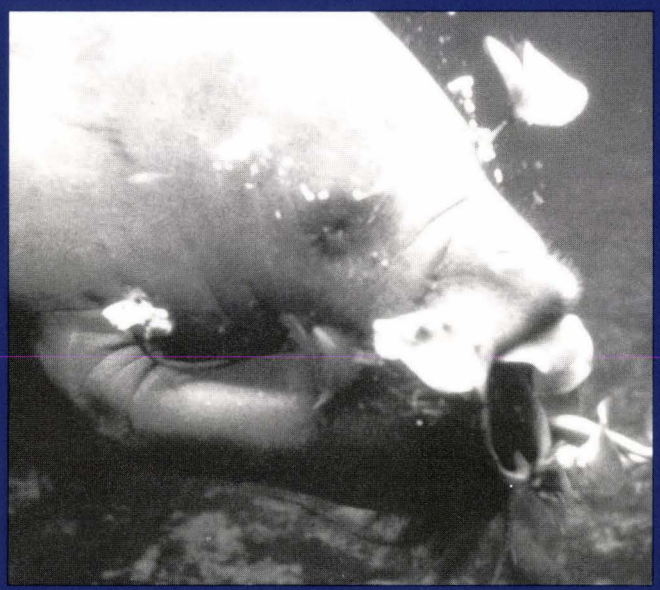
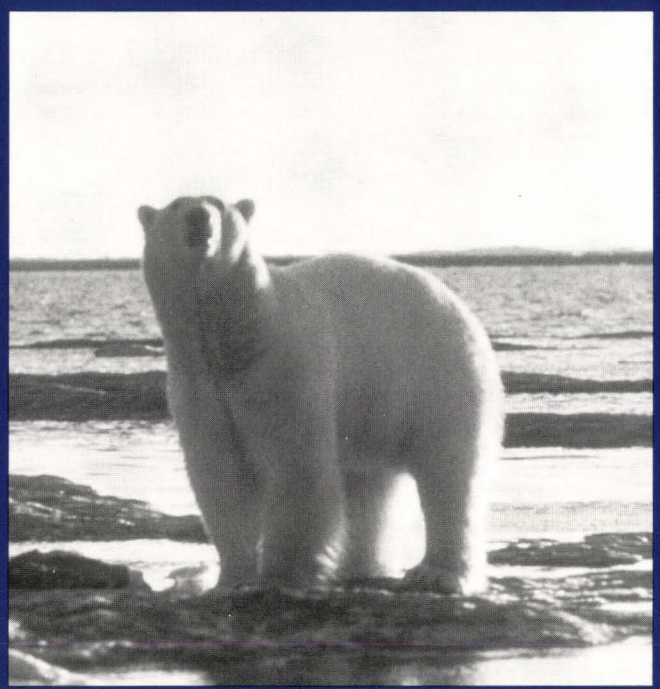
Administration of the Marine Mammal Protection Act of 1972

January 1, 1992 to December 31, 1992





U.S. Department of the Interior • U.S. Fish and Wildlife Service
Washington, DC 20240

Department of the Interior

U.S. Fish and Wildlife Service

Marine Mammal Protection Act

Report of the Department of the Interior

The Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1361-1407, 86 Stat. 1027 (1972), 95 Stat. 979 (1981), 98 Stat. 440 (1984), 100 Stat. 3741 (1986), 102 Stat. 4755 (1988), and 108 Stat. 532 (1994)) states 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 the 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(11)(B) of the Marine Mammal Protection Act to those marine mammals that are members of the Orders Carnivora (polar bear, sea otter, and marine otter), Pinnipedia (walrus), and Sirenia (manatee and dugong). Accordingly, published herewith is the report of the Department of the Interior for the period of January 1, 1992, to December 31, 1992, on the administration of the Marine Mammal Protection Act with regard to those mammals.

Issued at Washington, D.C., dated February 6, 1995

Director

Administration of the Marine Mammal Protection Act of 1972

January 1, 1992 to December 31, 1992

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Contents

Introduction

Authority

The passage of the Marine Mammal Protection Act of 1972, hereafter referred to as the Act, gave the Department of the Interior (Department) responsibility for manatees, polar bears, walruses, sea and marine otters, and dugong. Within the Department, the Fish and Wildlife Service (Service) is responsible for managing these marine mammals and for enforcing the moratorium on taking and importing marine mammals and marine mammal parts.

The Service administers requests for waiving the moratorium and for the transfer of management authority to States, issues permits, conducts research programs, enforces provisions of the Act, publishes rules and regulations to manage marine mammals, cooperates with the States, and participates in international activities and agreements. In addition, the Service lists and delists species as endangered or threatened and undertakes other Endangered Species Act-related responsibilities and maintains a close working relationship with the Marine Mammal Commission and its Committee of Scientific Advisors.

An adult West Indian manatee and calf. U.S. Fish and Wildlife Service photo by Galen Rathbun.

During the period of time covered by this report, there were no significant changes to the listed status of any of the species of marine mammals whose management is the Service's responsibility.

Species List

The following list identifies the Service's species and their status.

Species		Marine Mammal Protection Act	Endangered Species Act
Common Name	Scientific Name		
Polar bear	*Ursus maritimus*	Yes	No
Sea otter-Alaska	*Enhydra lutris lutris*	Yes	No
Sea otter-southern	*Enhydra lutris nereis*	Yes	Threatened
Marine otter	*Lutra felina*	Yes	Endangered
Walrus	*Odobenus rosmarus*	Yes	No
Dugong	*Dugong dugon*	Yes	Endangered*
West Indian manatee	*Trichechus manatus*	Yes	Endangered
Amazonian manatee	*Trichechus inunguis*	Yes	Endangered
West African manatee	*Trichechus senegalensis*	Yes	Threatened

* The dugong is listed as endangered throughout its entire historic range except when it occurs in the United States.

Summary of the 1992 Program

Appropriations

The Service's most recent funding authorization was under authority of Section 116(b) of the Act as adopted in the 1988 amendments (102 Stat. 4755) for Fiscal Years (FY) 1989 to 1993. Calendar year 1992 covered by this report overlaps FYs 1992 and 1993; funds (in $000) authorized for both years, as well as funds spent in FY 1992 and projected to be spent in FY 1993, are presented.

	Authorized	Expended	Projected
Fiscal Year 1992	$3,370	$3,632	—
Fiscal Year 1993	$3,500	—	$3,658

Outer Continental Shelf Operations and Environmental Studies

The Service continued to provide technical assistance to the Minerals Management Service (MMS) on the 5-year Natural Gas and Oil Resource Management Comprehensive Plan for 1992-1997 with a review of the Secretarial Issue Document. Key Service participation again centered on providing recommendations on leasing options in all 26 Outer Continental Shelf (OCS) planning areas. Comments were essentially consistent with those provided in previous iterations of the Comprehensive Plan. In some lease areas, notably southern California, the MMS presented new leasing options that more closely reflect previous Service guidance.

Early in 1992, the MMS prepared a special environmental assessment evaluating new leasing options off western Alaska and in Cook Inlet, Alaska. The Service called for additional environmental analysis and recommended revised leasing options to protect walrus, beluga whales, and sea birds. The MMS committed to implementing mitigation measures addressing these wildlife concerns.

The Final Environmental Impact Statement for the Comprehensive Plan was released in 1992, reflecting a greatly reduced leasing schedule. Affected Service Regions provided comments.

Air quality regulations for all OCS areas were proposed by the Environmental Protection Agency in 1992. All Service Regions evaluated the effects of the regulations on fish and wildlife resources, including marine mammals.

A 1992 draft report pertinent to the National Energy Strategy evaluated the opening of five undeveloped oil fields on the North Slope of Alaska. The Service's Alaska Region assisted in the preparation of Service comments that reviewed concerns related to marine mammals, the appropriate scope of environmental reviews, and the regulatory aspects of wetlands conservation.

Lease Sale #149 (Cook Inlet-Shelikof Strait) was the first Alaska sale from the new Comprehensive Plan to advance in 1992. The Service reviewed preliminary environmental documentation and recommended decision options minimizing impacts on Alaska sea otters. The Service recommended deleting certain lease blocks in sensitive wildlife concentration areas in Cook Inlet and Shelikof Strait. The Service also identified mitigation measures and items of information to lessees that should be included in the proposed action. An area identification, draft environmental impact statement, and proposed notice of sale will follow.

The Service submitted comments on the draft Proposed Action and Alternatives Memorandum for proposed lease Sales #147 (Central Gulf of Mexico) and #150 (Western Gulf of Mexico). A corrected list of sensitive species of concern was provided to the MMS. The Service concurred with the scheduling options, configuration and timing options, and mitigation measures proposed by the MMS.

Distribution of Expenditures (in $000)

	Actual FY 92	Projected FY 93
Marine Mammal Protection Act		
Research and Development		
Alaskan sea otter[1]	$ 320	$ 325
Walrus	220	200
Polar bear	910	850
Total Research and Development	$ 1,450	$ 1,375
Management		
Permit activities	$ 30	$ 35
Law enforcement activities	1,100	899
Other management activities	1,052	1,349
Total Management	$ 2,182	$ 2,283
Grand Total	$ 3,632	$ 3,658
Endangered Species Act		
Section 6 (Grants-to-States)		
California—sea otter	$ 0	$ 0
Florida—manatee	70	0
Total Section 6	$ 70	$ 0
Section 15 (Research and Development)		
Endangered/threatened otters	$ 605	$ 498
Manatee	673	670
Total Section 15 Research	$ 1,278	$ 1,168
Section 15 (Management)		
Endangered/threatened otters	$ 366	$ 360
Manatee	145	329
Hawaiian monk seal[2]	121	62
Total Section 15 Management	$ 632	$ 751
Grand Total	$ 1,910	$ 1,919

[1] Total does not include $805 in FY 1992 for damage assessments related to the *Exxon Valdez* oil spill.

[2] Although the National Marine Fisheries Service has primary responsibility for Hawaiian monk seals, the species utilizes the Hawaiian Islands and Johnston Atoll National Wildlife Refuges. Funds reported are spent for monk seal activities on Refuge lands under authority of the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee).

Research and Development

The Service conducted research under the Act during FY 1992 at several Centers and Field Stations. The Alaska Fish and Wildlife Research Center is responsible for polar bear, walrus, and northern (i.e., Alaska) sea otter research. The National Ecology Research Center in Fort Collins, Colorado, is responsible for all other marine mammal research, including the southern sea otter, manatee, and other depleted species. The Cooperative Fish and Wildlife Research Units Center conducts additional research to support the needs of the Service Regions, and other Service Research Centers. For each project active during FY 1992, the project title and summary, followed by highlights of FY 1992 accomplishments are given below by species. Previous results and accomplishments can be found in earlier publications.

1. Polar bear

A. Project Title and Summary:

Distribution, timing, and importance of polar bear denning in northern Alaska.

Female polar bears captured in October and November or March and April are fitted with radio collars and subsequently followed to their maternity dens. Activities of instrumented bears are monitored during den entrance, occupancy, and emergence periods.

1992 Activities/Accomplishments:

- The final field season—radiotelemetry searches for dens in coastal habitats—was conducted in the spring of 1992; this work unit was completed in September 1992. A comprehensive internal report, "Temporal and Geographic Variation of Maternity Denning Among Polar Bears of Beaufort Sea," has been completed. Three manuscripts have been submitted to refereed journals.
- Of bears denning on the mainland Beaufort Sea coast, 80 percent denned in far northeastern Alaska and adjacent Canada. Forty-three percent were on the Arctic National Wildlife Refuge, and 31 percent were located within the ANILCA § 1002 area. Bears were faithful to substrate (ice or land) on which they denned, but not to specific geographic locations.

B. Project Title and Summary:

Population definition and estimation of survival, recruitment, and numbers of polar bears in the Beaufort Sea.

During March, April, and May, polar bears captured in northern Alaska are permanently marked. Critical population parameters are assessed by analysis of mark/recapture data, catch/effort analysis, and mathematical simulations. Selected females are fitted with radio or satellite transmitters.

1992 Activities/Accomplishments:

- Recapture rates suggest that a large portion of the Beaufort Sea polar bear population is now marked. The population is thought to be higher in 1992 than at any time in the preceding 30 years. There is some evidence of population dynamics effects of increased density (e.g. more old animals, fewer young animals, and lower reproductive rates).
- An offshoot of genetics work has uncovered a powerful new management tool. Sex can be determined from minute tissue samples of animals that have been harvested or of museum specimens.
- Activity areas of female polar bears range in size from 25,000 to 250,000 square kilometers on an annual basis, and are highly variable among years.

C. Project Title and Summary:

Relationships between polar bears, sea ice movement and condition, and pagophilic seals.

High altitude aircraft and satellite imagery are used along with drifting buoy data to classify ice movements and conditions. Foraging methods used by polar bear are determined by radio tracking and snow tracking. Prey species, frequency of kills, habitat types, and hunting methods are recorded.

1992 Activities/Accomplishments:

- The largest sample of satellite radio collars was deployed over the greatest area ever in the Beaufort Sea in 1992. Efforts continued in 1992 to obtain high resolution ice data, a factor that has stifled progress in this work unit. An additional source of failure to meet objectives is the high cost of studying the distribution and availability of ringed seals, the main food of polar bears. The final season of field study is scheduled for spring of 1993.

D. Project Title and Summary:

Population definition and estimation of survival, recruitment, and number of polar bears in northwestern and western Alaska.

During March and April, Alaskan polar bears captured in the western portions of Arctic Alaska are permanently marked. Assessments of critical population parameters are achieved through continued analyses of mark/recapture data, catch/effort data, and mathematical simulations.

1992 Activities/Accomplishments:

- The eastern boundary between the Chukchi and Beaufort Sea populations has been defined; interchange occurs but can be quantified based upon movement data. The western boundary in the East Siberian Sea is undefined. Work on this is ongoing; this is crucial to the census effort.
- Planning for a joint cruise with Soviet scientists to census polar bears continues to face delays; the census is now scheduled for the fall of 1994. Development of a census methodology for the joint cruise is ongoing with Russian cooperators. Technique assessment is slated for late summer 1993.

E. Project Title and Summary:

Inter-relationships between sea ice habitats and polar bear distributions in the Bering and Chukchi Seas in northwestern Alaska.

Remotely sensed data on ice types, distributions, and movements are being analyzed with reference to concurrent locational data from satellite instrumented polar bears in the Bering and Chukchi Seas. Location of denning activity is also being recorded. All locational data is routinely integrated into geographic information systems (GIS).

1992 Activities/Accomplishments:

- The project has experienced delays due to computer access problems and problems in acquiring the necessary ground truth data on remotely-sensed ice data, making it difficult to correlate ice data with known locations of polar bears.
- Results from a pilot project for evaluating the applicability of Soviet radar imagery to the study of polar bear habitat use patterns indicate limited potential for those data.

2. Alaska sea otter

A. Project Title and Summary:

Biological information necessary to establish a zonal management program for sea otters in Alaska.

In response to real and perceived conflicts between sea otters and commercial and recreational fisheries over shellfish resources, the implementation of a zonal management program for sea otters has been suggested. Movements, mortality, and reproduction of sea otters at Kodiak Island and Prince William Sound are monitored using instrumented sea otters. Genetic and enzyme variation within the sea otter population is determined through the analysis of tissue samples collected from captured sea otters.

1992 Activities/Accomplishments:

- A new study was initiated in 1992 to describe and compare reproductive success of female otters at Amchitka, Alaska. This will provide comparative data on reproduction from populations that vary in relation to food and space resources.
- Sea otters near Kodiak Island, Alaska, may reach sexual maturity as young as age two; 60 percent of females are mature by age three. Additional information has been gathered regarding age specific reproductive rates and pup survival rates.

B. Project Title and Summary:

Interactions between sea otters and fisheries in Alaska.

Research is being conducted to assess: (1) sea otter diets with an emphasis on the importance of commercial species of shellfish; (2) the impacts of sea otter foraging behavior and activity on sub-tidal benthic communities, status of sea otter populations, and assessment of habitat; and (3) the recovery of the Prince William Sound sea otter population.

1992 Activities/Accomplishments:

- A trial of the recently developed standardized sea otter survey methods was conducted in Prince William Sound in 1992.
- Engineering difficulties delayed the delivery of an integrated time depth recorder/radio transmitter package capable of remote downloading of data, and the contractor has requested an additional year for development and testing.

C. Project Title and Summary:

Magnitude, extent, and duration of impacts from the *Exxon Valdez* oil spill on sea otter populations.

The long term effects of the *Exxon Valdez* oil spill on sea otters, including effects on individuals from chronic exposure to petroleum contaminants and effects on populations of ecosystem alterations, are being assessed. Aerial surveys of sea otter occurrence, carcasses, and telemetry data on movements and behavior are studied in order to compare populations in oiled and unoiled habitats; current populations are compared with the long term data base collected on sea otters in the area.

1992 Activities/Accomplishments:

- A new study was initiated to gain additional data on survival of juvenile sea otters. Sea otters in eastern and western Prince William Sound were captured and radio transmitters were implanted in 80 juvenile otters.
- A synthesis of estimates of immediate losses of sea otters following the spill indicates that 3,500-5,000 otters died acutely.
- Studies suggest that population damage is persisting and recovery is delayed. Abnormal mortality patterns (a high proportion of prime age carcasses from oiled areas) continue. Otters that have been radio tracked following their release from rehabilitation centers in 1989 have had decreased survival and reproduction relative to non-treated otters in eastern Prince William Sound (non-oiled areas).

D. Project Title and Summary:

Use of DNA to define populations of birds, mammals and fish of Alaska.

DNA analysis of animal populations is evaluated to assess its usefulness in determining genetic relationships among, or distinctions between, animal populations. Animal movement patterns are compared with genetic patterns to develop information about current and past levels of gene flow and differentiation of subpopulations. Studies are conducted on sea otters, polar bears, and walruses.

1992 Activities/Accomplishments:

- Evaluation of genetic sexing in polar bears and genetic variation in the Pacific walrus are completed. Collection and archiving of tissues of polar bears, walruses, and sea otters continue.
- Pacific and Atlantic populations of walrus are distinct, but there is no apparent structure within the Pacific samples. Mitochondrial DNA analyses show sea otters from different geographical areas to be separate gene pools.

3. Pacific walrus

A. Project Title and Summary:

Techniques to monitor movements for population assessment, age/sex composition, behavior, and estimates of populations of walrus.

Distribution and haulout behavior of Pacific walruses are determined using telemetry data on instrumented walruses. This information is necessary to quantify biases in the joint US-Russian walrus survey results.

1992 Activities/Accomplishments:

- Studies of chemical immobilization of adult walruses with four different drugs were conducted; of the four drugs, etorphine delivered by carbon dioxide powered dart guns was most effective.
- It has been determined that locational and saltwater tolerant sensors must be developed before satellite-linked radio transmitters can accurately determine the location of walrus on or near haulout areas.
- Meteorological and physical variables that influence walrus haulout and ice-resting behavior have been identified.

4. Manatee and dugong

A. Project Title and Summary:

Develop a generalized microcomputer capability for field offices to address large-scale resource assessment problems.

This activity is part of a larger effort to develop a prototype decision support tool that is compatible with existing PC standards currently at Service field offices. The prototype will be evaluated in an operational setting on several large-scale resource problems, such as support of Section 7 consultations on the Florida manatee, and to track location, status, and success of mitigation activities.

1992 Activities/Accomplishments:

- The QuickMAP "Desktop Mapping System" is used for manatee locational data display, primarily at the Gainesville, Florida, field station. Work

within this unit in FY 93 which involves manatees will be switched to upgrading video technology and software to improve the centralized manatee photo-identification catalog.

B. Project Title and Summary:

Ecological studies of manatees and dugongs.

Estimates of manatee population size and status are obtained using telemetry data from instrumented manatees. The potential of selected surveys to serve as indices of population density and movement are being evaluated, and the status of the entire Order Sirenia is being assessed.

1992 Activities/Accomplishments:

- A comprehensive Technical Workshop on Manatee Population Biology was organized and held February 4-6, 1992, in collaboration with the Florida Cooperative Fish and Wildlife Unit and the Florida Department of Natural Resources.
- Radio tracking studies of manatee movements, migrations, and habitat use in eastern Florida and Puerto Rico provided new information on high-use regions, travel routes, reproductive events, and mortality.
- For the first time, manatee survival rates were estimated for the Crystal River, Blue Spring, and Atlantic coast of Florida, based on resightings of photo-identified manatees.

5. Southern sea otter

A. Project Title and Summary:

Ecological studies of sea otters and other marine mammals.

Fall and spring range-wide censuses of sea otters in California and Washington, and monthly beach walks and censuses in selected areas are conducted. Analysis of these data is used to determine the social structure and patterns of dispersion of sea otters in central California, describe the dispersal characteristics of sea otters in central California, and determine trends in the size, population growth rate, and distribution of sea otter populations in California and Washington.

1992 Activities/Accomplishments:

- Analysis of data from tagged female otters and their pups indicate that the depressed rate of growth of the California sea otter population is caused by elevated mortality rather than decreased fecundity and a substantial portion of this elevated mortality occurs prior to weaning.
- A major new study was initiated in 1992 on the comparative demography and behavior of sea otter populations in California, Washington, and Alaska in order to improve understanding of the very low growth rate in the California population.

B. Project Title and Summary:

Interactions between sea otters and nearshore ecological communities.

Monthly, seasonal, and annual variation in surface kelp canopies and demographic characteristics of red abalone and other biotic components of sea otter habitats are analyzed and compared with areas not currently supporting sea otters in order to determine the preferred prey species and activity patterns of sea otters, and to clarify the substantial interactions that take place between sea otters and invertebrates and plants in their communities.

1992 Activities/Accomplishments:

- Studies were expanded to include a "withering syndrome" which has caused mass mortalities and local extinctions among black abalone populations.
- The analysis of surveys in kelp habitats support the general conclusion that plants and their herbivores have evolved to coexist in the southern hemisphere, whereas in the northern hemisphere, sea otter predation is required to maintain kelp forests in many locations.

C. Project Title and Summary:

Translocation of sea otters.

Capture, transport, and release of sea otters to San Nicolas Island from Morro Bay, California, was undertaken in order to: (1) establish a viable colony of sea otters, (2) determine changes in distribution and abundance of sea otters in the parent and translocated populations, (3) determine changes in behavior and population parameters of sea otters at San Nicolas Island as the population grows and reaches equilibrium density, and (4) establish criteria for determining the success of sea otter translocations as a management tool. In mid-July 1991, however, plans to reintroduce additional sea otters to San Nicolas Island were terminated, and research activities were reduced. Research is limited to monitoring the abundance, distribution, and reproductive success of the small colony remaining at San Nicolas Island.

1992 Activities/Accomplishments:

- As of August 1992, there were about 10 independent sea otters at San Nicolas Island. Although perhaps indicative of a small decline during this past year, the population has remained at about this level since 1989. Since the beginning of translocation in 1987, 140 sea otters have been released at the island. Eleven are known dead and 35 have returned to the mainland; the fate of the remaining animals is unknown. Twenty-two pups have been born at the island and at least 7 have been successfully weaned.

Enforcement

The Service's Division of Law Enforcement investigates known, alleged, or potential violations of the Act involving illegal take or importation of marine mammals or their products for which the Service is responsible. In addition, it assists the National Marine Fisheries Service (NMFS) by making apprehensions and conducting investigations in cases involving endangered or threatened species under that agency's jurisdiction. Results of these efforts are referred to the NMFS for its consideration and appropriate action. However, under a NMFS/Service Memorandum of Understanding, the Service retains authority over those investigations that involve endangered or threatened species under the jurisdiction of the Department of the Interior. Violations are referred to the Office of the Solicitor for civil action or the Department of Justice for criminal enforcement action.

In 1992, forensic scientists from the Clark R. Bavin National Fish and Wildlife Forensics Laboratory (Laboratory) completed their third summer of surveying walrus carcasses on beaches of the northern Bering Strait and southern Chukchi Sea in Alaska. The 1991 survey showed that approximately 80 percent of the carcasses examined had the head removed prior to the carcass washing up on the beach. In 1992, this number dropped to approximately 32 percent.

Recent advances in DNA technology at the Laboratory have dramatically enhanced the ability to distinguish among wildlife species and to resolve important questions related to the genetic structure of populations and biogeographical variations. In the past year, Laboratory scientists examined DNA fingerprint variation in northern sea otters from Prince William Sound, Alaska, and southern sea otters from central California; and Atlantic walrus from Greenland, and Pacific walrus from Nunivak Island, Alaska. Individual animals differed significantly from each other. Based on this work, the Laboratory is now able to identify individual animals. For example, the likelihood that two unrelated walruses would have identical DNA fingerprint profiles is estimated to be one in about four million. Data such as these comprise the basis for testing for reproductive isolation of threatened subspecies, and gene flow within managed populations. Moreover, this information is essential for typing evidence samples in incidents of game poaching and animal parts smuggling.

Service Special Agents continued to actively investigate reports of illegal taking of southern sea otters along the California coast. Two incidents involving the drowning of southern sea otters in fishing nets were referred to the Regional Solicitor for civil penalty proceedings in 1992. In each of these incidents, one or more sea lions were also drowned. A notice of violation proposing a civil penalty of $5,000 has been issued by the Regional Solicitor to one of the fishermen.

To follow-up on an incident that occurred in August of 1990 in the Monterey Bay National Marine Sanctuary, California, the perpetrator was assessed a $500 civil penalty for injuring a sea otter with a jet ski. The jet skier was observed chasing sea otters through a kelp bed. The craft then turned and aimed at dazed sea otters as they resurfaced. A National Geographic photographer, working nearby, took pictures of the otter attack. The photographs later led to the identification of the suspect.

Service Wildlife Inspectors increased their inspection efforts throughout the Pacific Region in 1992 to detect the illegal importation of marine mammals

Biologists attaching transmitter to a peduncle belt on a West Indian manatee. U.S. Fish and Wildlife Service Sirenia Project photo.

and marine mammal products entering the country. Emphasis was placed on the designated wildlife ports of Seattle, Portland, San Francisco, Los Angeles, and Honolulu. Inspection efforts were also increased at ports of entry on the Washington/Canada border, the California/Mexico border, and at Agana, Guam. There were 53 separate incidents involving the illegal importation of marine mammals reported at these ports during 1992. Seizures varied from small sperm whale ivory carvings to a full-sized mounted polar bear.

"Operation Whiteout," an 18-month undercover operation in Alaska, ended in February 1992 when Federal and State agents arrested and/or charged 25 people for killing walrus. During the operation, it was discovered that the tusks and heads were being traded for drugs and/or money. All 25 subjects have either pled guilty, or been found guilty by the courts. Prosecutions have resulted in $21,270 in fines, $40,529 in restitution to the Service, and $2,550 in special assessments. Incarcerations totalled 11.75 prison years, 36 years of supervised release, and 18.5 years probation. It is expected that additional subjects will be charged in this case.

Guests from a fishing lodge in Alaska were enjoying a sight-seeing flight over the Walrus Islands State Sanctuary, when the pilot "buzzed" a resting herd of walrus, causing them to stampede. The pilot of the plane pled guilty when the lodge was charged with harassing marine mammals.

Annual meetings are being conducted between Alaskan Natives and Service employees to discuss wasteful walrus hunting practices. Also, patrols are being conducted by Service Agents along the Bering Sea Coast, St. Lawrence and Little Diomede Islands, and Barrow, Alaska.

Permits and Registrations

The Act prohibits the take or import of marine mammals and marine mammal products although exceptions may be made under permits for scientific research, public display, or to enhance the survival or recovery of a species or stock. Registered agent/tannery permits may be issued to authorize under certain conditions the buying or selling of raw marine mammal parts or products by non-Alaska Natives (i.e., persons other than Alaskan Indians, Eskimos, or Aleuts) or to enable marine mammal hides to be tanned to facilitate trade of their products among Alaskan Natives.

Section 104 of the Act authorizes the Director of the Service, acting on behalf of the Secretary of the Interior, to issue permits for the activities identified above. Applicable provisions are found in Title 50 of the Code of Federal Regulations—50 CFR 18.23(d) for registered agent/tannery permits and 50 CFR 18.31 for scientific research or public display permits. Regulations will be developed for issuance of permits for enhancement of the survival or recovery of a species or stock.

During 1992 two new permits were issued for scientific research and four were renewed and/or amended. Three permits were issued for public display. Five parties either registered or renewed their registration as agents and/or tanneries.

The following is a brief description of permit actions taken in 1992.

Scientific Research Permits

1. PRT-691972 was renewed effective 12/24/92 through 12/31/94 for the Carle Foundation Hospital, Urbana, Illinois, authorizing import of polar bear blood, urine, and adipose tissue samples for hibernation research. Upon completion and approval of their facilities they are authorized to import two polar bears from Canada for hibernation research.
2. PRT-763537 was issued effective 05/15/92 through 06/01/94 and amended on 10/27/92 for Donald B. Siniff, Minneapolis, Minnesota, authorizing the take of 300 Alaska sea otters for a wide range study of behavioral and life history characteristics in the Amchitka Island sea otter population which is known to be at or near carrying capacity. Authorized activities include capture, sedation, collection of blood and tissue samples, flipper tagging, subcutaneously implant with a transponder chip, and surgical implant of a radio transmitter. Due to the death of two sea otters, a condition of the permit was amended to require that, in areas of high kelp density, capture nets must be monitored continuously, where previously nets were required to be monitored every 2 to 6 hours.
3. PRT-766146 was issued effective 10/7/92 through 10/31/97 to the Texas A&M University, Galveston, Texas, authorizing the take of captive West Indian manatees held at facilities in Florida to obtain data pertaining to reproduction energetics, growth, and thermoregulation. Authorized activities include measurements of average daily metabolic rate using doubly-labeled

water methodology, body fat stores using ultrasound, bioelectrical impedance analysis and deuterium dilution, and assimilation efficiency (fecal collection or manganese as a marker); collection of milk samples; and determination of water flux.

4. PRT-690715 was renewed effective 03/05/92 through 8/31/94 for the Fish and Wildlife Service, Alaska Office-Fish & Wildlife Research, Anchorage, Alaska, authorizing the following take activities on up to 5 walrus: chemical immobilization, tagging (double tagging on flippers), radio-tagging with satellite-linked transmitters, administration of oxytetracycline HCL (for protection from secondary pneumonia) and marking teeth for future identification. The permit also authorizes the following activities with an unspecified number of walruses: (1) collection of biological samples from walruses found dead or that die during permitted activities; (2) import of biological samples from Greenland, Canada, Norway, and the Soviet Union; and (3) recapture of tagged walruses for replacement of malfunctioning radio-transmitters. In addition, as part of the radio-tagging process, an unspecified number of animals are allowed to be inadvertently harassed during subsequent radio-tracking flights. The purpose of this research is to aid in the understanding of population dynamics of the species.
5. PRT-740507 was renewed and amended effective 04/29/92 through 04/30/94 for the Fish and Wildlife Service, Alaska Office-Fish and Wildlife Research, Anchorage, Alaska, authorizing the following take activities on up to 400 Alaska sea otters: (1) capture/recapture, transport, temporary holding, drugging, flipper tagging, collection of blood samples, injection with subcutaneous transponder chip, collection of urine samples, biopsy of oral and vaginal lesions, and surgical implant of radio transmitters in up to 111 of the 400 sea otter takes; (2) reimport of parts of deceased otters exposed to oil during the *Exxon Valdez* oil spill from Marine World, Japan, and Vancouver Aquarium, Canada; (3) Import of tissue samples taken from deceased otters in Canada and the USSR. The purpose of this research is to conduct studies related to the *Exxon Valdez* oil spill.
6. PRT-769567 was issued jointly by the Fish and Wildlife Service and the NMFS on October 1, 1992, to the NMFS, National Marine Laboratory, Northwest and Alaska Fisheries Science Center, Seattle, Washington, authorizing the collection and import of an unspecified number of specimen materials taken from dead individuals of all cetacean species, all pinniped species, and sea otters worldwide.

Public Display Permits

1. PRT-762093 was issued 03/03/92 to the Oregon Coast Aquarium, Newport, Oregon, authorizing the import of one male and two female Alaska sea otters from the Vancouver Public Aquarium, Canada, for the purpose of public display. These otters were beached and stranded due to the 1989 *Exxon Valdez* oil spill. Due to incompatibility problems with the male otter, only one of the two females was imported and the Aquarium subsequently applied for the import of a different female (permit information noted under 2. below).
2. PRT-767290 was issued 04/13/92 to the Oregon Coast Aquarium, Newport, Oregon, authorizing the import of one female Alaska sea otter from the Vancouver Public Aquarium, Canada, for the purpose of public display. This otter was beached and stranded due to the 1989 *Exxon Valdez* oil spill.
3. PRT-763288 was issued 03/30/92 to the Seattle Aquarium, Seattle, Washington, authorizing the import of one male Alaska sea otter, born in captivity at the Vancouver Public Aquarium, Canada, for the purpose of public display.

Registered Agent/Tannery Permits

1. PRT-766363, State of Alaska, Department of Corrections, Fairbanks, Alaska, was registered as an agent on 10/02/92.
2. PRT-764052, D. Cohn Fur Processors, Inc., Greenville, South Carolina, was registered as an agent/tannery on 01/24/92.
3. PRT-722022 renewed the registration of Mike Keim, Weld, Maine, as an agent on 04/10/92.
4. PRT-681597 renewed the registration of George L. Kritchen, Cordova, Alaska, as an agent on 08/05/92.
5. PRT-770609, Gary V. Wilgus, Marysville, Washington, was registered as an agent on 07/31/92.

Hawaiian monk seals sparring. U.S. Fish and Wildlife Service photo by Mark Rauzon.

International Activities

US-Russia Environmental Agreement: Marine Mammal Project

The Service, in partnership with the NMFS and the Russian Academy of Sciences, led a comprehensive program of laboratory and field research in 1992. Four American scientists and nine Russian scientists took part in seven exchanges.

A Russian researcher from Kamchatka visited Anchorage and Seattle for one month in the winter to study sea otter tooth structure and wear patterns, and to conduct a comparative analysis of large-scale mortality events.

Two Russians visited Seattle for a week in the spring to participate in a NMFS-sponsored workshop on fur seals.

Three Russians visited Fairbanks and Anchorage for six weeks during April and May to prepare reports on joint 1990 aerial and 1991 shipboard walrus surveys in the Bering and Chukchi Seas.

Two Americans travelled to the Commander Islands, Russia, in June to study the relation of benthic communities to sea otter abundance.

During June and July, two Russians visited Alaska for three weeks to conduct joint research on Steller sea lions.

Larga seals and their relationship to Pacific salmon were studied by two Americans during a visit to southwestern Kamchatka for four weeks during July and August.

Harbor seal abundance and foraging was the topic of a visit by a Russian research from Kamchatka to Alaska for three weeks in August and September.

Status Reports

Polar Bear

Harvest Summary

The Service continued to collect information from polar bears harvested by Native hunters. The Alaska kill during the July 1991/June 1992 period of 62 bears (including reported takes plus others killed but not reported) was comprised of 38 males, 22 females, and 2 bears for which the sex was unknown [Table 1]. The kill was 49 percent below the 12-year average annual take of 121 bears and the lowest recorded since the Service began the polar bear harvest monitoring program in 1980.

The harvest, which occurred in all months, peaked over the two month period of April and May 1992 when a total of 21 of the 60 (or 35 percent) bears for which the month of take was known were killed [Table 2]. The ratio of reported male to female bears was 63:37, which approximates the long-term harvest sex ratio. Ages based on tooth analysis are not yet available.

Table 1. Village Polar Bear Harvest, Alaska: July 1, 1991, to June 30, 1992.

Village	Male	Female	Unknown	Total
Kaktovik*	-	-	1	1
Nuiqsut*	-	2	-	2
Barrow*	15	8	-	23
Atqasuk*	-	-	-	-
Wainwright*	2	3	-	5
Point Lay	1	-	-	-
Point Hope	4	2	1	7
Kivalina	2	-	-	2
Shishmaref	3	-	-	3
Wales	2	-	-	2
Diomede	5	1	-	6
Savoonga	2	4	-	6
Gambell	3	2	-	5
Totals	38	22	2	62
Percent of Total	(61.3)	(35.5)	(3.2)	(100)

* Denotes villages party to the North Slope Borough/Inuvialuit Game Council (NSB/IGC) Polar Bear Management Agreement.

Table 2. Monthly Polar Bear Harvest, Alaska: July 1991 to June 1992.

	Month												
Village	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Kaktovik*	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuiqsut*	-	-	-	2	-	-	-	-	-	-	-	-	2
Barrow*	-	2	1	2	6	2	1	1	1	1	2	3	22
Atqasuk*	-	-	-	-	-	-	-	-	-	-	-	-	-
Wainwright*	-	-	-	-	1	-	-	-	-	3	1	-	5
Point Lay	-	-	-	-	-	-	-	-	-	-	-	-	-
Point Hope	-	-	-	-	-	-	1	1	1	1	3	-	7
Kivalina	-	-	-	-	-	1	-	-	-	-	1	-	2
Shishmaref	-	-	-	-	-	-	2	-	-	1	-	-	3
Wales	-	-	-	-	-	-	-	-	1	-	1	-	2
Diomede	-	-	-	-	-	-	-	-	2	4	-	-	6
Savoonga	-	-	-	-	-	-	2	2	-	2	-	-	6
Gambell	1	-	-	-	-	1	-	2	-	1	-	-	5
Totals	1	2	1	4	7	4	6	6	5	13	8	3	60
Percent	(2)	(3)	(2)	(7)	(11)	(7)	(10)	(10)	(8)	(22)	(13)	(5)	(100)

* Denotes villages party to the NSB/IGC management agreement. Month of kill not recorded for 2 animals.

Polar Bear Management Agreement, Beaufort Sea

The 1991/92 season marked the fourth year of the Polar Bear Management Agreement (Agreement) for the Southern Beaufort Sea between the Inuvialuit Game Council (IGC), Northwest Territories, Canada, and the North Slope Borough (NSB), Alaska. During the reporting period, 31 polar bears were harvested by residents of: Kaktovik (1), Nuiqsut (2), Barrow (23), and Wainwright (5) [Table 1]. The number of bears harvested by Alaskan villages party to the Agreement was within the NSB's sustainable yield harvest allocation of 38 animals. Likewise, Canadian hunters harvested fewer bears (32) than their IGC allocation of 38 animals. The ratio of reported male to female bears was 57:43. Sex was unknown for 1 bear.

In Barrow, as many as 40 bears were attracted by the remains from butchered bowhead whales during the fall and early winter of 1992. The aggregation of bears presented a significant threat to public safety. The North Slope Borough, the Alaska Department of Fish and Game (ADF&G), and the Service worked together to minimize the public risk and to keep bears and humans separated. The North Slope Borough requested Native restraint from killing bears in order to maintain harvests within the guidelines prescribed in the Agreement. Hunter compliance with this request was commendable.

A 5-year review of the Agreement will be conducted in 1993. A revised estimate of population size for the Beaufort Sea is also expected in 1993. Quotas and allocations will then be re-evaluated.

Management Planning

A draft Polar Bear Management Plan for Alaska was completed in December 1992. The draft plan was completed with the assistance of the Marine Mammal Commission and the cooperation of a variety of other individuals and organizations. The management plan was developed to guide future research and management activities on polar bears in Alaska. Public comments on the draft plan were solicited. (Note: A final plan entitled, "Conservation Plan for the Polar Bear in Alaska," was completed in June 1994.)

International Activities

In October 1992 the Service's Alaska Region signed a protocol of intent with the Russian Ministry of Ecology and Natural Resources to develop a polar bear management agreement. The protocol is the first step in the development of a management agreement for the conservation and regulated use of the shared population of polar bears in the Bering and Chukchi Seas. The protocol is motivated by the desire of Russia to re-open polar bear hunting in the Chukotka region (banned in 1956), and the need

for a unified management approach for the shared population. Meetings to discuss the framework for a bilateral management agreement were scheduled.

Sound biological information on population size and trend, and sustainable harvest levels will be the foundation for an agreement. Indigenous hunters of both countries will be involved in developing the agreement. Ultimate success will rely upon the level of acceptance and compliance by local hunters with the terms of the agreement.

The protocol calls for the exchange of information on population size and sustainable yield; joint field studies; cooperation with international conservation organizations and Native organizations; ecological bio-monitoring programs using standardized methods; and the exchange of scientific information.

Service research and management biologists continued to participate with Russian biologists in the cooperative study of polar bear of the Chukchi and Bering Seas area. The determination of population bounds through satellite telemetry is necessary prior to the joint census of the Chukchi Sea planned for fall 1994. A test of potential census methodologies was planned.

Meetings

The Service participated in the Canadian Federal Provincial Technical Committee for Polar Bear Research and Management in Edmonton, Alberta, in February 1992. This annual meeting promotes the exchange of information on research and management activities. The International Conference on Bear Research and Management, Missoula, Montana, was attended following the Technical Committee meeting.

The Service provided technical assistance to the North Slope Borough's Joint Commissioners on the Management Agreement for Polar Bears of the Southern Beaufort Sea at the annual meeting held in November 1992, in Anchorage, Alaska. Service representatives heard local concerns and answered questions at the Borough's quarterly Fish and Game Management Committee meetings.

The Service, Federal and State agency representatives, and private contractors met with LGL Consultants to review the Polar Bear and Human Safety and Interaction Manual being developed through a MMS contract. The manual will guide industry activities in polar bear habitat and is designed to enhance the safety of workers while minimizing the threat of human activities to polar bears. The manual is scheduled for completion in 1993.

A number of informational slide shows on polar bear management activities were presented to school students, residents of rural villages, and personnel from other agencies including the National Park Service and the MMS.

Public Display

A pair of polar bear cubs was orphaned in spring 1992. One cub died from a fall and blow to the head while in interim care at the Anchorage Zoo prior to permanent placement. After extensive effort, the remaining cub was placed in the Moralia Zoo in Mexico, which has an existing polar bear exhibit and a history of polar bear husbandry. Apparently many public display facilities in the United States have reached their capacity to house and display polar bears.

Sea Otter-Alaska

Management of sea otters in Alaska involved five primary issues in 1992:

(1) resolution of the legal case in the Ninth Circuit Court of Appeals concerning the harvesting of sea otters by Alaska Natives for creating and selling handicrafts and clothing to non-Natives; (2) harvest of sea otters by

Alaska Natives; (3) a survey of sea otters in the Aleutian Islands; (4) completion of a draft management plan for sea otters in Alaska; and (5) the *Exxon Valdez* oil spill Natural Resources Damage Assessment.

Ninth Circuit Court of Appeals Decision in Katelnikoff et al. v. United States Department of Interior et al.

Following Alaska District Court Judge Russell Holland's July 1991 decision holding that Alaskan Natives may create and sell handicrafts and clothing made from sea otters, the Department of Justice decided not to appeal the decision. However, a consortium of environmental organizations (Friends of The Sea Otter, et al.) filed an appeal, and on August 18, 1992, the case was argued before the U.S. Court of Appeals, Ninth Circuit, in Anchorage, Alaska.

On December 28, 1992, the Court of Appeals issued a decision which stated that Friends of The Sea Otter, et al., had standing to appeal the case, but upheld the District Court's ruling on the merits of the case. That decision stated that Alaska Natives may create and sell authentic Native articles of

handicrafts and clothing and that the principal criteria used to assess authenticity of the article are the means used to create it, rather than what is created. Although it has acquiesced with this holding, the Service will continue to apply the "significantly altered" criterion and other requirements from its definition of "authentic native articles of handicrafts and clothing" that were not addressed in this case.

Harvest of Sea Otter By Alaska Natives

In 1992, 620 sea otters were reported and tagged, with several villages reporting substantial increases in numbers of otters killed compared with the past three years. The most likely cause for the increased harvest was increased awareness of the legality of hunting and using sea otters resulting from the ruling in the previously mentioned law suit. Sea otter hides are being used to make hats, gloves, slippers, blankets, and other Native arts and crafts. A few hunters are trading sea otter hides for walrus ivory, polar bear and seal skins, or other items that are used in making traditional Native crafts. Compliance with the Service's Marking, Tagging, and Reporting Program regulations appears to be good.

Sea Otter Survey in The Aleutian Islands

After unsuccessful attempts in the summers of 1990 and 1991, a survey of sea otters in the Aleutian Islands was successfully completed in April 1992. The survey was undertaken by three staff biologists of the Service's Anchorage, Alaska, Marine Mammals Management Office in a contracted DeHavilland Twin Otter. The survey was principally staged out of Dutch Harbor in the eastern Aleutian Islands and Adak in the central Aleutian Islands. Secondary staging areas included Amchitka Island and Shemya Island in the western Aleutians. Simultaneous air and ground counts of sea otters were conducted at Adak and Amchitka Islands to develop a correction factor for the aerial counts.

Data analysis and report writing are in progress and a population estimate for sea otters in the Aleutian Islands was in preparation as of the end of 1992.

Draft Sea Otter Management Plan

A draft Sea Otter Management Plan for Alaska was completed in December 1992. The draft plan was completed with the assistance of the Marine Mammal Commission and the cooperation of a variety of other individuals and organizations. The management plan was developed to guide future research and management activities on sea otters in Alaska. Public comments on the draft plan were solicited. (Note: A final plan entitled, "Conservation Plan for the Sea Otter in Alaska," was completed in June 1994.)

Exxon Valdez Oil Spill

No boat-based surveys of sea otters were conducted in Prince William Sound in 1992. A draft of the final Natural Resources Damage Assessment report for the boat-based sea otter surveys conducted in 1989, 1990, and 1991 was completed in fall 1992. In addition, data from those surveys were used to develop an estimate of sea otters killed as a result of the *Exxon Valdez* oil spill, and incorporated into a manuscript that was submitted to a journal for publication. A poster presentation, based on data from the boat surveys, was planned for presentation at the *Exxon Valdez* Oil Spill Symposium scheduled in Anchorage, Alaska, in February 1993.

Walrus

Habitat Issues

In 1989, the Service worked with the ADF&G, the Eskimo Walrus Commission, the North Pacific Fishery Management Council (NPFMC), and the NMFS to implement a two year, seasonal closure restricting yellow-fin sole fishing within 12 nautical miles of walrus haulout sites in northern Bristol Bay. This action was taken because compelling circumstantial evidence indicated that yellow-fin sole fishery operations were causing airborne and waterborne acoustic disturbance to walrus. These agencies were concerned that this disturbance was responsible for the significant decline (up to 60 percent) in the number of walrus reported hauling out at Round Island and The Twins (Walrus Islands State Game Sanctuary), and Cape Peirce (Togiak National Wildlife Refuge).

The need for fishery closures was reviewed by the NPFMC in 1991. After reviewing data collected during the two year period indicating the closure was having some positive effects on walrus utilization of these haulout sites, the NPFMC decided to extend the 12 nautical mile seasonal no-trawl buffer around the three haulout areas. While the NMFS renewed the regulations indefinitely, they were modified to permit vessel transit through a 3 nautical mile region within State coastal waters that extends into the northeastern section of the Round Island zone. The relationship between fishing effort, walrus numbers, and the effectiveness of the closures remains unclear, with such evaluation compli-

cated by vessel use of the transit zone and minimal detailed monitoring and behavioral data. The peak counts of hauled out walruses on Round Island were somewhat higher in 1990 and 1991 than in 1987-1988, but counts in 1992 were again low. Some vessels have violated the regulations and fished within the closed zone; as of December 1992, 10 cases had been prosecuted and penalties in excess of $800,000 and loss of fishing privileges had been levied.

Another issue concerning walrus habitat is a proposal for subsistence hunting of walrus on Round Island. In 1991, residents of the village of Togiak requested a permit from the Alaska Board of Game that would allow them access to Round Island during the month of October to harvest 10 male walruses. While walrus hunting by Alaskan Natives for subsistence and handicraft purposes is not limited if the population is not depleted and the harvest is non-wasteful, the State of Alaska has indirectly prevented hunting at Round Island by restricting access to the island since 1960 when it became part of the Walrus Islands State Game Sanctuary. The Togiak proposal was considered by the State Board of Game in November 1991, but no decision was reached. During 1992, a state appointed Task Force considered this issue and prepared recommendations on how hunting should be conducted on Round Island, if it were permitted. The Service participated on this Task Force. (Note: After further discussion and consideration, the Togiak request was denied by the State in 1993.)

Management Planning

A draft Walrus Management Plan for Alaska was completed in December 1992. The draft plan was completed with the assistance of the Marine Mammal Commission and the cooperation of a variety of other individuals and organizations. The management plan was developed to guide future research and management activities on walrus in Alaska. Public comments on the draft plan were solicited. (Note: A final plan entitled, "Conservation Plan for the Pacific Walrus in Alaska," was completed in June 1994.)

Harvest Monitoring and Harvest Summary

The Service has monitored the spring walrus harvest in six villages in the Bering Sea since 1979, with the exceptions of 1990 and 1991 due to a lack of resources. The Service initiated a revised and more cooperative program in the spring of 1992 in four villages. This program monitors the level of harvest and collects life history data (age, reproductive condition, contaminant, and other samples) to provide management agencies and hunting and conservation organizations with information about how the harvest might affect the walrus population. Because Service biologists are stationed in the villages during the harvest season, biological samples can be collected which cannot be collected through the Marking, Tagging, and Reporting Program. Key changes in the Harvest Monitoring Program included: (1) the hiring and training of Native people to work as Village Monitors participating with Service biologists in the collection of data; (2) requesting Native hunters to voluntarily provide samples (teeth, reproductive tracts) from all walrus harvested; and (3) a commitment by the Service to analyze samples and report results back to Native users prior to the next harvest season so that hunters can use the information to make informed decisions about the level and structure of the upcoming harvest. Hunter participation in the first year of the revised program was encouraging with teeth being provided from about 50 percent of the non-calf harvest and reproductive tracts being provided from about 20 percent of the females taken in the villages monitored [Table 3]. The program will be limited to four villages during the 1993 season.

The reported walrus harvest for 1992 was 1,527 animals. Hunter success varies greatly from village to village and between hunters. Many hunters reported poor weather and marginal ice conditions during the walrus migration making it difficult to hunt the animals. Often the villagers could hear or even see the walrus but because of poor ice conditions they were unable to get close to them.

Compliance with the Marking, Tagging, and Reporting Program regulations needs to be increased, despite an aggressive campaign by management and enforcement to bring compliance up. Village meetings, radio announcements, newspapers, bulletins, letters, and posters are used to encourage the hunters in all villages to have every kill recorded as required by Service regulations. The most common known reason for failure to report is the hunters carve their own harvested ivory; some hunters do not see the use of tagging their ivory if they are going to use it themselves. If the raw ivory is sold to the village store, other Natives, or registered agents, compliance is generally better.

Contaminants Monitoring

The Service continued a baseline study to monitor levels of heavy metals in tissues of Pacific walrus harvested in the spring by Alaskan Natives. Analyses

for metals and metalloids were conducted on 50 kidneys and 53 livers collected from 1986-1989 in Gambell, Savoonga, and Diomede. Mean cadmium concentrations were not significantly higher than previously reported for walrus although they continued to exceed levels thought by the Environmental Protection Agency to interfere with organ function in domestic animals. Mean mercury concentrations were not found to be significantly higher than reported previously. A report of these results will be available in early 1993.

An additional 220 liver and kidney samples were taken from Pacific walruses during the 1991 joint USA-Russia research cruise. Analyses for heavy metals and metalloids are in progress; these analyses, for the first time, include tests for methyl mercury. Relationships between contaminant levels and age, sex, and known female-calf pairs will be examined. Blubber samples from approximately 50 walrus also were collected during this cruise and will be analyzed for a suite of hydrocarbons later in 1993.

Incidental Small Takes

On December 17, 1991, BP Exploration (Alaska), Inc., for itself and on behalf of Amerada Hess Corporation, Amoco Production Company, ARCO Alaska, Inc., CGG American Service, Inc., Conoco Inc., Digicon Geophysical Corp., Exxon Corporation, GECO Geophysical Co., Halliburton Geophysical Services, Inc., Mobil Oil Corporation, Northern Geophysical of America, Texaco Inc., Unocal Corporation, and Western Geophysical Company, petitioned the Service for the promulgation of regulations pursuant to section 101(a)(5) of the Act. The petition sought regulations that would allow incidental, but not intentional, take of small numbers of: (1) Pacific walrus and polar bear in the course of oil and gas exploration activities during the open-water season in State waters and on the OCS in the Beaufort Sea adjacent to the coast of Alaska, (2) polar bear in the course of oil and gas exploration activities in arctic Alaska (onshore and offshore) during the ice-covered period of the year, and (3) polar bear and walrus in the course of oil and gas development and production activities and associated vessel operations in arctic Alaska on a year-round basis.

The Service reviewed the petition and prepared a draft environmental assessment in conjunction with the proposed rule. The three part petition was combined into one action which proposed regulations that would authorize, for the next 5 years, the incidental, unintentional take, of small numbers of polar bear and walrus during oil and gas industry exploration, development, and production activities year-round in the Beaufort Sea and adjacent northern coast of Alaska. The coast of the Arctic National Wildlife Refuge was excluded from the petition and regulations. Following an Environmental Assessment, the Service concluded that the projected takings would have a negligible impact on the species or stocks and would not have an unmitigable adverse impact on the availability of such species or stocks for subsistence uses.

On December 30, 1992, the Service published in the *Federal Register* (57 FR 62283) a proposed rule, notice of public meetings, and request for comments on the BP Exploration (Alaska) Inc. petition. Public meetings were scheduled at four Alaska locations: Anchorage, Barrow, Nuiqsut, and Kaktovik. (Note: A final rule was published in the *Federal Register* on November 16, 1993, at 58 FR 60402.)

In 1992, no Letters of Authorization were requested or issued under the Service's Chukchi Sea incidental, small take regulations that were implemented on June 14, 1991, (56 FR 27443) for the incidental take of small numbers of walrus and polar bear during open water exploration for oil and gas in the Chukchi Sea adjacent to the coast of Alaska. The regulations remain in effect through June 14, 1996.

Marking, Tagging, and Reporting Program

The Marking, Tagging, and Reporting Program (MTRP) currently has 103 taggers and 45 alternates located in 84 villages throughout coastal Alaska. Most are local Native residents who are hired and trained to tag polar bear and sea otter hides and skulls, and walrus tusks in the villages where the taggers live. Numbered, color coded, locking tags are placed on all bear and otter skulls and skins presented for tagging. A premolar tooth is extracted for aging purposes from each skull. A lead headed wire tag is permanently attached through a hole drilled in the root section of each walrus ivory tusk tagged and a liquid marker is applied to two sides of the tusk. Tag numbers, location and date of tagging, place of kill or find, sex, age, and measurements of specified parts are recorded by the tagger and reported to the Service. Harvest information is reported under species headings and in Tables 4, 5, and 6. A four year summary report on the program was in preparation as of the end of 1992.

Table 3. 1992 Cooperative Harvest Monitoring Program Summary Statistics for Walrus

	Harvest Recorded					Samples Contributed By Hunters				
						Adult Teeth		Adult Female Reproductive Tracts		Number of Contaminant Tissue Samples
Village	Males	Females	Calves	Unknown	Total	N	(%)	N	(%)	Obtained
Diomede	29	72	38	8	147	76	75.2	36	50.0	37
Gambell	68	173	26	9	276	95	39.4[a]	37	21.4	11
Savoonga	183	136	73	–	392[b]	165	51.7[c]	5	1.3	N/C
Wales	–	5	1	–	6	5	100.0	–	N/C	N/C
Totals	280	386	138	17	821	341		78		48
Percent	34.1	47.0	16.8	2.1			51.2		20.0	

[a] About 33 percent of the tooth samples were taken from jaws provided by the hunters.
[b] Does not include an estimated 47 walrus verbally reported taken at camps outside of the village.
[c] About 20 percent of the tooth samples were taken from jaws provided by the hunters.
N/C indicates not collected.

Table 4. Polar Bears Tagged, By Tagging Location and Harvest Year*

	Harvest Year					
Location	1987/88	1988/89	1989/90	1990/91	1991/92	Totals
Anchorage	2	0	3	4	4	13
Barrow	12	31	14	14	22	93
Brevig Mission	0	0	1	0	0	1
Fairbanks	1	0	0	0	0	1
Gambell	25	13	10	11	4	63
Kaktovik	6	8	0	0	0	14
Kivalina	5	1	5	3	2	16
Kotzebue	0	0	4	0	0	4
Little Diomede	15	9	6	3	6	39
Nome	3	0	1	0	0	4
Nuiqsut	3	2	0	0	0	5
Point Hope	9	8	22	14	7	60
Point Lay	2	2	0	0	0	4
Savoonga	13	13	9	12	6	53
Shishmaref	13	23	14	6	3	59
Wainwright	9	13	7	6	3	38
Wales	5	9	3	3	2	22
Totals	123	132	99	76	59**	489

* Harvest year is from July 1 to June 30.
**Five bears were known to have been killed but not reported.

Table 5. Sea Otters Tagged, By Tagging Location and Calendar Year.

Location	Pre-Rule	1988	1989	1990	1991	1992*	Totals
Adak	0	0	0	0	0	4	4
Akutan	0	0	0	0	0	1	1
Akhiok	1	0	0	0	0	0	1
Anchorage	117	2	37	11	8	25	200
Bethel	4	0	0	0	1	0	5
Chignik	1	0	9	5	0	0	15
Cordova	31	0	12	9	39	13	104
Cold Bay	0	0	0	1	0	0	1
Homer	18	22	9	9	0	0	58
Hoonah	0	0	0	0	0	51	51
Juneau	10	0	1	26	0	14	51
Kenai	0	0	8	6	33	0	47
Ketchikan	2	0	0	0	0	194	196
King Cove	8	0	0	25	0	8	41
Klawock	57	3	119	10	74	4	267
Kodiak	157	0	31	16	5	25	234
Larsen Bay	31	0	0	0	17	14	62
Mekoryuk	5	0	0	0	0	0	5
Perryville	0	0	0	0	0	2	2
Pilot Point	1	0	0	0	0	0	1
Port Graham	0	3	0	0	1	6	10
Port Heiden	1	0	5	0	0	1	6
Port Lions	11	0	0	1	0	0	12
Sand Point	0	0	1	0	0	0	1
Seldovia	0	0	1	0	0	12	13
Sitka	44	25	35	47	39	163	353
Tatitlek	0	0	0	0	19	27	46
Valdez	0	0	0	0	0	73	73
Totals	499	55	268	166	236	637	1,861

* Preliminary data.

Sea Otter-Southern

The southern sea otter in California is an extant subspecies of the species that once ranged throughout the northern and eastern Pacific Coast. In the mid-1700's, the sea otter was recognized as a valuable fur-bearing animal, and commercial exploitation began. The historical population in California is estimated to have been 16,000–18,000 individuals. By 1910, the species had been virtually exterminated from its entire range except for remnant populations in Russia, Alaska, the Queen Charlotte Islands (British Columbia, Canada), central California, and the San Benito Islands (Baja California, Mexico). Even though the International Fur Seal Treaty of 1911 promoted protection of sea otters on the high seas, by 1920 the British Columbia and Baja populations were also extirpated.

In 1913, the California State Legislature protected the sea otter from exploitation, although there were apparently very few sea otters left in California. Those that survived were probably concentrated in the Point Sur area. In 1938, 50 otters were noted at Bixby Creek in Monterey County, just north of Point Sur.

Fully protected against take, the population subsequently grew in number and range. By 1970 the population had become reestablished in about 10 percent of its historic California range. However, between the early 1970s and mid-1980s, little or no growth in numbers was observed, although the range expanded somewhat. In 1977 the southern sea otter, already afforded the protection of the Act, was listed as a threatened species under the authority of the Endangered Species Act (ESA). The sea otter's physiological vulnerability to oil and greatly reduced population size and distribution, combined with

Table 6. Walrus Harvest Reported By Tagging Location and Year.

Location	Pre-Rule	1988	1989	1990	1991	1992*	Totals
Anchorage	289	0	37	19	19	0	364
Barrow	1	1	9	7	23	21	62
Bethel	12	0	10	15	15	21	73
Brevig Mission	3	0	0	6	1	24	34
Chevak	11	0	2	1	2	4	20
Clarks Point	8	0	1	0	14	5	28
Cordova	13	0	0	0	0	0	13
Cold Bay	0	0	0	0	0	1	1
Dillingham	25	0	10	15	5	8	63
Elim	0	0	0	3	4	0	7
Fairbanks	9	0	2	0	0	0	11
Gambell	12	4	188	756	629	403	1,992
Golovin	1	0	0	0	1	3	5
Goodnews Bay	4	0	2	1	1	0	8
Homer	0	0	0	0	2	2	4
Hooper Bay	3	0	1	14	5	3	26
Ketchikan	1	0	0	0	0	0	1
Kivalina	0	0	46	0	0	1	47
King Island	1	0	0	7	77	346	431
King Salmon	2	0	0	1	3	2	8
Kipnuk	3	0	0	3	0	1	7
Kodiak	2	0	0	0	0	0	2
Kongiganak	0	0	3	0	3	3	9
Kotzebue	30	0	0	0	3	0	33
Koyuk	0	0	0	2	5	0	7
Kwigillingok	0	0	0	0	1	5	6
Little Diomede	0	0	1	236	532	83	852
Manokotak	3	0	1	0	0	0	4
Mekoryuk	23	0	4	14	49	19	109
Naknek	1	0	0	3	1	1	6
Nome	48	0	1	15	39	13	116
Perryville	0	0	1	0	0	0	1
Pilot Point	0	0	0	0	1	0	1
Platinum	20	0	9	5	2	10	46
Point Hope	3	0	2	5	0	5	15
Port Heiden	5	0	0	0	2	4	11
Quinhagak	0	0	0	0	3	0	3
St. George	1	0	0	1	1	0	3
St. Paul	0	0	0	0	1	1	2
Sand Point	1	0	0	1	2	0	4
Savoonga	418	0	221	198	520	542	1,899
Shishmaref	490	0	122	87	35	69	803
Sitka	15	0	0	0	6	0	21
Stebbins	0	0	1	5	17	0	23
Teller	0	0	0	0	0	3	3
Togiak	12	1	9	25	6	6	59
Tooksook Bay	0	0	0	0	2	0	2
Unalakleet	6	0	1	5	5	0	17
Wainwright	4	0	43	0	32	33	112
Wales	10	0	10	10	86	15	131
Totals	1,490	6	737	1,460	2,155	1,657	7,505

* Preliminary data.

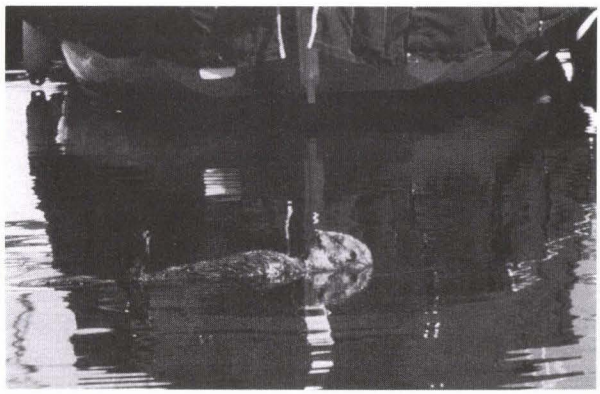
threats of oil spills resulting from increasing tanker traffic near the central coast, were the primary reasons for the southern sea otter listing.

The California Department of Fish and Game (CDF&G) and the Service again conducted a spring and fall survey in 1992. The area surveyed included the entire 220-mile long established range of the southern sea otter population, from Point Ano Nuevo in Santa Cruz County to the Santa Maria River in San Luis Obispo County, plus additional peripheral habitat. The total numbers of otters counted during the spring 1992 survey was higher than any since these counts were first begun [Table 7]. As a rule, fall counts are consistently lower than spring counts. This may, in part, be due to the fact that sea otters are more difficult to observe in the fall owing to their increased dispersal throughout the range, and, in part, to the greater abundance of bull kelp during the fall, which obscures some otters. In the spring, the giant kelp is more clumped and there is little bull kelp to contend with; therefore, the otters are easier to count. Most otters are still found between Monterey and Morro Bay.

Translocation of Southern Sea Otters

Translocation of southern sea otters to establish a second breeding colony was initiated in 1987. The purposes for establishing a second colony are two-fold: (1) to eliminate the possibility that more than a small proportion of the population would be decimated by any single natural or human-caused catastrophe; and (2) to obtain data for assessing translocation and containment techniques, population status, and the influence of sea otters on the structure and dynamics of the near shore community. The latter information is particularly important in attempting to understand the characteristics and impacts of a sea otter population at its optimum sustainable level as required by the Act.

Public Law 99-625 provides authority and establishes guidelines for carrying out the translocation program. A Final Environmental Impact Statement and rulemaking were distributed by the Service in May 1987. The final rule establishes the boundaries of a Translocation Zone to which otters would be translocated and given protection similar to that of the parent population, and a Management Zone to be maintained otter-free by non-lethal means. The Translocation Zone consists of San Nicolas Island and surrounding waters in the Southern California Bight, ranging from 10-19 nautical miles from the 15-fathom contour surrounding San Nicolas Island. The Management Zone must surround the Translocation Zone separating it from the parent



A southern sea otter. U.S. Fish and Wildlife Service photo by Jim Leupold.

population, yet not infringe upon habitat necessary for recovery of the southern sea otter. The Management Zone includes the remainder of the Southern California Bight south of Point Conception, including the other offshore islands and mainland coast. As such, it implements a significant form of zonal management, as recommended by the Marine Mammal Commission in 1980.

Analysis of data obtained during the initial year of translocation provided some insight into factors that are apparently necessary for successful translocation. In line with this information, translocation strategy changed. These changes were discussed in the Service's 1988 Annual Report to Congress. We have learned that the probability of sea otters being lost from the experimental population from either mortality or emigration is high. Analysis of the available data on loss rates of translocated sea otters indicates that the loss rates for juvenile and adult animals are similar. The survivorship of both age classes is such that there is a very low likelihood of a sufficient number of juveniles remaining at the island long enough to attain sexual maturity. Based on the available data, adults or females with dependent pups must form the nucleus of a successfully breeding colony at San Nicolas Island. This information has been reviewed by biologists from the Service's sea otter research program and the sea otter recovery program, the Sea Otter Recovery Team, the CDF&G sea otter program, the NMFS, and MMC staff. All concur with the finding and conclusion. In fact, this appears to be similar to the initial growth patterns of the translocated populations of sea otters to Vancouver Island, Canada, and Washington. These reintroductions initially declined to very low numbers after which the populations increased and now appear to be established. Three-hundred-thirteen sea otters were counted in a 1992 survey of the Washington population.

Table 7. Comparison of Southern Sea Otter Counts Conducted Since The Spring of 1982.[1]

Season	Number of Independent Otters	Number of Pups	Total
1982 Spring	1,124	222	1,346
Fall	1,204	147	1,351
1983 Spring	1,156	121	1,277
Fall	1,060	163	1,223
1984 Spring	1,180	123	1,303
Spring[2]	1,151	52	1,203
Fall	No survey		
1985 Spring	1,119	242	1,361
Fall	1,065	150	1,215
1986 Winter[3]	1,231	181	1,412
Spring	1,358	228	1,586
Fall	1,091	113	1,204
1987 Spring	1,435	226	1,661
Fall	1,260	110	1,370
1988 Spring	1,504	221	1,725
Fall	No Survey		
1989 Spring	1,571	285	1,856
Fall	1,492	115	1,607
1990 Spring	1,466	214	1,680
Fall	1,516	120	1,636
1991 Spring	1,700	241	1,941
Fall	1,523	138	1,661
1992 Spring	1,810	291	2,101
Fall	1,581	134	1,715

[1] In 1992, all survey data since Fall 1982 was reviewed and counts were corrected.
[2] California Department of Fish and Game aerial survey with ground truth stations.
[3] Experimental.

During the transplant period (1987-1990) 139 sea otters were translocated to San Nicolas Island. No otters were captured for translocation since 1990. Nine adults and four pups were observed at the island through December 1992. The number of otters observed at San Nicolas Island (not including dependent pups) had been relatively stable at about 13 individuals from November 1989 through 1991. Reproduction at the island is continuing and as of 1992, at least six pups are believed to have been successfully weaned into the population. Identification of individual otters, with few exceptions, is difficult due to tag loss. However, based on identification of tags and tag scars during survey efforts, at least six of the otters observed at San Nicolas Island are animals that were translocated to the island (in 1991 nine were reported). This information suggests the adult population is declining and most otters born at the island are not recruited into the colony. The cause(s) of the continuing attrition remains unknown, although dispersal and incidental mortality in lobster traps are suspected as the primary factors. Because of a lack of information as to the reasons for the decline of the colony, no further corrective actions have been taken. (Note: In 1987, gill net fishing around the island was prohibited by the State to protect sea otters.)

Status of Colony

One hundred thirty-nine sea otters (31 males, 108 females) were translocated to San Nicolas Island during the period August 24, 1987, to June 30, 1990. One rehabilitated sea otter pup was also released at the island in May 1988. As of December 31, 1992, the disposition of 56 sea otters that are no longer at San Nicolas Island is known or suspected. Thirty-five sea otters left the island and returned to the parent population, (subsequent observations are not recorded in this section). Ten were caught in the "no otter" Management Zone in southern California and moved back to their original capture site on the mainland. Three males died at San Nicolas Island from stress related to their capture and transportation. Five females were found dead on beaches in southern California (one of these had been shot and the other causes of death were undetermined). Three sea otters are suspected of having died in fishing gear.

Two groups of translocated otters have been found away from San Nicolas Island, one at San Miguel Island and one at Point Purisima. In both groups, dependent pups were observed. Because San Miguel Island is within the Management (no-otter) Zone, the Service is committed to remove these animals as required under Public Law 99-625. Purisima Point is north of the Management Zone but within an area where no restrictions exist for set-net fishing, and unless restrictions are implemented, this small group may be eliminated. The San Miguel Island group has been nearly eliminated by containment efforts under P.L. 99-625. The Point Purisima group still persists.

Summary of Mortality and Natality

No mortalities of translocated sea otters or their progeny were reported this year.

A total of 22 pups are known to have been born at San Nicolas Island. During this calendar year, two to four pups were observed at San Nicolas Island. To date, at least six pups are believed to have been successfully weaned.

Containment

The containment program is designed to prevent sea otters from colonizing the Management Zone through a cooperative effort between the Service and the CDF&G. The containment operation, as outlined in the Translocation Plan and the Service's Containment Plan, consists of three interrelated and interdependent activities: surveillance of the Management Zone, the capture of sea otters in the Management Zone, and post capture relocation.

Nine sea otters, seven adults and two dependent pups, were captured in the management zone in 1992. One male otter captured this year had been captured and transported out of the Management Zone the previous year. Captures were the result of cooperative efforts between the Service and the CDF&G. All captures this year were made by divers trained in rebreather apparatus using Wilson traps attached to underwater vehicles.

In 1992, capture efforts in the sea otter Management Zone were focused near Point Bennett, San Miguel Island. A group of ten sea otters was observed at San Miguel Island in March/April 1991. Since the group was discovered, seven adult otters and 2 pups have been captured and removed from the island. One adult male was captured and removed twice. Field surveys indicate that up to three otters may remain at San Miguel Island. If current trends continue, all otters may be removed from San Miguel Island by early 1993.

In addition to San Miguel Island efforts, one sea otter was captured near Cojo Anchorage (Santa Barbara County) this year. Since the Management Zone was established in 1987, five male sea otters have been removed from the Cojo area. None of these animals were individuals initially translocated to San Nicolas Island. Future containment activities may focus on the Cojo Anchorage area if sea otters from the mainland range continue to swim south.

Since 1987, a total of 17 adult sea otters and 3 dependent pups have been captured in the Management Zone. Two otters were captured and removed from the Management Zone twice. Eight of the adults were females and nine were males. Ten of the otters had been translocated to San Nicolas Island, four had apparently swam down from the mainland range, and six either swam down from the mainland range or were born in either the Management Zone or at San Nicolas Island.

The containment effort to date appears to have successfully prevented sea otter colonies from becoming established in the designated Management Zone. However, sea otters have entered the Management Zone at a slow rate and containment activities have been labor intensive and costly. The long-term viability of sea otter containment through non-lethal means remains in question.

Law Enforcement

Sea otters have been intentionally harassed, shot, clubbed, and drowned in legally and illegally set commercial fishing gear in past years. Service law enforcement officers conduct surveillance operations, investigations, and seek prosecution of individuals who harm sea otters. Pursuant to Public Law 99-625 and the Federal regulations governing the sea otter translocation program, the Service has implemented a law enforcement plan for protecting the San Nicolas Island colony of sea otters.

Public Law 99-625 requires a law enforcement program at San Nicolas Island until the Service determines that human threats to the colony have diminished. From 1987 to 1989, the Service employed two Wildlife Officers specifically for law enforcement and containment needs associated with the Service's sea otter translocation program. In 1989, one officer accepted a position with the NMFS and, although replaced by a biologist to help with containment activities, no replacement officer has been added to the program. Since then, law enforcement activities have been greatly reduced and tend to focus on peak boat use periods at San Nicolas Island. Activities included the monitoring of boats from the shore of the island and responding to reports of dead otters in the management zone.

Commercial and recreational boat activity at San Nicolas Island followed the same general trends observed during the first 3 years of the translocation program. Boat activity peaked in early October when lobster season opened and sea urchin prices began to rise. This activity tapered off gradually and was influenced greatly by weather conditions. There were no reports of illegal activities involving sea otters at San Nicolas Island this year.

A number of sea otters have been reported in the management zone this year. These otters may be the most likely targets of illegal activities. Otters in the management zone wander in isolated areas that are difficult to monitor and patrol. They are also unprotected from incidental take in legally set fishing gear. Prompt removal of otters found in the management zone has been the goal since the translocation of otters to San Nicolas Island began. Increased law enforcement activity within the management zone has been considered for those cases where capture efforts have been delayed.

Open Cases—The death of a San Nicolas Island sea otter, found by the U.S. Navy on shore at Point Mugu in 1987, is still under investigation. This otter was shot, and although a $10,000 reward was posted, no information has been forthcoming.

Incidental Take Within the Mainland Range

Several lines of direct and indirect evidence indicate that incidental drowning of sea otters in gill and trammel entangling nets has been a significant source of mortality. The State of California entered into a cooperative agreement with the NMFS to assist with the monitoring program required under the 1988 amendments to the Act. In both Monterey Bay and Morro Bay, one-to-three NMFS observers are stationed to document incidental take. No sea otters ("0") were reported to be killed in these nets in 1992. In summation, from June 1982 to December 31, 1992, a total of 73 otters have been observed or otherwise known to have drowned in commercial fishing nets: 6 in 1982, 6 in 1983, 16 in 1984, 12 in 1985, 3 in 1986, 5 each in 1987 and 1988, 11 in 1989, 9 in 1990, and 0 in 1991 and 1992.

California Senate Bill #2563, which provides additional restrictions on the use of gill and trammel nets in coastal waters, was enacted in 1990 and promulgated on January 1, 1991. This bill prohibits the use of gill and trammel nets in waters shallower than 30 fathoms between Waddell Creek in Santa Cruz County and Point Sal in Santa Barbara County. The 30 fathom contour was selected based on analysis and recommendation by the Service using data obtained during a study by the Minerals Management Service. The analysis indicated that currently only an extremely small number of sea otters use waters deeper than 30 fathoms. The Service recommended to the NMFS and the CDF&G that a 30 fathom closure should be implemented to likely reduce the incidental take of sea otters to near zero. The state legislation has significantly reduced the number of incidental sea otter drownings. The NMFS and the CDF&G will continue observations of the set net fishery occurring in waters outside this restricted area.

The small group of sea otters, currently found at Purisima Point, are at risk of incidental take. Purisima Point is between Point Sal and Point Conception, an area in which no restriction of gill or trammel net fishing exists for the protection of sea otters. Observations of set-net fishing activity in this area is not convenient and therefore not typically covered by the NMFS's observer program.

In June 1992, a Game Warden for the CDF&G reported that a dead otter was recovered from a crab trap set in shallow water near Lighthouse Point, Santa Cruz County. Anecdotal accounts of otters drowning in crab traps have been reported in past years. This is the first hard evidence that incidental take of otters occurs as a result of crab trap fishing.

These traps are similar to those used in the lobster fishery. The Service is currently evaluating this new information on crab/lobster trap-caused mortality.

Sea Otter Stranding and Mortality

In California, nearly 100 sea otters are found either moribund or dead each year. Many of the carcasses are severely decomposed and it is difficult, if not impossible, to determine the cause of death. In 1992, the Service in conjunction with the CDF&G initiated a new program to examine sea otter mortality. Dead sea otters found in a fresh condition are sent to the Service's National Wildlife Health Research Center (NWHRC) in Madison, Wisconsin for necropsy. The primary purpose of this new program is to enhance knowledge of sea otter pathology.

Twenty-two sea otters collected from January through December 1992 were necropsied at NWHRC. The deaths of 10 of the 22 animals necropsied were attributable to infectious/parasitic diseases. These diseases included coccidioidomycosis, aberrant acanthocephalan parasite migration, and protozoal encephalitis. The frequency of infectious/parasitic disease mortalities in the southern sea otter is higher than that seen in other endangered mammals or most other endangered species.

Coccidioidomycosis (*Coccidioides immitis*) was diagnosed in three sea otters from San Luis Obispo County. Coccidioidomycosis, otherwise known as "Valley Fever," is generally found in terrestrial animals (including man) and to date has been considered uncommon in marine mammals.

Aberrant migration of acanthocephalan parasites with a resulting inflammation of the abdominal cavity was diagnosed as the cause of death in five young sea otters (1 adult and 4 immature).

Two otters that were found having seizures along the same stretch of beach in San Luis Obispo county were diagnosed as having an encephalitis secondary to infection with protozoal organisms.

Causes of death in the other sea otters included emaciation and/or mating wounds (7), various types of trauma (4), and intestinal perforation with twisting of the intestine (1).

Section 7 Consultations

Pursuant to Section 7 of the Endangered Species Act, the Service reviews proposed Federally funded, conducted, or permitted activities that may affect the southern sea otter and issues Biological Opinions and recommendations to minimize impacts.

No formal consultations were initiated in 1992.

Section 6

In 1992, no funds were provided for the southern sea otter under Section 6 of the Endangered Species Act.

Oil Spill Activities

The Service's sea otter oil spill contingency plan has been drafted and is currently being revised to incorporate pertinent aspects of the Federal Oil Pollution Act of 1990, and California Senate Bill #2040 creating a new oil spill division within the CDF&G. The ramifications of both Federal and State legislation have yet to be realized or applied to the existing document. The State of California is actively pursuing the construction of a sea otter rescue and rehabilitation facility (as required by Senate Bill #2040).

On August 3, 1992, approximately 120 barrels of San Joaquin crude oil was spilled in Avila Beach, San Luis Obispo County. A pipeline running to storage tanks atop a near shore bluff ruptured and oil spilled down a steep canyon into the ocean. Approximately 60 otters were in the Avila Beach area at the time of the spill. At least four sea otters came in contact with the oil. Two were found dead, covered with oil; one was captured and died while being transported to a rehabilitation facility (this otter apparently died of coccidioidomycosis although it was oiled at time of capture); and one oiled otter was captured, cleaned, and released. The rupture was attributed to a weakening of the pipeline due to age.

The Avila Beach spill was the first oil spill known to have had a direct impact on southern sea otters. The spill was relatively small, identification of the spill occurrence and initiation of response efforts were quick, weather conditions were ideal for containment and clean up, and the majority of the oil was confined to a small protected area enclosed by oil containment booms. Even so, 4 of 60 local sea otters (7 percent) were affected, the clean up took more than 3 weeks and involved more than 100 people. Clearly, even small spills with a fast response time can have a measurable adverse effect on sea otters and the threat of oil spills to otters includes oil transportation and storage on land. Lessons learned during the Avila Beach oil spill will be incorporated into ongoing oil spill contingency planning for sea otters in California.

West Indian Manatee

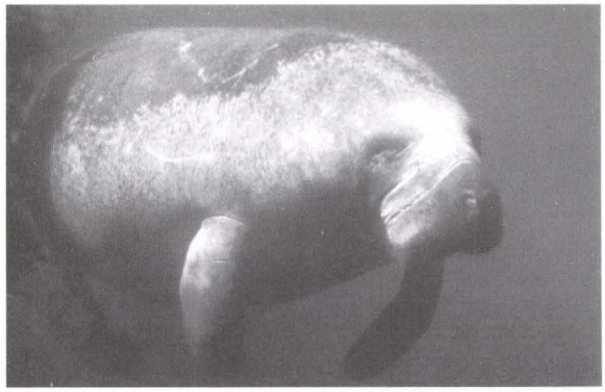
The Florida Manatee Recovery Plan, approved by the Service on July 24, 1989, guides the activities of the multi-agency Manatee Recovery Team. The Recovery Team, made up of representatives of the Service, the Florida Department of Environmental Protection (FDEP), the MMC, non-governmental organizations (including the Save the Manatee Club and the Sierra Club), utilities (such as Florida Power and Light (FPL)), law enforcement agencies (including the Florida Marine Patrol and the Florida Game and Fresh Water Fish Commission) and others, implements the many tasks at hand. Manatee recovery tasks include the following activities.

1. Efforts continue to gain a better understanding of the causes of manatee harassment, injury, and mortality and, wherever possible, to minimize or eliminate these hazards to enhance the survival of the species.

The salvage and necropsy program provides yearly information on manatee mortality. During 1992, 162 manatee carcasses were recovered and posted by the FDEP. Five additional animals were recovered outside of Florida. The total number of watercraft-related deaths (49) was down slightly from 1991 (53). Watercraft kill more manatees than any other known human-related cause. Perinatal deaths from natural or undetermined causes were also high with 49 deaths. Five manatees died as a result of being crushed in locks or flood gates during 1992.

The Service-financed Marine Mammal Pathobiology Laboratory was completed and occupied in 1992. This facility, operated by FDEP staff, now conducts post mortems on most manatee carcasses recovered in Florida. By centralizing such efforts, necropsies and data collection have been standardized.

To reduce the number of deaths and injuries to manatees from watercraft, the FDEP and the Service have been working with 13 key Florida counties to develop Manatee Protection Plans (MPP). MPPs include guidelines for future construction of boat docks, marinas, and other developments in essential manatee habitat, plans for public education, site-specific speed zones, and other manatee protection measures tailored to each county. Each of the key counties is engaged in the development of an MPP; at this time, county MPPs are in varying stages of development, with Citrus County having the only completed MPP.



A West Indian manatee. U.S. Fish and Wildlife Service Sirenia Project photo.

Reducing boat speeds is considered to be the best way to protect manatees from boat collisions in Florida's waterways. Slow, predictable traffic is easier for manatees to avoid. The first step in most MPPs is the development of county site-specific speed zones. Based on tracking data from the Service's Sirenia Project, abundant local knowledge, and interagency teamwork, speed zone plans, like MPPs, are carefully developed and thoroughly reviewed, often after extended negotiations. As each plan is completed, it is submitted to the Governor and Cabinet for approval, at which time it becomes State law. As of December 1992, site-specific speed zones were completed in nine of the 13 coastal counties, and regulatory signing was completed in four of them. Speed zones have been implemented near winter warm-water refuges in southeast Georgia. Rule challenges in State court are underway in two counties from boaters claiming undue economic impacts.

Within National Wildlife Refuges (NWR), areas presenting the greatest threat to manatees are posted and maintained. Seasonal posting of manatee sanctuaries at Crystal River NWR was expanded in 1991 to include four new sanctuaries in Kings Bay. The Emergency Rule creating the new sanctuaries went into effect for the second year on November 15, 1992, the beginning of "manatee season."

The Service published a "Notice of Intent to Prepare a Rule" to create manatee protection areas in Lake Woodruff NWR. Challenges to State rules regulating boat traffic in this refuge may have the effect of reducing manatee protection in this area. To counter this threat, the Service proposes to ensure protection for manatees by creating its own rule to protect this significant manatee area.

Agencies are working together to eliminate water control structure and lock-related manatee

deaths. The Service, the FDEP, and representatives of the water management districts and the Corps of Engineers (COE) meet regularly. Several solutions including redesigning structure doors, using sonar to detect a manatee's presence, using sound as a warning device, building barriers to exclude manatees, and designing pressure-sensitive reverse mechanisms (similar to that on elevator doors) to prevent manatees from becoming trapped in a closing gate, are currently being installed or tested.

The COE has submitted a proposal for Section 1135 funds in order to make structural modifications to COE navigation locks and water control structures for the purpose of eliminating manatee mortality at these structures.

Recovery activities include the rescue and rehabilitation of injured or diseased manatees and transfers of captive animals. The FDEP's new rescue coordinator handles the initial phases of a rescue event, with the collaboration of the Service. Selected teams "verify" the presence of an injured animal, then rescue teams capture and transport the manatee to a rehabilitation center, if necessary. All manatee distress calls are now handled through the Manatee HOTLINE (1-800-DIAL-FMP) number. In 1992, four additional verification teams and a rehabilitation facility in Puerto Rico were authorized.

A total of 24 manatee rescues took place in Florida in 1992. Program participants responded to a total of 91 reports of manatees in distress. In 19 cases, manatees were brought into rehabilitation facilities for treatment. Five manatees were rescued and released on-site, mostly due to entanglement in fishing or crab pot lines. As of January 1, 1993, 42 manatees remained in captivity in five Florida facilities, and one was being held in captivity in Puerto Rico.

The Service's manatee coordinator and staff met with Service, State, and private individuals to discuss manatee rescue needs in areas outside of Florida. The Service is developing guidance for responding to distressed manatees outside of Florida.

Activities in manatee areas are closely regulated by the permitting process. The Service, under Section 7 of the Endangered Species Act and the Fish and Wildlife Coordination Act, reviews all projects located in essential manatee habitat that have any Federal agency involvement. In 1992, the Jacksonville and Vero Beach Field Offices consulted on numerous COE permit applications, U.S. Coast Guard permits for high-speed marine events, and a number of other projects with potential impacts on manatees. Since 1982, the Service has written 68 jeopardy Biological Opinions (60 since 1987) for manatees, more than for all other endangered or threatened species combined. None of those permits were issued as proposed. As MPPs in each coastal county are completed, the permitting and Section 7 processes will be streamlined.

Regular meetings are held to review captivity and rehabilitation issues. On March 26 and September 29, 1992, a release category system for release of rehabilitated manatees was established. The final decision for release rests with the Service's Manatee Coordinator and whenever possible, animals will be fitted with radio transmitters to help researchers evaluate the success of rehabilitation.

The Service announced the formation of a Captive Manatee Planning Committee to function as a subcommittee of the Recovery Team to review proposed research projects utilizing captive manatees and to integrate captive management priorities with captive research supported by the Recovery Plan. An initial meeting was held on December 15, 1992. A biologist from the Service's Office of Management Authority explained manatee permitting programs.

2. Efforts proceed to ensure the continued existence of suitable habitat for manatees in the future.

The Sirenia Project's ongoing east coast telemetry project continues with ground and aerial tracking of tagged animals. Additional funding has allowed more animals to be tagged, and use of satellite telemetry to be expanded. Effort centers on Brevard County, a migratory hub and location of many manatee deaths each year.

Since June 1988, sixteen manatees have been tracked following their release from captivity after rehabilitation. Although one was trapped in a storm sewer and died, none of the others have been recovered and it is assumed that they have survived.

Manatee food preferences, dietary requirements, and nutritional requirements are being determined through several research projects. The Service, the FDEP, and Citrus County representatives continue to participate in an interagency working group which fulfills the objectives of the Summer/Winter Aquatic Plant Management Plan for the Crystal and Homosassa Rivers.

A Blue Spring Interagency Working Group was formed to gather information on the foraging needs of manatees overwintering at Blue Springs. Coincidentally, microscopic analysis of manatee

stomach contents from manatee carcasses collected in the St. Johns River has begun.

3. Educational programs, by improving public understanding, will reduce the incidence of manatee harassment and injury and enhance law enforcement activities.

The Service supports the efforts of the Save the Manatee Club, aided by boat manufacturers and dealers, marinas, and other groups including local Marine Industry Associations (MIA), who have been actively erecting educational signs at key public access points explaining the harm of feeding and harassing manatees, the dangers of boat collisions, and the proper disposal of monofilament lines. Florida Power Corporation runs a booth on weekends at Blue Springs State Park and MIA members hand out information at their boat shows.

The Save the Manatee Club holds training seminars throughout the State, trains display-booth representatives, and enlists members' help in a sighting program. Seminars train Club members to give manatee education programs to schools, civic groups, etc. One-hundred-twenty volunteers contributed over 800 hours of volunteer time to people in the 13 key counties. A teacher in-service program is available and 15,000 educator guides, travel displays, and sirenian posters were mailed to teachers across the nation. Sixteen-hundred press kits were mailed out nationwide. Additional funding for educator's guides came from the FPL and the MMC. The Save the Manatee Club also encourages the inclusion of manatee educational materials in boating safety courses, and produces public service announcements.

4. The status of the manatee population is being better evaluated by monitoring general patterns of distribution and relative abundance.

Since 1991, state-wide synoptic aerial surveys of manatee wintering habitat in southeast Georgia and Florida have been conducted to better assess manatee abundance in this area. The 1992 statewide survey, conducted on January 17-18, 1992, resulted in a count of 1,856 manatees. Initial results were reviewed at a manatee population biology workshop, held on February 4-6, 1992. This workshop, cooperatively sponsored by the FDEP and the Service, served to gather nationally and internationally recognized population biologists, statisticians, and modeling experts to review manatee data in order to develop population models for this species. The reviews were summarized in the "Interim Report of the Technical Workshop on Manatee Population Biology." A copy of this report may be obtained from the Florida Cooperative Fish and Wildlife Research Unit, University of Florida, P.O. Box 110450, Gainesville, Florida 32611-0307.

A West Indian manatee, with transmitter attached, about to be released. U.S. Fish and Wildlife Service Sirenia Project photo.

Individual manatees can be identified by the scars on their hides and the mutilations on their tails and flippers. More than 900 animals now have been catalogued in this way, making it possible to re-identify manatees year after year and to monitor their reproductive status. Partially funded by FPL and the Florida Audubon Society, the Service's Sirenia Project has now computerized the catalogue data base which simplifies scar pattern matches.

The Manatee Recovery Team is dedicated to refining the methods used to monitor the status of manatee populations. The development and evaluation of aerial survey methods for estimating or indexing manatee abundance in survey/management areas, and (ultimately) statewide, continue. Radio-tagged manatees are used to estimate the visibility bias during winter aerial surveys. Aerial counts at powerplants by airplanes and by airships are being compared for accuracy. Sight-resight techniques used by biologists in Palau with dugongs are being investigated for applicability to manatees. The Sirenia Project is evaluating the use of a new method for estimating survival based on photo-identification as a mark/recapture technique.

Research continues on various aspects of manatee life history and ecology. Using the scar catalogue data base and its photographs, the Sirenia Project is extracting data on basic parameters such as size, age/sex structure, age-specific survival, and reproductive rates for Crystal River and Blue Spring manatees.

The 1992 Annual Report of the Florida Manatee Recovery Plan is available from the Manatee Coordinator, Jacksonville Field Office, 6620 Southpoint Drive, South, Suite 310, Jacksonville, Florida 32216.

Dugong

There were no reportable dugong activities carried out by the Service in 1992.

Hawaiian Monk Seal

Service personnel from the Hawaiian Islands National Wildlife Refuge cooperate regularly with NMFS personnel on various research and recovery actions recommended in the Hawaiian Monk Seal Recovery Plan. Hawaiian Islands National Wildlife Refuge staff provide a variety of support services, including transportation of equipment and supplies aboard Service-funded charters, radio monitoring, and message relays and maintenance of the Tern Island Field Station. As part of production and population surveys, Service biologists worked with NMFS researchers on refuge islands, tagging weaned pups and resighting tagged seals. They also conducted regular population censuses of monk seals at French Frigate Shoals and Midway Atoll, and intermittent surveys of other refuge islands.

Service staff actively patrol and remove nets and other entangling debris from refuge beaches and reefs to reduce the likelihood of seal entanglement. Monk seals occasionally become disoriented or entrapped behind the deteriorating seawall at Tern Island.

The Service funded the Army Corps of Engineers to produce a report outlining options for shore protection at Tern Island. The report (due by September 30, 1992) will provide options and cost estimates for shore protection that will maximize the life of the island and minimize entrapment of Hawaiian monk seals. (Note: By December 31, 1992, the report had not been finished.)

The refuge assisted in transporting underdeveloped female pups from French Frigate Shoals to Honolulu where they were rehabilitated for release at Kure Atoll in a repopulation effort. Refuge staff participated in an evaluation of monk seal habitat at Eastern Island, Midway, as a site for releasing rehabilitated monk seals.

Refuge staff served on the NMFS Animal Care Committee. The committee implemented protocols for maintaining captive monk seals, and reviewed research protocols for captive animals.

Cover Photos

From top left, clockwise:

A West Indian manatee.
U.S. Fish and Wildlife Service photo.

A southern sea otter with young.
U.S. Fish and Wildlife Service photo by Lynn Starnes.

A polar bear on the Arctic National Wildlife Refuge.
U.S. Fish and Wildlife Service photo by Dave Olsen.

Pacific walrus.
U.S. Fish and Wildlife Service photo.


U.S. DEPARTMENT OF THE INTERIOR
MARCH 3, 1849

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