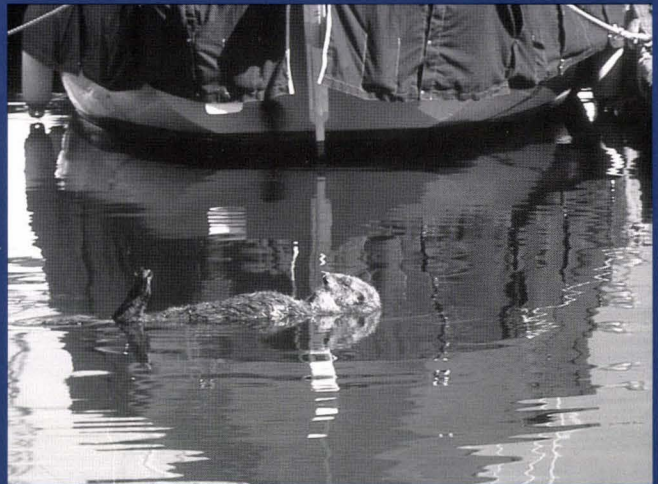


Administration of the Marine Mammal Protection Act of 1972

January 1, 1994 to December 31, 1994



Department of the Interior
U.S. Fish and Wildlife Service
National Biological Service

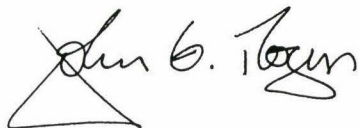
Marine Mammal Protection Act
Report of the Department of the Interior

The Marine Mammal Protection Act of 1972 (16 U.S.C. 1361-1407, 86 Stat. 1027 (1972)), as amended (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, 1994, to December 31, 1994, on the administration of the Marine Mammal Protection Act with regard to those mammals.

Issued at Washington, D.C.



Acting Director
U.S. Fish and Wildlife Service
Dated July 24, 1996



Director
National Biological Service
Dated July 30, 1996

Administration of the Marine Mammal Protection Act of 1972

January 1, 1994 to December 31, 1994



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

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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, walrus, sea and marine otters, and dugong. Within the Department, the Fish and Wildlife Service (Service) is the primary agency responsible for managing these marine mammals and for enforcing the moratorium on taking and importing marine mammals and marine mammal parts. In Fiscal Year 1994, the National Biological Survey (later changed to the National Biological Service (NBS)) was created within the Department with the responsibility to conduct marine mammal research.

The Service administers requests for waiving the moratorium and for the transfer of management authority to States, issues permits, 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



Manatee. U.S. Fish and Wildlife Service photo.

other Endangered Species Act (ESA)-related responsibilities and maintains a close working relationship with the Marine Mammal Commission (MMC) and its Committee of Scientific Advisors. Prior to Fiscal Year 1994, the Service conducted research programs on marine mammals, but since then, the NBS has been charged with that responsibility.

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

Species List and Status of Marine Mammals Under Service Jurisdiction Under the Act and the Endangered Species Act

Species

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

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

Summary of the 1994 Program

Appropriations

For Fiscal Years (FY) 1994 and 1995, the Service's funding authorization was under authority of Section 116(b) of the Act as adopted in the 1994 amendments (108 Stat. 532) to the Act. Calendar year 1994 covered by this report overlaps FY's 1994 and 1995; funds (in \$000) authorized for both years, as well as funds spent in FY 1994 and projected to be spent in FY 1995, are presented.

	Authorized	Expended	Projected
Fiscal Year 1994	\$8,000	\$4,742	—
Fiscal Year 1995	\$8,600	—	\$3,986

Distribution of Expenditures

See table on page 3.

Outer Continental Shelf Operations and Environmental Studies

Service activities for offshore oil and gas leasing were limited to three proposals. Two of the three proposals involved the Gulf of Mexico, where marine mammals under the Service's jurisdiction normally would not be affected.

The Service's review of an Environmental Impact Statement from the Environmental Protection Agency for the western Gulf of Mexico produced no comments. A review of H.R.4613, a draft bill that would permanently prohibit Outer Continental Shelf leasing off the Florida coast south of 26 degrees north latitude and 86 degrees longitude, also produced no comments from the Service. The Service reviewed Lease Sale 144 for the Beaufort Sea in Alaska and found a potential concern for bowhead whales and polar bears.

Research and Development

The National Biological Service conducted research under the Act during FY 1994 at several Centers and Field Stations. The Alaska Science Center (ASC, former Alaska Fish and Wildlife Research Center) is responsible for polar bear, walrus, and northern (i.e., Alaska) sea otter research. The ASC also administered work on southern sea otters in 1994, but as of 1995 that responsibility has been transferred to the new California Pacific Science Center (CPSC). The Southeastern Biological Science Center (SBSC, former National Fisheries Research Center, Gainesville) is responsible for research on sirenians (manatees and dugongs). The Division of Cooperative Research administers additional research at cooperative units across the country funded by and in support of the needs of the Fish and Wildlife Service (Service), other NBS Research Centers, and other bureaus of the Department.

For each project active during FY 1994, the project title and summary, followed by highlights of FY 1994 accomplishments are given below by species. Previous results and accomplishments can be found in earlier publications.

1. Polar bear

A. 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.

Distribution of Expenditures (in \$000)

	Actual FY 94	Projected FY 95
Marine Mammal Protection Act		
Research and Development¹		
Alaskan sea otter	\$ 310	\$ 310
Walrus	133	210
Polar bear	711	685
Misc. marine mammals (incl. pinnipeds, cetaceans— formerly MMS funds)	884	75 ²
Total Research and Development	<u>\$ 2,038</u>	<u>\$ 1,280</u>
Management		
Permit activities	\$ 70	\$ 100
Law enforcement activities	986	958
Other management activities	1,648	1,648
Total Management	<u>\$ 2,704</u>	<u>\$ 2,706</u>
Grand Total	<u><u>\$ 4,742</u></u>	<u><u>\$ 3,986</u></u>
Endangered Species Act		
Section 6 (Grants-to-States)		
California—sea otter	\$ 0	\$ *
Florida—manatee	77	*
Total Section 6	<u>\$ 77</u>	<u>\$ *</u>
Section 15 (Research and Development)¹		
Endangered/threatened otters	\$ 403	\$ 403
Manatee	597	621
Total Section 15 Research	<u>\$ 1,000</u>	<u>\$ 1,024</u>
Section 15 (Management)		
Consultation ³	\$ 150	\$ 170
Recovery ³	559	650
Hawaiian monk seal ⁴	75	75
Total Section 15 Management	<u>\$ 784</u>	<u>\$ 895</u>
Grand Total	<u><u>\$ 1,861</u></u>	<u><u>\$ 1,919</u></u>

1 Beginning in FY 1994, the National Biological Survey (NBS) (subsequently, the National Biological Service) was created. Amounts shown for FY's 1994 and 1995 for Research and Development under the Act and the ESA represent NBS marine mammal research figures, including former Region 8, former FWS (non-Region 8) marine mammal funds, and former Minerals Management Service (MMS) contracts on marine mammals which were transferred to the NBS.

The figures shown represent a reorganization in how the NBS presents its budget. The cost of operating facilities and support of related programs is no longer included in the research budget category, but is identified in separate budget categories, giving the misleading appearance that funding for projects has been reduced.

2 This number represents only the marine mammal tissue archiving work in Alaska. In FY 1994, a large contract/Interagency Agreement was ongoing in the Gulf of Mexico. New marine mammal research offshore Alaska and in the Eastern Gulf of Mexico will be contracted during FY 1995 with award likely near the end of the fiscal year.

3 Includes all endangered and threatened marine mammals for which the Fish and Wildlife Service engages in consultation and recovery activities.

4 Although the National Marine Fisheries Service (NMFS) 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).

* No data given.

1994 Activities/Accomplishments:

This work unit was completed as of September 1994. Efforts in FY 1994 were limited to data analysis and writing.

- Data analyses conducted in FY 1994 corroborated earlier analyses suggesting that the Beaufort Sea polar bear population has nearly doubled during the last 20 years. The analyses also suggest that the total number of animals in the mainland Beaufort Sea of Alaska and Canada may be even fewer than previously suggested. Thus, numbers are near a historic all time high for this area, but compared to other areas, numbers are very low.

B. 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.

1994 Activities/Accomplishments:

This work unit was completed as of September 1994. Field work was limited to the continuation of satellite telemetry monitoring of polar bear movements. The bulk of the year was spent in data analysis and writing.

- The large number of platform terminal transmitter (PTT) tags deployed in 1992 meant that numerous collars were still operational in 1994. Hundreds of relocations were obtained and multi-year monitoring continued.
- Movement and activity rates of bears were determined on a daily, monthly, and annual basis, and the ranges of activity area sizes for individual bears in varying reproductive classes were determined.
- Analyses conducted in FY 1994 determined the bounds of the Beaufort Sea population, providing a spatial reference for population size estimates derived in this work unit.
- Contrary to popular belief, it was determined that the most limiting time frame for movements of polar bears was summer, not winter or late spring. Instrumented polar bears were more faithful to their summer time ranges than to ranges occupied at any other time of year.

C. 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. Assessment of critical population parameters are achieved through continued analyses of mark/recapture data, catch/effort data, and mathematical simulations. Work also includes the development and implementation of a U.S./Russian polar bear census.

1994 Activities/Accomplishments:

- In 1994, additional females were captured and fitted with satellite telemetry collars at Wrangel Island (three) and in the Laptev/Kara seas (eight).
- Due to continuing logistical difficulties, attempts to conduct work in the Novosibirsk Islands were not successful. A test of census methodologies was attempted in the Beaufort Sea during fall 1993, but sea ice conditions precluded conclusion; the test was completed during June 1994. The U.S./Russia joint census is now scheduled for fall 1996, probably requiring a revised target completion date.
- Movement patterns of collared bears suggest an indistinct separation zone between bears captured in the East Siberian Sea and bears captured on Wrangel Island. The western bounds of the Chukchi Sea polar bear population cannot be definitely resolved without marking bears in the Novosibirsk Islands.
- NBS researchers participate actively with the Service in annual meetings of the Canadian Polar Bear Technical Committee and serve as technical advisors to the North Slope Borough/Inuvialuit Game Council management agreement on polar bears in the Beaufort Sea. NBS is also active with the Service in the formation of working groups of government and Native representatives in Alaska and Russia to support development of a future bilateral conservation agreement between the U.S. and Russia for the Chukchi/Bering Seas polar bear population.

D. 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).

1994 Activities/Accomplishments:

This work unit was completed as of September 1994.

- Additional digital tapes of Advanced Very High Resolution Radiometry (AVHRR) images of sea ice coverage in the Bering and Chukchi Seas were incorporated into the GIS. Data from Russian hydrometeorological stations were digitized in a compatible computer format by Russian cooperators. Special Sensor Microwave/Imager (SSM/I) data from satellite-based passive microwave scanners were used for estimates of sea ice cover needed to investigate habitat use patterns of polar bears in the Chukchi and Bering Seas from 1986-1992.
- The Service was required to prepare a Polar Bear Habitat Conservation Strategy (PBHCS) according to provisions of its final regulations published in the FEDERAL REGISTER on November 16, 1993, (58 FR 60402), governing unintentional take of small numbers of polar bears and walrus incidental to year-round oil and gas operations in the Beaufort Sea and adjacent northern coast of Alaska (excluding the Arctic National Wildlife Refuge). NBS researchers provided assistance to the Service in developing this strategy. (Note: The final PBHCS was completed on August 14, 1995; its completion and public availability were announced in the FEDERAL REGISTER on August 17, 1995, at 60 FR 42805). NBS researchers also assisted the Service in developing a "Conservation Plan for the Polar Bear in Alaska." This plan was completed in June 1994.
- Results of the initial tests of the usefulness of the SSM/I data for studying polar bear habitat use patterns indicate limited potential for those data. Scale of resolution is coarse, allowing investigation of regional use patterns only. Available statistical methods can not address the temporal and spatial variation of ice cover, and statistical methods were developed to address this problem.

E. Project Title and Summary:

Predator/prey interactions of polar bears and ringed seals in the ecosystem of the Polar Basin.

This is a new project being funded in FY 1995. The project goal is to document the status of the polar basin ecosystem by quantifying the relationship between polar bears, the apical predator, and ringed seals, the principal prey of polar bears. Preference of polar bears for various ice habitat types will be determined by retrospective analysis of satellite ice images and satellite relocations of polar bears. Snow-tracking of polar bears will be combined with surveys of ringed seal subnivean structures (lair and breathing holes) using trained dogs, to determine the rates and characteristics of predation on ringed seals by bears. The rates of predation on ringed seals will be estimated for each season for each class of bear, and will be used with demographic data from ongoing mark-recapture studies of bear populations to calculate the effect of polar bear predation on ringed seal populations. At the same time, the effect of ringed seal availability on polar bear hunting success, body condition, and reproductive success will be determined.

1994 Activities/Accomplishments:

None. Funding will begin in FY 1995.

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 (PWS) 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.

1994 Activities/Accomplishments:

- Analysis of mitochondrial DNA (mtDNA) and allozymes were completed for all sea otter tissues collected prior to 1994. Results of mtDNA and allozyme analysis continue to suggest that these techniques may be suitable in identifying geographically separate populations for use in the development of zonal management plans. Several mtDNA haplotypes were identified in each of the three sea otter sub-species, as well as in geographically separate populations. The California population appears to have a monophyletic

mtDNA while the Alaska and Russia populations do not. Low allozyme variation was noted in several populations (PWS, Adak, and Attu), but not in the California population.

- Supplementary tissue samples from the translocated Olympic Peninsula, Washington, population were collected in cooperation with the NBS California sea otter project in August 1994.
- The data collection component of the cooperative research at Amchitka Island with the University of Minnesota and the California Sea Otter Project was completed. Age-specific reproductive data is being analyzed in addition to time-activity budgets and food habits.
- Preliminary analysis of the Amchitka Project estimated annual reproduction rates of mature females at about 0.81, with a mean reproductive interval of 390 days. These values are below estimates from Kodiak Island. Adult, non-pregnant female sea otters are significantly lighter in weight, but not shorter than females from Kodiak Island. Findings suggest that reproductive parameters may be useful in defining the status of sea otter populations relative to resource availability.

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 PWS sea otter population.

1994 Activities/Accomplishments:

- Locations for routine sampling of crab populations in Glacier Bay were selected in areas with close proximity to current sea otter concentrations; sea otter occupation of these areas is anticipated in the near future which will allow gathering of data regarding the effects of sea otter foraging. There is the potential for dramatic changes in the structure of nearshore benthic communities as sea otters expand their range in southeast Alaska. In areas where sea otters are currently absent, dominant organisms include sea urchins, clams, scallops, and crabs. Sea stars are abundant and are likely the principal predator on many invertebrates. As sea otters move in, preda-

tion will likely increase and dramatic changes in community composition can be expected.

- Development of a standardized sea otter survey method was continued, incorporating results of previous research results. Results of FY 1993 field trials identified inter-observer variation and small sample sizes as components leading to high levels of imprecision. Observer training and testing resulted in all observers attaining maximum detection probabilities greater than 0.90. These results suggest that detection bias can be minimized. This training/testing was conducted in cooperation with the Service, enabling implementation of the protocol in a survey of Kodiak Island during July and August 1994. A second trial survey was conducted in PWS using data and techniques developed over the past three years.
- During the trial surveys in PWS, comparison of surveys using systematic site selection with surveys where intensive search units were selected based on the presence of otters, found no difference in detection probabilities, allowing future surveys to utilize the more efficient method. The adjusted estimate of abundance is 16,814 sea otters with a proportional standard error of 0.34.
- In August 1994 the vendor contracted to integrate time-depth recorders and VHF radio transmitters determined that integration was not feasible and the contract was cancelled. A collaborative effort with the University of Alaska was initiated to investigate the use of pressure modulated sonic transmitters to obtain sea otter dive data.

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.

1994 Activities/Accomplishments:

This work unit was completed in 1994.

- Juvenile sea otters in PWS were monitored biweekly through spring 1994; thereafter battery

failure precluded further monitoring. Foraging behavior in eastern PWS was observed during April-June 1994; surveys for beach-cast carcasses were conducted at Green Island (western PWS) in April; and aerial surveys of PWS sea otters were conducted in midsummer.

- Construction of a population model for sea otters is underway to predict recovery time from oil-related injury.
- The probability of survival for juvenile sea otters is dependent on both location and sex: juvenile females had a higher survival rate than males, but females from western PWS had poorer survival than their counterparts in the east. Survival rates for juvenile males from eastern and western PWS were similar.
- Initial examination of the foraging data suggests that food resources are more abundant in eastern PWS.
- Aerial surveys of distribution and abundance suggest that sea otter densities in areas that were heavily affected by the spill remain relatively low, compared to other regions of PWS. The extent to which the spill is a factor causing these low densities is unknown.
- Estimates of age at time of death of beach-cast carcasses on Green Island, based on aging of teeth, indicated that the pattern of mortality is similar to pre-spill patterns.

3. Miscellaneous Marine Mammals

(work units which study several marine mammal species)

A. Project Title and Summary:

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

DNA analyses of animal populations are evaluated to assess their usefulness in quantifying genetic relationships among animal populations. Animal movement patterns are compared with genetic patterns to determine information about current and past levels of gene flow and differentiation of subpopulations. Studies are conducted on sea otters, polar bears, and walrus.

1994 Activities/Accomplishments:

- A large number of highly variable nuclear microsatellite genetic markers have been devel-

oped for several taxa, including walrus, polar bear, and sea otter.

- Mitochondrial DNA (mtDNA) studies of polar bears failed to show significant genetic differences between Chukchi and Beaufort Sea populations. Recently characterized microsatellite nuclear loci will be used with a larger data set to continue the analysis.
- mtDNA analyses of sea otters revealed a high degree of macrogeographic variation, generally consistent with currently recognized sub-specific boundaries. Populations differed greatly in levels of genetic variability, though not in a manner consistent with estimates of current population size.
- Analyses of walrus mtDNA have been completed. Data conclusively show that Atlantic and Pacific subspecies are highly genetically divergent. Analyses of samples collected throughout the Chukchi and Bering Seas show that walrus are highly genetically variable. Little evidence was found for population structuring within the Chukchi-Bering Sea region.

B. Project Title and Summary:

Population status and trends in marine mammals in Alaska.

More feasible approaches to evaluation of the status and trends of marine mammal (walrus, polar bear, and sea otter) populations are being developed to replace present methods which are logistically difficult and very costly. Objectives to accomplish this include: (1) continued development and evaluation of survey methodologies; (2) construction of models to evaluate the dynamics of marine mammal populations; and (3) identification of characteristics of populations and individuals that enable assessment of population condition and status.

1994 Activities/Accomplishments:

- A program to collect data and samples from sea otter carcasses taken by Alaskan Native hunters was initiated in conjunction with the Service.
- Cooperation with the Service continued as conservation plans for polar bear, sea otter, and walrus were finalized in 1994, and in the development of materials for distribution to Alaskan Natives and other interested parties.
- The development of several cooperative agreements with the NMFS has been initiated, one to apply individual-based models to walrus population data, and another to co-sponsor a workshop

on census methodologies of marine mammals with varying sightability and availability.

- Censuses of walrus at Round Island continued, with the overall goal being the assessment of human influences on walrus populations and haulouts in the Bristol Bay area; minimal behavioral data was also collected. Tourist visits to Round Island were vastly reduced in 1994 due to administrative factors. However, the peak number of walrus utilizing Round Island continued to decrease over previous years. Basic walrus behavior was similar to that observed in 1993, but activity rates were significantly higher.
- Walrus harvest statistics and biological samples were collected from spring harvests in four locations; preliminary analyses of data and reading of teeth and reproductive tracts are underway and contaminant samples have been stored pending analysis. Walrus harvest in the four monitored villages was lower in each case than the 13-year means reported for these villages; total observed number of walrus harvested in the four villages was 778 animals.
- Planning for a joint NBS-NMFS workshop on census methodologies will be completed during FY 1995, with the workshop being held at the NMFS's National Marine Mammals Laboratory during the winter of 1995.

C. Project Title and Summary:

Alaska Marine Mammal Tissue Archival Project.

The study collects and archives representative marine mammal tissues for future contaminant analyses and documentation of long-term trends in environmental quality, potentially associated with oil and gas development in Alaskan waters. Collections are limited to freshly killed specimens taken under rigorously controlled conditions by researchers associated with ongoing programs or subsistence hunters. Tissue samples are archived with the National Biomonitoring Specimen Bank, National Institute of Standards and Technology. Tissue aliquot are analyzed for quality control and the results published in annual reports and refereed journals.

1994 Activities/Accomplishments:

- Work is proceeding as scheduled. Samples have been collected from a variety of marine mammals including ringed, spotted, harbor, bearded and northern fur seals; Steller sea lion; beluga and bowhead whales; and Pacific walrus. At the

beginning of FY 1994, the NBS assumed the administration of this project from the MMS.

- Organic and inorganic analyses have been performed on approximately 75 percent of the animals to establish baseline data permitting comparison with other data and future analyses. The inventory of archived tissues includes tissues from 121 animals sampled between 1987 and 1994 and accompanying information on: species, location collected, morphometrics, tissues collected, and dispositions of the tissues (i.e., archived or homogenized for analysis). Analyses completed to date include 35 major and trace elements, including potentially toxic heavy metals, in seals from Norton Sound, beluga whales from Cook Inlet and the Chukchi Sea, and bowhead whales from Arctic sampling areas. The concentrations of 120 chlorinated hydrocarbons were measured in belugas sampled in the Chukchi Sea.
- A Specimen Inventory Report and Annual Report were submitted in February 1994. The sample inventory presently consists of 263 samples from 94 animals. Most of the samples have been collected from beluga whales, bowhead whales, and ringed seals.
- The project has not analyzed every archived sample, however, aliquot of some of the samples have been analyzed for chlorinated hydrocarbons and heavy metals in order to monitor changes in the samples during storage and to determine the baseline levels of contaminants in a few of the species. Although analysis has been quite limited at this time, existing results suggest that the beluga whale warrants further attention regarding contaminant loads, particularly PCB's and chlorinated pesticides in its blubber.

D. Project Title and Summary:

Bering-Chukchi Sea Ecosystem Initiative.

This is a new project to be funded in FY 1995. The long-term objectives of the initiative are to investigate interrelationships among biotic and abiotic components of the Bering-Chukchi Sea ecosystem, with focus on certain species (major predators or herbivores of management concern) as indicators of ecosystem health, and to link those indicators with oceanographic factors that influence biological production. This broad initiative involves work on polar bears and Pacific walrus, as well as eiders, seabirds, and Arctic-nesting geese. The objectives of the polar bear/walrus work are: (1) to determine the ecological relationships between walrus, polar bears,



Sea Otter with young. U.S. Fish and Wildlife Service photo by Lynn Starnes.

their respective prey species, and the sea ice habitats in the Bering and Chukchi Seas, and to relate those ecological parameters to the trophic structure of the seas; and (2) to determine the ecological significance of radionuclide contaminants in the Russian Arctic and the potential of these contaminants for entering the Bering and Chukchi Sea ecosystem. Telemetry technology will be developed and used to define movement and habitat use patterns of polar bears and walrus; remote sensing data will be used to study sea ice characteristics and determine interrelationships with prey species; and standard sampling protocols and systematic sampling from harvested and beach-cast animals will be used to determine environmental contaminant levels. Biological sampling for radionuclides will be conducted from selected sites from the Russian Arctic between the Bering Strait and Novaya Zemlya in the Barents Sea in collaboration with Russian and Norwegian colleagues.

1994 Activities/Accomplishments:

None. Funding will begin in FY 1995.

E. Project Title and Summary:

Distribution and abundance of marine mammals in the North-Central and Western Gulf of Mexico.

The goal of this project is to determine the seasonal and geographic distribution and movements of cetaceans in areas potentially affected by future oil and gas activities along the continental slope in the north-central and western Gulf of Mexico. This is being accomplished through the use of systematic aerial and shipboard visual surveys, shipboard acoustic surveys, conventional and satellite telemetry of sperm whales, environmental data gathering on habitat use patterns, and behavioral descriptions to

assess age and sex configurations, preferred areas and times of travelling, resting, socializing, feeding, and to calibrate aerial surveys.

1994 Activities/Accomplishments:

- This project is nearing completion; all field data have been retrieved and some data are still being analyzed. The contract has been extended through July 1995. A final report is due in the summer of 1995.
- The project has been successful in delineating oceanographic patterns and documenting associated marine mammal activities.
- Several interesting observations regarding the presence/absence of particular marine mammal species in the Gulf of Mexico have been recorded. Fraser's dolphins were observed for the first time in the Gulf, in herds of up to 200 individuals; earlier sightings of common dolphins in the Gulf of Mexico proved to have been erroneous; sperm whales are unusually common in the Gulf, with an estimated population of approximately 300 animals.

4. Manatee and dugong

A. 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 sirenian Order is being assessed.

1994 Activities/Accomplishments:

- Radio tracking studies in FY 1994, of the Florida manatee on the Atlantic coast continued at a level similar to previous years. A total of 71 Florida manatees (24 male; 47 females) have been radio-tagged since the start of the study, and over 40,000 locations have been logged on satellite-tracked manatees.
- A post-doctoral associate has been hired to continue work on estimating manatee survival rates, and to initiate analyses of telemetry data. Field work was completed and data analyses are underway on the nutritional value of, and manatee preference for, selected freshwater aquatic plants. Field work to obtain data for the Manatee Individual Photo-Identification System was completed.

- The Sirenia Project and the Florida Department of Environmental Protection (FDEP) hosted a five-day, international workshop on manatee and dugong research and conservation methods in March 1994. A total of 23 biologists from twelve countries attended the workshop.
- Input was provided to the Service to assist in the development of plans for a temporary manatee pen to acclimate captive release candidates to natural conditions. The "soft-release" pen was completed in August 1994, and benthic vegetation mapping and density estimation were conducted in the pen before and after exposure to manatee grazing. Behavior of manatees placed in the pen was monitored and one manatee released from the pen back to the wild was radio-tagged and tracked. The six-week trial produced encouraging results; long-term captives may learn by example from experienced manatees inside the acclimation pen and possibly from wild manatees outside the pen.
- Summary of Atlantic coast manatee telemetry data from 1986-1993 indicates a much greater range of movements in eastern Florida than previously determined from telemetry studies in other areas.
- Results from strip-transect aerial surveys in the Banana River were compared with those obtained by FDEP in the Ten Thousand Islands region in southwest Florida; the method shows promise in areas like the Banana River region where water clarity is good, but not for areas like the Ten Thousands Islands where clarity is poor.

B. Project Title and Summary:

Mapping and Characterizing Seagrass Areas Important to Manatees in Puerto Rico.

This is a new project to be funded in FY 1995. This study proposes to make use of existing, high quality aerial photography by the U.S. Navy of coastal waters and submerged aquatic vegetation in Puerto Rico to develop base maps of seagrass bed outlines. It will also provide information from benthic surveys of seagrass bed species composition and coverage in areas of high manatee use. These habitat features will be related to information about manatee distribution and behavior obtained through satellite telemetry.

1994 Activities/Accomplishments:

None. Funding will begin in FY 1995.

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 this 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.

1994 Activities/Accomplishments:

- A three-year field project on behavioral ecology of sea otters in the western Aleutian Islands was completed; report and manuscript preparation continues. A field study of the behavioral ecology in Washington was initiated; otters were captured and radio-instrumented, and data on feeding, movements, activity and social behavior are being collected.
- A comparative study on organic contaminants in sea otters was completed; results show unexpectedly high levels of PCB'S and DDT in otters from the central and western Aleutian Islands. A research protocol to determine the source of contaminants is being developed.
- Censuses of California sea otters were continued. Preliminary analysis of 10-year trends in distribution and abundance of California sea otter populations was completed. Although the California sea otter population has steadily increased at about 5 percent per year, its range has not increased. These findings are directly relevant to the development of recovery criteria and strategies, and may require the Recovery Team to revise its recommended approach to recovery.
- A survey of the translocated sea otter colony in Washington was conducted in cooperation with the Washington Department of Fish and Wildlife, and an analysis of growth trends in that population was completed. Since 1989, when the current survey method was first used, the translocated sea otter population in Washington has grown at over 12 percent per year; analysis of data from 1977-1988 suggest a rate of over 20 percent per year. It is unclear whether the differ-

ence reflects a slow down in growth or simply a difference in survey methods.

B. Project Title and Summary:

Interactions between sea otters and nearshore ecological communities.

Monthly, seasonal, and interannual 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.

1994 Activities/Accomplishments:

- Analysis of changes in nearshore communities off central California and at San Nicolas Island continued. There were no new results to report since last year.
- The predicted effects of sea otters on kelp abundance (i.e. enhancement) has been found to occur broadly throughout Alaska and British Columbia, Canada.
- The abundance of benthic-feeding sea ducks (e.g., eiders and scoters) has been found to correlate negatively with the distribution of sea otters in western Alaska. Duck population declines also have been documented following the recovery of sea otter populations at other locations.

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 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 an NMFS/Service Memorandum of Understanding, the Service retains authority over those investigations that involve endangered or threatened species under the Department's jurisdiction. Violations are referred to the Department's Office of the Solicitor for civil action or the Department of Justice for criminal enforcement action.

The Clark R. Bavin National Fish and Wildlife Forensic Laboratory (Lab) continued to provide assistance to field enforcement personnel by examining evidence associated with marine mammal investigations. For example, the pathology section examined the dissected heads of approximately 20 marine mammals (mainly seals and sea lions) to determine the cause of death and to recover bullets. Recovered bullets were characterized and identified and the investigating officers were then provided a list of probable weapon sources.

Approximately 15 marine mammal items were examined at the Lab in 1994 to determine species identification.

The Lab has developed additional techniques for identifying marine mammal products. An analytical technique for the analysis of Ambergris (a waxy substance from sperm whales used in the manufacture of perfumes) was developed. DNA primers were developed which were used to distinguish harbor porpoise and Dall's porpoise.

Enforcement patrols were conducted along the northwest coast of Alaska by special agents checking for compliance with the wasteful take provisions of the Act. Special agents had attended meetings in several Alaskan Native communities and discussed the "wasteful take" provisions of the Act before enforcement patrols began. Particular enforcement emphasis was placed in those areas where large numbers of walrus are taken, including St. Lawrence Island and the Seward Peninsula. Two citations were issued to Alaskan Natives for wasteful take of walrus and polar bear.

Prosecutions of the last of defendants in "Operation Whiteout" (an undercover case involving the illegal trade of marine mammal parts) occurred in 1994. A total of 48 defendants were convicted in the investigation. They were assessed \$81,174 in fines, restitution, and special assessments, and were sentenced to 26.75 years in prison and 25.75 years of probation.

A multi-year investigation, involving a wholesale fly fishing supply store in Oregon that was unlawfully dealing in polar bear fur, was concluded. This case involved investigative activities by agents in Alaska, Washington, and Oregon. The owner of the supply store had unlawfully obtained polar bear hides from Alaska, Canada, and Russia and attempted to "launder" the hides by claiming they were pre-Act or legal Alaskan Native handicrafts. The hides were cut-up and sold as fly-tying material. Patches of polar bear hide, depending on size, sold for as much as \$50 each. Fishing flies containing polar bear hair sold for \$20 each. Prosecution of this case is pending.



Attaching transmitter to manatee. U.S. Fish and Wildlife Service photo.

Wildlife inspectors continued to identify and seize a variety of marine mammal products being unlawfully imported into the United States at those U.S. Customs ports of entry located in the Service's Pacific Region. In southern California, an area that includes the large, designated port of Los Angeles and the California-Mexico land border, a total of 16 seizures were made including whale bones, dolphin skulls, and seal and sea otter products.

Investigations of two separate oil spills, that resulted in the deaths of southern sea otters, have culminated with the payment of \$25,000 in penalties in each case. Unocal Oil Company and Berry Petroleum Company both agreed to settlements involving the payment of penalties, predicated on the unlawful discharge of oil into the Pacific Ocean as a result of system failures.

As reported in the 1993 report, a law suit was filed by the "personal watercraft industry" seeking to overturn regulations restricting the use of jet skis and other watercraft in the Monterey Bay National Marine Sanctuary. The Service provided assistance to the Department of Commerce in defending the regulations, including providing the details of a successful prosecution of a jet skier who was attempting to run over sea otters in Monterey Bay. The regulations have been upheld by the Ninth Circuit Court of Appeals, and Service special agents continue to provide law enforcement assistance to the NMFS within the Sanctuary.

An investigation of the illegal sale of wildlife, conducted jointly with the California Department of Fish and Game, has resulted, in part, in the forfeiture of a polar bear rug and a fine of \$2,500 for a violation of the Act. Service special agents covertly

contacted the subjects who owned a souvenir shop in Carmel, California, and purchased the rug and other products made from protected wildlife.

In 1994, a total of four southern sea otters were recovered with identifiable gunshot wounds. All bullet fragments were removed and analyzed by the Service's Lab, albeit, without any usable result. Investigation into these cases continues. The Service has assumed responsibility for the recovery of otter carcasses in California, as the program, which historically had been administered by the California Department of Fish and Game, lost its funding. Four metal detectors have been purchased and distributed to the "stranding network" in an effort to provide a more timely response to otter deaths attributed to gunshot.

During the 1994 reporting period, Honolulu, Hawaii, and Guam wildlife inspectors closed three marine mammal cases under the Act. These cases involved illegal importations of walrus ivory, whale bone pendants, and Asian medicinals containing seal products.

Eleven sperm whale teeth were seized at the Blaine, Washington, port of entry. The teeth were turned over to the NMFS.

Investigations at Seattle's Sea-Tac airport associated with the importation of marine mammals included three separate incidents involving walrus products and two incidents involving seal parts or products.

Permits and Registrations

The Act prohibits the take or import of marine mammals and marine mammal products although exceptions may be made under permits.

Considerable changes to the Permits section of the Act were made by the 1994 amendments to the Act contained in Public Law 103-238 enacted on April 30, 1994. In addition to exceptions under permits for public display, scientific research, or to enhance the survival or recovery of a species or stock, Section 104 was amended to allow for the issuance of permits for the import of sport-hunted polar bears (excluding internal organs) taken in Canada by the applicant, for photography for education or commercial purposes, and for beached and stranded marine mammals that are designated as non-releasable under the Act.

The permit section for Public Display was also amended to allow for the take, import, purchase, offer to purchase, possession or transport of a marine mammal that is on public display permit

without additional permits. Now the facility need only submit a transport notification form 15 days prior to shipment. The recipient facility must meet the requirements for a public display permit or hold a permit for scientific research or to enhance the survival or recovery of a species or stock. Similarly, captive-born progeny of marine mammals taken or imported under a public display permit may also be possessed, sold, purchased, transported, exported, or offered for sale or purchase without additional permit or authorization provided the facility submits a transport notification.

Section 104 was further amended to allow for the issuance of a General Authorization for the incidental take of marine mammals by Level B harassment in the course of bona fide scientific research. The General Authorization provisions are intended to streamline the permitting process for conducting scientific research.

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 18.31 for scientific research or public display permits. Regulations are currently being developed by the Service on the issuance of permits to import sport-hunted polar bears taken in Canada. Regulations will be developed for issuance of permits for enhancement of the survival or recovery of a species or stock, for photography for education or commercial purposes, and for the issuance of permits for beached and stranded marine mammals which are determined to be non-releasable, as well as for issuance of General Authorizations and notification of transport.

In order to enable marine mammal hides to be tanned and to facilitate trade of products among Alaskan Natives, registered agent/tannery permits may be issued to non-Alaskan Natives (i.e., persons other than Alaskan Indians, Eskimos or Aleuts). Registered agents may purchase and sell raw parts and tanned skins from and to Alaskan Natives or other registered agents. Raw parts may be transferred (not sold) to registered tanners for further processing. Registered tanners may transfer (not sell) parts received for processing to Alaskan Natives or registered agents, only.

During 1994 one new permit and six amendment/renewals were issued for scientific research. Three permits were issued for public display. Six parties either registered or renewed their registration as agents and/or tanneries.

The following is a brief description of permit actions taken in 1994.

Scientific Research Permits

1. Permit PRT-761873 was renewed effective January 12, 1994, through January 31, 1995, to Mote Marine Laboratory, Sarasota, Florida, authorizing them to conduct hearing studies on two male and two female captive West Indian manatees (*Trichechus manatus*).
2. Permit PRT-740507, issued to the NBS, Alaska Science Center, Anchorage, Alaska, was renewed October 7, 1994, through December 31, 1996. The permit authorizes: (a) the reimport of parts of dead Alaska sea otters (*Enhydra lutris*) previously exported to Marine World, Japan, and Vancouver Aquarium, Canada, to be used to study the long-term effects of oil exposure; (b) the import of tissue samples taken from dead sea otters in Canada and Russia for use in a genetics study; and (c) the collection of biological samples and the harassment of up to 400 sea otters. Harassment activities include capture/recapture, transport, temporarily maintain, drug, flipper tag, blood sample, inject with subcutaneous transponder chip, collect urine sample, biopsy oral and vaginal lesions, and release up to 200 sea otters. The purpose of the capture/release activities is to obtain an additional set of control samples and to more accurately assess potential organ dysfunction, which may be related to oil exposure and for virology assays.
3. Permit PRT-766146 was amended effective March 17, 1994, through October 31, 1997, to Texas A&M University, Marine Mammal Research Program, Galveston, Texas, authorizing two additional staff members to conduct research on captive West Indian manatees (*Trichechus manatus*) held at facilities in Florida to obtain data pertaining to reproduction energetics, growth, and thermoregulation.
4. Permit PRT-777239 was amended effective April 14, 1994, through December 31, 1999, to the NBS, Alaska Science Center, Anchorage, Alaska, for take of sea otters (*Enhydra lutris*) in the nearshore waters of Washington State to monitor behavior, demography, and natural history of this population. This amendment changed the name of the permittee from the Service to the NBS.
5. Permit PRT-691972 was amended effective August 16, 1994, through December 31, 1994, to the Carle Foundation Hospital, to include

import of organ tissue samples taken from three polar bears used in toxicological studies. The samples are to be used to collect data on residency times of Telazol and on tissue contamination by industrial pollutants.

6. Permit PRT-790174 was issued effective July 12, 1994, through December 31, 1996, to the Service's Marine Mammals Management Office, Anchorage, Alaska, for the import of up to 400 polar bear teeth from Canada for age determination studies.
7. Permit PRT-672624 was renewed effective October 12, 1994, through October 11, 1997, to the NBS, Santa Cruz, California, for take of up to 100 California sea otters (*Enhydra lutris nereis*) annually. The take activities include capture, sexing, weighing, and marking by ear-tag, flipper-tag, radio-tag, or implant subcutaneously with passive implantable transponder. The research continues efforts to study long-term life history patterns, characteristics of the reproductive cycle, and characteristics and variations in social behavior and social structure.

Public Display Permits

1. Permit PRT-778099 was issued January 14, 1994, for the New York Aquarium, Brooklyn, New York, to take in Alaska two male and four female walrus (*Odobenus rosmarus*) for the purpose of public display.
2. Permit PRT-786616 was issued April 19, 1994, for Marine World Africa USA, Vallejo, California, to take in Alaska two male and four female walrus (*Odobenus rosmarus*) for the purpose of public display.
3. Permit PRT-795025 was issued September 27, 1994, for Daesaeng Corporation, Seoul, Korea, to take in Alaska one male and four female northern sea otters (*Enhydra lutris*) for the purpose of public display.

Registered Agent/Tannery Permits

1. Permit PRT-786404, Rob Lupton, Anchorage, Alaska, was registered as an agent on April 26, 1994.
2. Permit PRT-766363, renewed the registration of the State of Alaska, Department of Corrections, Fairbanks, Alaska, as an agent on August 11, 1994.

3. Permit PRT-723077, renewed the registration of Alaska Fur Exchange, Anchorage, Alaska, as an agent on February 4, 1994.
4. Permit PRT-681597, renewed the registration of George L. Kritchen, Cordova, Alaska, as an agent on September 6, 1994.
5. Permit PRT-683423, renewed the registration of New Method Fur Dressing Co., San Francisco, California, as a tannery on May 20, 1994.
6. Permit PRT-764052, renewed the registration of D. Cohn Fur Processors, Inc., Greenville, South Carolina, as a tannery on September 6, 1994.

1994 Amendments to the Act

The Service is coordinating with the NMFS to develop harmonized regulations as a result of the 1994 amendments to the Act. The Service has proposed regulations on the application procedures for issuance of permits to import polar bear trophies legally taken in Canada. At the same time, the Service is coordinating with Canada to obtain information needed to make the findings required by the Act for such permits.

International Activities

U.S.-Russia Environmental Agreement: Marine Mammal Project

The Service, in partnership with the NBS, NMFS, ADF&G, All-Russian Institute for Fisheries and Oceanography (VNIRO), Russian Academy of Sciences, and Russian Ministry of Environmental Protection and Natural Resources led a comprehensive program of laboratory and field research in 1994. Four American scientists and eight Russian scientists took part in a total of eight exchanges.

In February, an NBS researcher traveled to Moscow, St. Petersburg, and Petropavlovsk-Kamchatskiy, Russia, to study archived records of Russian sea otter harvests in North America between 1741 and 1867. The harvest records are used in reconstructing estimates of sea otter population size and distribution in North America.

A NBS biologist joined Russian colleagues from late March to mid-May in capturing and marking polar bears and in surveying dens on Wrangel Island, Herald Island, the Russian mainland along northern

Chukotka, the Novosibirsk Islands, and the Severnaya Zemlya Islands.

A marine mammal specialist from Kamchatka, Russia, traveled to Alaska and Washington in March-April to meet with representatives of the State of Alaska, NBS, and NMFS to review joint programs.

A NMFS researcher attended an April meeting of the International Working Group on Northern Fur Seal and Steller Sea Lion Population Dynamics in Petropavlovsk-Kamchatskiy, Russia.

In June-July, a Russian marine mammals specialist joined the NMFS in shipboard surveys of Steller sea lion pups in Southeast Alaska.

A Service marine mammal specialist visited Arakamchechen Island, Chukotka, Russia, in August to observe the impact of eco-tourism in the vicinity of walrus haulout sites.

In August, a Russian from the Kamchatka Institute of Ecology and Nature Management participated in the radio tagging of harbor seals in southeastern Alaska. The work is designed to determine correction factors for aerial survey data.

From late August to mid-November, a Russian from Kamchatka joined ADF&G scientists in field studies and the analysis of data on spotted and harbor seals in Alaska.

Finally, Service representatives, together with Alaskan Native representatives and State of Alaska officials met with four Russian officials in September in Nome, Alaska, to continue technical discussions on proposed joint management of the shared Chukotka-Alaska population of polar bears, and of Pacific walrus.

Amendment and Reauthorization of the Marine Mammal Protection Act

The Act was amended and funding levels were reauthorized on April 30, 1994, by Public Law 103-238, the "Marine Mammal Protection Act Amendments of 1994." Passage of the amendments culminated a lengthy legislative process that involved extensive Service participation and resulted in numerous significant changes to the Act, including the following:

Section 101(a)(4) was modified to allow deterrence measures to be used against marine mammals to protect fishing gear or catch, other private property,

personal safety, and public property. When used, deterrence measures must not result in the death or serious injury of a marine mammal. A list of guidelines for use in safely deterring marine mammals must be developed and published in the FEDERAL REGISTER. The amendment further specifies that the Secretary shall recommend specific measures that may be used to deter marine mammals listed as threatened or endangered under the Endangered Species Act.

New section 101(a)(5)(D) directs the Secretary to authorize for periods up to one year the incidental, unintentional take by harassment of small numbers of marine mammals during the course of specified activities other than commercial fishing. As explained in the legislative record, this provision is intended to establish an expedited, non-rulemaking process to address procedural problems arising when applicants have sought authorizations for incidental takes by harassment under existing provisions in section 101(a)(5)(A).

Section 101(a)(5)(E) was added to allow during any period of up to three years for the Secretary to issue permits for the incidental, unintentional take of endangered or threatened marine mammals during commercial fishing operations. The legislative history recognizes that both the Secretary of Commerce and the Secretary of the Interior have jurisdictional authority over marine mammals and states that permits for specific listed species' takes will be issued by the appropriate agency. While the amendment does not apply to the incidental taking of California sea otters, West Indian manatees are covered.

New section 101(a)(6) eases import provisions with respect to personal effects items composed of marine mammal parts, and for noncommercial purposes by Alaskan Natives and non-Alaskan indigenous peoples when the product is part of a cultural exchange.

A new section 101(c) was included in the 1994 amendments to allow take of a marine mammal for self-defense or to save the life of a person in immediate danger. The Secretary may seize and dispose of any carcass taken for this reason.

Several substantial changes to section 104, "Permits," were enacted in 1994. These include new provisions allowing the issuance of permits to take and import for purposes of photography for educational or commercial purposes, or for the importation of polar bear parts (other than internal organs) legally taken in sport hunts in Canada. As of the end of 1994, efforts were underway to implement this

provision. (Note: On January 3, 1995, the Service published in the FEDERAL REGISTER (60 FR 70) a proposed rule to establish application requirements, permit procedures, issuance criteria, permit conditions, and a special permit issuance fee. The rule proposed the legal and scientific findings required by the 1994 Amendments that need to be made prior to the Service issuing permits to allow for the importation of sport-hunted polar bear trophies legally taken in Canada. On July 17, 1995, the Service published in the FEDERAL REGISTER (60 FR 36382) a supplemental proposed rule that announced the proposed legal and scientific findings on the importation from Canada of legally taken trophy polar bears. On October 20, 1995, the Service published in the FEDERAL REGISTER (60 FR 54210) a notice that reopened through November 6, 1995, the comment period on the July 17, 1995, proposed findings. This issue is still pending.)

Section 113 was amended to require the Service to review the effectiveness of the 1973 international Agreement on the Conservation of Polar Bears. The new provisions also require the Service to review the effectiveness of United States implementation of the Agreement and to report to the Congress on its findings.

Modifications were made to section 110 to require the Department of Commerce, in consultation with the Service and others to undertake a program to monitor the health and stability of the Bering Sea ecosystem.

Section 401 of new Title IV of the Act requires the Department of Commerce, in consultation with the Service and others, to establish a Marine Mammal Health and Stranding Response Program.

Significant amendments involved establishing a new regime to govern the incidental taking of marine mammals during commercial fishing operations. New section 118, "Taking of marine mammals incidental to commercial fishing operations," was added to replace section 114, "Interim exemption for commercial fisheries," that had been in place since 1988. Closely related to this new regime, a new section 117, "Stock assessments," was also added. These new provisions require: (1) the preparation of stock assessments for all marine mammal stocks that occur in U.S. waters; (2) development and implementation of take reduction plans for stocks that may be reduced or whose populations are already below their optimum sustainable population levels if those stocks interact with commercial fisheries. While the NMFS (for the Secretary of Commerce) has primary responsibility for imple-

menting new section 118, they are required to involve the Service through consultation prior to taking actions or making determinations that affect or relate to species or populations stocks of marine mammals for which the Secretary of the Interior is responsible. Development of stock assessments is required by the appropriate agency depending on management responsibility.

In implementing new section 117, the Service has worked closely with the NMFS. The Act requires these stock assessments, using the best scientific information available, to include information regarding the distribution and abundance of the stock, population growth rates and trends, estimates of total annual human-caused mortality from all sources, descriptions of the fisheries with which the stock interacts including an assessment of whether incidental fishery takes are "...insignificant and... approaching a zero mortality and serious injury rate," and the status of the stock. Although many of the items to be included in the stock assessments were described explicitly in the 1994 amendments, many elements including a quantitative definition of the parameters used in calculating Potential Biological Removal levels (PBR, defined in the Act as "the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population") were defined only in general terms.

To promote consistent interpretation of this provision of the Act, the NMFS convened, and the Service participated in, a workshop in La Jolla, California, from June 27-29, 1994. Preliminary guidelines to be used in preparing the draft stock assessments were developed and contained in a document entitled, "*Report of the PBR (Potential Biological Removal) Workshop.*" The Service also participated in a NMFS sponsored, combined meeting of Scientific Review Groups in Seattle, Washington, October 12-13, 1994. The three groups (i.e., Alaska; Pacific Coast, including Hawaii; and Atlantic Coast, including the Gulf of Mexico) were established by the NMFS, in consultation with the Service, as specified by section 117 of the Act.

Subsequent to the the La Jolla workshop, the Service began to develop stock assessments for those species under its jurisdiction. In Alaska, stock assessments were drafted for polar bears (two stocks, identified as the Beaufort Sea stock, and the Chukchi/Bering Seas stock), Pacific walrus, and northern sea otter. Draft documents were also developed for the northern sea otter in Washington State; southern sea otter in California; and West

Indian manatees in the southeastern United States (two stocks identified as the Florida stock, and the Antillean stock). On August 23, 1994, the Service published in the FEDERAL REGISTER (59 FR 43353) a notice of availability of the draft documents with a comment period open through November 21, 1994. The comment period was subsequently extended by a FEDERAL REGISTER notice (59 FR 59243) for an additional ten days through December 1, 1994. As of the end of the year, work was progressing on finalizing the stock assessments. (Note: Final stock assessments were completed in 1995. Notice of their completion and public availability was announced in the FEDERAL REGISTER on October 4, 1995, 60 FR 52008.)

Status Reports

Sea Otter-Alaska

The sea otter program undertook or completed several activities during this period including: (1) signing a Memorandum of Agreement (MOA) with the Alaska Sea Otter Commission, (2) completion in June 1994 of a sea otter conservation plan for Alaska, (3) initiation of a biological sampling program, (4) completion of field work for a sea otter abundance survey in the Kodiak Archipelago, (5) working cooperatively with the NBS on development of methodology for a sea otter survey, (6) preparation of a draft stock assessment for sea otters in Alaska, (7) expanding the application of data collected during the Marking, Tagging, and Reporting Program including applying GIS technology to consider the demographics of harvest and collection of genetics data to use to evaluate stock separation.

Alaska Sea Otter Commission MOA

The Alaska Sea Otter Commission (ASOC) is a Native Alaska organization that represents Native sea otter hunters in over 33 villages in Alaska. Their goal is to represent Native concerns and promote sustainable use of sea otters in Alaska. The Service, recognizing the role of Alaskan Natives in co-management of sea otters, entered into a MOA with the ASOC and the State of Alaska which states that the signatories will work together on mutual goals pertaining to sea otter conservation and management throughout their range in Alaska.

Sea Otter Conservation Plan

A *Conservation Plan for the Sea Otter in Alaska* was completed which describes the Service's current and future activities to further the conservation and sound management of sea otters in Alaska. This is important to Alaskan Natives who depend on marine mammals for subsistence purposes and for creating handicrafts, to industries such as commercial fisheries and oil and gas which sometimes interact with sea otters incidentally during their activities, and to others. This plan was prepared with the assistance of many individuals and organizations, particularly the Marine Mammal Commission.

Biological Sampling Program

In partnership with the ASOC and the NBS, the Service initiated a biological sampling program to collect biological information from carcasses of hunter-killed sea otters. This data will be used to monitor contaminant loads in otters throughout Alaska, to develop biological indices as tools to describe population health and vigor, and for other applications. A training program was developed and implemented for Alaskan Natives to collect data in their own communities. Data collection began in 1994.

Kodiak Archipelago Survey

Data collection was completed for an abundance and distribution survey for sea otters in the Kodiak Archipelago. Report preparation will be completed in 1996.

Sea Otter Survey Methodology

In partnership with the NBS, the Service continued to develop and evaluate an aerial survey methodology to standardize abundance surveys in most areas of Alaska. This technique will be further evaluated in 1996 due to a requirement to change the aircraft platform previously used. (Regulation changes in 1994 by the Office of Aviation Services required the discontinuation of the Supercub aircraft on which the survey methodology was previously based). This survey will continue to be applied in assessing sea otter abundance throughout Alaska as funds become available.

Stock Assessment

As required by new section 117, a draft stock assessment was developed during 1994 for sea otters throughout Alaska. Notice of its completion and availability for public review was announced in the

Harvest Demographics

The Service continues to use data collected as a result of the Marking, Tagging, and Reporting Program. Work began on the application of GIS analyses of kill locations to better describe hunting demographics. This information is needed to evaluate harvest levels in local areas.

Walrus

Habitat/Ecosystem Issues

Under the Service's 1994 Ecosystem Initiative, several projects concerning the biology and ecology of Pacific walrus in the Bering Sea and Chukchi-Beaufort Seas ecosystems were identified. A coordinated program to monitor walrus haulout sites throughout the Bering Sea ecosystem, the need to initiate studies on walrus feeding ecology, and to identify and monitor essential habitat of walrus were identified as high priority projects. The Service's goal is to coordinate with other Federal and State agencies, Alaskan Native organizations, the scientific community, and private industry, to secure funding, and develop and implement these projects over the next 3-5 years.

In 1993, concerns over potential human disturbances of walrus at terrestrial haulouts in Bristol Bay led to a Cooperative Agreement between the Service and the Alaska Department of Fish and Game (ADF&G) to monitor the number and behavior of walrus at Round Island (Walrus Islands State Game Sanctuary). In 1994, the Service continued to support walrus studies on State lands at Round Island and on Federal lands at Togiak National Wildlife Refuge; the NBS continued to census walrus and to collect behavioral data at Round Island (see additional discussion in this report's *Research and Development* section). The results of behavior monitoring studies carried out at Round Island in 1993 and 1994 will be presented as a Technical Report in 1995. In August of 1994, a Service representative was invited to Russia to participate in a collaborative study with Russian researchers concerned with the relationship between tourism and walrus behavior at Arakamchechen Island (see *Walrus, International Activities* section of this report for a description of this activity).

Walrus Conservation Plan

During the process to reauthorize the Act in 1988 as discussed in the legislative history, Congress suggested that the Department "...may wish to consider whether non-depleted [marine mammals] would benefit from the preparation of conservation plans...[for] the purpose of conserving...species or stocks...[at] optimum sustainable population levels." In 1989, the Service decided that a Conservation Plan could benefit the Pacific walrus population by clearly identifying critical management and research needs, coordinating the tasks, and providing the justification for acquiring long-term support. The Service involved representatives from Federal and State agencies, Alaska Native groups, industry, and the scientific community interested in the development of a "Conservation Plan for the Pacific Walrus in Alaska." The final draft of the Conservation Plan was completed and signed in June 1994. The Plan, which incorporates all of the components of a Conservation Plan as outlined in the 1988 and 1994 amendments to the Act, provides guidance for management, research, and enforcement activities in order to better manage the Pacific walrus population over the next five years.

As required under the 1994 re-authorization of the Act, the Service completed and issued draft stock assessments for all Service marine mammal trust species including the Pacific walrus. The draft stock assessment for Pacific walrus included information on stock definition and range, population size and trends, human caused mortality levels, fisheries interactions, current and maximum net productivity rates, potential biological removal, and identified how this information would be used to assess the status of the Pacific walrus population. The public comment period on the draft assessment closed November 21, 1994. A final stock assessment is expected to be completed in 1995. (Note: Final stock assessments were issued in October 1995 for all Service trust species occurring in the United States and Puerto Rico.)

Contaminants Monitoring

The Service continued with studies to monitor levels of heavy metals in the tissues of Pacific walrus. Data from walrus harvested in Alaska (1986-1989) showed high levels of mercury in livers, and cadmium in kidneys. These data prompted additional studies of walrus samples collected on a joint USA-Russia research cruise in 1991. Laboratory analysis for heavy metals (including methyl mercury) and metalloids were completed for these samples in 1993. These data continue to raise the concern for

potential walrus health effects because of the high levels of cadmium observed in kidneys. New data on methyl mercury showed only low amounts within acceptable limits. A report summarizing these results was presented at the Arctic Science Conference held jointly in Vladivostok, Russia, and Anchorage, Alaska, in August 1994. The results were shared with the Alaska Department of Health and Services.

To continue the contaminant monitoring study and to begin to address the question of what these contaminant levels mean to walrus organ function, samples for contaminant and histopathology analyses were collected in association with the Alaska subsistence harvest between 1992 and 1994. In November 1994, the Service received funds for the analysis of these samples. Funding was also secured to analyze and prepare a report on hydrocarbon levels in walrus tissues collected in association with the 1991 USA-Russia research cruise. The results of these studies are anticipated for release in 1995.

International Activities

A number of cooperative activities with Russia continue to be carried out. In September 1994, representatives from the Service, NBS, Alaska Native groups, and several Russian organizations met in Nome, Alaska, to discuss potential agreements between nations and Native groups for the joint conservation of the shared populations of walrus and polar bears. At the close of the meeting, protocols providing for continued meetings between nations were signed. The Service anticipates carrying out additional work to further progress on this agreement. Both parties have informally agreed that walrus harvest monitoring would be desirable in both Russian walrus harvesting regions (principally the Chukotka coast) as well as the U.S.

At the invitation of the Russian government, the Service participated in a limited cooperative assessment of walrus behavior and the impact of tourism at terrestrial haulout sites in Russia. A Service representative travelled to Russia and spent three weeks conducting behavioral studies at a terrestrial haulout site on Arakamchechen Island (Chukotka). Although valuable baseline data on walrus behavior were collected, the only tourist group observed to visit the Island arrived during a period when no walrus were hauled out, thus no human-walrus interactions were recorded. A draft report summarizing the results was prepared and under review at the end of 1994. Representatives from the Russian national and local governments have expressed the

desire to continue these cooperative studies in the future.

Between 1970 and 1990 the United States and Russia collaborated on range-wide population surveys for walrus at five year intervals. Sensitivity analysis of the most recent survey calls into question whether current methodology is sufficient to accurately predict the size or trend of the Pacific walrus population. The Service has recommended that more research is required to correct for walrus unseen during aerial surveys; results of satellite tracking may provide insight into the proportion of the population missed by surveys. Range-wide surveys are also extremely expensive and require a substantial commitment of resources. At this time no specific plans for conducting a range-wide survey have been made and the costs of conducting such a survey must be weighed against other competing priorities. The next survey is not likely to occur until 1997 (if funds are secured) due to funding priorities in both the United States and Russia.

Polar Bear

Harvest Summary

The Service continued to collect information from polar bears taken by Native hunters in coastal villages for subsistence purposes. The Alaska kill, which includes a limited number of bears killed but not tagged during the period from July 1, 1993, to June 30, 1994, totaled 121 bears and was comprised of 68 males, 43 females, and 10 sex unknown (Table 1). This represented a significant increase from the previous two years but was close to the long term average of 117 bears from 1980 to 1993. The harvest from the Alaska region of the Beaufort Sea stock was 46 bears and represented 38 percent of the total statewide harvest. The number of bears harvested in the villages on St. Lawrence Island increased from 4 in 1992/1993 to 51 in 1993/1994. The sex ratio of male to female polar bears was 61:39. Sex was unrecorded for 8 percent of the harvest. The harvest occurred in all months except July. Approximately 50 percent of the bears were killed between November and January (Table 2).

Polar Bear Management Agreement, Beaufort Sea

The 1993/1994 season marked the sixth year of the Management Agreement for Polar Bears in the Southern Beaufort Sea between the Inuvialuit Game Council, Northwest Territories, Canada, and the North Slope Borough, Barrow, Alaska (IGC/NSB

Table 1. Village Polar Bear Harvest, Alaska 1993/1994.

Village	Male	Female	Unknown	Total
Kaktovik*	2	3	-	5
Nuiqsut*	1	2	2	5
Barrow*	20	5	2	27
Atqasuk*	-	1	-	1
Wainwright*	7	1	-	8
Point Lay	-	-	-	-
Point Hope	5	-	4	9
Kivalina	1	-	-	1
Shishmaref	4	-	-	4
Wales	-	1	-	1
Ageklekak	1	-	-	1
Diomedede	6	2	-	8
Savoonga	6	16	1	23
Gambell	15	12	1	28
Totals	68	43	10	121
Percent	(56.2)	(35.5)	(8.3)	(100)

* Denotes villages party to the ICG/NSB Management Agreement. Harvest season extends from July 1, 1993, to June 30, 1994.

Management Agreement). During the reporting period 46 polar bears were harvested by the residents of Kaktovik (5), Barrow (27), Nuiqsut (5), Atqasuk (1), and Wainwright (8). This level exceeded the harvest guidelines (established at 38 bears) in the INC/NSB Management Agreement by 8 bears (21 percent). This is the second time in the past six years that the guidelines have been exceeded. The harvest by North Slope Borough villages of known-sex animals was 71 percent male and 29 percent female animals. Sex was unknown for 4 bears. The peak of the harvest was in November (28 percent). Three bears were killed outside of the prescribed season from September 1 to May 31. The North Slope Borough and Inuvialuit Game Council meeting of Joint Commissioners and Technical Advisors is scheduled for March 8-9, 1995, in Anchorage, Alaska.

1994 Amendments to the Act: Stock Assessments

During 1994, the Service developed draft polar bear stock assessments for the Beaufort Sea stock and the Chukchi/Bering Seas stock in Alaska. The Alaska Scientific Review Group and the Alaskan Native

community reviewed and commented on early drafts of the stock assessments.

Polar Bear Habitat Conservation Strategy

In November 1993, the Service issued final regulations to govern the incidental, unintentional take of small numbers of polar bears and walrus during year-round oil and gas operations (i.e., exploration, development, and production) in the Beaufort Sea and adjacent northern coast of Alaska. The Arctic National Wildlife Refuge was not included in the applications originally submitted in 1991 by the oil and gas industry requesting incidental take authority, and the final regulations excluded the Refuge. These regulations were originally effective for 18 months through June 16, 1995, but contain a provision that allows for their extension for an additional 42 months (for a total effective period of five years) contingent upon the Service developing and beginning implementation of a Polar Bear Habitat Conservation Strategy (PBHCS). During 1994, substantial effort was invested and an initial first draft was completed in late November.

Development of the draft PBHCS was a collaborative process and involved Alaskan Native organizations, the oil and gas industry, interested conservation organizations, academia, the ADF&G, other Federal agencies, and the Marine Mammal Commission (MMC). Important maternity denning and feeding areas are identified in the PBHCS. The information used to delineate these areas comes from review of the scientific literature, current ongoing research, and Native knowledge. This document represents an initial effort to consider and incorporate local knowledge of polar bear habitat use in addition to the scientific information.

During January 1994, the Service conducted public meetings in Anchorage and Barrow, Alaska, to discuss issues and obtain input for the PBHCS. Participants included representatives from Native groups, the oil and gas industry, conservation organizations, and officials from the North Slope Borough, the ADF&G, Minerals Management Service (MMS), and the MMC. In addition, Service representatives visited 12 Alaskan coastal communities to consult with polar bear hunters on polar bear habitat use. The draft PBHCS is expected to be available for a 60-day public review in early 1995. (Note: A final PBHCS was completed on August 14, 1995. A more extensive account of this effort and document will appear in the Calendar Year 1995 report.)

Alaska Nanuuq (Polar Bear) Commission

The Alaska Nanuuq (i.e., polar bear) Commission was formed on June 16, 1994. It consists of representatives from 14 villages within the range of polar bears. The newly formed Commission will provide technical assistance and advice on biological issues, management planning, and research issues and direction for polar bears in Alaska.

International Activities: U.S./Russian Bilateral Agreement

Representatives of the United States and Russia met in Nome, Alaska, on September 6-9, 1994, to discuss conservation and management strategies for the Chukchi Sea polar bear population stock. A protocol summarizing the major points of agreement was signed by both parties on September 9, 1994. Following is a summary of the principles agreed upon:

1. The 1973 international five-Party "Agreement on the Conservation of Polar Bears" shall serve as the framework.
2. A Government to Government agreement in conjunction with a Native to Native agreement will be developed.

3. Sound biological information will be fundamental to the agreement, including scientific and traditional knowledge, principles of sustained yield, harvest guidelines, and allocation agreements.
4. Use of polar bears for subsistence purposes is recognized, and commercial use shall be minimized.
5. Habitat protection shall be a cornerstone to the agreement.
6. Parties will enforce against illegal take or trade.
7. Biological monitoring and verification programs will be supported.
8. Appropriate authorizations to begin formal negotiations should be sought. A draft Circular 175 request for authorization from the Department of State for the Service to participate in negotiations in developing a bilateral United States/Russia agreement on the conservation and management of the polar bear population stock shared between both countries is in the developmental stage.

The Parties agreed to exchange documents to further the principles listed above and to meet within a

Table 2. Monthly Polar Bear Harvest, Alaska 1993/1994.

Village	Month												Total
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Kaktovik*	-	1	-	1	-	-	3	-	-	-	-	-	5
Barrow*	-	1	-	6	9	4	-	1	1	-	5	-	27
Wainwright*	-	-	-	-	1	4	-	-	-	1	2	-	8
Nuiqsut*	-	1	2	-	2	-	-	-	-	-	-	-	5
Atqasuk*	-	-	-	-	1	-	-	-	-	-	-	-	1
Point Lay	-	-	-	-	-	-	-	-	-	-	-	-	-
Point Hope	-	-	-	-	-	-	1	-	1	3	-	-	5 ^a
Kivalina	-	-	-	-	-	-	-	-	-	-	-	1	1
Shishmaref	-	-	-	-	-	-	2	-	-	2	-	-	4
Ageklekak	-	-	-	-	-	-	-	-	-	-	1	-	1
Wales	-	-	-	-	-	-	-	-	-	-	1	-	1
Diomede	-	-	-	-	-	2	1	-	-	-	1	4	8
Savoonga	-	-	-	-	-	3	7	1	-	3	8	1	23
Gambell	-	-	-	-	-	6	13	-	4	3	1	1	28
Totals	-	3	2	7	13	19	27	2	6	12	19	7	117
Percent	(0)	(3)	(2)	(6)	(11)	(16)	(23)	(2)	(5)	(10)	(16)	(6)	(100)

* Denotes villages party to the IGC/NSB Management Agreement. Harvest season extends from July 1, 1993, to June 30, 1994.

^a Month of kill not available for four bears taken in Point Hope.

year, and to conduct meetings between the Governments and Natives.

Twelve American specialists are scheduled to travel to Russia in September 1995 to continue discussions on the cooperative management of the shared polar bear population.

A meeting of scientists to plan a joint United States/Russian polar bear den survey of Wrangel Island and Chukotka is scheduled for the first half of 1995 in Alaska.

Importation of Polar Bear Trophies from Canada into the United States

The 1994 Amendments to the Act authorized the issuance of permits to import polar bear trophies (excluding internal organs) legally taken in sport hunts in Canada, including polar bear trophies legally taken, but not imported, prior to enactment of the 1994 Amendments. Section 104(c)(5) of the Act set out a permitting process, as well as the specific findings required to be made before permits could be issued to import these trophies into the United States. The Service must make such findings after notice and opportunity for public comment and in consultation with the Marine Mammal Commission. The necessary findings are that:

- (i) the trophy was legally taken by the applicant;
- (ii) Canada has a monitored and enforced sport-hunting program consistent with the purposes of the 1973 International Agreement on the Conservation of Polar Bears;
- (iii) Canada has a sport-hunting program based on scientifically sound quotas ensuring the maintenance of the affected population stock at a sustainable level;
- (iv) the export and subsequent import are consistent with the provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora and other international agreements and conventions; and
- (v) the export and subsequent import are not likely to contribute to illegal trade in polar bear parts.

The Act, as a safety check for these findings, further requires that prior to April 30, 1996, the Service shall undertake a scientific review of any adverse impact the issuance of import permits has on polar bear population stocks in Canada. Future permits shall not be issued after September 30, 1996, if the Service determines that such issuance is having a significant adverse impact on polar bear populations

in Canada. The Service may conduct an annual review of this determination after the first review.

On October 27, 1994, the Service published a Notice of Intent in the FEDERAL REGISTER (59 FR 53956). The notice outlined steps the Service was taking to implement this new provision of the Act, including development of the permit regulations and the collection and evaluation of information to make the legal and scientific findings required by section 104(c)(5).

(Notes: On January 3, 1995, the Service published a Proposed Rule in the FEDERAL REGISTER (60 FR 70) to establish application requirements, permit procedures, issuance criteria, permit conditions, and a special issuance fee. On July 17, 1995, the Service published a supplemental Proposed Rule in the FEDERAL REGISTER (60 FR 36382) that announced the proposed legal and scientific findings on the importation of polar bear trophies. The original 45-day comment period for this supplemental Proposed Rule was later extended for an additional 15 days. Affirmative findings were proposed by the Service for specific polar populations as follows: Northern Beaufort Sea; Southern Beaufort Sea; Viscount-Melville; Gulf of Boothia; M'Clintock Channel; and Western Hudson Bay. Other populations were not approved at that time since they lacked either a comprehensive management agreement between jurisdictions or shared populations, or the population status information was not sufficient.)

Meetings

The Service participated in the Canadian Federal-Provincial Polar Bear Technical Committee meeting in Edmonton, Alberta, Canada. The annual meeting promotes the exchange of information on research and management activities. The first two days were devoted to management and research topics and a workshop to review the Service's draft regulations concerning the import of polar bear hides from legally sport harvested polar bears from Canada into the United States.

Marking, Tagging, and Reporting Program

The Marking, Tagging, and Reporting Program (MTRP) was implemented in October 1988 to monitor the subsistence harvest of polar bear, sea otter, and walrus by coastal Alaskan Natives. The MTRP collects biological information from the harvest and assists in controlling illegal activities in

Table 3. Alaska Villages With MTRP Taggers and Species Tagged.

Village	Species*	Village	Species*	Village	Species*
Adak	SO	Juneau	SO	Platinum	W
Akhiok	SO	Kake	SO	Point Hope	PB/W
Akutan	SO	Kaktovik	PB/W	Point Lay	PB/W
Anchorage	SO/PB/W	Karluk	SO	Port Graham	SO
Angoon	SO	Kenai	SO/W	Port Heiden	SO/W
Atka	SO	Ketchikan	SO/W	Port Lions	SO
Barrow	PB/W	King Cove	SO	Quinhagak	W
Bethel	SO/W	King Island	W	Sand Point	SO/W
Brevig Mission	W	King Salmon	SO/W	Savoonga	PB/W
Chefornak	W	Kipnuk	W	Seldovia	SO
Chenegga Bay	SO	Kivalina	PB/W	Seward	SO
Chevak	W	Klawock	SO	Shishmaref	PB/W
Chignik	SO/W	Kodiak	SO/W	Sitka	SO/W
Chignik Lagoon	SO	Kongiganak	W	St. George	W
Chignik Lake	SO/W	Kotzebue	PB/W	St. Michael	W
Clarks Point	W	Koyuk	W	St. Paul	SO/W
Cold Bay	SO/W	Kwigillingok	W	Stebbins	W
Cordova	SO/W	Larsen Bay	SO	Tatitlek	SO
Dillingham	SO/W	Little Diomedes	PB/W	Teller	PB/W
Egegik	SO/W	Manokotak	W	Togiak	W
Elim	W	Mekoryuk	W	Toksook Bay	W
Emmonak	W	Naknek	W	Tuntutuliak	W
English Bay	SO	Newtok	W	Tununak	W
Fairbanks	SO/PB/W	Nightmute	W	Unalakleet	W
Gambell	PB/W	Nikolski	SO	Unalaska	SO/W
Golovin	W	Nome	PB/W	Valdez	SO
Goodnews Bay	W	Nuiqsut	PB	Wainwright	PB/W
Homer	SO/W	Old Harbor	SO	Wales	PB/W
Hoonah	SO	Ouzinkie	SO	Wrangell	SO
Hooper Bay	W	Perryville	SO/W	Yakutat	SO
Hydaburg	SO/W	Pilot Point	SO/W		

* Species Key: SO = Sea Otter PB = Polar Bear W = Walrus

For names, addresses, and telephone numbers of village taggers, contact the U.S. Fish and Wildlife Service, Office of Marine Mammals Management, Marking, Tagging, and Reporting Program, 1011 East Tudor Road, Anchorage, Alaska 99503. Telephone: (800) 362-5148.

specified marine mammal parts. During 1994, the MTRP staff traveled to 62 coastal villages to hold village meetings, hire and replace taggers, provide training, and work with hunters to gain better compliance with the regulatory requirements of the MTRP. To help inform village residents of these requirements, 12 school presentations were made during the village visits. The MTRP staff hired or replaced 12 taggers and added six new villages to the Program.

The MTRP currently has 114 taggers and 45 alternates located in 92 villages throughout coastal Alaska (Table 3). Usually, local Native residents are hired and trained to tag polar bear and sea otter hides, and skulls and walrus tusks in the villages where they live. The MTRP employs 49 sea otter, 17 polar bear, and 72 walrus taggers. The number of taggers per village varies depending on the magnitude of the harvest. Some villages have several taggers for each species and a few village taggers tag

Table 4. Sea Otters Tagged, by Tagging Location and Year.

Location	Pre-Rule	1988	1989	1990	1991	1992	1993	1994	Total
Adak	0	0	0	0	0	2	0	0	2
Akutan	0	0	0	0	0	1	10	0	11
Akhiok	1	0	0	0	0	0	0	0	1
Anchorage	117	2	37	11	8	25	9	56	265
Angoon	0	0	0	0	0	0	4	39	43
Atka	0	0	0	0	0	0	0	2	2
Bethel	4	0	0	0	1	0	0	0	5
Chignik	1	0	9	5	0	0	0	6	21
Chignik Lagoon	0	0	0	0	0	0	0	2	2
Cordova	31	0	12	9	34	13	50	120	269
Cold Bay	0	0	0	1	0	0	8	0	9
English Bay	0	0	0	0	0	0	17	6	23
Fairbanks	0	0	0	0	0	0	2	0	2
Homer	18	22	9	9	0	0	25	14	97
Hoonah	0	0	0	0	0	51	230	7	288
Juneau	10	0	1	26	0	14	21	93	165
Kake	0	0	0	0	0	0	18	2	20
Kenai	0	0	8	6	33	0	0	19	66
Ketchikan	2	0	0	0	0	194	83	6	285
King Cove	8	0	0	25	0	8	1	5	47
King Salmon	0	0	0	0	0	0	1	0	1
Klawock	57	3	118	10	74	4	220	19	505
Kodiak	157	0	31	16	5	27	120	6	362
Larsen Bay	31	0	0	0	17	14	2	16	80
Mekoryuk	5	0	0	0	0	0	0	0	5
Ouzinkie	0	0	0	0	0	0	29	0	29
Perryville	0	0	0	0	0	2	2	0	4
Pilot Point	1	0	0	0	0	0	0	0	1
Port Graham	0	3	0	0	1	6	6	101	117
Port Heiden	1	0	5	0	0	1	0	1	8
Port Lions	11	0	0	1	0	0	0	23	35
Sand Point	0	0	1	0	0	0	0	0	1
Seldovia	0	0	1	0	0	12	20	8	41
Sitka	44	25	35	47	39	163	218	131	702
Tatitlek	0	0	0	0	19	27	4	0	50
Unalaska	0	0	0	0	0	0	5	0	5
Valdez	0	0	0	0	0	73	102	135	310
Wrangell	0	0	0	0	0	0	21	0	21
Yakutat	0	0	0	0	0	0	14	12	26
TOTAL	499	55	267	166	231	637	1,242	829	3,926

Revised January 11, 1996.

more than one species where the harvest numbers are low. Numbered, color coded, locking tags are placed on all polar bear and sea otter skulls and skins presented for tagging. Premolar teeth are extracted for aging purposes from each bear and otter skull. A lead-headed wire tag is attached through a hole drilled in the root section of each walrus tusk tagged and a liquid marker (visible only under ultraviolet light) 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. Harvest data were reported from 69 villages during 1994.

Twenty three sea otter taggers reported 829 otters being tagged in 1994 with several villages reporting decreases in numbers of otters killed compared with the last year (Tables 4, 5 and 10). Sea otter hides are used to make hats, gloves, slippers, blankets, and other arts and crafts. A few hunters trade sea otter hides for walrus ivory, polar bear, and seal skins or

other items that are used in making crafts. Compliance with the tagging regulations by sea otter hunters appears to be high.

One hundred twenty polar bears were tagged in 12 villages during the 1993-94 hunting season (Tables 6, 7 and 10). During the harvest year, the total number of bears tagged increased as compared with the past several years. Compliance by the polar bear hunters to the MTRP requirements appears to be good.

Twenty nine walrus taggers reported tagging 1,303 walrus in 1994. Walrus tusks sometimes become separated before they are tagged. In order to accurately account for the harvest, a weight factor variable is added that interprets each record in terms of take. Estimation of the total harvest is made by summing this weight factor. Walrus records where only a single tusk was tagged is given a weight factor of 0.5, because the possibility exists that the second tusk may be tagged at a later date. For

Table 5. Sea Otters Tagged by Age Class, Sex, and Year.

	Pre-Rule	1988	1989	1990	1991	1992	1993	1994	Total
Adults									
Male	230	44	176	120	149	367	585	464	2,135
Female	88	9	35	15	44	172	426	166	955
Unknown	121	0	19	2	23	17	36	80	298
Subtotal	439	53	230	137	216	556	1,047	710	3,388
Subadults									
Male	8	1	15	16	3	35	74	65	217
Female	8	1	2	9	5	25	55	25	130
Unknown	14	0	3	0	3	5	5	21	51
Subtotal	30	2	20	25	11	65	134	111	398
Pups									
Male	1	0	1	3	0	6	7	5	23
Female	0	0	0	1	1	5	3	1	11
Unknown	6	0	1	0	1	2	2	1	13
Subtotal	7	0	2	4	2	13	12	7	47
Unknown									
Male	0	0	1	0	2	1	0	0	4
Female	0	0	1	0	0	1	7	0	9
Unknown	23	0	13	0	0	1	42	1	80
Subtotal	23	0	15	0	2	3	49	1	93
All Ages									
Male	239	45	193	139	154	409	666	534	2,379
Female	96	10	38	25	50	203	491	192	1,105
Unknown	164	0	36	2	27	25	85	103	442
Grand Total	499	55	267	166	231	637	1,242	829	3,926

Revised January 11, 1996.

Table 6. Polar Bears Tagged by Tagging Location and Harvest Year.^a

Location	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	Total
Anchorage	2	0	3	4	4	0	0	0	13
Barrow	12	31	14	14	22	24	28	8	153
Brevig Mission	0	0	1	0	0	0	0	0	1
Fairbanks	1	0	0	0	0	0	0	0	1
Gambell	25	13	10	11	4	4	28	9	104
Kaktovik	6	8	0	0	0	3	5	1	23
Kivalina	5	1	5	3	2	1	1	2	20
Kotzebue	0	0	4	0	0	1	1	0	6
Little Diomedede	15	9	6	3	6	6	8	10	63
Nome	3	0	1	0	0	0	0	1	5
Nuiqsut	3	2	0	0	0	0	3	0	8
Point Hope	9	8	22	14	7	12	6	18	96
Point Lay	2	2	0	0	0	2	1	1	8
Savoonga	13	13	9	12	6	0	23	10	86
Shishmaref	13	23	14	6	3	5	5	10	79
Wainwright	9	13	7	6	3	4	10	6	58
Wales	5	9	3	3	2	3	1	2	28
TOTAL	123	132	99	76	59	65	120	78	752

^a Harvest year is from July 1 through June 30 of the following year.

Revised January 11, 1996.

analytical purposes, the lower estimate is calculated with the assumption that single tusk-records in the database represent half of one walrus. The upper estimate is calculated assuming that each record represents a whole walrus. If all walrus tusks are tagged as pairs, the upper and lower bounds are equal. As a conservative approach to management, the upper estimate is considered to be the actual figure for the walrus harvest (Tables 8, 9 and 10).

Hunter success varied greatly from village to village and between hunters. Many hunters reported poor weather and marginal ice conditions during the walrus migration making hunting conditions difficult. Often the villagers could hear or even see the walrus, but because of bad ice conditions they were unable to get close to them.

Compliance with the MTRP regulations by walrus hunters needs improvement. Despite an aggressive campaign by the MTRP staff and Service Law Enforcement special agents to improve Native compliance, a few walrus hunters still do not comply with the MTRP requirements. Village meetings, radio and newspaper announcements, letters, and posters were utilized to encourage the hunters in all villages to have every kill recorded. The most com-

mon reason for ivory not being tagged was that hunters carve their own harvested ivory. Some hunters do not understand the value of tagging their ivory if they are going to use it themselves. In the past, when raw ivory was sold to the village store or registered agents, compliance with the rule was high.

Assessment of compliance is subjectively based on personal observation and discussions with village taggers and others. The Service has not determined a feasible way to quantify the levels of compliance. Enforcement of the MTRP provisions has been limited to only a few cases and those were related to other enforcement actions. However, information from the MTRP data base was valuable in several enforcement actions in past years. In most cases, enforcement has had a positive effect and heightened awareness.

Success of the MTRP depends on a village presence by the Service and routine contacts with taggers. The MTRP staff will continue to hold village meetings, train and retrain taggers as necessary, work with Native leaders and organizations and expand the use of informational and educational materials

that relate to the MTRP and other marine mammal issues.

Because of the extensive exposure of the MTRP staff throughout coastal Alaska, MTRP personnel are often called upon by other programs in the Service that need an introduction to, or assistance working in, a village. The MTRP staff will continue to provide information that is obtainable only by being acquainted with the residents of the remote villages and/or familiarity with the traditional village life.

The Service continues to develop and distribute an informal quarterly bulletin to all taggers and other interested people. The bulletin is devoted to providing information about the MTRP, and has proven to be a valuable tool in disseminating pertinent information in a timely manner to a State-wide audience.

Walrus Harvest Monitoring Project (WHMP)

In the fall of 1994 the WHMP was transferred to the MTRP to more fully integrate the two projects. The MTRP will continue to work closely with WHMP personnel to maintain consistency in data collection. At the close of 1994, the Service had initiated plans for conducting a WHMP field season in the spring of 1995.

The Act provides an exemption to the moratorium on taking of Pacific walrus to Alaskan Natives that harvest walrus for subsistence or handicraft purposes. The WHMP monitors the level and age/sex structure of the Native harvest and collects biological samples to assess life history parameters. The purpose of this Program is to provide management agencies, hunters, and conservation organizations with information about how the harvest may affect

Table 7. Polar Bears Tagged by Age Class, Sex, and Harvest Year.^a

	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	Total
Adults									
Male	12	5	29	41	25	24	28	31	195
Female	8	3	12	6	5	11	15	9	69
Unknown	0	0	0	0	0	2	5	1	8
Subtotal	20	8	41	47	30	37	48	41	272
Subadults									
Male	1	2	27	13	12	13	26	16	110
Female	0	0	7	6	13	3	9	10	48
Unknown	0	1	0	0	0	1	2	0	4
Subtotal	1	3	34	19	25	17	37	26	162
Cubs									
Male	2	0	4	2	1	5	8	2	24
Female	0	0	2	0	0	2	5	4	13
Unknown	0	0	0	0	0	2	1	1	4
Subtotal	2	0	6	2	1	9	14	7	41
Unknown									
Male	58	78	6	5	0	2	4	4	157
Female	39	31	1	1	3	0	14	0	89
Unknown	3	12	11	2	0	0	3	0	31
Subtotal	100	121	18	8	3	2	21	4	277
All Age Classes									
Male	73	85	66	61	38	44	66	53	486
Female	47	34	22	13	21	16	43	23	219
Unknown	3	13	11	2	0	5	11	2	45
Grand Total	123	132	99	76	59	65	120	78	752

^a Harvest year is from July 1 through June 30 of the following year.

Revised January 11, 1996.

Table 8. Walrus Harvest Estimate, From MTRP Data, by Tagging Location and Year.

Location	Pre-Rule	1988	1989	1990	1991	1992	1993	1994	Total
Anchorage	293	0	37	19	19	1	2	13	384
Barrow	1	1	11	7	23	21	30	15	109
Bethel	13	0	10	18	17	22	12	6	98
Brevig Mission	3	0	0	6	1	27	4	2	43
Chevak	11	0	2	1	2	4	4	3	27
Chignik Lagoon	2	0	0	0	0	0	0	0	2
Clarks Point	8	0	1	0	14	5	0	0	28
Cordova	13	0	0	0	0	0	0	0	13
Cold Bay	0	0	0	0	0	1	1	1	3
Dillingham	25	0	10	15	5	8	24	48	135
Egegik	0	0	0	0	0	1	0	1	2
Elim	0	0	0	2	4	0	1	0	7
Emmonak	0	0	0	0	0	0	3	0	3
Fairbanks	9	0	2	0	0	0	2	1	14
Gambell	12	4	188	756	629	403	464	520	2,976
Golovin	1	0	0	0	1	3	0	1	6
Goodnews Bay	4	0	2	1	1	2	0	2	12
Homer	0	0	0	0	2	2	2	0	6
Hooper Bay	3	0	1	15	5	3	2	2	31
Kaktovik	0	0	0	0	0	0	1	0	1
Kenai	2	0	0	0	0	0	0	0	2
Ketchikan	1	0	0	0	0	0	0	0	1
Kivalina	0	0	46	0	0	1	0	0	47
King Island	2	0	0	7	77	346	28	12	472
King Salmon	3	0	0	1	3	2	2	0	11
Kipnuk	3	0	0	3	1	1	1	1	10
Kodiak	2	0	0	0	0	0	0	0	2
Kongiganak	0	0	3	0	3	4	3	0	13
Kotzebue	30	0	0	0	3	0	0	0	33
Koyuk	0	0	0	2	5	0	0	0	7
Kwigillingok	3	0	0	1	1	6	0	1	12
Little Diomedea	3	0	1	236	532	84	91	372	1,319
Manokotak	3	0	1	0	0	0	0	2	6
Mekoryuk	23	0	4	14	49	22	23	4	139
Naknek	1	0	0	3	1	1	1	0	7
Nome	49	0	1	15	39	14	16	19	153
Perryville	0	0	1	0	0	0	0	0	1
Pilot Point	0	0	0	0	1	0	0	0	1
Platinum	20	0	9	5	2	10	3	3	52
Point Hope	3	0	2	5	0	5	5	6	26
Point Lay	0	0	0	0	0	0	1	1	2
Port Heiden	5	0	0	0	2	4	5	1	17
Quinhagak	0	0	0	0	3	0	0	0	3
St. George	1	0	0	1	1	0	0	0	3
St. Paul	0	0	0	2	1	1	5	0	9
Sand Point	1	0	0	1	9	0	0	0	11
Savoonga	423	0	221	198	520	546	300	151	2,359
Shishmaref	490	0	122	87	35	69	42	5	850
Sitka	15	0	0	0	6	0	0	0	21
Stebbins	0	0	1	5	17	0	8	0	31
Teller	0	0	0	0	0	3	11	1	15
Togiak	13	1	9	25	6	6	24	32	116
Toksook Bay	4	0	0	0	2	1	2	1	10
Tuntutuliak	0	0	0	0	2	1	2	5	10
Tununak	1	0	0	0	0	0	0	1	2
Unalakleet	6	0	1	5	5	0	0	2	19
Wainwright	4	0	43	0	32	33	44	68	224
Wales	10	0	10	10	81	15	3	0	129
TOTAL	1,519	6	739	1,466	2,162	1,678	1,172	1,303	10,045

Revised January 11, 1996.

Table 9. Walrus Harvest Estimate, From MTRP Data, by Age Class, Sex, and Year.

	Pre-Rule*	1988	1989	1990	1991	1992	1993	1994	Total
Adults									
Male	596	6	351	517	881	702	596	484	4,133
Female	235	0	215	530	894	730	423	708	3,735
Unknown	585	0	154	55	63	103	78	50	1,088
Subtotal	1,416	6	720	1,102	1,838	1,535	1,097	1,242	8,956
Subadults									
Male	26	0	6	21	39	53	21	28	194
Female	5	0	2	4	16	7	6	6	46
Unknown	49	0	3	8	6	6	10	1	83
Subtotal	80	0	11	33	61	66	37	35	323
Calves									
Male	0	0	0	0	58	1	3	1	63
Female	0	0	0	0	61	0	2	0	63
Unknown	1	0	4	331	144	74	32	25	611
Subtotal	1	0	4	331	263	75	37	26	737
Unknown									
Unknown	22	0	4	0	0	2	1	0	29
Subtotal	22	0	4	0	0	2	1	0	29
All Ages									
Male	622	6	357	538	978	756	620	513	4,390
Female	240	0	217	534	971	737	431	714	3,844
Unknown	657	0	165	394	213	185	121	76	1,811
Grand Total	1,519	6	739	1,466	2,162	1,678	1,172	1,303	10,045

* PR indicates Pre-Rule (i.e., pre MTRP final rulemaking).

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the walrus population. Samples collected through the program included teeth for age determination, adult female reproductive tracts to assess reproductive rates, and tissue samples to assess contaminant levels.

In 1994, the WHMP continued to operate in key Alaskan Native harvesting communities. Harvest monitors recorded a total of 973 walrus retrieved by hunters from four monitored villages in the spring walrus hunt of 1994. This value is somewhat larger than the number of walrus retrieved during the 1993 monitoring period ($n = 726$), but below the mean annual harvest level for a 14-year period (1980-1994: mean = 1,826). A draft Technical Report summarizing the 1993 WHMP season was submitted to the Alaska Eskimo Walrus Commission for review and comments in 1994. At the end of 1994, this report was undergoing further revision and nearing completion. Similar reports are in development for the 1992 and 1994 seasons.

In October 1994, the Service released a Technical Report presenting a compilation of U.S. and Russian harvest statistics for the period 1931-1989. Noteworthy are the harvests of 6,000-9,000 animals per year that occurred in the 1980's with an increase in the proportion of females being taken.

Incidental Small Takes-Alaska

Section 101(a)(5) of the Act gives the Department authority to allow, on request by U.S. citizens engaged in a specified activity (other than commercial fishing) in a specified geographical region, the incidental, but not intentional, taking of small numbers of marine mammals. The Service has promulgated two rules concerning the incidental take of marine mammals during specified activities.

Table 10. MTRP Tagging Data, By Year With All Villages Combined.

Sea Otters ^a								
Pre-Rule ^b	1988 ^c	1989	1990	1991	1992	1993 ^d	1994	Total
499	55	267	166	231	637	1,242	829	3,926
Polar Bears ^e								
Pre-Rule ^b	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94 ^d	1994/95	Total
123	132	99	76	59	65	120	78	752
Walrus ^a								
Pre-Rule ^b	1988 ^c	1989	1990	1991	1992	1993 ^d	1994	Total
1,519	6	739	1,466	2,162	1,678	1,172	1,303	10,045

^a Harvested by calendar year, January 1 to December 31.

^b Harvested before October 26, 1988.

^c Harvested between October 26 and December 31, 1988.

^d Preliminary data. Revised January 11, 1996.

^e Harvested by harvest year—July 1 through June 30 of the following year.

Chukchi Sea

The Service issued a final rulemaking on June 14, 1991 (56 FR 27443), effective for five years through June 14, 1996, for the incidental, but not intentional, take of small numbers of walrus and polar bears during open water exploration for oil and gas in the Chukchi Sea adjacent to the coast of Alaska. Subsequent to this rulemaking, Letters of Authorization (LOA) were requested by, and issued to, Shell Western Exploration and Production Inc., and Chevron. No incidental takes of marine mammals were recorded in response to the two exploration activities. No LOA's have been requested or issued for Chukchi Sea activities since 1991.

Beaufort Sea

Following applications from the oil and gas industry in late 1991, the Service issued a final rulemaking on November 16, 1993, (58 FR 60402), initially effective for 18 months through June 16, 1995, for the incidental, unintentional, take of small numbers of polar bears and walrus during year-round oil and gas industry operations (exploration, development, and production) in the Beaufort Sea and adjacent northern coast of Alaska. In 1994, 13 LOA's were issued effective for one year for various oil and gas industry activities; no incidental takes of marine mammals associated with the activities were reported.

In comport with, and to meet more fully the intent of the 1973 multilateral international Agreement on the Conservation of Polar Bears (between the United States, Canada, Russia, Denmark, and Norway), under the 1993 Beaufort Sea final rule the Service was directed by the Secretary of the Interior to develop and begin implementing a Polar Bear Habitat Conservation Strategy to identify and conserve important polar bear habitat throughout Alaska. A discussion of the actions taken during 1994 to develop this Strategy appears earlier in this report in the section entitled, "Polar Bear-Alaska".

Sea Otter-Southern

Sea otters historically ranged throughout the north Pacific from Hokkaido, Japan, through the Aleutian Islands, the Alaskan peninsula, and south along the Pacific coast to Baja California, Mexico. In the mid-1700's, sea otters were recognized as a valuable fur-bearing animal and were subject to an intense commercial harvest. By the early 1900's, the species had been extirpated from most of its historic range except for 13 remnant populations, including one numbering approximately 50 individuals in central California. This remnant population in the near-shore waters of California is referred to as the southern sea otter, and was first recognized as a subspecies in 1904. The historical sea otter population size in California is estimated to have numbered 16,000-18,000 individuals. Today, the

southern sea otter population numbers over 2,300 (Table 11) and its range extends between Pigeon Point, San Mateo County, to Purisima Point, Santa Barbara County.

The Service listed the southern sea otter as threatened under the Endangered Species Act in 1977 because of its small population size, limited distribu-

tion, and risk of exposure to oil spills throughout its range. The most serious threat to the southern sea otter is a major oil spill from a tanker in the waters in the vicinity of its range.

The NBS, the California Department of Fish and Game (CDF&G), and the Service continued the spring and fall population surveys in 1994. The area

Table 11. Comparison Of Southern Sea Otter Counts Conducted Since The Spring Of 1982.^a

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 ^b	1,151	52	1,203
Fall	No survey		
1985 Spring	1,119	242	1,361
Fall	1,065	150	1,215
1986 Winter ^c	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
1993 Spring	2,022	217	2,239
Fall	1,662	143	1,805
1994 Spring	2,076	283	2,359
Fall	1,730	115	1,845

^a In 1992, all survey data since Fall 1982 was reviewed and counts were corrected as appropriate.

^b California Department of Fish and Game aerial survey with ground truth stations.

^c Experimental.

surveyed included the entire 220-mile long established range of the southern sea otter, from Point Ano Nuevo in Santa Cruz County to the Santa Maria River in San Luis Obispo County, plus additional peripheral habitat. The number of otters counted during the spring 1994 survey was again higher than any since these counts began (Table 11). Spring counts are consistently higher than fall counts, and this is thought to be the result of more favorable sighting conditions in the spring than in the fall. Most otters are sighted between Ano Nuevo, San Mateo County and Avila Beach, San Luis Obispo County.

Translocation of Southern Sea Otters

Between 1987 and 1990, 139 southern sea otters (31 males, 108 females) were translocated to San Nicolas Island (SNI), off of southern California, in an effort to establish a second breeding colony. The purposes for establishing a second colony were 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 population level.

Public Law 99-625 provides the authority and establishes the guidelines for carrying out the translocation program. The regulations designating the colony as an experimental population (50 CFR 17.84(d)) established the boundaries of a Translocation Zone to which otters would be translocated and given protection similar to that of the source population, and a Management Zone to be maintained otter-free by non-lethal means.

Status of Colony

Sea otter surveys are conducted at SNI every other month by the Service and the NBS. During 1994, counts of independent otters ranged from 6 to 16 animals. A high count of 16 independent otters was attained twice, in March and December. The December count was the highest one-day count of independent otters since September 1989. To date, 33 pups are known to have been born at SNI, and at least nine of them have been successfully weaned. Reproduction at SNI is continuing; during 1994, six different pups were observed at the island.

Containment

The containment program is designed to prevent sea otters from colonizing the Management Zone and involves 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 inter-related and interdependent activities: surveillance of the Management Zone, capture of sea otters in the Management Zone, and post capture relocation.

Since 1987, 20 independent (ten male and ten female) sea otters and four dependent pups have been captured in the Management Zone. Eleven of the otters had been translocated to San Nicolas Island, four had apparently swam down from the mainland range, and nine either swam down from the mainland range or were born in the Management Zone or at San Nicolas Island. Two of the otters mentioned above were captured and removed from the Management Zone twice.

In February 1993, all sea otter containment activities were halted following the deaths of two independent otters that died shortly after their release in the mainland range. Concern was raised regarding the requirement that sea otter containment activities were being conducted by non-lethal means. An evaluation of containment techniques proved to be inconclusive, and recommendations were made to continue sea otter containment activities with minor modifications. In 1994, sea otter containment activities were limited due to the unavailability of funds within both the Service and the CDF&G.

During 1994, the Service received three reports of otters in the Management Zone. These reports were likely multiple sightings of one otter residing at San Miguel Island. The containment effort to date has appeared to have successfully prevented sea otter colonies from becoming established in the designated Management Zone. However, containment activities have been labor intensive and costly. The long term viability of sea otter containment through non-lethal means remains in question. Containment activities are required to continue as long as the experimental population is maintained at San Nicolas Island.

Follow-up meetings are scheduled for 1995.

Law Enforcement

Sea otters have been intentionally harassed, shot, clubbed, and found drowned in legally and illegally set commercial fishing gear in past years. Service law enforcement officers conduct surveillance opera-

tions and investigations, and seek prosecution of individuals who harm sea otters.

Four sea otters were known to have died of gun shot wounds this year; two of them had washed ashore in the "no-otter" Management Zone. These animals likely represent a fraction of southern sea otters killed annually by malicious activities. Service law enforcement agents continue to investigate these shootings. However, evidence required to bring such cases to trial is often lacking.

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 Section 114 of the 1988 amendments to the Act. In Monterey Bay and Morro Bay, up to three NMFS observers have been stationed to document incidental take. In 1994, one sea otter found stranded in Morro Bay died three days later from lacerations sustained from entanglement in a fishing net. In summation, from June 1982 to December 31, 1994, a total of 75 otters have been observed or otherwise known to have drowned in legally set commercial fishing nets: 6 each in 1982 and 1983, 16 in 1984, 12 in 1985, 3 in 1986, 5 each in 1987 and 1988, 11 in 1989, 9 in 1990, 0 in 1991 and 1992, 1 in 1993, and 1 in 1994.

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 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, Santa Barbara County, are at risk of

incidental take. Purisima Point is between Point Sal and Point Conception, Santa Barbara County, an area in which no restrictions of gill or trammel net fishing exist for the protection of sea otters. Observations of set-net fishing activity in this area are not convenient and therefore not typically covered by the NMFS's observer program. The Service has requested that the CDF&G enact an emergency closure and close the area to set-net fishing. The CDF&G has chosen not to close the area because there is no direct evidence that sea otters are being taken by the set-net fishery in the area.

The crab and lobster pot fishery continues to be a concern as a source of mortality for otters. Sparse data and anecdotal records indicate that southern sea otters are incidentally taken in the pot fishery. Sea otters are known to be taken occasionally in Alaska's crab pot fishery. However, Alaska's pot fishery utilizes different types of gear and is not directly comparable to the California fishery. The Service continues to evaluate incidental take in crab and lobster pots.

Sea Otter Mortality

Over 100 sea otter carcasses wash ashore every year. In 1994, 126 southern sea otter carcasses were recovered from beaches. Since 1992, fresh, beach cast sea otter carcasses have been sent to the NBS's National Wildlife Health Center (NWHC) in Madison, Wisconsin, for necropsy. The immediate goals of this program are to identify the major causes of death in sea otters and to establish their relative frequencies. The necropsy program at the NWHC is expected to continue through 1995.

As of March 1994, 88 southern sea otter carcasses have been necropsied by pathologists at the NWHC. Most sea otter deaths have been attributed to infectious diseases (42 percent). These diseases include coccidioidomycosis (6.8 percent), acanthocephalan peritonitis (15.9 percent), protozoal encephalitis (11.4 percent), and other diseases (7.9 percent). Other sources of mortality include various types of trauma such as shark bite, lacerations, etc. (18.2 percent); emaciation (11.4 percent); tumors (3.4 percent); and various conditions of mechanical or functional impairment such as esophageal impaction, intestinal perforation, intestinal volvulus, etc. (9.1 percent). The cause of death of 15.9 percent of animals is undetermined at this time.

Stranding and Rehabilitation Program

The Monterey Bay Aquarium has been the primary facility involved in the rescue and rehabilitation of stranded southern sea otters. In 1994, the Service

authorized a second facility, the Marine Mammal Center of Sausalito, California, to rescue and rehabilitate stranded southern sea otters for the purpose of returning them to the wild. During late 1994, the Marine Mammal Center received its first stranded sea otter.

Rehabilitated sea otters that lack the skills to survive in the wild are placed in permanent housing in a number of facilities. During 1994, these facilities included the Monterey Bay Aquarium, Sea World of San Diego, the Oregon Coast Aquarium, and the New York Aquarium.

ESA Section 7 Consultations

Pursuant to Section 7 of the ESA, the Service reviews proposed Federally funded, conducted, or permitted activities that may affect the southern sea otter. The Service received no requests for formal consultation in 1994.

ESA Section 6 Grants-to-States

No section 6 funds were provided for the southern sea otter in 1994.

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 has yet to be realized or applied to the existing document.

The Union Oil Company of California (Unocal) has operated the Guadalupe oil field in San Luis Obispo County since 1953. A thinning agent, called K-D diluent, which has been used to improve oil production, has been found to be the source of extensive contamination in and around the oil fields, including the local marine environment. Unocal estimates between 4.6 million and 8.5 million gallons of diluent have been released into the soil, ground water, and local marine environment in the past 34 years. Full determination of the extent of contamination is underway. The southern sea otter is one of several ESA listed species that may have been affected by these spills. During 1994, the Service participated as a trustee representative for the Department's trust resources.

Unocal and the trust resource agencies (i.e., the Service and the CDF&G), reached a settlement agreement for \$100,000 to be used for sea otter restoration activities resulting from natural resource

damages sustained during the 1992 oil spill near Avila Beach, San Luis Obispo County.

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 coccidiodomycosis although it was oiled at time of capture); and one oiled otter was captured, cleaned, and released. Potential projects identified for settlement monies for sea otter restoration include the sea otter rehabilitation program at the Monterey Bay Aquarium, and contaminant analyses of sea otter tissues collected by the NWHC.

West Indian Manatee

The West Indian manatee in Florida represents the northern most, and largest remaining component of a manatee population once found throughout the Caribbean basin. Physically isolated from its counterparts, the manatee in Florida has historically been viewed as rare and declining in numbers. Because of this perception, the manatee was first afforded protection by the State of Florida in 1893. The manatee is now protected by the State of Florida's Manatee Sanctuary Act of 1978, the ESA, and the Act.

As a Federally listed endangered species, efforts to recover the species are guided by the Service manatee recovery program. This program, through the revised Florida Manatee Recovery Plan of 1989, coordinates manatee recovery activities conducted by Federal, State, local, and private agencies. Recovery activities incorporate both research and management efforts. Research efforts have focused on monitoring the status of the manatee and its habitat and on better defining various components of its life history. Management initiatives have concentrated on protecting essential manatee habitat and reducing human-related causes of manatee mortality.

More than 20 years of manatee research and management initiatives have demonstrated that the manatee's future depends upon the protection of the manatee and its habitat. The protection of these essential components in the face of an increasing human population, development, and use of watercraft underscores the need to continue to balance the needs of the manatee with its human neighbors.

Status

In 1994, 193 manatees were known to have died in the contiguous United States (192 in Florida and 1 in Georgia). Fifty (26 percent) of these deaths were attributed to watercraft, one of which occurred on the Savannah River in Georgia. An additional 21 (11 percent) manatee deaths were attributed to other human causes, 16 (8 percent) of which were related to water control structures. As in years past, 1994 was characterized by a substantial number of perinatal deaths (46/24 percent). Other natural causes were responsible for 36 (19 percent) of these deaths, and a cause of death could not be determined for 40 (21 percent) manatees.

The Florida Department of Environmental Protection (FDEP) coordinates a seasonal series of synoptic aerial surveys throughout the manatee's range during peak cold periods. These surveys focus on warm water aggregation sites and are used to assess manatee abundance. While these surveys were not conducted in 1994 because of unsatisfactory weather conditions, FDEP continues to support this effort. Surveys conducted in 1992 documented the presence of at least 1,856 manatees within their range in the southeastern United States.

The NBS's *Sirenia* Project maintains a catalog of individually identified manatees. The catalog (the Manatee Individual Photo-identification System) relies on manatee identifications (based primarily on scars caused by boat propellers) and provides an additional data base by which trends in abundance can be evaluated. At present, 994 manatees have been identified.

Current models describe the manatee population as stable but declining within certain areas of its range, especially along Florida's east coast. These models postulate that, should mortality increase by even a few individuals, the manatee will not persist.

Management

Manatee behavior and habitat have been closely monitored for more than 20 years through the carcass salvage program, NBS's photo-identification system, aerial surveys, tracking projects, and other studies. These studies have provided a wealth of information, most of which has been made available to managers through a variety of media, including Geographic Information Systems (GIS). With this information, Federal, State, and local agencies protect manatees from direct threats, such as watercraft and water control structures, and from indirect threats, such as habitat loss.

Comprehensive manatee protection plans are being developed on a county-wide basis throughout Florida. These plans address ways to reduce human impacts to manatees. At this time, these plans are in varying stages of completion. Most of the thirteen counties involved in this process have either permanent or interim boat speed restrictions in effect. The counties are also addressing guidance on boat facility siting, recommendations for limiting boat densities in certain areas, sea grass protection, etc., and most counties have summarized these in draft form. The FDEP has taken a primary role in this initiative and is supported in its efforts by the Service.

Service efforts to protect manatee habitat rely heavily on Section 7 of the ESA. The Section 7 process involves a Service review of all federally permitted or funded actions for impacts to listed species, including the manatee. The Service makes recommendations to the permitting agency to minimize the effect of the action on the manatee and its habitat. The Service also adopts regulations to establish manatee sanctuaries. Existing sanctuaries in the Crystal River National Wildlife Refuge were expanded in 1994 when the Service published final rules adopting three new sanctuaries covering a total of 28 additional acres. A management plan was adopted in 1994 by the Service to manage public use of this refuge.

Water control structures have been a persistent source of manatee mortality. Manatees are crushed, or impinged by these structures, which are owned and operated by the South Florida Water Management District and the U.S. Army Corps of Engineers (Corps). Through the Section 1135 process of the Water Resources Development Act of 1986, the Corps has secured funding to retrofit problem structures with devices to reduce mortality. The Service has been an active participant in this process and, in 1994, completed a Coordination Act Report in which the structures and proposed actions were reviewed.

In addition to addressing manatee mortality and habitat protection, recovery efforts also support a manatee rescue and rehabilitation network. Injured or sick manatees often require some form of assistance. A network of rescue teams has been developed and each team responds as necessary. Manatees requiring rehabilitative care are typically taken to one of five authorized facilities for treatment. (On October 1, 1994, a manatee was captured on Maryland's eastern shore and later released. This animal was caught out of concern for its well-being; given the lateness of the season and distance from

warm water, it was thought that this manatee would not survive if left to its own devices.)

In 1994, the Service initiated a "soft-release" program in which long-term captive manatees are returned to the wild. The program involves the temporary introduction of these captives into a series of pens located in the Banana River. Manatees held in these pens are exposed to native forage and wild, free-ranging manatees. After an acclimation period, the manatees are released to the wild. A single, short-term, captive manatee successfully went through this program in 1994.

Efforts to update the Florida Manatee Recovery Plan were initiated in 1992. A drafting committee, selected by the recovery team, submitted a recommended revised Florida Manatee Recovery Plan to the Service in 1993. This draft was reviewed and amended by the Service in 1994 and was then submitted to the recovery team for comment. Upon receipt of these comments, the Service revised the draft and, in December 1994, advertised the availability of the document for public review. The revised Florida Manatee Recovery Plan is expected to be adopted by the Service in 1995.

Research

Research activities continued to focus on monitoring the status of the manatee and its habitat and on better defining various components of its life history. Studies conducted in 1994 included mortality assessments via the manatee carcass salvage program, population assessments by aerial survey and photo-identification studies, and telemetry studies. Additional discussions that describe the NBS's manatee research efforts are provided in the *Research and Development* section of this report.

Manatee mortality assessments are provided by FDEP's Marine Mammal Pathobiology Laboratory, located in St. Petersburg, Florida. Causes of death are determined here and tissues, bone, ingesta, and other materials are collected for various purposes. In 1994, researchers continued to analyze tissues for contaminant concentrations. Ear bones were harvested as part of an ongoing initiative to determine the age of recovered specimens. Stomach contents were sampled to assess forage preferences.

Aerial surveys to assess manatee distribution and abundance were conducted in the St. Johns River, in Tampa Bay, and in the Wakulla and St. Marks Rivers. The Banana River was surveyed in an effort to develop a quantitative line-transect method for estimating manatee population size. Further assessment of distribution patterns, use areas, and life

histories were conducted through telemetry studies on Florida's east and southwest coasts.

Summary

The long range recovery goal for the Florida manatee, as required by the Act, is to "maintain the health and stability of the marine ecosystem" and to determine and maintain manatee numbers at optimum sustainable population levels in the southeastern United States. In 1994, significant progress was made toward this goal. Recovery team members furthered efforts to reduce watercraft- and water control structure-related mortalities. Various habitat conservation initiatives promoted and enhanced essential manatee habitat areas. Researchers continued to identify manatee habitat and to assess manatee distribution, abundance, and the status of the manatee.

Dugong

Dugong are listed as endangered throughout their entire range except the United States. Prior to October 1, 1994, Palau was a Trust Territory of the United States. The Service in 1993 published a proposed rule to list the Palauan dugong population as endangered. During 1994, the Service worked to develop a final decision on the listing proposal. By the end of the year, this effort had not been completed. There was little other Service activity associated with this species during the period covered by this report.

Hawaiian Monk Seal

Service personnel from the Pacific/Remote Islands National Wildlife Refuge (NWR) Complex, which includes staff from the Refuge Complex office, Hawaiian Islands NWR, and Midway Atoll NWR's cooperate regularly with NMFS personnel on various research and recovery actions recommended in the Hawaiian Monk Seal Recovery Plan. As part of production and population surveys, Service staff assisted NMFS researchers on refuge islands with tagging weaned pups, resighting tagged seals, recording births, injuries and mortalities, and collecting specimens from dead animals.

Marine debris that washed ashore, and old waste material such as wire and cable that was previously discarded by the military and exposed by erosion, and that could harm seals and other wildlife, was collected or destroyed in place. Seals that came ashore entangled in marine debris were freed when-

ever possible. Refuge staff conduct this work exclusively during the six to eight months that NMFS researchers are absent from Pacific/Remote Island Refuges each year. At Tern Island, Refuge staff conducted daily patrols throughout the year to search for, and free disoriented seals entrapped behind the degraded sea wall.

Midway Naval Air Facility is scheduled for closure in 1997. Refuge personnel are serving as on-site monitors to prevent disturbance to Hawaiian monk seals during clean-up activities at the Atoll. By the end of 1994 the beaches of Eastern Island, which are designated as critical habitat for Hawaiian monk seals, were cleared of hazardous anti-submarine net, antennas, and cables. Also in 1994, refuge staff on Midway instituted an orientation for all visitors with the goal of educating them on wildlife laws and the efforts of NMFS and the Service to protect the endangered Hawaiian monk seal.

Hawaiian Islands NWR staff based in Honolulu, on Tern, and on Laysan Islands provided a variety of support services: transportation of personnel, assistance with collection of live seals for rehabilitation, and transportation of equipment and supplies aboard Service-funded aircraft and vessel charters. Additional logistical support important to the NMFS program included radio monitoring and message relays for field camps, and maintenance of the Tern Island Field Station and aircraft runway.

The Tern Island Shore Protection Project moved ahead in 1994. The Service received \$500,000 for design of the shore protection structure. Staff of the Pacific/Remote Island NWR Complex began work on the project Environmental Assessment and Endangered Species Act consultations. Completion of the design and the Environmental Assessment are expected by early Fiscal Year 1996 (Fiscal Year 1996 begins on October 1, 1995). Construction funding is estimated at \$11.5 million dollars and has not yet been authorized.

The Pacific/Remote Islands NWR Complex Refuge Manager attended the annual MMC meeting in November 1994. At this meeting, he briefed the MMC on the status of the base closure at Midway, and the Tern Island Shore Protection project.

Refuge staff served on the NMFS Animal Care Committee, required by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service. The committee implemented protocols for maintaining captive monk seals, and reviewed research protocols for captive animals.

Cover Photos

From top left, clockwise:

A Florida manatee.

U.S. Fish and Wildlife Service photo.

A California sea otter.

U.S. Fish and Wildlife Service photo by Jim Leupold.

A polar bear.

U.S. Fish and Wildlife Service photo by Dave Olsen.

Walrus.

U.S. Fish and Wildlife Service photo.

