-like with rudimentary nails, and the tail is horizontally flattened. Adults range in length from 2.5 to over 4.5 meters, and adult weights vary from 200 to 800 kilograms. Most adults are between 3 and 4 meters long and weigh less than 500 kilograms. Sexual dimorphism in size has not been documented.

Breeding occurs throughout the year. The cow usually copulates with several bulls during her relatively short period of receptivity. Mating has been observed in water about 2.5 meters deep as well as in shallows less than 1 meter deep. Most calves are thought to be born from spring to early fall. The gestation period is probably about 385 to 400 days, and parturition is thought to occur in secluded shallows. Successful breeding has occurred under captive conditions only twice, but full documentation of the event is lacking. A cow usually bears only one calf at a time, but twins and a case of foster parenthood have been reported. Newborn calves are usually over 1 meter long and weigh between 11 and 27 kilograms. Suckling from the axillary teats occurs underwater. Calves may begin grazing within weeks of birth, but nursing probably continues for over 1 year. Breeding occurs every 3 to 5 years.

Manatees have been classified into the following age groups: calves, any small animals associating with a cow; juveniles, independent small animals not yet sexually mature; and adults, animals taking part in reproduction. Sexual maturity may not be attained until the animals are more than 6 to 8 years old. Manatee longevity in the wild is unknown, but a captive has been successfully maintained in Florida for over 29 years (as of May 1978).

Studies of social behavior indicate that the only prolonged association is between a cow and calf. Small groups consisting of an estrous female and her male consorts may remain together for several weeks. Groups of less than five animals are most commonly encountered, except during cold winter periods when larger groups are counted at warm water refugia in Florida. Reported intragroup social interactions include "play" and nonspecific sexual (including homosexual) behavior.

T. manatus is thought to have no specific daily activity patterns. Adults may spend from 6 to 8 hours per day feeding. Manatees are mainly herbivorous, consuming a variety of food plants in the following order of preference: (1) submerged plants, (2) surface floating vegetation, and (3) emergents. Free-ranging and captive manatees have been reported to eat fish. Incidentally ingested insect larvae, amphipods, mollusks, shrimp, and other invertebrates probably also provide supplemental protein for the manatee. Captive adults consume from 30 to 50 kilograms of vegetation each day. Manatees reportedly must return to freshwater occasionally to drink, but recent blood/urine studies suggest that they should be able to subsist on only seawater.

Internal parasites of T. manatus include the trematodes Opisthotrema and Chiorchis and the nematode Plicatolabia. The copepod Harpacticus was also reported on the skin. Manatees in saltwater become covered with marine diatoms (Zygnema and Navicula) and barnacles, whereas animals in freshwater develop a coat of algae (Lyngbya and Compsopogon).

There is little documentation of predation on the manatee by animals other than man, but attacks by alligators have been reported in Florida. Sharks have also been suggested as likely predators.

Ecological problems. In the United States, wounds inflicted by motorboats and barges are a major known cause of manatee mortality. Of 183 manatees salvaged from April 1974 through December 1977, 58 died from causes attributable to humans, and 30 of these were due to boat or barge collisions. Flood-control structures, accidental netting, poaching, and miscellaneous involvement with human paraphernalia are additional causes of manatee mortality.

Manatees' recent winter range expansion and use of artificial winter refugia also apparently account for mortality. Manatees in Florida apparently cannot withstand cold winter temperatures, and warm water springs or localities where factories and powerplants discharge heated water are the focus of winter congregations in northern Florida. Artificial refugia north of the historical range limits appear to be in marginal winter habitat, and during severe winters (such as those of 1976-77 and 1977-78), greatly increased manatee mortality may result.

In eastern Florida, north of the historical winter range, manatee deaths believed to be related to cold weather numbered 4 in 1975-76, 34 in 1976-77, and 11 in 1977-78. Twenty-four of these mortalities

were from areas which had never before been associated with manatee winter mortality, while the remaining deaths occurred 30 to 85 kilometers north of the northernmost winter mortality previously reported. Cause of death was usually not determined because tissue autolysis occurred before an autopsy could be performed, but one case of pneumonia was verified and others were suspected. Available metabolic data suggest that manatees are strongly affected by water temperatures below 20° C but not by air temperatures diminished temporarily to near freezing. Captives are known to feed erratically in 18° to 20° C water and to cease feeding in colder water. It has been suggested that powerplant effluents cannot provide adequately warm water temperatures during severe cold periods in northern areas. Consequently, manatees may be residing in unsuitable habitats north of their historical winter range limits.

Water pollution may affect manatees and their habitat. Water contamination by industrial effluents often destroys manatee habitat and food supplies, but it does not appear to directly affect the animals that sometimes congregate near polluted outfalls in winter. In upper Tampa Bay, the natural submergent vegetation has been eradicated by industrial pollution, which is probably responsible for the absence of manatees in the upper bay. Dredging (and motorboats) may also detrimentally affect manatees by increasing water turbidity until submergent plants can no longer survive. However, water pollutants rich in organic material may benefit manatees by stimulating growth of aquatic weeds, which are potential food resources.

Programs to control weed growth may harm manatees. Some weeds, especially the submerged exotics Hydrilla sp. and water hyacinths Eichornia crassipes, impede boat traffic and are sprayed with herbicides, such as 2,4-D, which then may be ingested by manatees. No direct effects of this or other herbicides have been documented. Oil spills from offshore drilling may also detrimentally affect manatees' food supplies.

Blue Spring Park (a winter congregating site) has been designated a manatee sanctuary by the Florida Department of Natural Resources and is the only locality in Florida with lowered boat-speed limits and human-swimming restrictions for manatee protection. As many as 27 manatees have taken refuge in this spring during cold periods. Manatees also inhabit the Everglades National Park and several national wildlife refuges. Manatees are especially abundant around the Merritt Island National Wildlife Refuge, part of which is included in the NASA Kennedy Space Center launch security zone. Foreign sanctuaries include Colombia's Parque Nacional Isla de Salamanca and Costa Rica's Tortuguero National Park. Manatee occurrence in other foreign reserves or sanctuaries is unknown.

Allocation problems. Manatees have long been hunted for their meat, hides, oil, and ivory. Protective legislation is now nearly complete. The meat is still sold occasionally in local markets of Colombia, Brazil, and Venezuela, but kills are usually the result of fortuitous encounters by fishermen. T. manatus has been used with success in small-scale aquatic

weed clearance projects in Guyana, Mexico, and Panama. The manatee has also been suggested as a potential meat resource, to be farmed like cattle. However, current decimated populations and the species' low reproductive rate make these projects unrealistic.

Regulations. Protective legislation for the manatee now exists in the following countries or commonwealths: Brazil, British Honduras, Colombia, Costa Rica, Cuba, the Dominican Republic, Guyana, Haiti, Jamaica, Panama, Puerto Rico, Trinidad, the United States, and Venezuela.

An attempt to declare the entire State of Florida a manatee sanctuary was defeated by the Florida Legislature in 1977, but another bill limiting boat speeds in specific areas where manatees congregate is currently pending and has received little opposition.

Current research. In 1974, the FWS Division of Wildlife Research's National Fish and Wildlife Laboratory (NFWL) initiated a research program on the ecology, behavior, and physiology of T. manatus in Florida. In addition to the four NFWL staff members assigned to its Sirenia Project research efforts, the Service has contracts and cooperative agreements with individuals and other institutions to conduct further manatee research. In cooperation with overseas scientists, NFWL researchers have also conducted preliminary studies on manatees in Brazil, Mexico, and Surinam. In March 1978, the NFWL cosponsored with the Florida Audubon Society, Florida Department of Natural Resources, and Sea World of Florida a 3-day West Indian manatee workshop in Orlando, Fla.

Dr. E. Mondolfi of Venezuela is directing a program to study T. manatus in his country, and Dr. P. van Bree of Amsterdam is supervising a taxonomic study comparing T. manatus and T. senegalensis. Mr. T. Johansen is studying manatees in Lake Isabella in Guatemala. Mr. D. and Ms. C. Belitsky have conducted aerial surveys of manatees in the Dominican Republic, and they have proposed similar studies on the coast of Puerto Rico where they now reside.

The U.S. National Academy of Sciences, the National Research Council of Canada, and the National Science Research Council of Guyana are considering establishing jointly an international manatee research center in Guyana.

Amazonian manatee
(Trichechus inunguis)

Distribution and migration. Amazonian manatees are strictly fluvial, apparently being confined to the Amazon Basin and possibly the Orinoco drainage (fig. 1). In Brazil, they occur in the Amazon River and the following tributaries: Rio Tocantins, Rio Xingu, the Tapajos, the Nhamunca, Rio Madeira, and Rio Negro. They have also been reported in Rio Branco, which is almost continuous with the Essequibo and Rupununi Rivers of Guyana during flooding, thus allowing the animals access to these rivers. T. inunguis is also thought to inhabit the upper Orinoco and the Cano Casiquiare of Venezuela, but records are lacking. In Colombia, Amazonian manatees may be found in the Amazon and the Pupunayo River (west to the Araracuara rapids); they may also frequent the Apaporis River. Peruvian rivers supporting manatees are: Rio Napo, Rio Tigre, Rio Marañon (as far as its confluence with Rio Pastaza), Rio Samiria, and Rio Pacaya. These animals also inhabit the Ucayali and Huallago River drainages but are absent from both the Madre de Dios and the Purus systems. No information is available on migration of this species.

Abundance and trends. Amazonian manatees were formerly abundant in the Brazilian Amazon. Thousands of skins were brought yearly to Manaus for trade in the 1930's and 1940's. T. inunguis is consequently less abundant today in most of the Amazon and its tributaries. It is, however, still fairly common in some lakes on the lower Tapajos and in the Nhamunca River. In general, it is regarded as rare in Colombia. This species is nearer extinction in Peru than is any other mammal, although modest numbers do remain in Rio Samiria and Rio Pacaya. All reports indicate a dramatic decline in numbers of Amazonian manatees throughout their range. Population estimates are not available, but extinction has been predicted within the next few decades if local hunting pressures continue.

General biology. T. inunguis is a large, fusiform, and nearly hairless marine mammal with paddlelike flippers and a spatulate tail. It is distinct from other manatee species (T. manatus and T. senegalensis) in both appearance and habitat. Characteristically, it is more slender and has elongated flippers lacking nails, and it is marked by a unique white breast patch. This species is the only entirely fluvial manatee. Adults may reach lengths of 2.8 meters and estimated weights between 125 and 250 kilograms. Breeding apparently occurs throughout the year. The gestation period is thought to be about 1 year, and usually a cow gives birth to only one calf at a time. Newborn calves are less than 1 meter long and weigh less than 20 kilograms. Further information on reproduction, ontogenetic variation, and population structure is lacking. Longevity in nature is unknown, but a captive pair survived 12-1/2 years before they died.

Amazonian manatees feed upon varied aquatic vegetation, including Statiotes, Potamogeton, Vallisneria, Ceratophyllum, Ulva, Myriophyllum, and Zostera. Daily consumption of food plants has not been measured under natural conditions, but captive adults generally require 9 to 15 kilograms of lettuce and vegetables daily. Natural predation on T. inunguis is not documented, but jaguars, sharks, piranhas, and caimans have been suggested to be likely predators. The trematode, Chiorchis fabaceus, occurring in the large intestine, is the only internal parasite reported for this species. Bronchial disorders, pneumonia, and skin problems have been noted in captives, and one captive developed osteomyelitis as a result of a harpoon wound.

Allocation problems. Many Indian tribes of Amazonia have hunted manatees in the past for both meat and the hides which were used to make shields. Animals were captured with harpoons and nets, but the final killing was done by driving wooden plugs into their nostrils, causing suffocation. In the 1930's and 1940's, the Amazonian manatee was commercially exploited for the skins, which were shipped to Portugal and Rio de Janeiro where they were used primarily to make machine belting and water hoses. A meat preparation called "mixira," consisting of meat boiled in its own fat, was canned and also shipped abroad. Thousands of manatees were slaughtered yearly. Protective legislation has since been enacted, and the present rate of exploitation is reportedly reduced. However, poaching continues at a reduced rate, and manatee meat is still occasionally available in Colombia and Brazil.

Regulations. T. inunguis is totally protected in Brazil (1968), Colombia (1969), Guyana (1961), Peru (1973), and Venezuela (1970).

Current research. Daryl P. Domning and Robin C. Best are continuing studies on the species at the Instituto Nacional de Pesquisas da Amazonia, Manaus, Brazil. These studies include data on the species' growth, anatomy, distribution, and natural history.

West African manatee
(Trichechus senegalensis)

Distribution and migration. The West African manatee occurs in coastal waters and adjacent rivers of West Africa--from the mouth of the Senegal River (lat. 16° N.), to the mouth of the Cuanza River, to Angola (fig. 3). Animals of this species have been reported from the Faleme, Gambia, and Casamance Rivers of Senegal and Gambia and from the coasts of Guinea. Other rivers known to support manatees are the Sierra Leone, the Missunado, the St. Paul's, and the Cavalla. In Ghana, the species is now apparently restricted to Lake Volta and the upper reaches of the Volta River. Manatees have been taken at Benin and Lagos, Nigeria, occur in the Doro River Forest Reserve, and are numerous in most of the larger rivers of southern Nigeria. They occur in the Niger River and are common as far upriver as Idah, on the western border; however, they travel even farther upriver and have been noted in Segou, Mali, approximately 200 miles southwest of Timbuktu. Manatees also ascend the Benue River, a large tributary of the Niger; they have been reported in this waterway as far east as Numan (lat. 9° N., long. 12° W.). Manatees are not thought to occur in Lake Chad, although specimens have been collected from its principal tributaries, the Baniangi, the Bahr Keeta, and the River Shari. In Cameroon, they are found within the Korup and Campo Reserves and have been reported from the Mungo and Wouri Rivers; they also probably inhabit the Campo River in southern Cameroon. Specimens have been taken from the Rio Muni, Gabon, and Ogooue Rivers and may also be found in the Loeme River of Congo Brazzaville. In Zaire, T. senegalensis occurs in the lower Congo River and also in the upper drainage of the Uele River, east to Kibali. The Loge, Dnade, Bengo, and Cuanza Rivers of Angola all reportedly contain manatees. No data are available on migrational movements.

Abundance and trends. No population estimates are available for this species. The West African manatee was reported to be rare in the Senegal, Faleme, and Casamance Rivers of Senegal as early as 1900. Recent reports of manatee abundance in Senegal, Guinea, and Portugese Guinea are lacking. Manatees remain common enough in the Sierra Leone River estuaries today to be trapped for food, but no information is available on their current status along the coast from Liberia to Nigeria. Manatees have been extirpated from the Mekrou River of Dahomey and the portion of the Niger River on the Niger-Dahomey border, although they are thought to be still numerous in most of the larger rivers of southern Nigeria. Populations seem to be stable in the lower Niger, the Benue River, and the Anambra system of creeks, but manatees are rare in the Izichi River of Nigeria. T. senegalensis has apparently been extirpated in Lake Chad and is classified as rare in the Cameroons. The lower reaches of the Congo River reportedly support numerous animals, but

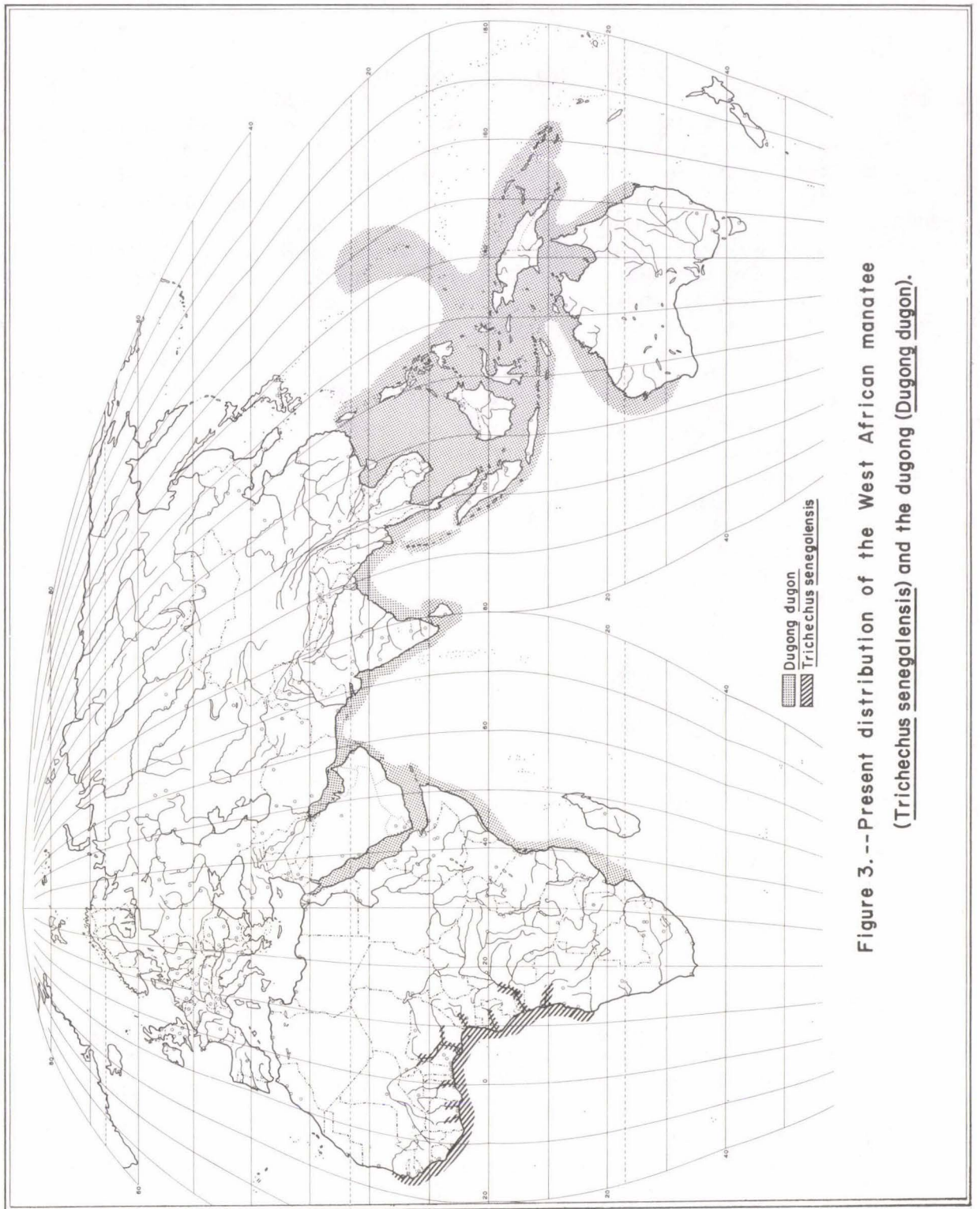


Figure 3.--Present distribution of the West African manatee (*Trichechus senegalensis*) and the dugong (*Dugong dugon*).

populations have diminished in the upper rivers. In general, the manatee population of Zaire is much reduced. T. senegalensis is classified as a vulnerable species, but little information is available on the recent distribution or abundance of this animal.

General biology. Externally, this manatee is indistinguishable from the West Indian manatee. It too is large, fusiform, and nearly hairless and has paddlelike flippers and a spatulate tail. Average adults measure from 2.5 to 3.4 meters in length and weigh from 400 to 500 kilograms. It has been hypothesized that breeding occurs during the late dry season in weedy swamps and lagoons, but documentation is lacking. The gestation period is unknown but is probably about 1 year, and a cow usually gives birth to a single calf. Newborn calves are approximately 1 meter long, and they are believed to remain with the parent cow for a long time. No further information is available on reproductive or population biology of this species.

West African manatees favor weedy swamps and mirigots. They are believed to be active throughout the day but feed mostly at night. Their diet includes the aquatic vascular plants Cymodocea nodosa, Polygonum sp., and Eichornia crassipes, but they also reportedly feed on leaves of the mangrove Rhizophora, a terrestrial plant whose leaves often hang over water. A 1.85-meter-long captive male consumed 12 kilograms of vegetables daily. When 2.4 meters long, he regularly ate 17 to 18 kilograms of vegetables, Elodea, and legumes daily. The only information available on the social behavior of T. senegalensis is that groups of four animals, including half-grown calves, have been observed.

Chiorchis fabaceus, a trematode found in the large intestine, is the only internal parasite reported for the West African manatee. No diseases of this species have been reported from the wild, but one captive died of acute enteritis. There is no evidence of predation on T. senegalensis by species other than man.

Ecological problems. Propellers and keels of boats striking submerged manatees may inflict mortal wounds. While there is no evidence that this is as real a problem in West Africa as it is in Florida, the Ijaw fishermen of the Anambra system of creeks in Nigeria considered manatees a nuisance to their boat traffic. In 1932, they began trapping and killing manatees, and they exterminated the local population within 3 years. Killing of manatees for food reportedly reduced this species in rivers in Ghana after the water became clearer following the construction of dams. These dams are also believed to have isolated populations and may disrupt normal movement patterns. Manatees inhabit the recently formed Lake Volta in Ghana and Lake Kainje in Nigeria, which are currently being overgrown with aquatic weeds. Use of herbicides on the weeds which are consumed by the manatees presents a potential threat to the animals.

Pollution of waters in areas of human development would be expected to adversely affect the food sources of manatees.

Allocation problems. The West African manatee has long been hunted throughout its range, largely for its meat. Hunting is done at night with nets, harpoons, and guns, and such hunting has been a regular occupation in the lower Congo, Angola, and in northern Nigeria. No estimates of current take are available. Manatees are also accidentally caught and die in shark nets, which are set along many coastal areas of West Africa. T. senegalensis has been considered to be a potential solution to the problem of aquatic weed control in manmade lakes and river systems. Experiments with the West Indian manatee indicate that that species can successfully control weeds under certain specialized circumstances and that manatees plus alternative mechanical weed removers may provide the best non-chemical means of control.

Regulations. The West African manatee is currently protected in Angola, Cameroon, Congo Brazzaville, Dahomey, Gabon, Ghana, Guinea, Ivory Coast, Liberia, Nigeria, Senegal, Sierra Leone, Togo, and Zaire. The species is also now being considered for threatened status under the U.S. Endangered Species Act.

Current research. No survey programs are currently underway to determine the status and distribution of this species, but the U.S. Fish and Wildlife Service's Division of Wildlife Research considers this to be a critical area for research.

Dugong
(Dugong dugon)

Distribution and migration. Dugongs occur in tropical and subtropical Indo-Pacific waters (fig. 3). They are totally marine and are usually found in nearshore coastal waters from 3.7 to 5.5 meters (2 to 3 fathoms) deep. Along the east coast of Africa, they range from the Red Sea coast of Egypt south to Delagoa Bay (lat. 26° S.), Mozambique, but this distribution is discontinuous owing to local extirpation in certain areas. Dugongs have been reported from the Persian Gulf, and they also range along the west coast of India, south of the Gulf of Kutch. They occur in Sri Lankan waters and are present in the Andaman Islands, the Mergui Archipelago, Burma, Malaysia, the Moluccas, and Sumatra. They may still be found in the Ryukyu Archipelago, and specimens have been taken in Taiwan and Hong Kong. The present range extends south and east to include Guam, the Palau Islands (Caroline Islands), New Britain, Papua New Guinea, the Solomons, New Caledonia, and the New Hebrides. In Australia, dugongs occur all along the northern coast from Perth (lat. 32° S.) on the west coast to Brisbane in the east. They are absent from the Marshall, Gilbert, Ellice, and Fiji Islands.

Long-distance migrations of this species are unknown, but local, offshore movements are apparent. These may be correlated with the changing monsoon seasons and possibly with resulting shifts in abundance of food sources. During the season of rough seas and extremely strong winds, the animals move to shore, apparently seeking shelter. Such movements have been reported in east Africa, India, and the Philippines. Similar migrations have not been noted in Australia.

Abundance and trends. Populations are thought to be much reduced and still declining throughout much of the range, except in Australia and Papua New Guinea. No numerical estimates of dugongs are available, except for those in northeastern Australia where an estimated 1,000 to 2,000 animals dwell along the Queensland coast.

Dugongs are more abundant in Kenya and the Somali Republic than elsewhere along the coast of Africa; in Kenya, they presently occur only in Lamu Park. They are now extremely rare in the Red Sea and the Gulf of Aqaba. They were once abundant enough in the Gulf of Mannar (between Sri Lanka and India) to support a large commercial dugong fishery. The only remaining segments of this population are restricted to the region near the Mannar Peninsula of Sri Lanka, from Jaffna to Puttalam. Numbers have declined along the Sarawak coast of Malaysia, and few dugongs can be found today in the Ryukyu Archipelago. The only stable populations occur along the northern Australia coast--Shark Bay, Broome, the Gulf of Carpentaria, and the northern coast of Queensland--and along the coast of Papua New Guinea. These stocks appear to be maintaining themselves.

General biology. A dugong is a large fusiform marine mammal with flipper-like forelimbs and a broadly notched, horizontal tail fluke. Adults range in length from 2.4 to 2.7 meters, in weight from 230 to 360 kilograms. The thick, nearly hairless skin is deep slate gray to brown and is frequently marked with numerous scars and scratches. Dugongs were highly social in the past, forming large herds of several hundred animals. Today, groups usually include no more than 6 animals, although groups of up to 50 animals are still seen along the coast of Australia. Breeding apparently occurs throughout the year. The gestation period is thought to be about 1 year, and a cow usually bears only one calf at a time; twins have been reported rarely. Newborn calves are about 1.1 meter long. Calves begin grazing within 3 months of birth but continue to nurse for over 1 year, when they may have grown to a length of 1.8 meters. Animals reach sexual maturity at an approximate length of up to 2.4 meters, which corresponds to an estimated age of 5 to 10 years. Sexual dimorphism in size of adults is not evident. Longevity of the dugong in the wild is unknown, but analysis of tooth growth layers suggests a maximum of 30 to 60 years, depending on whether growth rings are annual or biannual. Two captives were successfully maintained for 10 years in India.

Dugongs are largely herbivorous and feed primarily on marine sea grasses of the families Potamogetonaceae and Hydrocharitaceae; these particular grasses occur in upper subtidal and lower intertidal waters with a year-round temperature range between 21° C and 28° C. Diplanthera and Cymodocea are most heavily utilized, but the brown algae, Sargassum, may also be consumed in significant amounts when sea grasses are locally scarce. Dugongs reportedly prefer to feed at night or with the rising tide.

There are few observations of predation upon the dugong by animals other than man. Fishermen have claimed that the shark is a predator, but of the more than 100 dugongs netted and drowned in Queensland, none showed any sign of attack by sharks or other predators. Large saltwater crocodiles are known to eat dugongs occasionally, but the extent of this predation is unknown.

Internal parasites include 10 species of trematodes and 2 species of nematodes. Barnacles and green filamentous algae have been observed on dugongs but do not appear to be harmful. No diseases have been reported.

Allocation problems. Man is the major threat to the dugong's existence. Boat traffic in offshore areas may inflict mortal wounds. Increased marine fishery activities in the India-Sri Lanka and Kenya areas have resulted in accidental dugong nettings, which have drowned substantial numbers of animals. Dynamiting for fish presumably also adversely affects dugongs. In Queensland, Australia, a shark-netting program has resulted in large dugong mortality; similar netting programs exist in Africa.

Dugongs have been hunted throughout their range. Their meat is similar to veal or pork and "keeps" for long periods of time. Adults of average size yield from 19 to 30 liters of oil similar to cod liver oil, and the hide makes excellent leather, which is especially suitable for sandalmaking. Tusks and bones are used as ivory, and several body parts were once thought to have medicinal or aphrodisiac properties. Today, hunting pressures are much reduced, owing partly to the decline of dugongs. In spite of legislative protection, however, poaching continues. In Australia, the aborigines and Torres Islanders may still legally hunt the animals. One village of 250 people caught an average of about 70 animals per year during the early 1960's. In Papua New Guinea, at least one animal is killed each week for local consumption along the southwestern coast.

Regulations. The dugong is totally protected in Anglo-Egyptian Sudan, Egypt, Ethiopia, India, Japan, Kenya, Madagascar, Mozambique, Natal, New Caledonia, the Philippines, Sabah, Sarawak, Somalia, South Africa, Sri Lanka, Taiwan, and Tanzania; in Australia and Papua New Guinea, only aborigines and natives may hunt the dugong for their own local consumption and use. Although protection is nearly complete, effective enforcement is virtually impossible in most areas.

Current research. George Heinshon and his associates at James Cook University, Townsville, are continuing their study of dugongs in Queensland, Australia. Animals accidentally drowned in shark nets provide population and reproduction data, as well as information on food habits. Studies of nutrition, general ecology and behavior, and histology are also being conducted. Brydget Hudson of the Wildlife Division, Department of Natural Resources, Papua New Guinea, is continuing her study of dugongs throughout the waters of that area. In 1977, the FWS Division of Wildlife Research's National Fish and Wildlife Laboratory started surveys on the dugongs in the waters around Palau, Trust Territory of the Pacific Islands.

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Appendix A

Notice of receipt of administrative
law judge's recommended decision
on Alaska's request to waive
MMPA moratorium

Federal Register, volume 42, number 139, page 37215,
Wednesday, July 20, 1977 (42 F.R. 37215)

ADDRESS: Comments should be addressed to the Director (FWS/WA), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, and should make reference to MMPA Docket No. 76-1.

FOR FURTHER INFORMATION CONTACT:

Rupert R. Bonner, Marine Mammal Coordinator, Office of Wildlife Assistance, U.S. Fish and Wildlife Service, Suite 1200, 1612 K Street NW., Washington, D.C. 20006. (202-343-8961).

SUPPLEMENTARY INFORMATION:

The six species of marine mammals not mentioned in the summary are under the jurisdiction of the National Marine Fisheries Service. These species are the subject of a separate notice of receipt of the recommended decision being filed simultaneously with this notice by the Department of Commerce, National Oceanic and Atmospheric Administration. Augmenting the Administration's comments regarding ex parte communications to or from Federal employees who may reasonably be expected to be involved in the final decisionmaking process—communications prohibited under section 4 of the Government in the Sunshine Act of 1976 (5 U.S.C. 557(d)(1)), potentially involved Department of the Interior employees include Cecil D. Andrus, Secretary, Department of the Interior; Robert Herbst, Assistant Secretary for Fish and Wildlife and Parks; Lynn A. Greenwalt, Director, Fish and Wildlife Service; Robert S. Cook, Deputy Director; Harvey K. Nelson, Associate Director, Fish and Wildlife Resources; James W. Pulliam, Jr., Deputy Associate Director, Wildlife; Ronald E. Lambertson, Assistant Solicitor, Division of Conservation and Wildlife; and Ronald E. Swan, Attorney, Division of Conservation and Wildlife.

Judge Littlefield found that Alaskan populations of the mammals under Fish and Wildlife Service jurisdiction are within the range of optimum sustainable population, and he recommended that the moratorium be waived for the polar bear and sea otter and that their management be returned to the State, subject to stipulated modification of State laws and regulations; recommended annual quotas not quantified in existing State regulations should not exceed 170 polar bears and 3,000 sea otters. He also recommended continuation of the existing waiver for the Pacific walrus, as approved on April 5, 1976 (41 FR 14372) and amended on October 13, 1976 (41 FR 44875) and May 20, 1977 (42 FR 25924); current State quotas limit the annual retrieved walrus harvest to less than 2,300 animals, well below the maximum of 3,000 animals permitted under the waiver.

The recommended decision and all comments timely received will be available for public inspection between 7:45 a.m. and 4:15 p.m. on official business days in suite 1200 of the Service's offices at 1612 K Street NW., Washington, D.C. The recommended decision is also avail-

able for public inspection during normal business hours at the Service's Alaska Area Office, 813 D Street, Anchorage, Alaska. The record of hearings is available for public inspection and copying during normal business hours in the Office of the Solicitor, Room 6553, Department of the Interior Building, 18th and C Streets NW., Washington, D.C. Jackson E. Lewis, Office of Wildlife Assistance, U.S. Fish and Wildlife Service, was the principal author of this document.

Dated: July 13, 1977.

M. J. SPEAR,
Acting Director,
Fish and Wildlife Service.

[FR Doc. 77-20694 Filed 7-19-77; 8:45 am]

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[50 CFR Part 18]

MARINE MAMMALS

Waiver of Moratorium With Respect to Nine Species of Alaskan Marine Mammals

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notification to the public of receipt of administrative law judge's recommended decision on Alaska's request to waive moratorium for nine marine mammal species and allow the State to resume management.

SUMMARY: Notice is hereby given that on June 30, 1977, the Fish and Wildlife Service received the recommended decision of Administrative Law Judge, the Honorable Malcolm P. Littlefield, regarding the request of the State of Alaska to waive the moratorium on nine species of marine mammals and allow the State to resume management under sections 101 and 109 of the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361-1407). The Service has jurisdiction over three of these species: the polar bear (*Ursus maritimus*), sea otter (*Enhydra lutris*), and Pacific walrus (*Odobenus rosmarus*). The Director of the Service is required by 50 CFR 18.90 to solicit public comment before a final decision is made to waive the moratorium. He may either approve the recommended decision as handed down, modify it, or reject it.

DATES: Interested persons are invited to submit written comments on the recommended decision on or before August 22, 1977.

Appendix B

Final designation of marine otter
as a marine mammal

Federal Register, volume 43, number 61, pages 13065-13066,

Wednesday, March 29, 1978 (43 F.R. 13065-13066)

[4310-55]

Title 50—Wildlife and Fisheries

**CHAPTER I—UNITED STATES FISH
AND WILDLIFE SERVICE, DEPART-
MENT OF THE INTERIOR**

PART 18—MARINE MAMMALS

**Designation of Marine Otter as a
Marine Mammal**

AGENCY: Fish and Wildlife Service,
Interior.

ACTION: Final rule.

SUMMARY: The Service hereby determines that the marine otter (*Lutra felina*) be formally designated as a marine mammal for purposes of the Marine Mammal Protection Act of 1972. This action is being taken, based on available biological data, in order to afford this endangered species additional protection.

EFFECTIVE DATE: March 29, 1978.

FOR FURTHER INFORMATION
CONTACT:

Marshall L. Stinnett, Special Agent
in Charge, Regulations and Penalties,
Division of Law Enforcement,
U.S. Fish and Wildlife Service,
Washington, D.C. 20240, 202-343-
9242.

SUPPLEMENTARY INFORMATION:
On June 16, 1977, The Service published a proposed rulemaking in the FEDERAL REGISTER (42 FR 30659-30660) advising that sufficient biological data was on file to support a determination that the marine otter, an endangered species which is protected under the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), required additional protection and should be added to the list of species formally designated as marine mammals.

RULES AND REGULATIONS

Public comments were requested on this proposed rule, with comments received no later than July 18, 1977, to be considered before adoption of the final rule. One comment, from the Environmental Defense Fund, was received and that comment supported the proposed designation for the reasons therein stated. The Fund also pointed out that the marine otter was not listed as "depleted" under the Marine Mammal Protection Act. The Service has taken this point under advisement and will respond at a later date.

Also, this document corrects two previous errors in the association of the common names with the scientific names *Trichechus inunguis* and *Trichechus senegalensis*.

The final rule is therefore adopted as proposed. The principal author of this document is Joel McLeod, Legal Specialist, Division of Law Enforcement.

NOTE.—The Fish and Wildlife Service has determined that (1) this final rule is not a

major Federal action significantly affecting the human environment and requiring preparation of an environmental impact statement and (2) that this final rule does not contain a major rule requiring preparation of an Economic Impact Statement under Executive Order 11949 and OMB Circular A-107.

Accordingly, the definition of "marine mammal" contained in § 18.3 of Part 18, Subchapter B, Chapter I of Title 50, Code of Federal Regulations, is amended to read as follows:

§ 18.3 Definitions.

In addition to the definitions contained in section 3 of the Act and in Part 10 of this subchapter, and unless the context requires otherwise, in this Part 18:

* * * * *

"Marine mammal" means any specimen of the following species, whether alive or dead, and any part thereof, including but not limited to, any raw, dressed, or dyed fur or skin:

Scientific name	Common name	Date listed
<i>Ursus maritimus</i>	Polar bear	Dec. 21, 1972.
<i>Enhydra lutris</i>	Sea otter	Do.
<i>Odobenus rosmarus</i>	Walrus	Do.
<i>Dugong dugon</i>	Dugong	Do.
<i>Trichechus manatus</i>	West Indian manatee	Do.
<i>Trichechus inunguis</i>	Amazonian manatee	Do.
<i>Trichechus senegalensis</i>	West African manatee	Do.
<i>Lutra felina</i>	Marine otter	Date of FR publication.

NOTE.—Common names given may be at variance with local usage.

* * * * *

Dated: March 23, 1978.

LYNN A. GREENWALT,
Director, Fish and Wildlife Service.

[FR Doc. 78-8258 Filed 3-28-78; 8:45 am]