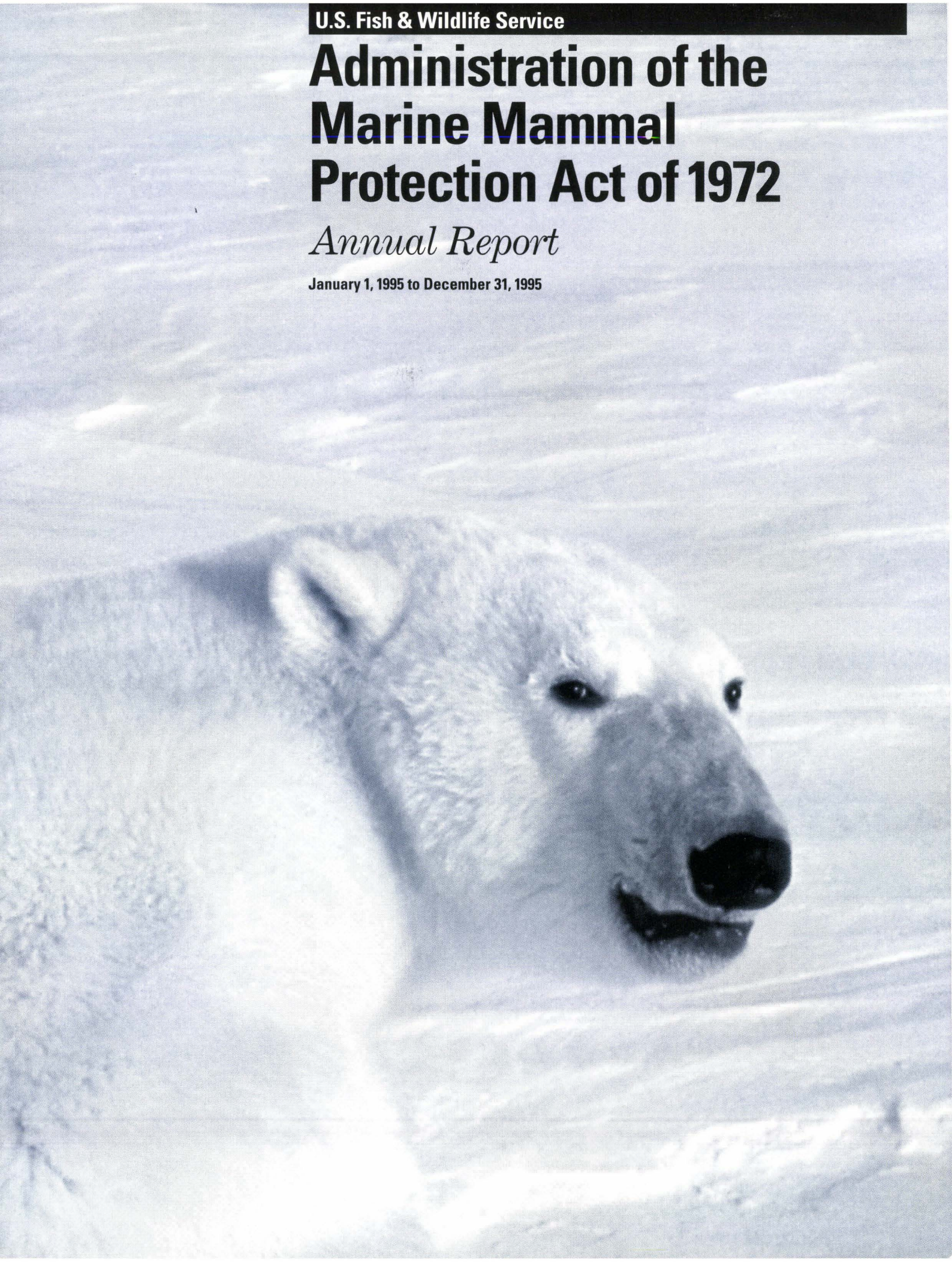


U.S. Fish & Wildlife Service

# Administration of the Marine Mammal Protection Act of 1972

*Annual Report*

January 1, 1995 to December 31, 1995





**U.S. Department of the Interior  
U.S. Fish & Wildlife Service  
Biological Resources Division/  
U.S. Geological Survey**

### **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(12)(A)(ii) 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 (manatees and dugong). Accordingly, published herewith is the report of the Department of the Interior for the period of January 1, 1995, to December 31, 1995, on the administration of the Marine Mammal Protection Act with regard to those mammals.

Issued at Washington, D.C.

Acting Director  
U.S. Fish & Wildlife Service  
Dated 5/1/97

Chief Biologist  
Biological Resources Division  
U.S. Geological Survey  
Dated 5/8/97

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Washington, D.C. 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, walruses, sea and marine otters, and dugong. Within the Department, the Fish & 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. During 1995, the National Biological Service (now the Biological Resources Division of the U.S.

Geological Survey (BRD/GS) as of October 1, 1996, pursuant to Secretarial Order No. 3202) was responsible for conducting 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. The Service also cooperates with the States, and participates in international activities and agreements. In addition, the Service lists and delists species as endangered or threatened and undertakes other Endangered Species

Act (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. Since then, the BRD/GS has been charged with that responsibility, although the Service closely coordinates with the BRD/GS on marine mammal research needs.

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 ESA

<i>Species</i>		<i>Marine Mammal Protection Act</i>	<i>Endangered Species Act</i>
<i>Common Name</i>	<i>Scientific Name</i>		
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	Endangered

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

# Summary of the 1995 Program

## *Appropriations*

For Fiscal Years (FY) 1995 and 1996, 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 1995 covered by this report overlaps FY's 1995 and 1996; funds (in \$000) authorized for both years, as well as funds spent in FY 1995 and projected to be spent in FY 1996, are presented.

	<i>Authorized</i>	<i>Expended</i>	<i>Projected</i>
Fiscal Year 1995.....	\$8,600	\$4,094	—
Fiscal Year 1996.....	\$9,000	—	\$3,983

### **Marine Mammal Protection Act Expenditures**

	<i>Actual FY 95</i>	<i>Projected FY 96</i>
<i>BRD/GS Research and Development</i>		
Alaska sea otter.....	\$ 356	\$ 310
Walrus.....	474	474
Polar bear.....	656	656
Misc. marine mammals (incl. pinnipeds and cetaceans).....	75	75
Total BRD/GS Research and Development.....	<u>\$ 1,561</u>	<u>\$ 1,515</u>
<i>Management</i>		
Permit activities.....	\$ 100	\$ 115
Law enforcement activities.....	785	705
Other management activities.....	1,648	1,648
Total Management.....	<u>\$ 2,533</u>	<u>\$ 2,468</u>
Grand Total MMPA.....	<u>\$ 4,094</u>	<u>\$ 3,983</u>

### **Endangered Species Act Expenditures**

<i>Section 6 (Grants-to-States)</i>		
California—sea otter.....	\$ 10	\$ 0
Florida—manatee.....	50	0
Georgia—manatee.....	26	26
Total Section 6.....	<u>\$ 86</u>	<u>\$ 26</u>
<i>Section 15 (BRD/GS Research and Development)</i>		
Endangered/threatened otters.....	\$ 429	\$ 429
Manatee.....	468	361
Total BRD/GS Research and Development.....	<u>\$ 897</u>	<u>\$ 790</u>
<i>Section 15 (Management)</i>		
Consultation <sup>1</sup> .....	\$ 170	\$ 160
Recovery <sup>1</sup> .....	650	600
Hawaiian monk seal <sup>2</sup> .....	75	75
Total Management.....	<u>\$ 895</u>	<u>\$ 835</u>
Grand Total ESA.....	<u>\$ 1,878</u>	<u>\$ 1,651</u>

<sup>1</sup> Funded under authority of the ESA of 1973, as amended. Includes all endangered and threatened marine mammals for which the Service engages in consultation and recovery activities.

<sup>2</sup> 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).

# *Outer Continental Shelf Operations and Environmental Studies*

Service activities for offshore oil and gas leasing were limited to three proposals involving the Service's Alaska Region. The Service reviewed the Minerals Management Service's (MMS) Draft Environmental Impact Statement (DEIS) for Lease Sale 144 for the Beaufort Sea in Alaska. The Service found a potential concern for walrus and polar bear. Stipulations were suggested dealing with protection of the denning and feeding areas of these species.

The MMS's DEIS for the proposed Cook Inlet Natural Gas and Oil Lease Sale 149 was reviewed and commented upon by the Service. The Service explained concern for the potential effect of oil spills on the sea otter population in Cook Inlet.

The MMS's Gulf of Alaska/Yakutat Planning Area Oil and Gas Lease Sale 158 DEIS was produced in December 1995. The Service offered a Biological Opinion in October 1995 on this proposed sale. No marine mammals were found to be involved with this proposed lease.



*A polar bear on ice in Alaska. U.S. Fish & Wildlife Service photo.*

# Research and Development

The BRD/GS conducted research under the Act during FY 1995 at several Centers and Field Stations. The Alaska Science Center (ASC) is responsible for polar bear, walrus, and northern (i.e., Alaska) sea otter research. The California Science Center (CSC) is responsible for work on southern sea otters. The Southeastern Biological Science Center (SBSC) 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 Service, other BRD/GS Research Centers, and other bureaus of the Department.

For each project active during FY 1995, the project title and summary, followed by highlights of FY 1995 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 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.

### 1995 Activities/Accomplishments:

In 1995, 20 additional females were captured and fitted with satellite telemetry collars in the Kara and Barents Seas of western Russia.

Data analyses for the spring 1994 test of census methodologies for polar bears in the Beaufort Sea was completed and final report preparation is underway. A manuscript on the use of the double-count method was prepared and submitted for publication.

The U.S./Russia joint census is now scheduled for fall 1998, depending upon the economic and political situation in Russia, and the availability of funds; this has required a revised completion date.

The data base on polar bear movement patterns was expanded during 1995, with a special effort to expand the Russian capture area into the vicinity of the Novaya Zemlya and Frans Josef Land.

BRD/GS researchers participate actively with the Service in the annual meeting of the Canadian Polar Bear Technical Committee, and serve as technical advisors on the Polar Bear Management Agreement in the Southern Beaufort Sea between the North Slope Borough, Alaska, and the Inuvialuit Game Council, Northwest Territories, Canada. The BRD/GS 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.

### B. Project Title and Summary:

Ecosystem dynamics of polar bears in the Polar Basin.

The goal of this project 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). Most aspects of polar bear foraging ecology are poorly understood. 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



*A female northern sea otter with her pup in Alaska.  
U.S. Fish & Wildlife Service Photo.*



subnivean structures (lair and breathing holes) using trained dogs, to determine the rates and characteristics of predation on ringed seals by bears, as well as to document the importance of other prey and food sources. 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.

*1995 Activities/Accomplishments:*  
Exploratory field work indicated that aerial surveys of ringed and bearded seals and seal capture/instrumentation could be accomplished in the autumn season. On-ice activities using over-snow machines and trained dogs, however, would be prohibitively dangerous due to unstable ice. Opportunities to establish behavioral observation points along the coast were explored. Initial investigation of the availability of idle oil drilling structures as viewing platforms has been unproductive.

Additional assessment of existing distribution data and new analytical tools have suggested refinements in previous approaches to questions about population bounds. Existing radiotelemetry data on the integrity of the Beaufort Sea polar bear population are valuable, but the existence of spatial segregation and true sub-populations can only be confirmed from genetics patterns. Preliminary analyses of polar bear tissue for stable isotope ratios of carbon and nitrogen suggest these may also be of use in establishing geographic fidelity and documenting the importance of various foods in polar bear and ringed seal diets.

One natural observation point has been identified—Herschel Island, where large cliffs overlook ice that is reasonably active during much of the winter. Further evaluation is necessary to determine whether Herschel Island or any man-made structure could provide sufficient observation rates to ensure quantifiable data.

Although efforts to obtain high resolution radar images of sea ice have thus far been unsuccessful, the weather and ice stability limitations of on-ice and hands-on activities documented this year emphasize the importance of remote

sensing methods in accomplishing study objectives.

A manuscript entitled, "Movements and activities of polar bears in the Beaufort Sea," has been submitted to the Canadian Journal of Zoology.

## **2. Alaska sea otter**

### **A. Project Title and Summary:**

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

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

*1995 Activities/Accomplishments:*  
Analysis of mitochondrial DNA (mtDNA) in sea otter tissue to compare haplotype frequencies and diversities among source and translocated sea otter populations resulted in several findings of potential broad application in conservation of rare or endangered animals. (1) High levels of genetic diversity may be maintained when founding populations consist of large numbers of individuals from multiple populations and population growth is not delayed. (2) The period of time a population remains reduced in abundance is more important than the magnitude of the reduction.

Comparisons of reproduction and juvenile survival between populations below equilibrium density (Kodiak) and those at or near equilibrium density (Amchitka) provided results that may have application in individual-based models of population assessment. Although reproductive rates were high and did not differ, juvenile survival was generally higher at Kodiak than at Amchitka.

Analysis of mtDNA was completed for all sea otter tissues collected during, or prior to, 1994. Supplementary tissue samples from the Cape Lopotka and Commander Islands in Russia were

obtained in cooperation with Russian scientists in 1995. Analysis of tissues collected in 1995 will be completed in FY 1996.

Studies under this work unit are nearing completion. Analysis of data from the Amchitka project was completed. Several manuscripts were published and several more are in press. A Masters thesis on age specific reproductive behavior in sea otters was accepted by the University of California, Santa Cruz.

Additional work is warranted in the genetics project to provide comparison of genetic diversity between translocated populations and naturally re-colonizing populations. Tissue samples are in hand for this comparison.

### **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 the habitat; and (3) the recovery of the Prince William Sound sea otter population.

*1995 Activities/Accomplishments:*  
Development of a standardized sea otter survey method, in response to a request from the Service's Marine Mammals Management Office (FWS-MMM), neared completion in 1995. A Bellanca Scout aircraft was tested at 70 mph and, in collaboration with FWS-MMM, training and evaluation of a new observer was provided. Testing of aerial survey detection probabilities at 70 mph demonstrated that at least 0.90 of the animals present in intensive search areas could be detected. Eleven observers attained maximum detection probabilities greater than 0.90. These results suggest that detection bias can be minimized and provided justification for implementation of the recommended survey design for management purposes.

The sea otter aerial survey design was tested for a final time in western Prince William Sound in July 1995. The 1995 sea otter population trial survey was comparable in area surveyed to previous trials. Using results of a survey covering 445 km<sup>2</sup>, and 34 intensive searches to estimate the correction factor, the

adjusted population estimate for western Prince William Sound was 2,158 (standard error = 236, proportional standard error = 0.11). This provides the best precision estimate obtained in the development and testing of this survey methodology.

The marine mammal permit was amended to allow attachment of pressure modulated sonic transmitters to sea otters.

Field work on the cooperative Glacier Bay sea otter/fisheries interactions study continued in 1995. Surveys of sea otter distribution and abundance continued in Glacier Bay and Icy Straits.

Additional work in and near Glacier Bay National Park and Preserve continues to assess the potential for large scale ecological change in near shore marine invertebrate species composition and abundance following the reoccupation of habitats by sea otters. Crab sampling areas are situated in close proximity to current sea otter concentrations and it is anticipated that occupation will occur in the near future. Additional subtidal explorations in 1995 in and around Glacier Bay confirmed previous findings regarding the abundance of invertebrate prey and the potential influence sea otter foraging will have. 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 into previously unoccupied areas, predation will likely increase and dramatic changes can be expected in benthic community composition. Surveys of sea otter distribution indicate movements eastward in Icy Straits and north into Glacier Bay. Additional data on sea otter foraging will be obtained in one or more of our sampling areas as otters move in.

### **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.

Analyses of mitochondrial and nuclear DNA in 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 (involving the collection, archiving, and analysis of tissue) are conducted on sea otters, polar bears, and walruses.

#### **1995 Activities/Accomplishments:**

Genetic work on walruses is directed at elucidating the extent of population structuring, particularly relative to Russian-U.S. territorial boundaries. Use of mtDNA and nuclear DNA markers failed to document evidence of significant spatial structure when comparing walrus samples from four locations in the Bering Sea, two from Russia (Anadyr Gulf and Koryak), and two locations along the U.S. coast (Nunivak Island and St. Lawrence Island).

Ongoing sea otter analyses are focusing on micro geographic population structuring to provide the Service with more complete understanding of Alaskan populations and enable effective management plans. Analyses using mitochondrial genetic markers suggest that sea otter populations can be separated into four major groups: (1) California; (2) Prince William Sound, Alaska; (3) Kodiak Island, Alaska, and islands of the Aleutian archipelago, including the Commander Islands; and (4) the Kiril Islands. Additional work on sea otters is addressing the effects of translocations on genetic variability in populations.

Genetic work on polar bears is directed toward testing the hypothesis that polar bears from the Chukchi and Beaufort Seas are reproductively isolated subpopulations; the results will have implications for polar bear management. Laboratory work has recently been completed for approximately 260 female polar bears from the western Beaufort Sea and the Chukchi Sea. Each bear was characterized for eight variable micro satellite genetic loci to address questions about the extent and causes of macro- and micro-geographic population structuring across this region. Very preliminary results (one locus) suggest that polar bears from the Beaufort and Chukchi Seas do not differ significantly in gene frequency. Detailed analyses are ongoing and should be completed during FY 1996.

#### **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.

#### **1995 Activities/Accomplishments:**

An agreement was completed between the NMFS National Marine Mammals Laboratory and the BRD/GS Alaska Science Center to co-sponsor a workshop on census methodologies for marine mammals with varying sightability and availability. However, a FY 1995 budget rescission prevented scheduling the workshop; the workshop is intended to be held at the National Marine Mammals Laboratory during FY 1996, pending availability of funds.

Genetic microsatellites at eight loci are being used to investigate the degree of genetic separation between 240 polar bears in western and northern Alaska. Preliminary discussions with Service cooperators were held concerning design of a polar bear den survey methodology for the Russian Arctic.

The joint effort between the NMFS Southwest Fisheries Science Center and the BRD/GS Alaska Science Center in applying individual-based models to walrus population data continued. Cooperators at the University of Alaska completed updating and proofing the data base of Pacific walrus reproductive characteristics needed for this modeling effort. Work on two independent efforts to develop population models for Pacific walrus (Universities of Alaska and Maine) was completed. Manuscripts are in preparation and are intended to be submitted for publication during FY 1996.

Blood and tissue samples were collected from captured and sedated walruses, carcasses, and subsistence hunt kills. Analyses included blood serum chemistry and blood cell counts; skin biopsies for genetics work; ultrasound measurements of blubber thickness; and vibrissae were collected and archived pending stable isotope studies to evaluate trophic levels.

The program to collect data and samples from sea otter carcasses taken by Native hunters was continued in conjunction with the Service.

### **C. Project Title and Summary:**

Alaska Marine Mammal Tissue Archival Project (AMMTAP).

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. Specimens are limited to freshly-killed animals. Collections are 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 aliquots are analyzed for quality control and the results published in annual reports and refereed journals.

#### *1995 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; polar bears; and Pacific walrus.

One of the major accomplishments of this ongoing project is the number of partners that participate in various ways in the archival of tissue samples. Major research collaborators include: the Department of Fish and Oceans (Canada); the University of Germany; the Service; the North Slope Borough; the State of Alaska; Kawerak and TDX Corporations; the Alaska Sea Grant Program; and the Cook Inlet Marine Mammal Advisory Committee.

Because the project is primarily an archival one, not every archived sample has been analyzed. However, aliquots 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. For example, contaminant loads, particularly PCBs and chlorinated hydrocarbons, in beluga whale blubber from the Chukchi Sea are relatively high, a trend which is similar to observations in this species across the Canadian Arctic.

Future directions for this study include expansion of tissue collections geographically; inclusion of greater food web representation and human risk assessments; expansion of tissue banking to include brain and muscle tissue on a regular basis; and initiation analysis for compounds not routinely measured in AMMTAP samples (e.g., dioxins, coplanar PCBs).

### **D. Project Title and Summary:**

Bering-Chukchi Sea ecosystem initiative.

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, 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 Seas ecosystems. Telemetry technology will be developed and used to define movement and habitat use patterns of polar bears and walruses; 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.

#### *1995 Activities/Accomplishments:*

Because this is the first year for this project, there are few accomplishments to report.

Russian remotely-sensed ice data is being collected and formatted by Russian cooperators. These data have a 1 km<sup>2</sup> resolution and include both infrared and radar imagery. Data will be transferred to the BRD/GS in Alaska during FY 1996 and methods will be

developed to overlay satellite-determined polar bear locations on the ice data. Russian Academy of Sciences cooperators and BRD/GS project personnel will jointly conduct the data analyses and prepare a manuscript on the results during FY 1996.

### **E. Project Title and Summary:**

Dynamics of marine ecosystems in the Bering and Chukchi Seas.

Suitable telemetry technology will be developed and used to define movement and habitat use patterns of top carnivores in the Bering and Chukchi Seas marine ecosystems. Emphasis will be placed on interrelationships between seasonal sea ice habitats and prey species of the two apical predators using remotely sensed data on sea ice. Presence of environmental contaminants, including radionuclides, in predators and prey (both harvested animals and beach cast carcasses) will be documented using standard sampling protocols. Biological sampling will include selected sites from the Russian Arctic between the Bering Straits and Novaya Zemlya in collaboration with Russian and Norwegian colleagues. International cooperation will be accomplished through active participation in the North Pacific Marine Science Organization (PISCES), the Conservation of Arctic Flora and Fauna (CAFF) working group, and the International Northern Sea Route Programme (INSROP) during ecological investigations of the Bering and Chukchi Seas marine ecosystems.

#### *1995 Activities/Accomplishments:*

Initial field work to develop capture and attachment protocols for Pacific walrus was conducted at Cape Peirce with Service cooperators. Carfentanyl citrate was successfully used as the immobilizing agent on 12 animals, and isoflurane gas was successfully used to anesthetize four animals. Several types of satellite transmitters were attached to walrus tusks and at-sea locations were obtained. Satellite telemetry data from walrus captured at Cape Peirce indicate a feeding concentration area southwest of the Cape. Efforts to further delineate this region will continue in FY 1996, with the attachment of GPS-linked satellite transmitters to walrus using the Cape Peirce haulout.

BRD/GS project staff was nominated for membership in a new PISCES marine mammal workgroup. Agreements were reached with Russian, University of

Alaska, and Service cooperators to establish an international Pacific walrus database. BRD/GS project staff attended the coordination meeting of the U.S./Russia marine mammal project in Russia.

The Russian Academy of Sciences, Russian Ministry of Ecology, and Norsk Zoologisk Museum cooperators established a pilot study to develop methods for determining radionuclide levels in teeth materials of polar bears. Initial samples for this effort were provided by Norwegian and Russian cooperators. Preliminary lab results indicate an elevated level of radionuclides in polar bear teeth from Svalbard. Laboratory analyses of polar bear teeth from Novaya Zemlya is ongoing.

The U.S./Russia marine mammal project coordination meeting identified several potential avenues for future cooperation on research topics related to Pacific walrus.

#### **F. Project Title and Summary:**

Sensitive non-endangered mammals and marine birds in the Chukchi and Beaufort Seas.

This project is initially oriented toward collecting baseline information on ecosystem characteristics of the Bering and Chukchi Seas (e.g., bathymetry, bottom types, sea ice characteristics, etc.) and assembling this information into a GIS-based database available to all researchers working in the region. Pending the results of this initial work, synthesis of existing information regarding effects of acoustic and visual disturbance on wildlife, and tests of new GPS-linked satellite transmitters, this project should develop into a second study of the behavioral effects of helicopter overflights on sensitive animal species in the Chukchi and Beaufort Seas. The focus of such a second study would be on quantifying the behavioral responses of Pacific walrus to acoustic and visual disturbances from overflights, and on summarizing information on the distribution of spectacled eiders in the Chukchi Sea.

#### *1995 Activities/Accomplishments:*

Because this is the first year of the project, there is little to report with regard to results.

Satisfactory drugging protocols have been developed for safely immobilizing walrus for attachment of radio transmitters to tusks.



*Chessie awaiting his release from Sea World of Florida. U.S. Fish & Wildlife Service photo by Jim Valade.*

A number of geo-referenced databases on resources of the Bering and Chukchi Seas have been located and efforts to gain access to those databases are underway.

Agreements were reached between Russian and American scientists to develop an international Pacific walrus database that will include data from census surveys, haulout counts, and annual harvests. This database will be one component of the resource database being developed for the Bering and Chukchi Seas.

#### **4. Manatee and dugong**

##### **A. Project Title and Summary:**

Ecological studies of manatees and dugongs.

This work is concerned with the status of sirenian populations throughout the geographic range of the order but emphasizing Florida, obtaining estimates of population levels and key aspects of population dynamics to determine habitat requirements, and evaluating the potential of surveys in selected areas as indices of population densities and movements. This is done through the capture, tagging, and tracking of manatees along the Florida coast and in Puerto Rico, the study of the diet of manatees, and the sampling of seagrass ecosystems.

*Note:* This description encompasses the work reported last year as a separate project entitled, "Mapping and Characterizing Seagrass Areas Important to Manatees in Puerto Rico."

#### *1995 Activities/Accomplishments:*

Radio tracking studies in FY 1995 of the Florida manatee on the Atlantic coast and the Antillean manatee in Puerto Rico continued at a level similar to previous years. A total of 81 Florida manatees (31 male; 50 females) have been radio-tagged since the start of the study, and over 47,000 locations have been logged on satellite-tracked manatees.

The range of manatee movements in eastern Florida is much greater than measured in other areas. About 85 percent of tagged manatees made seasonal migrations, typically between south Florida in winter and central or north Florida during the warm season. Migratory distance did not vary significantly with age class or adult body size.

In 1995, additions to the computerized, PhotoCD-based Manatee Individual Photo-Identification System (MIPS) included an on-line help menu and a report format for printing summary identity, feature, and sighting information, and a composite sketch for any individual.

Eight manatees (three orphaned, one short-term rehabilitated, and four captive-born) were placed in the “soft-release” acclimation enclosure on Merritt Island National Wildlife Refuge (NWR) during 1995. Behavior and health were monitored and five manatees were released into the Banana River after being fitted with radio tracking devices. Fifteen of 18 wild-born manatees brought into captivity for rehabilitation have survived their first winter after reintroduction to the wild. General movements and habitat utilization appear to be similar to patterns noted for other radio-tracked manatees.

Studies of manatee effects on, and association with, submerged vegetation were conducted in the acclimation enclosure, and at Roosevelt Roads Naval Station, Puerto Rico. Manatee grazing reduced seagrass biomass, but affected the two co-dominant species—manatee grass (*Syringodium filiforme*) and shoalgrass (*Halodule wrightii*)—in different ways. Shoalgrass tended to dominate grazed areas and manatee grass tended to dominate exclosed (ungrazed) areas. It is possible that in the absence of manatee grazing, shoalgrass is shaded out by the taller, more robust manatee grass. Thus, manatee grazing may help maintain mixed-species seagrass beds.

An adult male manatee (named Chessie) was successfully tracked during the summer as he traveled north nearly 2,000 miles through the coastal waters of ten states before reaching Rhode Island. His return to Florida was documented in November. This is the longest documented movement for any manatee.

Project biologists assisted researchers in Chetumal, Mexico, and two sites in Brazil (the upper Amazon River and the northeastern coast) to launch manatee radio tracking efforts. Technical expertise was provided to a dugong research project in Australia.

Through a search of the MIPS database, it was discovered that of the 30 manatees identified with scarred or mutilated flippers (indicative of entanglement injuries), 22 (73 percent) were females. This suggests that female manatees may be especially vulnerable to entanglement; research on captive manatees may discover behaviors that promote entanglement.

## 5. Southern sea otter

### A. Project Title and Summary:

Population biology of sea otters.

The goals of this project are to evaluate trends in the California sea otter population and causes for its low rate of increase. A baseline of information on distribution and abundance is necessary to determine current and future population status, which is of particular importance to the recovery plan and delisting. The study obtains demographic and behavioral information for sea otters in California, and from several other populations of known status. Causes and consequences of differences among these populations will be evaluated and population modeling will be used in the analysis. The work is conducted through censuses, monthly surveys for beach-cast carcasses, and studies comparing demography and behavior of sea otter populations in California, Washington, and Alaska in order to understand the low growth rate in the California population. In addition, there are several associated studies of the effects of contaminants on sea otters.

#### *1995 Activities/Accomplishments:*

Field research on sea otters in Washington continued. Seventeen otters were captured in the vicinity of Cape Alava in 1995, and 14 were surgically implanted with radio transmitters. The sex and age composition of the otters was more favorable for meeting study objectives this year—more females and pups. Monitoring of all instrumented otters continued. Data were collected on foraging behavior, reproduction, and movements. Time/activity budget data collection was curtailed because of budget shortfalls.

Field work on similar projects was begun at Adak and Shemya Islands in the Aleutian archipelago with support from the Department of Defense and in collaboration with partners including the University of California at Santa Cruz, Alaska Maritime NWR, U.S. Navy, U.S. Air Force, and BRD/GS Alaska Science Center.

Both the fall and spring surveys in 1995 indicate that the California sea otter population is continuing to grow—total counts for both the spring (2377) and fall (1845) surveys were the largest of this century. The majority of this increase has occurred as a result of increasing density within the established range, rather than from range expansion.

Range expansion of the population translocated to Washington to east of Cape Flattery, an area devoid of sea otters since the fur trade period, was documented, as was the dispersal of recently weaned pups. Population growth continues at a finite rate of about 12 percent per year.

Information on sea otter birth rates and mortality are now available for comparison among Amchitka Island, Kodiak, and central California. These data demonstrate that age-specific birth rates are similar, but patterns of mortality vary substantially. Both Amchitka and California have pre-weaning mortality rates of about 50 percent, whereas the Kodiak rate is closer to 15 percent.

Results of foraging data in recently occupied habitat in Washington show red sea urchins comprise about 70 percent of the diet. Prior to movement of sea otters into the new area, urchins comprised about 0.2 percent of foraging records.

Six trips to San Nicolas Island were made in FY 1995 to monitor the small colony of sea otters. The highest count of independent sea otters (16) in at least four years was obtained. Four births were documented, including the sixth pup born to a known individual. Distribution of otters is changing, with more observations off the north and northwest shores. There is evidence of some recruitment to the colony, but most weaned pups are either dying or emigrating.

### B. Project Title and Summary:

Interactions between sea otters and near shore ecological communities.

The goal of this study is to evaluate the generality, breadth, and evolutionary consequences of the interactions between sea otters, the benthic invertebrates on which they prey, and the kelp forest on which the invertebrate herbivores graze. Work focuses on the role of sea otter predation on California habitats, but includes additional comparative studies across the Pacific rim and work on indirect influences on other food web components (e.g., coastal fishes, coastal-feeding sea ducks, subtidal asteroids, and kelp assemblages).

#### *1995 Activities/Accomplishments:*

A study involving sites in California, Australia, and New Zealand to test the hypothesis that the intensity of

predation on benthic invertebrates is less in the southern than the northern hemisphere, was completed. Additional work on the generality of the sea otter's influence on kelp forests in California and Mexico was planned.

Relationships between sea otters and kelp forest communities in British Columbia are similar to those that occur in southeast Alaska. In general, areas lacking sea otters have been deforested by urchin grazing and those with well established sea otter populations are characterized by well-developed kelp forests. The mechanism of change was found to be closely tied to the behavioral response of sea urchins to damaged conspecifics. Otters discard the uneaten exoskeletons of their prey which sink to the bottom. Living urchins flee from the remains of dead urchins, thus creating halos within which kelps rapidly recruit and grow.

A field study of the population structure and predatory role of subtidal sea stars at Attu Island was completed. This study involved a comparison of data gathered in the late 1970s when otters were absent from most of Attu, with data gathered in 1994, after otters had become reestablished. Long-term data show that the abundance of predatory sea stars declined by several orders of magnitude following the recolonization by sea otters. Sea stars prey on mussels and barnacles, and thus the mortality rates of these invertebrates declined substantially with the arrival of otters.

Research on sea urchin refuging behavior shows that where fish predation is strong, the urchins hide during the day and come out at night to forage. Accumulating information suggests that this behavior is genetically fixed in tropical species (where predation intensity is strong) and genetically plastic in temperate species (where intensity is variable).

# 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 has jurisdiction. 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 jurisdiction of the Department. Violations are referred to the Department's Office of the Solicitor for civil action or the Department of Justice for criminal enforcement action.

Forensic scientists at the Clark R. Bavin National Fish and Wildlife Forensics Laboratory (Laboratory) in Ashland, Oregon, continued to provide forensic support to investigators involved in marine mammal protection from throughout the world. Laboratory staff examined approximately 37 marine mammal items during 1995 to assist investigators in establishing species identification. The items were examined as part of 13 investigations and involved seal, walrus, whale, dolphin, sea otter, polar bear, and manatee.

Efforts to develop a test for the identification of manatee and dugong continued in 1995. The Laboratory sequenced several genes from the mtDNA of 48 different West Indian manatees from Florida, Georgia, Puerto Rico, Jamaica, Venezuela, Columbia, and Guyana; and West African populations in Gabon.

Service wildlife inspectors in the Pacific Region closely monitor wildlife entering the country to detect the illegal importation of marine mammals and marine mammal products. Emphasis is placed on the designated wildlife ports of

Seattle, Portland, San Francisco, Los Angeles, and Honolulu. Ports of entry on the Washington-Canada border, the California-Mexico border, and at Agana, Guam, also receive special attention. Approximately 35 separate incidents involving the illegal importation of marine mammals were reported in 1995. Seizures primarily involved products manufactured from whale ivory, whale baleen, walrus ivory, polar bear skins, seal skins, and dolphin skulls.

The Service actively participates in a joint task force in San Francisco, including representatives from the U.S. Customs Service, the Department of Agriculture, and the Food and Drug Administration, to address the importation of animal parts and products for the Asian community. The task force investigates violations of statutes and regulations relating to the importation of material often used as medicinals, and implements an out-reach program designed to inform importers about the law. The U.S. Attorney's office for the



*A northern sea otter in Alaska. U.S. Fish & Wildlife Service photo.*

Northern District of California in San Francisco chairs the task force. Marine mammal products seized by the Service are included in cases considered by the task force.

Service special agents continue to actively investigate reports of illegal taking of southern sea otters along the California coast. The southern sea otter is listed as a threatened species under the ESA. One incident involving the shooting of a sea otter occurred near the Santa Cruz Harbor. The incident was initially reported by the U.S. Coast Guard when a sea otter carcass was observed while towing a commercial fishing vessel back to port. The carcass was retrieved and the cause of death determined to be from shotgun wounds. Further investigation identified a witness who provided a statement that the captain of the towed vessel had admitted shooting the otter, and a search of the vessel resulted in the seizure of a loaded shotgun. The case has been referred to the U.S. Attorney for prosecution. Four other southern sea otters were found shot along the central coast of California in 1995. Examinations of the carcasses have been completed and ballistic tests conducted. No information concerning possible suspects has yet been developed.

After more than two years, the defendant in a case involving the unlawful shooting of a sea lion off the California coast pleaded guilty in Federal court to violating the Act. The case began when Service special agents purchased tickets for a sport fishing vessel following reports that migratory birds had been killed during previous trips. Using a concealed video camera, the agents recorded the boat's captain shoot a sea lion swimming near the vessel, just prior to returning to the docks. The case was originally referred to the Los Angeles County District Attorney, but subsequently transferred to the Office of the U.S. Attorney at their request. Sentencing has been scheduled for later this year.

In addition to controlling the illegal harvest and illegal importation of marine mammals, investigative efforts were also directed at illegal commercialization in marine mammal parts within the Pacific Region. A cooperative investigation in Oregon with the Drug Enforcement Administration and the Portland Police Bureau resulted in the apprehension of a subject offering to trade raw sea otter pelts for marijuana. The subject, a native of Alaska, allegedly obtained the pelts in Alaska. As a result of negotiations with the U.S. Attorney's office, the subject agreed to cooperate with the government in future investigations.

In another Oregon investigation, two unworked walrus tusks were seized from a person who had displayed walrus ivory at a knife and gun show. Although the tusks were not offered for sale, the subject admitted obtaining the raw tusks illegally from an Alaskan Native on Little Diomed Island. An investigation in Reno, Nevada, resulted in the forfeiture of 46 sperm whale teeth.

Enforcement patrols were conducted along the northwest coast of Alaska by Service special agents checking for compliance with the wasteful take provisions of the Act. Special agents attended meetings in several Alaskan Native communities and discussed the "wasteful take" provisions of the Act before enforcement patrols began. Special agents also participated in the training program for Service employees responsible for monitoring the walrus harvest by Alaskan Natives. During the training, emphasis was placed on the importance of reporting instances of wasteful take and improving cooperative efforts between the Law Enforcement and Marine Mammals Management programs.

During the walrus hunting season, particular enforcement emphasis was placed in those areas where large numbers of walruses are taken, including St. Lawrence Island and the Seward Peninsula. One citation was issued to an Alaskan Native for wasteful take of walrus, one citation was issued to an Alaskan Native for the illegal sale of an unaltered walrus tusk, and two citations were issued to a non-Native Alaskan resident for the unlawful possession of five polar bear claws taken in violation of the Act, and for the unlawful purchase of an unaltered walrus tusk. Additional complaints of "head hunting" of walrus and illegal sale of marine mammal parts were received and investigated, but they failed to result in prosecutions.

Service special agents investigated/concluded several other cases involving the Act. One case involved a "harassment" incident in which an individual repeatedly tried to run over a sea otter while operating a water Jet-ski. A local resident videotaped the violation and reported it to authorities. The subject paid a \$350 fine.

Another case involved the disturbance of walrus by a chartered military aircraft at a sensitive marine mammal haulout on the Togiak National Wildlife Refuge. Over 1,000 walruses stampeded into the ocean as a result of the low-flying aircraft. The aircraft flew over the animals approximately 75-100 feet above ground level. Weather was not a factor, with visibility at 30 miles. Although no prosecution resulted from the incident, the pilot was suspended for two weeks and given a written reprimand. Refuge personnel have worked extensively with private pilots, commercial operators, and military personnel to educate them about the haulouts, yet significant disturbances continue to occur.



# Permits and Registrations

The Act prohibits the take or import of marine mammals and marine mammal products. Exceptions may be made under permits for scientific research, public display, import of sport-hunted trophies of polar bears taken in Canada, photography for educational or commercial purposes, beached and stranded marine mammals that are designated as non-releasable under the Act, or to enhance the survival or recovery of a species or stock. Another exception streamlines the permitting process for conducting scientific research by allowing a General Authorization for the incidental take of marine mammals by Level B harassment in the course of bona fide scientific research.

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, provided that only authentic Alaskan Native handicrafts or clothing may be purchased or sold in interstate commerce. 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.

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

With regard to implementing the 1994 provisions of the Act that allow for the issuance of permits to import personal, sport-hunted polar bear trophies taken in Canada, the Service issued proposed



*A female polar bear with cub in Alaska. U.S. Fish & Wildlife Service photo.*

regulations on January 3, 1995, (60 FR 70) to establish application requirements, permit procedures, issuance criteria, permit conditions, and a special permit issuance fee. On July 17, 1995, the Service issued a supplemental proposed rule (60 FR 36382) to announce the proposed legal and scientific findings on the importation of polar bear trophies taken in sport hunts in Canada. The comment period on this supplemental proposed rule was subsequently extended through November 6, 1995. By year's end, the Service was reviewing the comments received from the public on the proposed regulations.

Regulations will be developed for issuance of permits for enhancement of the survival or recovery of a species or stock, photography for educational or commercial purposes, and beached or stranded marine mammals that are designated as non-releasable under the Act.

During 1995, four new permit and four amendment/renewals were issued for scientific research. Two permits were issued for public display. Twelve parties either registered or renewed their registration as agents and/or tanneries.

The following is a brief description of permit actions taken in 1995.

## **Scientific Research Permits**

1. Permit 795477, issued January 25, 1995, through January 25, 1997, to Florida Atlantic University, Department of Biological Sciences, Boca Raton, Florida, authorizes hearing studies on two male and two female captive West Indian manatees (*Trichechus manatus*).
2. Permit 691972, issued to the Carle Foundation, Urbana, Illinois, was renewed February 8, 1995, through February 8, 1999. The permit authorizes the import of biological samples from polar bear (*Ursus maritimus*) for scientific research of residency times of Telazol and tissue contamination by industrial pollutants.
3. Permit 795349 was amended effective June 30, 1995, through December 31, 1998, to the BRD/GS, Santa Cruz, California. This permit authorizes the take of northern sea otters (*Enhydra lutris lutris*), including capturing and blood sampling for scientific research on population biology and ecology.

4. Permit 782423 was issued effective February 23, 1995, through September 1, 1995, to the California Department of Fish and Game, Sacramento, California. This permit authorizes take activities of southern sea otter (*Enhydra lutris nereis*) including capture, immobilization, and pelt swabbing for scientific research related to oil spill contamination.

5. Permit 791721 was issued effective April 3, 1995, through December 31, 1999, to the BRD/GS, Sirenia Project, Gainesville, Florida. The permit authorizes take activities of West Indian manatees (*Trichechus manatus*) including radio-tagging, and the import of biological samples from salvaged dead manatees for scientific research.

6. Permit 766818 was amended effective July 12, 1994, through December 31, 1996, to the BRD/GS, Alaska Science Center, Anchorage, Alaska. This permit authorizes take activities for northern sea otters (*Enhydra lutris lutris*) and southern sea otters (*Enhydra lutris nereis*) for scientific research, including capturing, immobilizing, radio-tagging, and collecting biological samples.

7. Permit 801652 was issued effective June 30, 1995, through December 31, 2000, to the BRD/GS, Anchorage, Alaska. This permit authorizes take activities of Pacific walrus (*Odobenus rosmarus divergens*) including capture, immobilization, blood sampling, and importing tissue samples of Pacific and Atlantic walrus (*Odobenus r. rosmarus*) for scientific research.

8. Permit 690038 was renewed effective September 1, 1995, through October 31, 2000, to the BRD/GS, Alaska Science Center, Anchorage, Alaska. This permit authorizes take activities for polar bear (*Ursus maritimus*) including capture, immobilization, biological sampling, and importing biological samples of polar bears for scientific research.

#### **Public Display Permits**

1. Permit 797101 was issued April 14, 1995, for the Indianapolis Zoological Society, Indianapolis, Indiana, to take in Alaska up to 2 male and 4 female Pacific walrus (*Odobenus r. divergens*) for the purpose of public display.

2. Permit 799991 was issued April 21, 1995, for the Seattle Aquarium, Seattle, Washington, to import from the Vancouver Aquarium, Vancouver, Canada, one female northern sea otter (*Enhydra l. lutris*) for the purpose of public display.

#### **Registered Agent/Tannery Permits**

1. Permit 797559, Chukotka-Alaska, Inc., Nome, Alaska, was registered as an agent on February 27, 1995.

2. Permit 748545, renewed the registration of Alaskan Treasures, Anchorage, Alaska, as an agent on March 8, 1995.

3. Permit 799658, Prince of Wales Taxidermy and Fur Exchange, Craig, Alaska, was registered as an agent on May 5, 1995.

4. Permit 799354, Ivory House, Anchorage, Alaska, was registered as an agent on May 11, 1995.

5. Permit 704234, renewed the registration of Bear's Den, Inc., Olympia, Washington, as an agent on June 1, 1995.

6. Permit 799359, Carolina Fur Dressing, Inc., Raleigh, North Carolina, was registered as a tannery on April 5, 1995.

7. Permit 756124, renewed the registration of Shishmaref Traditional Industries, Shishmaref, Alaska, as an agent on June 7, 1995.

8. Permit 802573, Top Gun Taxidermy, Wasilla, Alaska, was registered as an agent and tannery on June 27, 1995.

9. Permit 671391, renewed the registration of Frontier Tanning Co., Anchorage, Alaska, as an agent and a tannery on September 14, 1995.

10. Permit 779983, renewed the registration of Dennis' Taxidermy, Fairbanks, Alaska, as an agent on November 27, 1995.

11. Permit 773799, renewed the registration of Arctic Enterprises, Anchorage, Alaska, as an agent on November 29, 1995.

12. Permit 755879, renewed the registration of The Cutting Edge, Bethel, Alaska, as an agent on December 6, 1995.

# International Activities

## **US-Russia Environmental Agreement: Marine Mammal Project**

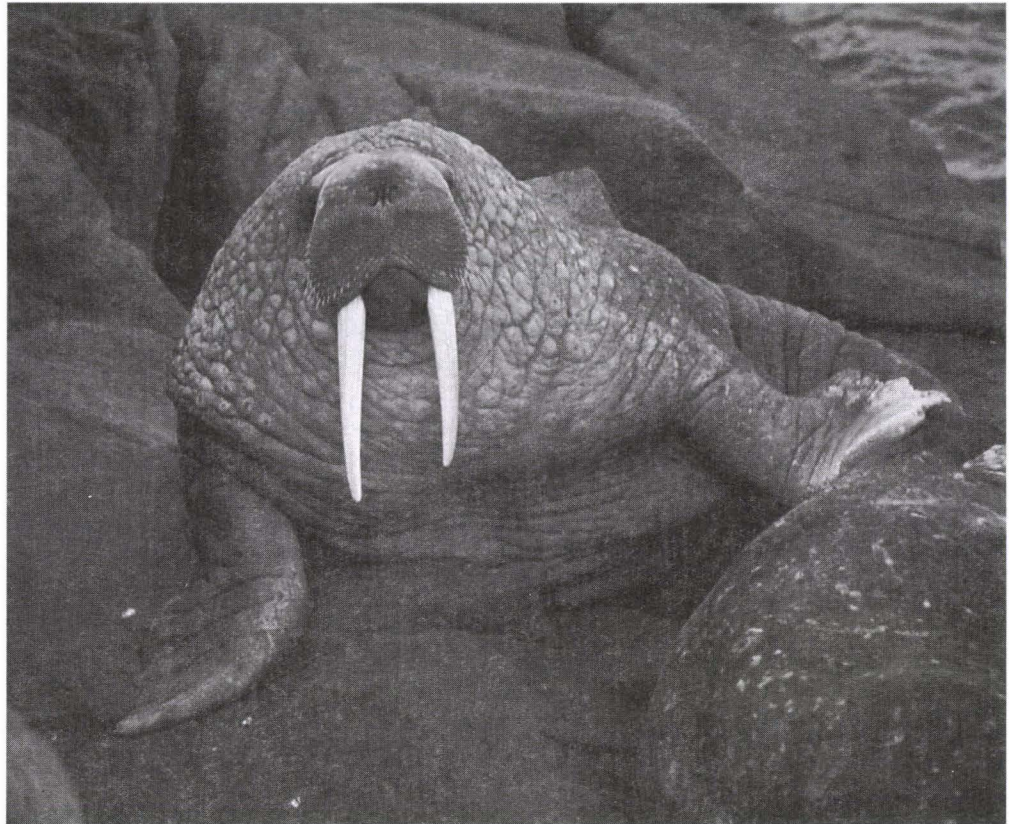
The Service, in partnership with the BRD/GS, the NMFS, the Alaska Department of Fish and Game (ADF&G), the All-Russian Institute for Fisheries and Oceanography (VNIRO), the Russian Academy of Sciences, and the Russian Ministry of Environmental Protection and Natural Resources led a comprehensive program of laboratory and field research in 1995. Twenty-seven American scientists and twenty-eight Russian scientists took part in a total of ten exchanges.

In April, an BRD/GS researcher joined Russian colleagues in the capture and satellite collaring of female polar bears in the Laptev, Barents, and Kara Seas to obtain data on their migration and distribution patterns. At the conclusion of the field work, the BRD/GS researcher joined Russian and Norwegian polar bear biologists in Moscow to discuss expanding the cooperative research program to include determination of radionuclide levels in polar bears throughout their range.

In July, two Russian scientists visited Alaska for a week to analyze polar bear survey data with BRD/GS staff and prepare manuscripts for publication. Reports were presented in Fairbanks, Alaska, at the Tenth International Conference on the Study and Management of Polar Bears.

In August, one NMFS specialist joined Russian colleagues in conducting bowhead and gray whale surveys in the Sea of Okhotsk off the east coast of northern Sakhalin Island.

In August, the U.S. National Marine Mammal Laboratory hosted the chief of the Marine Mammal Laboratory of the Kamchatka Research Institute of Fisheries and Oceanography for three weeks for field studies of northern fur seals on the Pribilof Islands, Alaska.



*A male Pacific walrus on Round Island Alaska. U.S. Fish & Wildlife Service photo, by Dana J. Seagars.*

In September, seven U.S. specialists traveled to Kamchatka for one week to attend the Biennial U.S.-Russia Sea Otter Workshop.

In September, a U.S.-Russia meeting on walrus and polar bear was held for one week in Kamchatka, Russia, to agree on principles for joint conservation and management of the Alaska-Chukotka polar bear population. Twelve representatives from the U.S. attended, and a protocol was drafted and signed.

In September, the Biennial Project Meeting of the Marine Mammal Project of Area V of the U.S.-Russia Environmental Agreement was held for one week in Kamchatka, Russia. Six Americans attended.

In November, one researcher from the Russian Academy of Sciences consulted with U.S. colleagues in Washington, D.C., for ten days on the assessment of accumulated radiation doses and their effects in long-lived mammals of the Russian Arctic.

A BRD/GS researcher traveled to Magadan, Russia, for one week in December to discuss plans for the creation of a Pacific Walrus International Database with the Institute of Biological Problems of the North.

Finally, in December the Director of the Kamchatka Fisheries Agency (KAMCHATRYBVOD) was hosted by the ADF&G for one week to discuss cooperative efforts in studying harbor seals.

# Status Reports

## **Incidental (Small) Take During Oil and Gas Exploration**

The Act authorizes the Secretary of the Interior to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals in a specified activity within a specified geographical region if it is found that the total of such taking will have a negligible impact on the species or stock and will not have an unmitigable adverse impact on the availability of such species or stock for subsistence uses. General implementing regulations in 50 CFR 18.27 provide for development of specific regulations to govern incidental take activities and for issuance of Letters of Authorization (LOA) to applicants proposing to conduct activities under the specific regulations. Regulations can be for not more than five consecutive years. LOAs prescribe specific stipulations for each applicant and must be renewed annually.

On June 14, 1991, the Service issued final regulations (at 56 FR 27463) that would allow for five years the incidental, but not intentional, take of small numbers of walruses and polar bears during open water exploration for oil and gas in the Chukchi Sea adjacent to the coast of Alaska. LOAs were 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 LOAs have been issued since 1991 under these regulations.

The Service issued regulations on November 16, 1993, (58 FR 60402), effective for 18 months from December 16, 1993, through June 16, 1995, for the incidental, unintentional, take of small numbers of polar bears and walruses during oil and gas industry operations (exploration, development, and production) year-round in the Beaufort Sea and adjacent coast of Alaska. On June 14, 1995, (60 FR 31258), the Service extended the regulations for an additional 60 days through August 15, 1995. On August 17, 1995, (60 FR 42805), the Service modified and extended for an additional 40 months (through December 15, 1998, for the full five-year term

authorized by the Act) the effectiveness of the incidental take regulations. As a condition of the extension of the final rule, the Service announced the availability of its final Polar Bear Habitat Conservation Strategy that was prompted by provisions of the 1993 regulations.

In 1995, nine LOAs to take Pacific walruses and polar bears were issued for various oil and gas industry exploratory activities. One LOA was renewed for year-round development and production activities in established oil fields. In accordance with the Act, monitoring and reporting programs have been required for each LOA.

## **Polar Bear**

### *Harvest Summary*

The Marking, Tagging, and Reporting Program (MTRP) continued to collect information from polar bears taken by Native hunters in coastal villages for subsistence purposes during the past year. The Alaska kill during the 1994/95 harvest year totaled 80 bears comprised of 51 males, 26 females, and 3 for which the sex was unknown (Table 1). This represented a significant decrease from the 1993/94 season and was similar to harvest levels in the 1991/92 and 1992/93 seasons. The recent harvest trend continues to be approximately 33 percent below the long-term average. The greatest change from the previous year occurred in Point Hope where the harvest increased by approximately 50 percent, and in Gambell and Savoonga where the harvest decreased by approximately 50 percent. The sex ratio of polar bears of known-sex was 64 percent males and 32 percent females. Sex was unrecorded for 4 percent of the harvest which occurred in all months except June. Approximately 50 percent of the bears were killed between January and March (Table 2). The harvest from the Alaska region of the southern Beaufort Sea stock was 16 bears and represented 20 percent of the total statewide harvest.

### *Harvest Characteristics*

Specimens to evaluate genetic proof of sex and contaminants continue to be collected as part of the harvest

monitoring program. Additionally, the sex and age composition of the harvest is being compared to the population, sex, and age structure for the southern Beaufort Sea. This analysis also examined the effects of the North Slope Borough/Inuvialuit Game Council Agreement of 1988, which established harvest guidelines and voluntary quotas; and encouraged hunters not to take females with cubs, or denning females. A contaminant proposal to determine the levels of organochlorines in fat tissue and heavy metals in the liver, kidney, and muscle tissue of polar bears throughout Alaska was completed and work continues to set up the sampling program and secure additional funding needed to complete the project.

### *Genetics*

To verify the sex of harvested bears, 177 muscle and tissue samples were analyzed using genetic techniques by LGL Research Associates, Inc. The samples were analyzed according to techniques described by Amstrup et al., 1993, "Sex identification of polar bears from blood and tissue samples." Sex could not be determined for 30 samples due to tissue degradation and subsequent desiccation which prevented DNA amplification, and field sex was unknown for 8 samples. The resulting sample of 139 bears for which DNA and field sex data were available were comprised of 40 (28.8 percent) from the Beaufort Sea and 99 (71.2 percent) from the Chukchi Sea stocks. The sex was correctly identified for approximately 86 percent (n=139) of the harvest. A slight bias in reporting males was detected. The sex was reversed for 19 bears: 12 were reported as males when, in actuality, they were females; and seven initially reported as females were actually males. Seven of each sex "cancel" each other in terms of the overall sex composition of the harvest. Therefore, five more females were killed than were reported. The net underestimate of females was 5/139 which equates to a 3.6 percent error rate. A number of factors appear to contribute to incorrect sex identity of harvested polar bears. Incorrect sex was

reported or recorded by hunters and the taggers (local assistants and Service personnel). A publication on the details of this study is in preparation.

Findings of this study reveal a need for improvement in reporting the sex of harvested animals. Polar bears, because of their low reproductive potential, relatively small populations, and low densities are particularly susceptible to over-harvest. Research on the population dynamics of the Southern Beaufort Sea population has determined that reproductively active females are the most important sex/age class. Sustainable yield estimates for the annual harvest of adult females may only be 1.6 percent of the population. Therefore, accurate sex identification of harvested adult bears is critically important. Modification of the harvest data collection procedures is warranted and may include the continued genetics verification of sex of all harvested animals or development of a requirement that a baculum accompany all harvested males.

#### Contaminants Study

Although elevated heavy metal and organochlorine concentrations have been documented in Canadian polar bear populations, relatively little information is available for populations in Alaska. Lentfer (1976) documented heavy metal and organochlorine concentrations in polar bears, prior to major oil and gas development activities on the North Slope. Little recent information on heavy metal and organochlorine contamination of polar bears in Alaska has been collected. Data are needed to assess the environmental impact of recent, and planned, industrial activities.

Polar bears are ideally suited for monitoring the level and distribution of heavy metal and organochlorine levels in the Arctic ecosystem because of their position at the top of the Arctic marine food chain and their wide distribution. Differences in the origin and movements of currents, rates of atmospheric or geological deposition of heavy metals and organochlorines, and differences in the feeding ecology of polar bears between the Beaufort and the Chukchi/Bering Seas may affect the amount of heavy metal and organochlorine levels found in the two stocks. Polar bears in the Chukchi/Bering Seas may feed more heavily on Pacific walrus carcasses than polar bears in the southern Beaufort Sea. They are potential indicator species of the Arctic ecosystem, and are one of the species identified to be monitored under the Arctic Monitoring and Assessment

**Table 1. Village Polar Bear Harvest, Alaska 1994/1995**

Village	Male	Female	Unknown	Total
Kaktovik*	1	0	0	1
Nuiqsut*	0	1	1	2
Barrow*	4	3	0	7
Atqasuk*	0	0	0	0
Wainwright*	3	2	1	6
Point Lay	1	0	0	1
Point Hope	15	2	1	18
Kivalina	1	1	0	2
Shishmaref	7	4	0	11
Wales	2	0	0	2
Nome	1	0	0	1
Diomede	7	3	0	10
Savoonga	8	2	0	10
Gambell	1	8	0	9
Total	51	26	3	80
Percent	(63.7)	(32.5)	(3.8)	(100)

\*Denotes villages party to the IGC/NSB Management Agreement for the southern Beaufort Sea polar bear stock. Harvest season extends from July 1, 1994, to June 30, 1995.

**Table 2. Monthly Polar Bear Harvest, Alaska 1994/1995**

Village	Month												Total
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Kaktovik*	-	-	-	-	-	-	-	-	-	-	1	-	1
Nuiqsut*	-	-	-	-	2	-	-	-	-	-	-	-	2
Barrow*	-	1	1	2	1	-	-	-	-	1	1	-	7
Atqasuk*	-	-	-	-	-	-	-	-	-	-	-	-	0
Wainwright*	-	-	-	3	-	2	-	1	-	-	-	-	6
Point Lay	-	-	-	-	1	-	-	-	-	-	-	-	1
Point Hope	-	-	-	-	-	1	3	6	3	2	3	-	18
Kivalina	-	-	-	-	-	-	-	2	-	-	-	-	2
Shishmaref	-	-	-	-	3	1	4	2	1	-	-	-	11
Wales	-	-	-	-	-	-	-	1	-	1	-	-	2
Nome	1	-	-	-	-	-	-	-	-	-	-	-	1
Diomede	-	-	-	-	-	4	-	1	2	3	-	-	10
Savoonga	-	-	-	-	-	-	5	1	4	-	-	-	10
Gambell	-	-	-	1	-	1	4	2	-	-	1	-	9
Total	1	1	1	6	7	9	16	16	10	7	6	-	80
Percent	1.3	1.3	1.3	7.5	8.8	11.3	20.0	20.0	12.5	8.8	7.5	0	100

\*Denotes villages party to the IGC/NSB Management Agreement for the southern Beaufort Sea polar bear stock. Harvest season extends from July 1, 1994, to June 30, 1995.

Programme (AMAP). AMAP is an international effort to assess the health and ecological risks to the Arctic region associated with contamination from radioactive waste, persistent organics, and other contaminants. Under the 1973 international Agreement on the Conservation of Polar Bears, the United States has the responsibility to protect polar bears and their habitat.

Identification of heavy metal and organochlorine levels in polar bears and comparison with contaminant levels in other populations will provide an indirect measure on the health of polar bear habitat within Alaska.

The Alaska Nanuq Commission passed a motion to support this contaminant study in Nome, Alaska, on December 7,

1995. The National Fish and Wildlife Foundation (NFWF) has approved a challenge grant of \$30,000 to the Service to support the Polar Bear Contaminant Project. This amount, which is approximately 20 percent of the required funds, represents \$15,000 from NFWF Federal matching funds and \$15,000 from non-Federal Challenge funds (Sea World/Anheuser Busch). Tissue samples from six bears were sent in for organochlorine and heavy metal analysis through the Service's Environmental Contaminants Program.

#### *Sex-Age Structure (Population vs. Harvest)*

The sex and age composition of the reported Alaskan Native polar bear harvest from 1980 through 1994 (n=1,089) is being compared to the estimate of the population age and sex structure. Data on sex and age from bears captured from 1981 through 1992 (n=1,161) provided an estimate of the sex and age structure of the population. A polynomial fit was used to simulate the estimated age structure. To assess the biases of the harvest, age classes of animals readily distinguished by Native hunters (cubs of the year, dependent cubs older than one year, sub-adults, and adults) were evaluated.

Preliminary comparisons indicate that the Alaska harvest was: (1) biased toward males; (2) biased away from cubs of the year; and (3) biased toward sub-adults, especially sub-adult males. The influence of the North Slope Borough/Inuvialuit Game Council Agreement on the sex and age composition of the kill was evaluated in relationship to previous harvests. A publication on the details of this study is in preparation.

#### *Polar Bear Management Agreement, Beaufort Sea*

The harvest for villages of the North Slope which are party to the management agreement with the Inuvialuit, was 16 bears: 8 male, 6 female, and 2 sex unknown. The harvest of known-sex animals was 57 percent male and 43 percent female. Teeth were collected from 86 percent of the harvest. The peak monthly harvest was November (28 percent). One bear was 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 met February 3-4, 1996, in Quebec City, Quebec, Canada.

#### *Polar Bear Habitat Conservation Strategy*

To further implement the habitat provisions of the 1973 international Agreement on the Conservation of Polar Bears, and to put mechanisms in place to conserve polar bear habitat, the Secretary of the Interior directed the Service to develop a Polar Bear Habitat Conservation Strategy (PBHCS). Development of this strategy was required by final regulations issued by the Service on November 16, 1993, to authorize the incidental (non-lethal), 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. The final regulations were issued subsequent to the finding that such takings would have negligible impact on polar bears and their availability for subsistence use. Individual Letters of Authorization (LOA) may be issued if the level of taking is consistent with the findings made for total allowable take under the final regulations.

The Service in August 1995 completed a final "Habitat Conservation Strategy for Polar Bears in Alaska." Development of the Strategy was a collaborative process that involved Alaskan Native organizations, the oil and gas industry, interested conservation organizations, academia, the ADF&G, and other Federal agencies.

The primary sources of information for the Strategy included published and unpublished scientific studies, and the traditional knowledge of polar bear habitat use from Inupiat and Yupik Natives. The Service, in cooperation with the Alaska Nanuq Commission, regional corporations, and village councils, visited 12 villages in northern and northwestern coastal Alaska to gather information from Native hunters and experts about polar bear habitat use. Information gained from traditional knowledge, which is often passed down orally and based upon years of observation, involved an extensive effort to interview and collate information from Native hunters living in northern coastal Alaska villages. In total, 61 individuals residing in 12 villages were interviewed.

The product of these interviews was a series of maps depicting traditional knowledge of seasonal polar bear habitat use, such as denning and feeding areas, observed within the area used by the residents for hunting or traveling. Composite maps consisting of information provided by all the individuals in each village were created and later verified during follow-up visits to each village. A technical report summarizing the survey protocols and results of the Native knowledge survey of polar bear habitat use is in final preparation.

The Strategy also proposed measures to further the goals of the 1973 international Agreement on the Conservation of Polar Bears, including the development of a Village Communication Plan, development of a Polar Bear Advisory Council, through continued recognition of the importance of the status of the Arctic National Wildlife Refuge for maternity denning, and through further cooperation and coordination in international conservation initiatives. Lastly, the Strategy identified a number of important research needs regarding polar bear and habitat relationships including the role and effect of contaminants in the environment.

While the Strategy identified various measures to conserve polar bear habitat, implementation has begun on a number of these measures while others are in a preparatory state.

1. The Strategy proposes conservation measures for these areas through the regulations governing incidental take, particularly through LOA's, which may specify provisions for monitoring take, development of personnel/polar bear awareness and interaction plans, seasonal or temporal considerations for industrial activities, and plans of cooperation with affected villages among other considerations.

The Service will continue emphasis on the incidental take program as a means to monitor and evaluate the effect of industrial activities on polar bears, their habitat, and their availability to subsistence users as required by the Act. Numerous LOAs and coordination meetings have taken place with industry. Polar bear/human interaction contingency plans, and monitoring and employee awareness programs have been instituted.

Aerial den surveys have been incorporated into monitoring requirements as part of the LOA process. British Petroleum conducted three non-systematic aerial surveys, during the fall of 1995, along the barrier islands near the site of the Pingok Island exploration well and bluffs adjacent to the proposed coastal ice road in November 1995. Follow-up surveys are planned for the spring of 1996. One den site was located during this survey.

2. Continue coordination with the MMS in the early planning stages of lease sales to identify resource issues of concern and to focus on the areas of important values to polar bears.

3. Continue efforts to be actively involved in other programs which either indirectly or directly affect the ecosystem of the region. Such examples include the Bering Sea Ecosystem initiative, the Coastal Zone Management Plan process, and the U.S.-Russia conservation initiatives.

4. Initiate surveys to delineate marine mammal carcass locations and, in the future, further studies to evaluate the nutritional value, importance, and use of carcasses by polar bears. Information and maps will be provided to industry in order to minimize potential disturbance of areas used for feeding. Initial surveys reveal that the number of carcasses available is much less in the Beaufort Sea region than in the Chukchi and Bering Seas regions in western Alaska.

One of the goals of the Strategy was to develop and implement measures to conserve polar bear feeding habitat. Marine mammal carcasses represent tons of potential food for polar bears and may be particularly important for the survival of females with cubs and younger bears during the fall. To document the abundance and distribution of marine mammal carcasses, primarily Pacific walrus, bearded seals (*Erignathus barbatus*), ringed seals (*Phoca hispida*), beluga whales (*Delphinapterus leucas*), and bowhead whales (*Balaena mysticetus*), aerial surveys were conducted in 1995 along the Alaska coast from Nome, Alaska, to the Canadian border. In July 1995, a total of 168 carcasses (83 walrus, 79 seals, and 6 whales) were recorded along the coastline of the Bering, Chukchi, and Beaufort Seas. In September 1995, a total of 94 carcasses were recorded (68 walrus, 20 seals, and 6 whales) along the coastline from Nome to Barrow, Alaska.

5. Develop a Village Communication Plan.

6. Form a Polar Bear Advisory Council to oversee monitoring requirements to be included in LOAs.

One of the elements identified in the Strategy was for the Service to establish a Polar Bear Advisory Council which would provide input into decisions concerning habitat conservation measures that affect the various stakeholders. The Council which would have representatives from interested parties including industry, Native organizations, conservation organizations, and Federal and state agencies, would be advisory in nature. Preliminary work to gather information concerning the requirements for chartering an advisory committee under the Federal Advisory Committee Act are underway.

7. The Service will continue international efforts through the Arctic Environmental Protection Strategy, the Committee on Arctic Flora and Fauna, and the International Union for the Conservation of Nature and Natural Resources Polar Bear Specialist Group for polar bear conservation.

*Alaska Nanuuq Commission*  
Formed on June 16, 1994, the Alaska Nanuuq (i.e., polar bear) Commission is still seeking Congressional support for funding authorized under the 1994 amendments to the Act. The Commission has been active in developing the Native-to-Native Agreement as part of the bilateral discussions for the development of a management agreement for polar bears in the Chukchi Sea. (See details below). This work has included drafting the Native-to-Native Agreement, coordination and consultation with Russian representatives, and providing technical assistance and advice to the Service on biological and management issues.

The Commission, comprised of representatives from 12 villages from northern and western coastal Alaska, met in Nome on December 7, 1995, to discuss management issues related to the bilateral discussions, the Native-to-Native Agreement on the Conservation of Polar Bears, a polar bear contaminant proposal, and the potential importation of polar bear skins from Canada into the United States.

A polar bear safety poster was developed with the help of the Alaska Nanuuq Commission; North Slope Borough; the Native Village of Barrow, Alaska; ADF&G; the BRD/GS; and the Service. The Commission has taken responsibility for the distribution of this poster to the villages to promote safety awareness.

**Sea Otter-Alaska**

The sea otter program led and participated in a variety of activities during this period including: (1) cooperative work with the Alaska Sea Otter Commission (ASOC); (2) development of a biological monitoring program; (3) a sea otter abundance and distribution survey for Yakutat Bay and the outer Gulf Coast of Alaska; (4) participation in the Area V, U.S./Russia Biennial Sea Otter Workshop; (5) cooperative work with BRD/GS on survey methodology; (6) completion of a stock assessment for sea otters in Alaska; (7) a contaminants program; (8) a conservation plan summary for public distribution; and (9) application of the MTRP data for harvest demographics and continued tissue sample collection for population genetics data.

*Cooperative Work with the ASOC*  
The ASOC and the Service initiated the following cooperative work under the 1994 Memorandum of Agreement: (1) the Service trained two Native people in tissue sample collection techniques from subsistence hunted sea otters as part of a biological monitoring program for sea otters; (2) the ASOC reviewed and commented on the draft stock assessment for sea otters prior to the document being finalized; (3) the Service provided comments to the ASOC on the Native sea otter management plan for Southeast Alaska; and (4) the Service entered into a cooperative agreement with the ASOC for the collection of Native knowledge of the distribution of sea otters in Southeast Alaska.

*Biological Monitoring Program*  
The biological monitoring program is a partnership with the ASOC and the BRD/GS. The broad objectives are to collect biological information from carcasses of hunter-killed sea otters to monitor the health and condition of the population. The following are the major developments in the program: (1) development of a sample collection procedure manual for sea otter tissue collection; (2) development of a sample handling protocol and training procedure for people collecting tissues; and (3) standardization of a computer database of tissues collected.

### *Yakutat and Outer Gulf Coast Sea Otter Survey*

A sea otter distribution survey was conducted from Cape Suckling to Cape Spencer and, concurrently, an abundance survey was conducted in Yakutat Bay. Both surveys were aerial. Computer summaries of the data have been prepared and an interim progress report was submitted to the MMS as the funding agency. A final report is scheduled to be completed in 1996.

### *U.S./Russia Sea Otter Workshop*

The Service participated in the 5th Biennial Sea Otter Workshop held in Petropavlovsk, Kamchatka, Russia. Service biologists presented current biological work and Service policies on sea otters in Alaska, and participated in the development of a protocol for exchanged information and shared work for the next two years. The next meeting of the workshop will be held in the Seattle area.

### *Cooperative Work With the BRD/GS*

In partnership with the BRD/GS, the Service continued to develop and evaluate an aerial survey methodology to standardize sea otter abundance surveys in Alaska. Increased air speed was evaluated to determine change in detection limits. Two additional Service employees were trained in the survey protocol and are now qualified to participate in future surveys.

### *Sea Otter Contaminant Program*

Acquisition of additional sea otter tissues from the biological monitoring program and from Alaska refuges continued during 1995. Ten tissue samples were analyzed for heavy metal and organochlorine content. More samples will be analyzed as funding becomes available. The Service coordinated with the National Institute of Science and Technology on the sample handling procedures to determine contaminant content of sea otter tissues. A training video of the sample collection procedure was made.

### *Conservation Plan Summary*

Following completion of the Service's Conservation Plan for the Sea Otter in Alaska, the Service initiated development of a "public-friendly" summary version of the plan. The purpose of the summary is to communicate to the public the contents of the plan in a non-technical way that is easily understood. The summary version should be completed in 1996.

### *Sea Otter Harvest Demographics*

Data on harvest levels and sex-age composition by geographic region of subsistence hunted sea otters have been compiled and analyzed through 1994. The results were presented at the following professional meetings: (1) an ASOC board meeting; (2) a Harvest Symposia held in Alaska; (3) the U.S./Russia 5th Biennial Sea Otter Workshop; and (4) the 11th Biennial Marine Mammal Conference held in Orlando, Florida. These data are pertinent to the local management plans being developed by Alaskan Natives. Additionally, the MTRP program has begun to collect additional tissue samples to determine bias in the reporting of the sex of hunted animals and samples to determine the genetic variability in the sea otter population in Alaska.

### **Pacific Walrus**

#### *Bristol Bay Walrus Haulout Monitoring*

In 1995, the Service continued to monitor walrus numbers and assess walrus reactions to human activities on Cape Peirce and Round Island, Bristol Bay, two of the largest terrestrial hauling out grounds in the United States. Biologists from the Service and the ADF&G were stationed at Round Island, Walrus Islands State Game Sanctuary from May 6 through August 22, 1995. They made daily counts of walrus hauled out on island beaches and collected 273 hours of behavioral observations to quantify walrus reactions to human activities around the island. Biologists from the Togiak National Wildlife Refuge stationed at Cape Peirce from May 22 through October 26, 1995, made daily counts of walrus and opportunistic observations of walrus responses to human activities. Daily counts were used to monitor changes in haulout patterns. Behavioral observations were used to assess walrus reactions to a variety of human activities, and provided information needed to regulate these activities.

#### *Round Island Cooperative Management Agreement*

The Service and the ADF&G continued to cooperatively manage the Walrus Islands State Game Sanctuary. The arrangement, initiated in 1993, ensures continued protection of the Round Island walrus haulout, the largest and most continuously studied haulout in the United States. In 1995, Service and State biologists worked together to continue walrus monitoring efforts and operation of the Round Island visitor program. During the summer of 1995, 66 visitors from around the world came to

Round Island to view and photograph walrus.

#### *Cooperative Agreement for Subsistence Walrus Hunting on Round Island*

For the first time since the Walrus Islands State Game Sanctuary was created in 1960, local Alaskan Natives conducted a self-limited walrus subsistence hunt on Round Island. The Sanctuary was established to protect dwindling numbers of walrus using this traditional hauling ground. Walrus numbers have since increased, and in 1995 the Alaska State Board of Game granted Bristol Bay Natives limited access to Round Island to resume a traditional subsistence walrus hunt.

On September 22, 1995, the Service entered into a cooperative agreement with ADF&G, the Qayassiq Walrus Commission, and the Eskimo Walrus Commission to establish a cooperative management plan for subsistence hunting on Round Island. The plan implemented a limited subsistence hunt that was "consistent with the conservation of the walrus population, the protection of Round Island as a walrus haulout and state game sanctuary, the Act, and the customary and traditional uses of walrus by the people of...the Bristol Bay Region". Native groups honored a self-imposed limit of ten walrus and restricted hunting to the month of October. The Service, ADF&G, and the Native walrus commissions monitored hunt activities and assessed the impact of the harvest on local walrus abundance and behavior (see "Harvest Monitoring" section below).

#### *Range-Wide Survey of Pacific Walrus*

At 5-year intervals between 1975 and 1990, the United States and Russia collaborated on range-wide surveys of Pacific walrus. Analysis of resulting survey information indicated that current levels of effort would not be adequate to accurately assess population size or detect trend. The Service recommended evaluation of alternative methods for detecting population trend prior to conducting additional range-wide aerial surveys.

#### *International Agreements*

Recognizing the intrinsic value of the Pacific walrus as a common resource, representatives of the United States and Russia met in Petropavlovsk-Kamchatskiy, Russia, September 14-20, 1995, for discussions on the joint conservation and management of the shared population of Pacific walrus. The



results of these talks established a basis for future efforts that may lead to bilateral agreements that would provide for the conservation, research, habitat protection, and Native subsistence use of Pacific walrus. Both sides resolved to conduct a second meeting in the United States in 1996 to discuss the potential for Bilateral Agreements between the U.S. and Russian governments and the Native Peoples of Alaska and Chukotka on conservation and management issues.

Service staff also attended the Marine Mammal Working Group meeting under Area V of the United States/Russia Environmental Agreement to exchange results and plan for future cooperative studies and monitoring plans.

#### *Harvest Monitoring*

For the first time in 35 years, Alaskan Natives from several communities in Bristol Bay, Alaska, resumed harvesting walrus from Round Island (see "Round Island Cooperative Management Agreement" Section above). Hunt activities at Round Island were monitored by the Service, ADF&G, and the Qayassiq Walrus Commission to assess the impact of the harvest on walrus abundance and behavior. Native hunters participated in the monitoring program by coordinating hunting effort with behavioral observations and by providing the Service with biological samples from the ten harvested walrus.

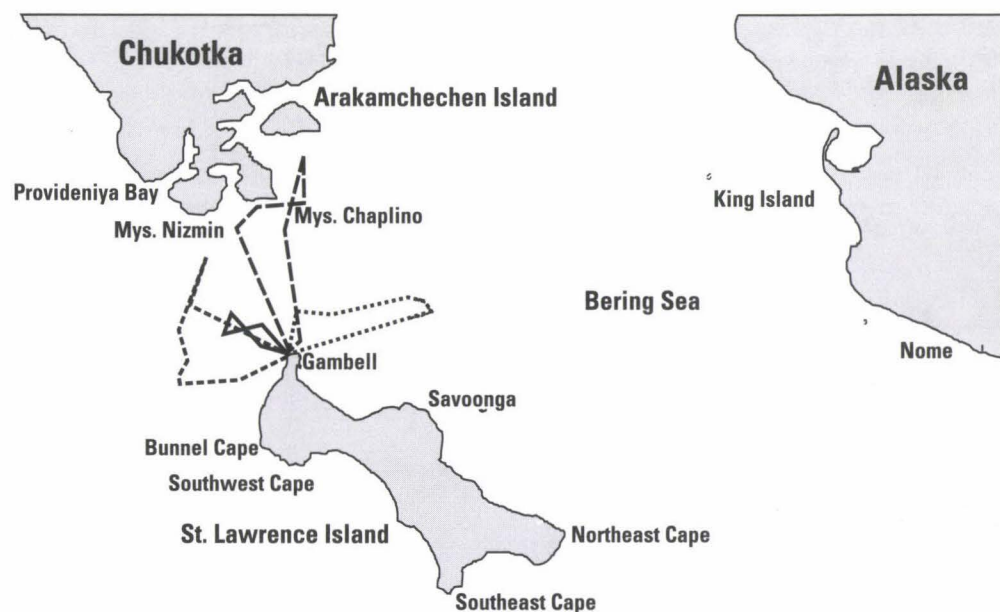
#### *Walrus Health Monitoring*

The Service continues several studies assessing Pacific walrus health.

In cooperation with the Armed Forces Institute of Pathology, a study was initiated to examine the relationship between concentrations of heavy metals in liver and kidney tissues and organ function.

In 1995, biological samples and struck and lost statistics were collected from walrus harvested by Native hunters near Gambell, St. Lawrence Island, during hunts observed by a Service biologist (Figure 1). Tissue samples from 12 animals were collected for the Alaska Marine Mammals Tissue Archival Project, an interagency project dedicated to the collection and long term storage of marine mammal tissues suitable for determining levels of organic and inorganic toxic substances. Blood samples from 20 walrus collected during the hunts were analyzed for infectious disease serology and toxicology. The results of the disease serology were presented at the Eleventh

**Figure 1. Routes of Alaskan Native Hunting Trips Accompanied by a Service Biologist for Walrus Bio-Monitoring Studies, Spring 1995.**



Biennial Conference on the Biology of Marine Mammals, Orlando, Florida (December 14-18, 1995). The toxicology results will be compared with similar tests on liver and kidney tissues.

#### **Marking, Tagging, and Reporting Program**

The Act established a moratorium on the taking (i.e., harass, hunt, capture, or kill) and importation of marine mammals. Coastal Alaskan Natives were granted an exemption to the moratorium and may legally harvest marine mammals for subsistence and handicraft purposes. 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 specified marine mammal parts. During 1995, the MTRP staff traveled to 55 coastal villages to hold village meetings, hire and replace taggers, provide training, and work with hunters to gain better compliance with the MTRP rule. To help inform village residents of the MTRP requirements, 15 school presentations were made during the village visits. The MTRP staff hired or replaced 11 taggers and added 6 new villages to the program.

The MTRP currently has 120 taggers and 41 alternates located in 92 villages through coastal Alaska (Table 3). Usually, local Native residents are hired and trained to work in their own villages to tag polar bear and sea otter hides and skulls, and walrus tusks. The MTRP

employs 52 sea otter, 22 polar bear, and 77 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 more than one species where the harvest numbers are low. Numbered and 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 is applied to two sides of the tusk. Tag numbers, location, 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 60 villages during 1995.

Eighteen sea otter taggers reported 589 otters being tagged in 1995 with several villages reporting a decrease in numbers of otters killed compared with the previous 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 to the MTRP requirements by sea otter hunters appears to be high.

Eighty polar bears were tagged in 13 villages during the 1994-95 hunting season (Tables 6, 7, and 10). During the

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

<i>Village</i>	<i>Species*</i>	<i>Village</i>	<i>Species</i>	<i>Village</i>	<i>Species</i>
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	Point 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
Chenega Bay	SO	Kivalina	PB/W	Shaktoolik	W
Chevak	W	Klawock	SO	Seward	SO
Chignik	SO/W	Kodiak	SO/W	Shishmaref	PB/W
Chignik Lagoon	SO	Kongiganak	W	Sitka	SO/W
Chignik Lake	SO/W	Kotzebue	PB/W	St. George	W
Clarks Point	W	Koyuk	W	St. Michael	W
Cold Bay	SO/W	Kwigillingok	W	St. Paul	SO/W
Cordova	SO/W	Larsen Bay	SO	Stebbins	W
Dillingham	SO/W	Little Diomed	PB/W	Tatitlek	SO
Egegik	SO/W	Manokotak	W	Teller	PB/W
Elim	W	Mekoryuk	W	Togiak	W
Emmonak	W	Naknek	W	Toksook Bay	W
English Bay	SO	Newtok	W	Tuntutuliak	W
False Pass	SO	Nightmute	W	Tununak	W
Fairbanks	SO/PB/W	Nikolski	SO	Unalakleet	W
Gambell	PB/W	Nome	PB/W	Unalaska	SO/W
Golovin	W	Nuiqsut	PB	Valdez	SO
Goodnews Bay	W	Old Harbor	SO	Wainwright	PB/W
Homer	SO/W	Ouzinkie	SO	Wales	PB/W
Hoonah	SO	Perryville	SO/W	Wrangell	SO
Hooper Bay	W	Pilot Point	SO/W	Yakutat	SO
Hydaburg	SO				

\*Species Key: SO = sea otter PB = polar bear W = walrus

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

harvest year, the total number of bears tagged decreased as compared with the last year. Compliance by the polar bear hunters to the tagging rule appears to be good.

Twenty-nine walrus taggers reported tagging 966 walrus in 1995. 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 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 by walrus hunters with the MTRP needs improvement. Despite an aggressive campaign by MTRP staff and Law Enforcement special agents, some walrus hunters still do not comply with the tagging rule. 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 common reason for ivory not being tagged was that hunters carve their own harvested ivory. Some hunters do not see the use of tagging their ivory if they are going to use it themselves. 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. A feasible way to quantify the level of compliance has not been determined. Enforcement of the MTRP requirements 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 continues 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 MTRP staff throughout coastal Alaska, MTRP personnel are often called upon by other Service programs that need an introduction to, or assistance working in, a village. The MTRP staff continues 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 continued to develop and distribute an informal quarterly Marine Mammal Bulletin to report MTRP news.

Provided to all taggers and other interested people, the Bulletin has proven to be a valuable tool in disseminating pertinent information in a timely manner to a state-wide village audience.

#### Walrus Harvest Monitoring Project

The Service conducts two programs to monitor the size and structure of the walrus harvest. The MTRP monitors the year-round walrus harvest in all coastal Alaska villages, while the Walrus Harvest Monitoring Project (WHMP) monitors the spring walrus harvest in selected villages by conducting hunter interviews and obtaining biological samples. This information is used to gain insight into the structure of the walrus harvest, walrus population dynamics, and walrus life history. Samples collected through the program included teeth for age determination, adult female reproductive tracts to assess reproductive rates, and various anomalous samples to assess individual animal pathologies.

In 1995, the WHMP continued to operate in four key Alaskan Native communities generally responsible for 60 percent to 80 percent of the annual walrus harvest in the United States (Tables 11 and 12). Harvest monitors recorded a total of 1,205 walrus retrieved by hunters from four monitored villages during the spring hunt of 1995. This value is somewhat larger than the number of walrus retrieved during the 1994 monitored period (n = 973), but well below the mean annual harvest level for a 15 year period (1980-1995: mean = 1,781). A technical report entitled, "Annual Summary: Information Collected During the 1993 Spring Walrus Harvest in Alaska," was issued in March 1995. A similar report is in development for the 1994 and 1995 spring walrus harvest seasons.

#### Stock Assessment Reports

As required by Section 117 of the Act, as amended in 1994, the Service during 1995 completed Stock Assessment Reports for all Service marine mammal species under its jurisdiction that occur in the United States. These include walrus, polar bears, and sea otter in Alaska, sea otters in Washington State and California, and manatees in the southeastern United States. The final Stock Assessment Reports incorporated comments both from the public and Scientific Advisory Groups. Notice of their public availability was published in the FEDERAL REGISTER on October 4, 1995 (60 FR 52008). Included as part of that notice was a table that presented

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

<i>Location</i>	<i>Pre-Rule</i>	1988	1989	1990	1991	1992	1993	1994	1995	<i>Total</i>
Adak	0	0	0	0	0	2	0	0	0	2
Akhiok	1	0	0	0	0	0	0	0	0	1
Akutan	0	0	0	0	0	1	10	0	0	11
Anchorage	117	2	37	11	8	25	9	56	37	302
Angoon	0	0	0	0	0	0	4	39	56	99
Atka	0	0	0	0	0	0	0	2	0	2
Bethel	4	0	0	0	1	0	0	0	0	5
Chenega Bay	0	0	0	0	0	0	0	0	14	14
Chignik	1	0	9	5	0	0	0	6	0	21
Chignik Lake	0	0	0	0	0	0	0	2	0	2
Cold Bay	0	0	0	1	0	0	8	0	0	9
Cordova	31	0	12	9	34	13	50	120	171	440
English Bay	0	0	0	0	0	0	17	6	0	23
Fairbanks	0	0	0	0	0	0	2	0	0	2
False Pass	0	0	0	0	0	0	0	0	10	10
Homer	18	22	9	9	0	0	25	14	0	97
Hoonah	0	0	0	0	0	51	230	7	0	288
Juneau	10	0	1	26	0	14	21	93	10	175
Kake	0	0	0	0	0	0	18	2	3	23
Kenai	0	0	8	6	33	0	0	19	0	66
Ketchikan	2	0	0	0	0	194	83	6	0	285
King Cove	8	0	0	25	0	8	1	5	1	48
King Salmon	0	0	0	0	0	0	1	0	0	1
Klawock	57	3	118	10	74	4	220	19	42	547
Kodiak	157	0	31	16	5	27	120	6	30	392
Larsen Bay	31	0	0	0	17	14	2	16	7	87
Mekoryuk	5	0	0	0	0	0	0	0	0	5
Ouzinkie	0	0	0	0	0	0	29	0	0	29
Perryville	0	0	0	0	0	2	2	0	0	4
Pilot Point	1	0	0	0	0	0	0	0	1	2
Port Graham	0	3	0	0	1	6	6	101	32	149
Port Heiden	1	0	5	0	0	1	0	1	2	10
Port Lions	11	0	0	1	0	0	0	23	3	38
Sand Point	0	0	1	0	0	0	0	0	0	1
Seldovia	0	0	1	0	0	12	20	8	0	41
Sitka	44	25	35	47	39	163	218	131	34	736
Tatitlek	0	0	0	0	19	27	4	0	0	50
Unalaska	0	0	0	0	0	0	5	0	0	5
Valdez	0	0	0	0	0	73	102	135	121	431
Wrangell	0	0	0	0	0	0	21	0	0	21
Yakutat	0	0	0	0	0	0	14	13	15	42
Total	499	55	267	166	231	637	1,242	830	589	4,516

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important information from the individual Stock Assessment Reports. That table is summarized in this annual report (in Table 13). Copies of the final Stock Assessment Reports are available

on request from the Division of Fish and Wildlife Management Assistance, U.S. Fish & Wildlife Service, Mail Stop 840—ARLSQ, 1849 C Street NW., Washington, D.C. 20240.

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

	<i>Pre-Rule</i>	1988	1989	1990	1991	1992	1993	1994	1995	Total
<i>Adults</i>										
Male	230	44	176	120	149	367	585	464	430	2,565
Female	88	9	35	15	44	172	426	166	89	1,044
Unknown	121	0	19	2	23	17	36	80	13	311
Subtotal	439	53	230	137	216	556	1,047	710	532	3,920
<i>Subadults</i>										
Male	8	1	15	16	3	35	74	66	23	241
Female	8	1	2	9	5	25	55	25	15	145
Unknown	14	0	3	0	3	5	5	21	2	53
Subtotal	30	2	20	25	11	65	134	112	40	439
<i>Pups</i>										
Male	1	0	1	3	0	6	7	5	5	28
Female	0	0	0	1	1	5	3	1	2	13
Unknown	6	0	1	0	1	2	2	1	8	21
Subtotal	7	0	2	4	2	13	12	7	15	62
<i>Unknown</i>										
Male	0	0	1	0	2	1	0	0	0	4
Female	0	0	1	0	0	1	7	0	0	9
Unknown	23	0	13	0	0	1	42	1	2	82
Subtotal	23	0	15	0	2	3	49	1	2	95
<i>All Ages</i>										
Male	239	45	193	139	154	409	666	535	458	2,838
Female	96	10	38	25	50	203	491	192	106	1,211
Unknown	164	0	36	2	27	25	85	103	25	467
Grand Total	499	55	267	166	231	637	1,242	830	589	4,516

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**Table 6. Polar Bears Tagged by Tagging Location and Harvest Year.<sup>a</sup>**

<i>Location</i>	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	2	6
Nuiqsut	3	2	0	0	0	0	3	1	9
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	80	754

<sup>a</sup>Harvest year is from July 1 to June 30 of the following year.

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**Table 7. Polar Bears Tagged by Age Class, Sex, and Harvest Year.<sup>a</sup>**

	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	Total
<i>Adults</i>									
Male	12	5	29	41	25	24	28	32	196
Female	8	3	12	6	5	11	15	10	70
Unknown	0	0	0	0	0	2	5	1	8
Subtotal	20	8	41	47	30	37	48	43	274
<i>Subadults</i>									
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
<i>Cubs</i>									
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
<i>Unknown</i>									
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
<i>All Age Classes</i>									
Male	73	85	66	61	38	44	66	54	487
Female	47	34	22	13	21	16	43	24	220
Unknown	3	13	11	2	0	5	11	2	47
Grand Total	123	132	99	76	59	65	120	80	754

<sup>a</sup> Harvest year is from July 1 to June 30 of the following year.

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### International Activities

#### *Review of the 1973 Agreement on the Conservation of Polar Bears*

The provisions described in this section concern both the domestic and international review of the effectiveness and implementation of the 1973 international Agreement on the Conservation of Polar Bears (Agreement) and consultation concerning cooperative research and management programs for the conservation of polar bears in Alaska and Russia. Regarding the international implementation of the Agreement, the Secretary of the Interior is required to consult with the contracting parties that signed the Agreement in order to review its effectiveness and establish a process for future reviews. Diplomatic contact with the international parties to the Agreement will begin following completion of the report assessing United States domestic compliance with the Agreement.

To evaluate U.S. compliance with the Agreement, the Service conducted a

series of workshops. A final report dated December 20, 1993, entitled "Reconciling the Legal Mechanisms to Protect and Manage Polar Bears Under United States Laws and the Agreement for the Conservation of Polar Bears," and prepared by Donald C. Baur under contract to the MMC, provided much of the background information for discussions during the Service's review process. The workshop reviews incorporated input from representatives of the Department's Office of the Solicitor, the Department of State, the MMC, the Alaska Nanuuq Commission, Native organizations, and numerous conservation organizations. A draft Service report was developed in late 1995 and submitted on November 27, 1995, to the Department of State and the MMC for formal consultation as required by the Act. Issues relevant to the 1973 Agreement identified in the report include: (1) the Act's provisions that authorize incidental take of marine mammals; (2) implementation of habitat protection measures; (3) use of aircraft to take polar bears; and (4) the take of

females with cubs or their cubs, and bears entering or in denning areas. At year's end, responses from both agencies were awaited.

*U.S. Russian Bilateral Discussions*  
Dialogue on development of a possible polar bear conservation agreement with Russia has been ongoing. A meeting in Nome, Alaska, on September 6-9, 1994, addressed the basic conservation principles for a future agreement. More recently, representatives of the United States and Russia met in Petropavlovsk-Kamchatskiy, Russia, from September 14-20, 1995, to further these discussions. The following tenets for a future conservation agreement have been the subject of these bilateral discussions.

(1) The international 5-Party "Agreement on the Conservation of Polar Bears" would serve as the framework.

(2) A Government-to-Government agreement in conjunction with a Native-

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

<i>Location</i>	<i>Pre-Rule</i>	<i>1988</i>	<i>1989</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>Total</i>
Anchorage	293	0	37	19	19	1	2	13	13	397
Barrow	1	1	11	7	23	21	30	15	2	111
Bethel	13	0	10	18	18	22	12	6	0	99
Brevig Mission	3	0	0	6	1	27	4	2	0	43
Chevak	11	0	2	1	2	4	4	3	0	27
Chignik Lagoon	2	0	0	0	0	0	0	0	0	2
Clarks Point	8	0	1	0	14	5	0	0	3	31
Cold Bay	0	0	0	0	0	1	1	1	0	3
Cordova	13	0	0	0	0	0	0	0	0	13
Dillingham	25	0	10	15	5	8	24	48	36	171
Egegik	0	0	0	0	0	1	0	1	0	2
Elim	0	0	0	2	4	0	1	0	1	8
Emmonak	0	0	0	0	0	0	3	0	0	3
Fairbanks	9	0	2	0	0	0	2	1	0	14
Gambell	12	4	188	756	629	403	464	520	266	3,242
Golovin	1	0	0	0	1	3	0	1	1	7
Goodnews Bay	4	0	2	1	1	2	0	2	0	12
Homer	0	0	0	0	2	2	2	0	0	6
Hooper Bay	3	0	1	15	5	3	2	3	1	33
Kaktovik	0	0	0	0	0	0	1	0	0	1
Kenai	2	0	0	0	0	0	0	0	0	2
Ketchikan	1	0	0	0	0	0	0	0	0	1
King Island	2	0	0	7	77	346	28	12	0	472
King Salmon	3	0	0	1	3	2	2	0	2	13
Kipnuk	3	0	0	3	1	1	2	2	1	13
Kivalina	0	0	46	0	0	1	0	0	1	48
Kodiak	2	0	0	0	0	0	0	0	0	2
Kongiganak	0	0	3	0	3	4	3	1	0	14
Kotzebue	30	0	0	0	3	0	0	0	0	33
Koyuk	0	0	0	2	5	0	0	0	1	8
Kwigillingok	3	0	0	1	1	6	0	1	1	13
Little Diomedea	3	0	1	236	532	84	91	372	197	1,516
Manokotak	3	0	1	0	0	0	0	2	0	6
Mekoryuk	23	0	4	14	49	22	23	4	8	147
Naknek	1	0	0	3	1	1	1	0	0	7
Nome	49	0	1	15	39	14	16	19	2	155
Perryville	0	0	1	0	0	0	0	0	0	1
Pilot Point	0	0	0	0	1	0	0	0	0	1
Platinum	20	0	9	5	2	10	3	0	3	52
Point Hope	3	0	2	5	0	5	5	6	0	26
Point Lay	0	0	0	0	0	0	1	1	4	6
Port Heiden	5	0	0	0	2	4	5	1	3	20
Quinhagak	0	0	0	0	3	0	0	0	0	3
Sand Point	1	0	0	1	9	0	0	0	0	11
Savoonga	423	0	221	198	520	546	300	151	354	2,713
Shishmaref	490	0	122	87	35	69	42	5	8	858
Sitka	15	0	0	0	6	0	0	0	0	21
St. George	1	0	0	1	1	0	0	0	0	3
St. Paul	0	0	0	2	1	1	5	0	1	10
Stebbins	0	0	1	5	17	0	8	0	0	31
Teller	0	0	0	0	0	3	11	1	4	19
Togiak	13	1	9	25	6	6	24	32	8	124
Toksook Bay	4	0	0	0	2	1	2	1	0	10
Tuntutuliak	0	0	0	0	2	1	2	5	4	14
Tununak	1	0	0	0	0	0	0	1	0	2
Unalakleet	6	0	1	5	5	0	0	2	2	21
Wainwright	4	0	43	0	32	33	44	68	31	255
Wales	10	0	10	10	81	15	3	0	8	137
<b>Total</b>	<b>1,519</b>	<b>6</b>	<b>739</b>	<b>1,466</b>	<b>2,163</b>	<b>1,678</b>	<b>1,173</b>	<b>1,303</b>	<b>966</b>	<b>11,013</b>

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

	<i>Pre-Rule</i>	1988	1989	1990	1991	1992	1993	1994	1995	Total
<i>Adults</i>										
Male	596	6	351	517	882	702	597	484	423	4,558
Female	235	0	215	530	894	730	423	708	420	4,155
Unknown	585	0	154	55	63	103	78	50	7	1,095
Subtotal	1,416	6	720	1,102	1,839	1,535	1,098	1,242	850	9,808
<i>Subadults</i>										
Male	26	0	6	21	39	53	21	28	17	211
Female	5	0	2	4	16	7	6	6	9	55
Unknown	49	0	3	8	6	6	10	1	2	85
Subtotal	80	0	11	33	61	66	37	35	28	351
<i>Calves</i>										
Male	0	0	0	0	58	1	3	1	0	63
Female	0	0	0	0	61	0	2	0	0	63
Unknown	1	0	4	331	144	74	32	25	88	699
Subtotal	1	0	4	331	263	75	37	26	88	825
<i>Unknown</i>										
Unknown	22	0	4	0	0	2	1	0	0	29
Subtotal	22	0	4	0	0	2	1	0	0	29
<i>All Ages</i>										
Male	622	6	357	538	979	756	621	513	440	4,832
Female	240	0	217	534	971	737	431	714	429	4,273
Unknown	657	0	165	394	213	185	121	76	97	1,908
Grand Total	1,519	6	739	1,466	2,163	1,678	1,173	1,303	966	11,013

Revised February 1, 1996.

to- Native agreement should be developed. Co-management arrangements would be sought in the United States.

(3) Sound biological information should 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 should be recognized as a priority.

(5) Habitat protection should be a cornerstone to the agreement.

(6) Parties would actively enforce against illegal take or trade.

(7) Biological monitoring and verification programs would be supported.

(8) Appropriate domestic authorizations to begin formal negotiations should be sought by the Parties.

A public review of the Service's draft Environmental Assessment (EA) for

this action should be conducted in 1996 and the authority to negotiate an agreement from the Department of State should also be sought in 1996. (Note: On July 19, 1996, the Service announced availability of a draft EA and two public meetings on the proposal to develop a U.S./Russia Bilateral Agreement for the Conservation of Polar Bears in the Chukchi/Bering Seas (61 FR 37761). Public meetings were held in Anchorage, Alaska, and Washington, D.C., on August 14, 1996, and August 21, 1996, respectively; and the 60 day public comment period closed on September 17, 1996.)

#### *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 regulations concerning the import of polar bear hides from legally sport harvested polar bears from Canada into the United States.

#### **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 2,350 (Table 14) 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 distribution, and

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

<i>Sea Otters<sup>a</sup></i>									
<i>Pre-Rule<sup>b</sup></i>	<i>1988<sup>c</sup></i>	<i>1989</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995<sup>d</sup></i>	<i>Total</i>
499	55	267	166	231	637	1,242	830	589	4,516
<i>Polar Bears<sup>e</sup></i>									
<i>Pre-Rule<sup>b</sup></i>	<i>1988/89</i>	<i>1989/90</i>	<i>1990/91</i>	<i>1991/92</i>	<i>1992/93</i>	<i>1993/94</i>	<i>1994/95<sup>d</sup></i>	<i>Total</i>	
123	132	99	76	59	65	120	80	754	
<i>Walrus</i>									
<i>Pre-Rule<sup>b</sup></i>	<i>1988<sup>c</sup></i>	<i>1989</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995<sup>d</sup></i>	<i>Total</i>
1,519	6	739	1,466	2,163	1,678	1,173	1,303	966	11,013

<sup>a</sup> Recorded by calendar year, January 1 to December 31.

<sup>b</sup> Harvested before October 26, 1988.

<sup>c</sup> Harvested between October 26 and December 31, 1988.

<sup>d</sup> Preliminary data. Revised February 1, 1996.

<sup>e</sup> Recorded by harvest year, July 1 to June 30 of the following year.

**Table 11. Summary of Age Class and Sex of Retrieved Walrus During the 1995 Walrus Harvest Monitoring Project.**

<i>Village</i>	<i>Age Class</i>	<i>Female</i>	<i>Male</i>	<i>Unknown</i>	<i>Total</i>
Diomedes	Adult	154	11	0	165
	Subadult	1	2	4	7
	Yearling	1	1	0	2
	Calf	2	6	3	11
	Subtotal	158	20	7	185
Gambell	Adult	172	92	0	264
	Subadult	8	7	0	15
	Yearling	1	4	4	9
	Calf	54	33	28	115
	Subtotal	235	136	32	403
Savoonga	Adult	192	252	1	445
	Subadult	2	13	0	15
	Yearling	0	0	1	1
	Calf	36	40	78	154
	Unknown	1	0	0	1
	Subtotal	231	305	80	616
Wales	Adult	1	0	0	1
	Subtotal	1	0	0	1
All Villages	Adult	519	355	1	875
	Subadult	11	22	4	37
	Yearling	2	5	5	12
	Calf	92	79	109	280
	Unknown	1	0	0	1
	Grand Totals	625	461	119	1,205

**Table 12. Summary of Walrus Tooth and Female Reproductive Tract Samples Collected During the 1995 Walrus Harvest Monitoring Project.**

<i>Village</i>	<i>Non-Calf Walrus</i>	<i>Jaw Samples</i>	<i>Tooth Samples</i>	<i>Teeth Sampled (%)</i>	<i>Adult &amp; Subadult Females Walrus</i>	<i>Repro<sup>1</sup> Samples</i>	<i>Repros<sup>1</sup> Sampled (%)</i>
Diomedes	174	0	80	45.98	155	23	14.84
Gambell	288	10	119	44.79	180	21	11.67
Savoonga	462	2	236	51.52	194	14	7.22
Wales	1	0	1	100.00	1	0	0.00

<sup>1</sup> "Repro" and "Repros" refers to adult female reproductive tracts.



**Table 13. Summary of Marine Mammal Stock Assessments for Species Under Service Management Authority.**

<i>Species</i>	<i>Stock Area</i>	<i>N<sub>(est)</sub></i>	<i>CV</i>	<i>N<sub>(min)</sub></i>	<i>R<sub>(max)</sub></i>	<i>F<sub>(r)</sub></i>	<i>PBR</i>	<i>AEAHCM<sup>1</sup></i>	<i>CFK</i>	<i>S/NS</i>
Sea otter-Alaska stock	Alaska	100,000-150,000	N/AV	100,000	0.2	1.0	10,000	506	<1	NS
Polar bear-Chukchi/Bering Sea stock	Chukchi/Bering Seas-Alaska and Russia	N/AV	N/AV	N/AV	N/AV	1.0	N/AV	55	0	NS
Polar bear-Beaufort Sea stock	Beaufort Sea-Alaska and Canada	1,717	0.13	1,579	0.06	1.0	72 <sup>2</sup>	63	0	NS
Pacific walrus	Alaska and Canada	201,039	N/AV	188,316	0.08	1.0	7,533	5,895 <sup>3</sup>	16	NS
West Indian manatee-Florida stock	Southeastern U.S.A.	UNK	N/D	1,822	0.04	0.1	3	49 <sup>4</sup>	<1	S
West Indian manatee-Antillean stock	Puerto Rico	UNK	N/D	86	0.04	0.1	0	2	UNK	S
Southern sea otter-California stock	Central California and San Nicolas Island	UNK	N/D	2,376	0.06	0.1	N/AP <sup>5</sup>	UNK <sup>6</sup>	UNK <sup>7</sup>	S
Sea otter-Washington stock	Neah Bay to Destruction Island, WA	UNK	N/D	360	0.12	0.5	11	UNK <sup>8</sup>	UNK <sup>7</sup>	NS

**Abbreviations:**

<i>N<sub>(est)</sub></i>	<i>Estimated population size.</i>
<i>CV:</i>	<i>Coefficient of variation (on the population estimate).</i>
<i>N<sub>(min)</sub>:</i>	<i>Minimum population size.</i>
<i>R<sub>(max)</sub>:</i>	<i>Estimated maximum net productivity.</i>
<i>F<sub>(r)</sub>:</i>	<i>Recovery factor.</i>
<i>PBR:</i>	<i>Calculated Potential Biological Removal level.</i>
<i>AEAHCM:</i>	<i>Annual estimated average human-caused mortality.</i>
<i>CFK:</i>	<i>Estimated annual fishing caused mortality.</i>
<i>S/NS:</i>	<i>Strategic (as defined in Section 3 of the Marine Mammal Protection Act, as amended in 1994) or non-Strategic.</i>
<i>N/AV:</i>	<i>Data not available.</i>
<i>UNK:</i>	<i>Unknown.</i>
<i>N/D:</i>	<i>Not determined.</i>
<i>N/AP:</i>	<i>Not applicable.</i>

<sup>1</sup> For Alaska marine mammal stocks, the numbers presented in this column are nearly all attributable to subsistence harvest by indigenous peoples.

<sup>2</sup> Adjusted upwards to 72 animals from the calculated PBR of 48 to reflect the approximate 2 male:1 female sex ratio of the harvest. See stock assessment for additional information.

<sup>3</sup> Of the total estimated 5,895 walrus killed annually as a result of human activities, 5,837 is the estimated average annual take attributed to the combined subsistence harvest in Alaska and Russia for the five-year period from 1990 through 1994.

<sup>4</sup> Estimated average human-caused mortality for the West Indian manatee-Florida stock from 1984-1992. The estimated average annual human-caused mortality from 1974-1992 is 36 animals.

<sup>5</sup> Although the PBR level for the southern sea otter-California stock was calculated to be 7, their incidental take is not governed under Section 118 of the 1994 amendments to the Marine Mammal Protection Act.

<sup>6</sup> Human caused mortalities of southern sea otters have been attributed to drowning in gill nets and lobster/crab pots, shootings, boat collisions, disease, and oil spills. However, data are insufficient for estimating annual losses. See stock assessment for additional information.

<sup>7</sup> Observer coverage is inadequate to estimate annual fishery-caused mortality.

<sup>8</sup> Unknown. Sea otters in Washington State are susceptible to the same sources of human-caused mortality as they are in California.

**Table 14. Comparison of Southern Sea Otter Counts Since the Spring 1982.a**

<i>Season</i>	<i>Number of Independent Otters</i>	<i>Number of Pups</i>	<i>Total</i>
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 <sup>b</sup>	1,151	52	1,203
Fall	No survey		
1985 Spring	1,119	242	1,361
Fall	1,065	150	1,215
1986 Winter <sup>c</sup>	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
1995 Spring	2,095	282	2,377
Fall	2,053	137	2,190

<sup>a</sup> In 1992, all survey data since Fall 1982 were reviewed and counts were corrected as appropriate.

<sup>b</sup> CDF&G aerial survey with ground truth stations.

<sup>c</sup> Experimental.

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 BRD/GS, the California Department of Fish and Game (CDF&G), and the Service continued the spring and fall population surveys in 1995. The area surveyed included the entire 220-mile long established range of the southern sea otter, from Point Año 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 1995 survey was again higher than any since these

counts began (Table 14). 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 Año 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, as defined in the Act. The Act states that, "Whenever consistent with [the] primary objective [to maintain the health and stability of the marine ecosystem], it should be the goal to obtain an optimum sustainable population keeping in mind the carrying capacity of the habitat."

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 otters surveys are conducted at SNI every other month by the Service and the BRD/GS. During 1995, counts of independent otters ranged from 9 to 14. The highest one-day count of independent otters at San Nicolas Island since September 1989 occurred during December 1994. To date, 38 pups are known to have been born at the island, and at least 9 of them have been successfully weaned. The actual number may be larger. However, because pups are not marked assessment of recruitment into the population is difficult. Reproduction at the island is continuing and during 1995 five different pups were observed at SNI.

#### *Containment*

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

Since 1987, 20 independent (10 males, 10 females) sea otters and 4 dependent pups have been captured in the Management Zone. Eleven of the otters had been translocated to SNI, 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 SNI. 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. Since 1994, sea otter containment activities have been limited due to the unavailability of funds within both the Service and the CDF&G.

During 1995, the Service received ten reports of otters in the Management Zone. Three reports were likely multiple sightings of one otter off of Santa Barbara County. Two reports resulted in confirmed sightings by Service biologists, both in the near shore area of Santa Barbara County. Containment efforts were not initiated because subsequent visits by Service biologists to these two locales yielded no otters. In addition to the ten reports received by the Service, the CDF&G has regularly sighted sea otters about two miles south of Point Conception in the Management Zone. Although the containment activities have been substantially decreased since 1993, it appears that no other sea otter colonies have been established in the designated Management Zone.

Containment activities are required to continue unless: (1) the translocation to San Nicolas is determined to be a failure; (2) the containment effort fails to maintain the Management Zone free of otters; or (3) the Management Zone is eliminated.

*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 Special Agents conduct

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

Five sea otters were known to have died of gun shot wounds in 1995. These animals likely represent a fraction of southern sea otters killed annually by malicious activities. As of the end of 1995, six incidences of shooting are currently under investigation by Service Special Agents. However, evidence required to bring such cases to court 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 by Section 114 of the Act, as amended in 1988. In Monterey Bay and Morro Bay, up to three NMFS observers are stationed to document incidental take. In 1995, no mortalities of southern sea otters were attributed to entanglement in fishing nets. However, at least one sea otter in 1995 was found to have died from injuries from a collision with a boat propeller. In summation, from June 1982 to December 31, 1995, a total of 75 otters have been observed or otherwise known to have drowned in legally set commercial fishing nets: 6 in 1982, 6 in 1983, 16 in 1984, 12 in 1985, 3 in 1986, 5 in 1987, 5 in 1988, 11 in 1989, 9 in 1990, 0 in 1991, 0 in 1992, 1 in 1993, 1 in 1994, and 0 in 1995.

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 a very 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 attempt to reduce the incidental take of sea otters to near zero. The State legislation has significantly reduced the number of sea otters found

drowned in fishing nets. 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 is 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 fisheries continue to be of concern as sources 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 1995, 157 southern sea otter carcasses were recovered from beaches. This represents a record high for number of recovered beach-cast carcasses. The previous record of 153 carcasses was set in 1981. During July 1995, the first mass mortality event observed for southern sea otters occurred in Monterey Bay, Monterey County. Eleven dead or moribund southern sea otters were found within 10 miles of each other within a one week period. All carcasses were necropsied at the BRD/GS National Wildlife Health Center (NWHC) in Madison, Wisconsin. The causes of death of the otters in Monterey Bay has remained undetermined. However, preliminary analyses have ruled out numerous potential causes of mortality such as poisoning and diseases that are commonly known to occur in sea otters.

The NWHC has conducted necropsies on fresh, beach cast sea otter carcasses since 1992. 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 into 1996.

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. The Marine Mammal Center received seven adult stranded southern sea otters in 1995, and is projected to expand their program in 1996 to accommodate pups.

Rehabilitated sea otters that lack the skills to survive in the wild are placed in permanent housing in a number of facilities. During 1995, those facilities included the Monterey Bay Aquarium, Sea World of San Diego, Oregon Coast Aquarium, and the New York Aquarium. As of December 1995, a total of 12 rehabilitated southern sea otters exist in permanent captivity.

#### *Section 7 Consultations*

Pursuant to Section 7 of the Endangered Species Act, the Service reviews proposed Federally funded, conducted, or permitted activities that may affect the southern sea otter. The Service conducted one internal consultation in 1995 for the issuance of a scientific research permit to sample blood from southern sea otters. The Service consulted informally on several pier replacement projects. However, in 1995 the Service received no requests for formal consultation.

#### *Section 6*

The Service spent \$10,000 in 1995 to support Section 6 activities under the Endangered Species Act for the southern sea otter.

#### *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, which created a new oil spill division within the CDF&G. The ramifications of both Federal and State legislation have yet to be realized or applied to the existing document.

#### *Guadalupe Oil Field*

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. A minimum estimate of 35-40 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 listed species that may have been affected by these releases. Since 1994, the Service has participated as a trustee representative for the Department of the Interior's trust resources.

#### *Avila Beach Oil Spill Settlement*

Unocal and the trust resource agencies, 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 coccidioidomycosis 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 initiation of a southern sea otter genome project at the Monterey Bay Aquarium, and

hydrocarbon analyses of sea otter blood by the CDF&G. The genome project will include the collection, storage, and utilization of sea otter sperm and egg material. The Monterey Bay Aquarium proposes to develop the techniques with captive Alaska sea otters before they are applied to southern sea otters. The CDF&G proposes to establish baseline blood hydrocarbon levels in southern sea otters. This information will be used to assess impacts of future oil spills by comparing baseline blood hydrocarbon levels to that observed following future oil spills.

#### **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 number. Because of this perception, the manatee was first afforded protection by the State of Florida in 1893. The manatee is now variously protected by the State of Florida's Manatee Sanctuary Act of 1978, the Endangered Species Act of 1973, as amended, and by the Act, as amended.

As a Federally listed endangered species, efforts to recover the species are guided by the Service's 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. National wildlife refuges have played an integral role in the manatee recovery process.

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 1995, 201 manatees were known to have died in the contiguous United States (199 in Florida and two out of state). Forty-two of these deaths were attributed to watercraft. An additional 13 manatee deaths were attributed to human causes, eight of which were related to water control structures. As in years past, 1995 was characterized by a substantial number of perinatal deaths (46). Natural causes were responsible for 36 of the remaining deaths and a cause of death could not be determined for 40 manatees.

The Florida Department of Environmental Protection (FDEP) coordinates a series of synoptic aerial surveys conducted throughout the manatees' range during peak cold periods. These surveys focus on warm water aggregation sites and are used to assess manatee abundance. Two surveys were flown in 1995, one on January 21-22 and the other on February 6-7. During the January survey, 1,443 manatees were counted (of which 8.2 percent were calves) and 1,822 manatees (8.1 percent calves) were seen in February. These counts were consistent with surveys conducted in January 1992 (1,856 manatees), February 1991 (1,465 manatees) and in January 1991 (1,268 manatees). The counts represent a minimum population estimate (i.e., there are at least this

many individuals in the population at the time the surveys were flown).

The BRD/GS'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. As of 1995, more than 1,000 manatees had been identified and nearly 15,000 sighting/resighting records were in the catalog.

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 over the long-term.

## Management

Manatee behavior and habitat have been closely monitored for more than 20 years through the carcass salvage program, BRD/GS'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). These data are used to develop population models and to assist

Federal, State, and local agencies in their efforts to protect manatees from direct threats such as watercraft and water control structures, and from indirect threats such as habitat loss.

The Service prepared stock assessments for Florida and Antillean manatees, as required by Section 117 of the 1994 amendments to the Act. The stock assessments projected a potential biological removal (PBR) of three Florida manatees and zero Antillean manatees (in Puerto Rico). Based on the manatee's status as an endangered species, high mortality levels, the stock assessments, and PBRs, the Service concluded that both stocks should be designated strategic stocks as defined in the 1994 amendments to the Act.

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 13 counties involved in this process have either permanent or interim 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 the provisions of Section 7 of the Endangered Species Act. The Section 7 process involves a Service review of Federal actions for impacts to listed species, including the manatee. If it is determined that an action is likely to affect manatees and their habitat, the Service makes recommendations to the action agency to minimize the effect of the action on the manatee and its habitat. The Service also adopts regulations to establish manatee sanctuaries in sensitive manatee areas.

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 (SFWMD) 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



*A manatee transfer at the soft release pens in the Banana River at the Merritt Island National Wildlife Refuge, Florida. U.S. Fish & Wildlife Service photo by Jim Valade.*

to reduce mortality. The Service has reviewed and commented on SFWMD and Corps proposals to reduce the number of manatees being killed by these structures. These agencies have developed pressure-sensitive reversing door mechanisms, similar to those on elevator doors, that are fitted on the edges of gate and lock doors. An initial prototype which used mechanical plungers failed to detect manatees. Subsequently, a new detection device which uses piezoelectric film is being developed.

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. Fifty rescue attempts were made in 1995 in sharp contrast to previous years, which averaged between 15 and 25 rescues per year. The increase in effort is partially due to a record number of crab pot float line entanglements. There were 46 manatees held in rehabilitation facilities as of December 31, 1995.

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 in Brevard County, Florida. 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. Two manatees staged in 1994 were released in 1995. The whereabouts of one of these individuals is unknown and the other was struck and killed by a boat in Brevard County in 1996 (while this Annual Report was being developed). Eight manatees were held in the soft-release pens in 1995, including one of the aforementioned manatees staged in 1994. Three were returned to captivity because of concerns regarding their health. The remaining four were released; at present, the whereabouts of one animal is unknown, one was struck by a boat and killed in Dade County, one was returned to captivity, and one died of natural causes.

Efforts to update the 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 comment period was extended in 1995, and subsequent to the end of the comment period, the plan was modified to incorporate some of the comments. The final draft was submitted to the Service's Regional Director for the southeast region for approval in late 1995. (Note: The revised document has been approved and should be released in early 1996.)

#### *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 1995 included mortality assessments via the manatee carcass salvage program, population assessments by aerial survey and photo-identification studies, and telemetry studies.

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 studies. In 1995, 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 Lee County, in Tampa Bay, and in the Wakulla and St. Marks Rivers. Further assessment of distribution patterns, use areas, and life histories were conducted through telemetry studies on Florida's east and southwest coasts and in Florida Bay in the Everglades.

A manatee (named "Chessie") rescued in Maryland in 1994 was monitored through the BRD/GS's Florida east coast manatee telemetry project. Chessie was released into the Banana River following his

rescue and was intermittently monitored via satellite transmitter. Subsequent to his release he headed south and, after the 1995 winter season, Chessie traveled north. In August 1995, Chessie reached Point Judith, Rhode Island, a northern distribution record for the species. By November, Chessie returned to Florida on his own, having completed a 4,000-mile journey over a five-month period.

#### *Refuges*

The refuge network in Florida provides manatees with elements critical to their recovery. Refuges, such as the Crystal River National Wildlife Refuge (NWR), provide essential wintering habitat for manatees that use the Gulf coast. On Florida's east coast, refuges provide important summer-use areas for manatees in the St. Johns River and coastal regions. Refuge managers at these sites have adopted management plans that promote the protection of manatees and their habitat. These plans incorporate many initiatives including public education, law enforcement, support for research, etc.

The refuges have active manatee education programs with displays and handouts to educate the public about manatee conservation. Merritt Island NWR recently completed a manatee viewing area where visitors can passively observe wild, free-ranging manatees. This refuge is also the site of the manatee recovery program's soft-release project, which seeks to release captive born and orphaned manatees to the wild. Refuge biologists assist with efforts to assess manatee distribution and abundance by aerial survey and are actively involved in manatee rescue/rehabilitation programs.

#### *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 1995, significant progress was made toward this goal. Recovery team members furthered efforts to reduce watercraft- and water control structure-related mortality. 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.

## **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. 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.

As part of production and population surveys, Service staff assisted NMFS researchers on refuge islands with tagging weaned pups, re-sighting 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 whenever 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 to search for, and free disoriented seals entrapped behind the degraded sea wall.

Midway Naval Air Facility is scheduled for closure in June 1997. Refuge personnel served as on-site monitors to prevent disturbance to Hawaiian monk seals during clean-up activities at the Atoll. Refuge staff also provided an orientation for all visitors to educate them on wildlife laws and the efforts of the NMFS and the Service to protect these endangered animals.

The Tern Island Protection Project continued to move ahead in 1995. The Service was involved in the design of the shore protection structure. (Note: The design was completed in September 1996.) Funding for construction costs, estimated at \$11.5 dollars, has not yet been authorized.

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.

U.S. Department of the Interior  
U.S. Fish & Wildlife Service  
Biological Resources Division/  
U.S. Geological Survey

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