

Errata Sheet for Administration of the Marine Mammal Protection
Act of 1972 - January 1, 1983 to December 31, 1983

The following oil and gas lease sales were inadvertently omitted from the second paragraph on page 5:

Eastern Gulf of Mexico (Sale 69, Part II)
Norton Basin (Sale 57)
St. George Basin (Sale 70)
Central California (Sale 73)

The following oil and gas lease sale was inadvertently included in the second paragraph on page 5:

Eastern Gulf of Mexico (Sale 79)

Administration of the
MARINE MAMMAL PROTECTION ACT OF 1972
Annual Report
January 1, 1983 - December 31, 1983

Prepared by
Department of the Interior
U.S. Fish and Wildlife Service
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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

MARINE MAMMAL PROTECTION ACT

Report of the Department of the Interior

The Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1361-1407, 86 Stat. 1027 (1972), 95 Stat. 979 (1981)) 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 this Act. His report shall describe those actions taken and those measures believed necessary including, where appropriate, the issuance of permits pursuant to this title to assure the well-being of such marine mammals."

The responsibility of the Department of the Interior is limited by section 3(11)(B) of the Act to those mammals that are members of the orders Carnivora (polar bear, sea otter and marine otter), Pinnipedia (walrus), and Sirenia (manatee and dugong). Accordingly, published herewith is the report of the Department of the Interior for the period January 1, 1983, to December 31, 1983, on the administration of the Act with regard to those mammals.

Issued at Washington, D.C., dated JUN 8 1984

Ronald E. Lamberson

Associate Director

ADMINISTRATION OF THE MARINE MAMMAL PROTECTION ACT OF 1972

January 1, 1983 - December 31, 1983

Report of the Department of the Interior

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INTRODUCTION

Authority

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

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

General information on distribution and migration, abundance and trends, general biology, ecological problems, allocation problems, regulations and research can be found in the 1979 annual report, thus it is not repeated here. There have been no significant changes in the status of the polar bear, marine otter, Atlantic walrus, Amazonian manatee, West African manatee, or dugong during this report period.



Walrus resting on haulout area. U.S. Fish and Wildlife Service photo by John Sarvis.



A polar bear sow waits for her cub to catch up. U.S. Fish and Wildlife Service photo.

SPECIES LIST

Species List and Status of Marine Mammals With FWS Jurisdiction Under the Marine Mammal Protection Act and the Endangered Species Act

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

APPROPRIATIONS

The most recent funding authorization by Congress for the Service was under Section 114 of the amended MMPA (16 U.S.C. 1361-1407, 86 Stat. 1027 (1972), 95 Stat. 979. (1981)) for fiscal years (FY) 1982, 1983 and 1984. The calendar year (January 1, 1983 - December 31, 1983) covered by this report, however, overlaps FY 1983 and FY 1984, and funds authorized (Auth.) and appropriated (Appr.) for both fiscal years are shown below (in \$000).

Reporting Year Funding (January 1 to December 31, 1983)

	MMPA Section 114	
	Auth.	Appr.
FY 83	\$1,760.0	\$1,695.0
FY 84	\$2,000.0	\$1,658.0

The funding breakdown is as follows (in \$000):

	Actual FY 83	Projected FY 84
<u>Marine Mammal Protection Act</u>		
Research and Development		
Alaskan sea otter	\$ 94	\$ 69
Endangered/threatened otters	239	212
Walrus	72	17
Polar bear	241	284
Manatee and dugong	194	226
Monk seal <u>1/</u>	5	0
Total Research	<u>\$ 845</u>	<u>\$ 808</u>
Management		
Permit activities	\$ 22	\$ 22
Law enforcement activities	465	465
Other management activities	363	363
Total Management	<u>\$ 850</u>	<u>\$ 850</u>
Grand Total	<u>\$1,695</u>	<u>\$1,658</u>

1/ While the National Marine Fisheries Service has primary responsibility for the monk seal, the species utilizes a National Wildlife Refuge, thereby becoming a management responsibility of the FWS pursuant to the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee).

	<u>Actual</u> <u>FY 83</u>	<u>Projected</u> <u>FY 84</u>
<u>Endangered Species Act</u>		
Section 6 (Grants-to-States)		
California - Sea otter	\$ 141	\$ 105
Florida - Manatee	0	15
Total Section 6	<u>\$ 141</u>	<u>\$ 120</u>
Section 15		
Research and Development		
Endangered/threatened otters	\$ 81	\$ 190
Manatee	126	206
Total Section 15 Research	<u>\$ 207</u>	<u>\$ 396</u>
Management		
Endangered/threatened otters	\$ 64	\$ 44
Manatee	191	64
Monk seal <u>1/</u>	26	25
Total Section 15 Management	<u>\$ 281</u>	<u>\$ 133</u>
Grand Total	<u>\$ 629</u>	<u>\$ 649</u>

1/ While the National Marine Fisheries Service has primary responsibility for the monk seal, the species utilizes a National Wildlife Refuge, thereby becoming a management responsibility of the FWS pursuant to the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee).



Hawaiian monk seal. U.S. Fish and Wildlife Service photo.

SUMMARY OF 1983 PROGRAM

OUTER CONTINENTAL SHELF (OCS) OPERATIONS AND ENVIRONMENTAL STUDIES

The Service participates in the Department's OCS Minerals Leasing and Development Program primarily by providing advice, input and review at various decision stages. The Service provides technical expertise on the management of fish and wildlife resources and the habitats on which they depend. During the report period, the Service participated in several lease sales and suggested protective measures for the appropriate marine mammal species.

During 1983, the Department held oil and gas lease sales in the Mid-Atlantic (Sale 76), South Atlantic (Sale 78), Western Gulf of Mexico (Sale 74), Central Gulf of Mexico (Sale 72) and Eastern Gulf of Mexico (Sale 79). In both the Mid-Atlantic and South Atlantic sales, tracts that received acceptable bids were located offshore along the edge of the Continental Shelf. Tracts that received bids in the Western and Central Gulf sales were scattered throughout the sale area. For the Eastern Gulf sale, prohibitions have been placed on leasing the seagrass bed tracts, Florida Middle Ground tracts and the area within the 20-meter isobath south of 26° N. latitude. These prohibitions provide additional protection to the sensitive coastal habitat and manatees from potential oil-related impacts.

ECOLOGICAL CHARACTERIZATIONS OF U.S. COASTAL AREAS

The Division of Biological Services (DBS) is continuing to manage a group of studies known as ecological characterizations for the Minerals Management Service (MMS) in support of OCS leasing. This ecological information base is designed to assist in comprehensive coastal resource planning and management. Each characterization contains a narrative section on marine mammal life histories, species abundance and distribution, migration routes, statistics on harvest by man, and habitat preferences and requirements. Marine mammal distributions are also mapped in the characterization. Ecological characterizations have been completed for the chenier plain coastal ecosystems of Louisiana and Texas, the Pacific Northwest Coast, the rocky coast of Maine, the sea islands and coastal plain of South Carolina and Georgia, the central and northern California coast, the Mississippi River deltaic plain, and the southwest and northwest Gulf of Mexico coasts of Florida. Nearing completion is a characterization of the Texas barrier Islands.

The DBS has produced "Turtles, Birds, and Mammals in the Northern Gulf of Mexico and Nearby Atlantic Waters." This narrative report gives species accounts of 15 marine mammal species, 4 turtle species, and 69 bird taxa. The authors present and interpret results of aerial surveys of these animals in the Gulf of Mexico and off the east coast of Florida, and provide up-to-date information on the distribution, abundance, and seasonal occurrence of these species.

The proceedings of a workshop conducted by the DBS with the MMS on cetaceans and sea turtles in the Gulf of Mexico has been produced. The workshop participants discussed potential impacts of OCS development on cetaceans and sea turtles. The proceedings summarize the meeting and outline needs and directions for future research.

RESEARCH

The Marine Mammal Section of the Denver Wildlife Research Center (DWRC) is responsible for carrying out research under the MMPA. Emphasis has been given to determining the ecological effects of human activities related to development and exploitation of the marine environment on marine wildlife and ecosystems.

Research conducted by the Service or under contract during FY 83 is summarized below.

Service Conducted

1. Polar bear
 - a. Determine the distribution, timing and importance of polar bear denning in Alaska.
 - b. Determine size and trend of Alaskan polar bear populations.
 - c. Determine movement and distribution patterns of Alaskan polar bears.
 - d. Determine biological parameters of polar bears of the western and northern populations.

2. Sea otter and marine otter
 - a. Determine annual and seasonal distribution, abundance and composition of populations of sea otters and other marine mammals at Prince William Sound, Alaska.
 - b. Provide the biological basis for determining Optimum Sustainable Population (OSP), estimating sustainable yield, delineating management stocks, and for identifying factors important to effective zonal management of sea otters in southeastern Alaska.
 - c. Determine the biology and management needs for the California sea otter.
 - d. Determine the interactions between sea otters and the nearshore community.
 - e. Determine the occurrence of sea otters and the nature of sea otter habitat in Baja California.
 - f. Determine baseline data for the San Nicolas Island ecosystem.
 - g. Determine the status of the marine otter.

3. Walrus
 - a. Evaluate selected areas for potential use for population assessment, to investigate hauling out patterns and to determine the age/sex composition and general behavior of walruses on hauling grounds.

4. Hawaiian monk seal
 - a. Determine the status of the Hawaiian monk seal.
5. Manatee and dugong
 - a. Determine the distribution and status of all taxa and populations of Sirenians.
 - b. Determine basic reproductive and behavioral characteristics of West Indian manatees.
 - c. Determine ecosystem relationships of the manatee.
 - d. Determine causes of mortality and salvage stranded manatees and other marine mammals.
 - e. Develop manatee tagging and tracking technology.
 - f. Determine parasites and environmental contaminants in manatees and the dugong.
 - g. Determine basic sensory and physiological parameters of manatees as related to technical needs.

Contracts

1. San Nicolas Island (California) ecological study. Principal investigator: W. Doyle, University of California (\$160,000 including \$71,000 of ESA Section 15 funds and \$89,000 of MMPA Section 114 funds).
2. Experimental radiotracer implant studies on the sea otter. Principal investigator: D.B. Siniff, University of Minnesota (\$10,000 ESA Section 15 funds).
3. Compilation and mapping of available biological, ecological and socioeconomic information relative to the protection, management and restoration of the southern sea otter. Principal investigator: J.L. Dobbins, J.L. Dobbins Assoc., Ltd. (\$15,000 ESA Section 15 funds).
4. Sea otter studies; improvement of capture techniques, behavioral response to artificial stimuli, mortality studies and population studies. Principal investigator: T. Farley, California Department of Fish and Game (\$37,500 ESA Section 6 funds).
5. Determine feasibility of regulating movement of sea otters; methods to contain the distribution of sea otters will be evaluated. Principal investigator: T. Farley, California Department of Fish and Game (\$60,400 ESA Section 6 funds).
6. Obtain sea otter index of mortality rates and determine causes of mortality. Principal investigator: T. Farley, California Department of Fish and Game (\$43,000 ESA Section 6 funds).
7. West Indian manatee carcass salvage in South Florida. Principal investigator: D. Odell, University of Miami, Florida (\$60,000 ESA Section 15 funds).

8. Population index and mark/recapture methodology for the West Indian manatee in Florida. Principal investigator: J. Packard, University of Florida (\$50,000 ESA Section 15 funds).

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 FWS is responsible. In addition, it assists the National Marine Fisheries Service (NMFS) by making apprehensions and conducting investigations in cases involving species under that agency's jurisdiction. Results of these efforts are referred to NMFS for its consideration and appropriate action. However, under a NMFS/Service memorandum of understanding, the Service retains authority over those investigations that involve endangered marine mammal species. Violations are referred to the Department's Office of the Solicitor for civil action or to the Department of Justice for criminal action.

Two hundred and nine marine mammal investigations were pending at the start of the reporting period, and Service Agents initiated 80 new investigations. A total of 89 marine mammal investigations were closed, while 200 were pending at the end of the period. Eighteen cases resulted in civil penalties being assessed and collected during the period. Marine mammal parts and products with an estimated value of \$21,822 were also forfeited as part of these civil actions. Seven cases resulted in criminal convictions and payment of fines totalling \$975.

Alaska Law Enforcement Actions

Undercover investigations into the illegal trade in marine mammal parts continues in Alaska. Indications are that this trade has been reduced somewhat and that dealers are much more cautious about who they deal with.

Nineteen sea otter hides were seized from an Anchorage taxidermy shop. They had been taken to the shop for tanning by a Washington State resident. Charges will be filed when the investigation is completed.

The Ninth U.S. Circuit Court of Appeals upheld the forfeiture of 36 walrus tusks seized from an Anchorage Registered Marine Mammal Agent in 1981.

Eighty-one walrus tusks were seized from a Wasilla, Alaska, ivory dealer. He had purchased the tusks from an Alaskan Native who claimed they had been taken in 1978 and tagged by the State of Alaska, but all of the tags had rusted off. Forensic examinations showed many of the tusks were taken during 1983.

A search warrant was served at the U.S. Coast Guard Station, Pt. Clarence, Alaska, where a Coast Guardsman was allegedly dealing in raw walrus ivory, purchasing it from Alaskan Natives and reselling it to Coast Guard aircrews. A quantity of walrus ivory was seized, both from the dealer and aircrewmembers. Charges are pending.

Alaska Enforcement Summary

1. Active investigations:
 - a. Walrus 62
 - b. Polar bear 39
 - c. Sea otter 4
2. Closed investigations:
 - a. Walrus 28
 - b. Polar bear 7
 - c. Sea otter 6
3. Cases submitted for civil penalty:
 - a. Walrus 24
 - b. Polar bear 3
 - c. Sea otter 0
4. Civil penalties:
 - a. Nine people involved in \$1,625 penalties, and forfeiture value of \$3,000.
5. Criminal penalties:
 - a. One person involved in \$500 penalty.

PERMITS AND REGISTRATIONS

The MMPA prohibits the take or import of marine mammals and marine mammal products although exceptions may be made under permit for scientific research or public display. These permits may be issued only if it is determined by the Service that there would be no adverse effects on the health and well-being of the marine mammal species, populations and their marine ecosystems. Permits may also be issued to authorize the buying or selling of raw marine mammal parts or products by non-Alaskan natives (i.e., persons other than Alaskan Indians, Eskimos or Aleuts) or to enable marine mammal hides to be tanned to facilitate trade of these products among Alaskan natives.

Section 104 of the Act authorizes the Director of the Service, Acting in behalf of the Secretary of the Interior, to issue permits for scientific research, public display and the registration as a tannery or agent. These provisions are implemented in Title 50 of the Code of Federal Regulations -- 50 CFR 18.23 (d) for registered agent/tannery permits and 50 CFR 18.33 for scientific research or public display permits.

During calendar year 1983, four new scientific research permits were issued, one was amended and two were renewed. Three new permits were issued for public display. Eight new permits were issued for registered agent/tannery and four were renewed. Three applications are pending. The following is a brief description of permit actions taken in 1983.

Scientific Research Permits

New Permits:

PRT 2-10207, California Department of Fish and Game, Sacramento, California. This permit authorizes through June 30, 1985, the take (capture and release) of sea otters in the coastal waters off California in order to develop and refine capture techniques and to identify methods to influence the distribution of sea otters without capture.

PRT 2-9221, Dr. Ralph A. Nelson, Carle Foundation Hospital, Urbana, Illinois. This permit authorizes through January 31, 1985, the importation from Manitoba or the Northwest Territories of Canada two polar bears for long-term study of their food intake patterns and changes in biochemistry and the importation of 300 polar bear blood samples each year to analyze for chemical substances felt to be essential for survival under the extreme conditions imposed upon polar bears.

PRT 2-10362, Dr. Kerry R. Foresman, Department of Zoology, University of Rhode Island, Kingston, Rhode Island. This permit authorizes through June 30, 1986, the importation of up to 300 polar bear blood samples each year to analyze blood protein levels in association with pregnancy in an attempt to develop a pregnancy testing procedure. The work will be conducted in conjunction with the Canadian Wildlife Service field project under the direction of Dr. Ian Sterling.

PRT 2-9757, Dr. William H. Taft, Mote Marine Laboratory, Sarasota, Florida. This permit authorizes through December 31, 1984, the take (harassment) of 20 West Indian manatees and 200 bottle-nosed dolphins by means of a sonar device to determine its feasibility in effectively tracking large marine mammals. It was issued jointly with the NMFS.

Amended Permits:

PRT 2-8430, Dr. Bob Brownell, Marine Mammal Section, Denver Wildlife Research Center, San Simeon Field Station, San Simeon, California. The permittee, who originally was authorized to use radio transmitters attached to peduncle belts placed on manatees, is now also authorized to use modified free-floating radio transmitter packages on tethers attached to peduncle belts on twenty additional free ranging manatees.

Renewed Permits:

PRT 2-9740, Mr. Charles Malme, Bolt Beranek and Newman, Inc., Cambridge, Massachusetts. This permit has been renewed through December 31, 1984, and authorizes the take (harassment) of up to seven sea otters in the coastal waters off Southern California by means of air gun blast and by discharging recorded sounds of oil and gas exploration and development activities from research vessels to determine the effect the artificial noise has on otters.

PRT 2-7183, National Marine Fisheries Service, Southwest Fisheries Center, LaJolla, California. This permit has been renewed through February 28, 1985, and authorizes the import and export of salvaged materials of any marine mammal for scientific research. It was jointly issued with the National Marine Fisheries Service.

Public Display Permits

New Permits:

PRT 2-10689, Izu-Mito Sea Paradise, Numazu, Japan. This permit authorized through December 31, 1983, the take of four female sea otters from Prince William Sound, Alaska, for public display.

PRT-668102 (PRT 2-10450), San Francisco Zoological Garden, San Francisco, California. This permit authorizes through August 31, 1985, the import of one captive-born polar bear from the Nurnberg Zoo, West Germany, for public display.

PRT 2-10690, Toba Aquarium, Toba City, Japan. This permit authorized through December 31, 1983, the take of one male and three female sea otters from Prince William Sound, Alaska, for public display.

Registration Permits

New Permits:

PRT 2-10061, Peter R. Vallejo, Alaskan Arts, Anchorage, Alaska, is authorized through May 31, 1985, to receive or acquire from and sell or transfer to Alaskan natives or other marine mammal Registered Agents the parts or products of walrus, polar bear and Alaskan sea otter.

PRT 2-10498, Louie Brunner, Brunner of Alaska, Anchorage, Alaska, is authorized through June 30, 1985, to receive or acquire from and sell or transfer to Alaskan natives or other marine mammal Registered Agents the parts or products of walrus and polar bear.

PRT 2-9767, Craig and Lloyd Keefer, The Flying Fisherman, Anchorage, Alaska, are authorized through January 31, 1985, to receive or acquire from and sell or transfer to Alaskan natives or other marine mammal Registered Agents the parts or products of walrus, polar bear and Alaskan sea otter.

PRT-671391, Ralph W. Ring, Frontier Tanning Company, Anchorage, Alaska, is authorized through December 31, 1985, to receive or acquire from and sell or transfer to Alaskan natives or other marine mammal Registered Agents the parts or products of polar bears.

PRT 2-9941, Linda M. Ladwig, Pioneer Loan Company, Anchorage, Alaska, is authorized through May 31, 1985, to receive or acquire from and sell or transfer to Alaskan natives or other marine mammal Registered Agents the parts or products of walrus.

PRT 2-9834, Karl and Christa Puls, Royal Fur Dressing, Woodinville, Washington, are authorized through March 31, 1985, to receive or acquire from and sell or transfer to Alaskan natives or other marine mammal Registered Agents the parts or products of polar bear.

PRT-670074, Bill Egner, Wildlife Fur Dressers, Seattle, Washington, is authorized through November 30, 1985, to receive or acquire from and sell or transfer to Alaskan natives or other marine mammal Registered Agents the parts or products of walrus, polar bear and Alaskan sea otter.

PRT 2-10365, Sharron L. Nickell, Yukon Lil's, Nome, Alaska, is authorized through July 31, 1985, to receive or acquire from and sell or transfer to Alaskan natives or other marine mammal Registered Agents the parts or products of walrus and polar bear.

Renewed Permits:

PRT 2-4845, Harold B. Jones, AAA Taxidermy, Inc., Anchorage, Alaska, renewed his Registered Agent permit for walrus and polar bear through January 31, 1985.

PRT 2-2105, Charles Crocker, New Method Fur Dressing Company, South San Francisco, California, renewed his Registered Agent permit for polar bear through February 28, 1985.

PRT 2-3766, Cliff Jests, Silver Eagle Taxidermy, Anchorage, Alaska, renewed his Registered Agent permit for walrus and polar bear through May 31, 1985.

PRT 2-3613, Gereth B. Stillman, Still's Valley Taxidermy, Eagle River, Alaska, renewed his Registered Agent permit for walrus, polar bear and Alaskan sea otter through July 31, 1985.

INTERNATIONAL ACTIVITIES

The Service's international efforts to conserve marine mammals and their habitats are an important component of its overall efforts to achieve the objectives of the MMPA. The following describes the principal international activities carried out by the Service during the report period.

Excess Foreign Currency Program

During this report period, the Service received no new Congressional authorizations for use of excess foreign currencies. However, the Service continued work in Egypt, Pakistan and India using carryover funds authorized in previous years. These authorizations were requested under Section 8 of the ESA, which allows such funds to be expended on projects deemed by the Secretary of the Interior to be necessary for the conservation of endangered or threatened species.

Conservation efforts in Egypt reached a key turning point in July, 1983 with the enactment of General Law No. 102, on the need for nature protection, and authorizing the designation of "natural protectorates" to protect and conserve areas of "cultural, scientific, touristic, and aesthetic value." This was followed by the designation of the first natural protectorate in November, 1983 of Ras Mohamed and the islands of Tiran and Sanafir in Sinai and the Red Sea by Prime Ministerial Decree 1068. These important legislative actions will do much to enhance the protection of the dugong population in the Red Sea.

As a result of the Iraq-Iran war and the oil pollution problems created in the Persian Gulf by the damaging of three offshore oil wells in early 1983, the Service has attempted to collect information on the effects of this oil pollution on Gulf marine organisms. Because of the war situation, little on-the-spot research can be carried out. However, information from Bahrain indicates that at least 31 carcasses of dugong were observed along the Bahrain coastline at the end of March, 1983 with one additional carcass observed near Kuwait and another off Saudi Arabia during the same time period. Whether these deaths were linked to the oil spill or some other cause has not been verified. The information is significant in that it indicates that the known dugong population south of Bahrain has been severely impacted.

US-USSR Environmental Agreement - Marine Mammal Project

Under the auspices of the bilateral US-USSR Environmental Agreement, American and Soviet scientists took part in two exchanges totaling five man-months in 1983.

The Service, the NMFS, USSR Ministry of Fisheries and USSR Academy of Sciences cooperate in an extensive laboratory and field research program to foster the protection and management of marine mammals of importance to both countries.

In July-August, three Americans participated in a joint walrus population survey expedition on the Soviet research vessel "Zykovo" in the western Chukchi Sea. Data were gathered on general physical condition, feeding habits, reproduction and coastal haulouts. Copies of the 14-page final report are available from the Service's Office of International Affairs. The other major activity for the year was an April meeting in Santa Cruz, California of the US-USSR Marine

Mammals Working Group, which set research goals and planned exchanges for 1984-85.

STATUS REPORTS

Polar Bear

During the report period the Service continued to monitor the harvest of polar bears by coastal Eskimos to obtain numbers harvested and sex and age data. The documented minimum polar bear harvest for the 1982-83 hunting period was 45 males, 26 females and 14 unknown, for a total of 85 bears (Table 1).

Polar bears are circumpolar in distribution, occupying most sea ice covered portions of the northern hemisphere including near and offshore waters of northern Alaska. Recent radiotracking data suggest that polar bears occupying the area between Pt. Barrow, Alaska and Cape Bathurst, Northwest Territories are members of the same population. Four separate sources of information suggest approximately 2,000 polar bears (one bear for every 40-60 square nautical miles of sea ice habitat) presently occupy this area, and that the population is about the same size now as it was in the late 1950's. Multi-year mark and recapture data suggest no significant trend in polar bear numbers since 1972. Catch and effort data from aerial trophy hunters and from scientists attempting to catch and mark bears suggest some declines in numbers of bears by 1972, and apparent recovery to former levels since then. Too few data are available from western Alaskan polar bears to determine population



Polar bears off Cape Lisburne, Alaska. U.S. Fish and Wildlife Service photo by Gerry Atwell.

size or distribution on the Chukchi and Bering Seas. Several factors raise questions regarding the future security of polar bears in Alaska. Oil and gas exploration and development will continue to alter near shore and offshore habitats. Levels of human activities, particularly aircraft, vessel and motor vehicle operation are increasing dramatically. Despite drops in annual harvests of polar bears since aerial trophy hunting ceased, many females continue to be killed by Natives. The Beaufort Sea population can sustain little if any increase in the present mortality of females. Yet, more female bears than have been harvested in recent years are potentially vulnerable to present hunting strategies, and there are still no limitations on numbers, sex or age classes of bears harvested. The absence of regulatory controls over the harvest and impending changes in Arctic habitat mandate concern for the future welfare of Alaska's polar bears. However, polar bears are renewable resources with a long history of human utilization. Available evidence suggests a properly regulated harvest could assure the security of the critical female portion of the population and perhaps even allow an increased take.

Table 1. Alaskan Polar Bear Harvest by Village, 1980-83.*

<u>Village</u>	<u>July 1980 to May 1982</u>	<u>May 1981 to June 1982</u>	<u>Sept. 1982 to June 1983</u>
Kaktovik	23	1	1
Barrow	7	5	15
Nuiqsut	-	-	-
Wainwright	8	13	13
Pt. Lay	1	4	-
Pt. Hope	9	7	21
Kivalina	-	1	-
Shishmaref	29	22	13
Wales	6	11	8
Little Diomede	1	3	-
Gambell	6	1	5
Savoonga	16	21	9
Emmonak	-	1	-
Total	<u>106</u>	<u>90</u>	<u>85</u>

*U.S. Fish and Wildlife Service data.

Walrus

In 1983 the FWS continued to collect harvest data from the major walrus hunting villages in the Bering Straits region to monitor the health and status of the Pacific walrus herd (Table 2). Body parts were again collected from hunter killed animals to be analyzed for heavy metals and pesticides.

The FWS continued to participate in planning and coordination efforts with the Eskimo Walrus Commission (EWC). The Service also continued its involvement with the Pacific Walrus Technical



Walrus massed on shores of Bristol Bay. U.S. Fish and Wildlife Service photo by the Denver Wildlife Research Center.

Table 2. Documented Retrieved Spring Walrus Harvest, 1983.*

Village	M	F	C	U
Gambell	249	203	190	0
% of total	38.8	31.6	29.6	
% of adults	55.1	44.9		
	Total 642			
Savoonga	178	204	106	136
% of total	28.5	32.7	17.0	21.8
% of adults	34.4	39.4		26.2
	Total 624			
Nome/King Island	277	155	5	200
% of total	43.5	24.3	0.8	31.4
% of adults	43.8	24.6		31.6
	Total 637			
Little Diomede	114	46	6	0
% of total	68.7	27.7	3.6	
% of adults	71.3	28.7		
	Total 166			
Wales	45	21	0	1
% of total	67.2	31.3		1.5
% of adults	67.2	67.3		1.5
	Total 67			
Subtotal	863	629	307	337

Grand Total 2,136

M--males C--calves
 F--females U--unknown adults

*U.S. Fish and Wildlife Service data.

Committee. The Technical Committee is comprised of FWS, EWC and Alaska Department of Fish and Game (ADF&G) representatives.

The overall magnitude of the harvest during the past 4 year period has shown dramatic increases compared to harvests of the preceding 16 years. For example, there was an increase from over 1,100 walrus retrieved annually during the mid-1960's to over 2,500 walrus retrieved annually in the early 1980's. Averages of 4 year intervals also show a general upward trend for individual villages. The total US and USSR kill, including unretrieved animals, is estimated to be 11,000 to 12,000 animals.

The trend of harvesting greater numbers of calves was evident since 1975. Mean harvest rates per village computed at 4 year intervals ranged from 20 calves per village during 1969-71 to 57 calves per

Chronology of the spring harvest varies by latitude according to ice conditions occurring during a particular year. Of the villages within the study area the southern St. Lawrence Island villages of Gambell and Savoonga experience the earliest detectable movement of migrant walrus herds during April. Nome hunters generally begin to encounter walrus during mid-May while Wales and Little Diomedé areas experience walrus migration through the Bering Strait from late May to early June. Hunting activity generally ceases as follows: Gambell--mid-June, Nome--early June, King Island--mid-July, and Wales and Little Diomedé, mid-June. Peaks in harvest activity show extended variability for all locations except Nome where the harvest has consistently occurred between May 10 to 20. Harvests for other villages has been more sporadic occurring over greater time frames and reflecting yearly variance in weather and ice conditions. During the seventh meeting of the Marine Mammal Project US-USSR Environmental Protection Agreement, several key items pertaining to Pacific walruses were discussed. The meeting was held at the University of California in April 1983.

A discussion of the 1980 joint aerial survey of walruses was held. It was agreed to conduct coordinated surveys again during September 1985.

Preliminary results from a joint walrus research cruise conducted in 1982 indicated poor survival of young over the past several years. In August 1983 a joint walrus research cruise was conducted in the Bering and Chukchi Seas to gather additional information concerning sex and age composition. The results of this survey confirmed the continued trend of poor survival of young. The present population is now predominantly old animals. The implication is that the Pacific walrus, at present, is declining, for the magnitude of recent harvests appears to have exceeded the recruitment for at least the past 2 or 3 years.

The FWS commenced an active contaminant monitoring study of harvested walrus in 1980 as part of the effort to assess the numbers of animals harvested by Natives for subsistence. Interest in conducting the contaminant analysis stems from the recent interest in organochlorine pesticides and toxic heavy metal impacts on the reproductive processes of northern pinniped populations. Although this has not been recognized as a problem with Bering Sea marine mammals as yet, the objective was to establish a baseline of contaminant information for scheduled trend analysis of Bristol Bay and Navarin Basin originating stocks.

In 1982, of the 10 pesticides analyzed, only dieldrin and chlordane were detected. The 11 walrus blubbers checked in Alaska contained dieldrin in the range of 0.22 to 0.26 parts per million (ppm). Chlordane was detected in the blubber of seven of the walrus collected. Dichlorophenyl trichloroethane (DDT) and its metabolites were absent from the 2 years of tissue collection.

Heavy metals were analyzed in the kidney and liver tissues of 21 walrus. Arsenic was found in only one animal sampled from the St. Lawrence Island area and in all the animals sampled from Little Diomed Island. Selenium was absent from animals harvested from the Little Diomed Island area and occurred in all animals harvested from the St. Lawrence Island area.

Walrus sampled for lead in liver tissues from St. Lawrence Island contained a level of 0.10 to 0.17 ppm and no lead in the kidneys whereas only two livers sampled from Little Diomed Island contained measurable amounts of lead with 0.11 to 0.22 ppm. The amounts of lead in kidney tissue of five of eight animals ranged between 0.11 and 0.83 ppm.

Cadmium is a highly toxic metal to organisms since it may act as a metabolic antagonist of zinc. Unfortunately, zinc was not included for analysis in 1981 or 1982, but was included in 1983. Walrus in the Bering Sea are apparently subjected to high concentrations of cadmium in their food since liver tissues contained a range of 1.4 to 30.0 ppm and kidney levels of 10.0 to 87.0 ppm. All the animals harvested were considered to be healthy.

Mercury has been known for some time to bioaccumulate in tissue of animals. Considering the high levels found in some seals in different parts of the world's oceans, walrus liver samples collected and analyzed in the Bering Sea were low, ranging from 0.06 to 0.98 ppm. The Food and Drug Administration considers a level of 1.0 ppm as a toxic "action" food level.

Selenium as a micronutrient in the food chain can be a critical toxic factor in health maintenance of animals especially in maintenance of the reproductive processes. Walrus collected near Little Diomed Island did not contain detectable amounts of selenium, whereas walrus livers from St. Lawrence Island ranged between 0.05 to 4.9 ppm selenium.

Arsenic was included in the heavy metal analysis because of its antagonistic interaction with mercury. Only one walrus collected from St. Lawrence Island was found to contain arsenic (0.13 ppm). The Little Diomed Island walrus livers were found to contain arsenic with ranges between 1.4 and 2.8 ppm.

Sea Otter-Alaska

In a continuing effort to determine the status and distribution of sea otters in Alaska two surveys were conducted in 1983. The first, a boat survey of southeast Alaska, was conducted in May and June, and the second, an aerial survey of the Cordova vicinity, was conducted in August.

By 1911, when sea otters were given complete protection, remnant populations remained on 13 widely separated sites in the eastern North Pacific. In Alaska extant populations were located from



Alaska sea otters on rocks on Amchitka Island, Alaska. U.S. Fish and Wildlife Service photo by Robert D. Jones, Jr.

southern Prince William Sound, south and westward with no sea otters along the northern or eastern coast of the Gulf of Alaska. By the early 1960's it became clear that extant populations, particularly in the Rat and Andreanof Islands in the Aleutians, had increased and were reoccupying historic range; however, it was evident that several decades would pass before they would reach the Alexander Archipelago (southeast Alaska) where they were once numerous. Consequently, the ADF&G translocated and released about 400 otters at several widely scattered sites from 1965 thru 1969.

Occasional sightings were reported and surveys by ADF&G biologists indicated that translocated otters had established reproducing populations in at least some areas by the early 1970's. In 1975 a survey was conducted of several areas of suitable sea otter habitat in southeast Alaska. This effort was concentrated in areas where populations were believed or known to be located. That survey established that there were reproducing

populations at five separate locations, but less than 50 otters were counted at each of three sites and the future of these small populations was uncertain. From 1975 to April 1983, additional sightings were reported and portions of the area along the west coast of Yakobi Island north of Sitka were surveyed. However, there was no information regarding the fate of the small populations. In 1983 a survey was organized by the Service to look at all known populations in southeast Alaska. The major objectives of the survey were to: estimate the size of the population at each site; determine changes in distribution; determine the age/sex composition of the populations; and, as time permitted, obtain other information on segregation, feeding, hauling out and the suitability of sites for additional study.

Sea otters were sighted at all areas where they were found in 1975. All populations had increased several fold and the largest populations had expanded into adjacent habitat, and segregation by sex was noted. It should be noted that the survey was made early in the pupping season, therefore the pup:independent animal ratio is lower than it would be later in the season. A crude estimate of size was developed for each population based on the number of otters counted, visibility conditions during the count and amount of suitable habitat surveyed. We estimate that there are between 1,400 and 1,850 sea otters in southeast Alaska at the present time, distributed as five populations located between the Barrier Islands near Dixon Entrance on the south and Cape Spencer on the north.

The movement of significantly large numbers of sea otters into the Cordova vicinity has generated considerable local protest concerning the ability of sea otters to greatly reduce shellfish populations. Residents of Cordova use local shellfish resources, particularly clams and dungeness crabs, for subsistence food, commercial sale and recreational use. In 1981, two years after large numbers of sea otters began using the area immediately around Cordova, this area was closed to all taking of clams and crabs to protect low stocks. A slow decline was evident in dungeness stocks in nearshore waters of the Cordova area following a major uplift of the sea bed caused by the 1964 earthquake. However, with the mass movement of sea otters into Orca Inlet, Hawkins Cutoff and adjacent areas, the dungeness crab population has suffered a severe decline.

Presently boats out of Cordova fishing for dungeness crabs are utilizing the waters of Controller Bay and the area just west of Kanak Island. There is also a commercial razor clam fishery on Kanak Island. Concern has been expressed by fisherman's groups and the ADF&G about the possibility of sea otters moving eastward across the Copper River Flats and establishing a population center in the Controller Bay area.

The purpose of the survey was to document the present distribution and relative abundance of sea otters in the Cordova area including

the Copper River Flats and the Controller Bay vicinity. Future surveys are planned to detect periodic changes in distribution and abundance.

In the survey area 601 sea otters were recorded. Observations were made at 64 locations. Approximately 60 percent of the sea otters observed were concentrated in Hawkins Island Cutoff and lower Orca Inlet. A total of seven sea otters were observed along the Copper River Flats and a total of 36 sea otters were observed in the vicinity of Controller Bay.

The 601 sea otters observed represents the minimum population of the area surveyed. The total population would probably fall within a range of 800 to 1,000 sea otters.

The observation of sea otters on the Copper River Flats documents the various reports of fishermen that sea otters are utilizing to some degree the Copper River Flats, and supports the theory that sea otters may move eastward across the flats to the Controller Bay vicinity. The 36 sea otters observed in the Controller Bay vicinity was approximately a four fold increase from the number of sea otters reported by several observers approximately one year ago. However, due to the nature of the observations of a year ago no definite conclusion concerning the rate of increase can be made. For the present the only definite point is that there are significantly more sea otters in the Controller Bay vicinity than previously suspected. Due to the possible adverse effects upon shellfish stocks in the Controller Bay vicinity by increasing numbers of sea otters this situation will be closely monitored.

Sea Otter-Southern

The Southern Sea Otter Recovery Plan outlines actions needed both for recovery of the southern sea otter and to aid the Service in carrying out its responsibilities under the Act. The most immediate goal of the approved Recovery Plan is to establish at least one additional population of southern sea otters. This will reduce the possibility of decimation of the existing population from an oilspill. To assist the Service in identifying potential translocation sites, a contract was let in 1981 to map available and relevant biological, ecological and socioeconomic information for the Pacific Coast from Washington to California. The project is now nearing completion. A second draft of the final report was submitted for review in mid-December, and the final report is expected by mid-summer 1984.

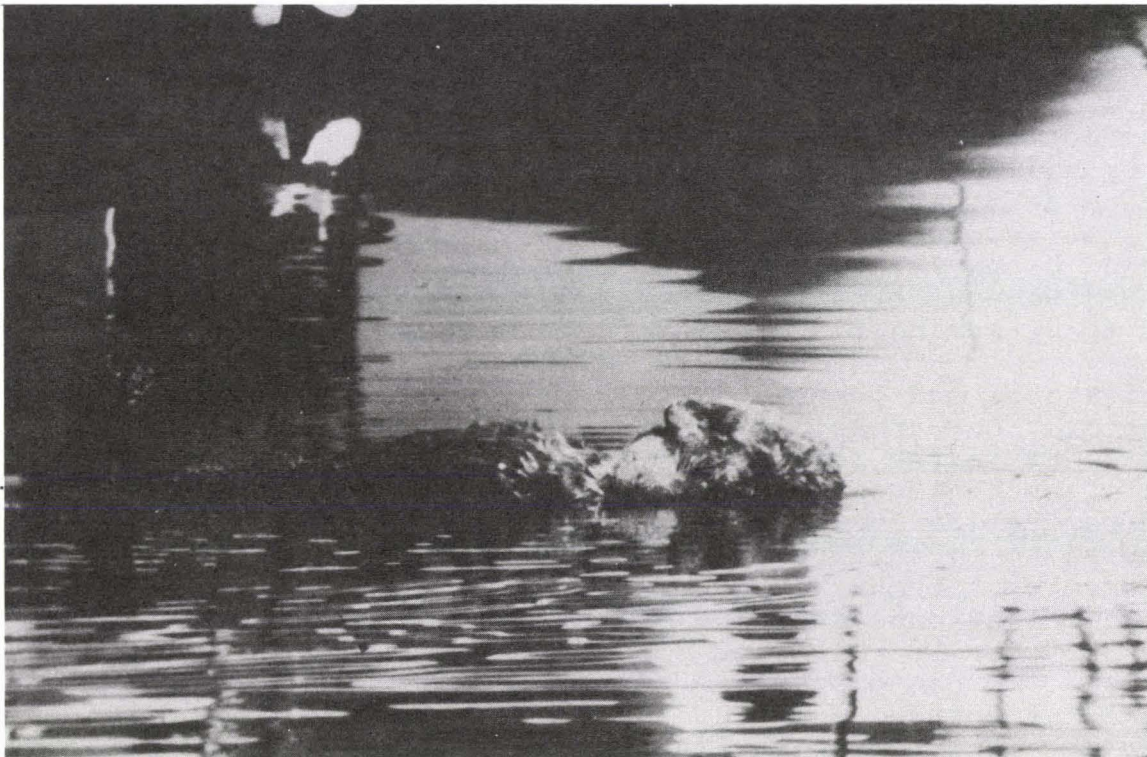
The Service also responded to numerous Congressional requests for information regarding sea otter management. Constituent concerns were related to sea otter translocation, population status and the MMPA.

The Service worked closely with the Pacific OCS Office of the MMS to develop studies for the southern sea otter. The MMS has

contracted to study the sea otter. The study involves research on the current range of southern sea otters in California and sea otter research in Alaska. The primary objective of the contract, in combination with existing Federal and State studies, is to provide additional data necessary to assess potential impacts of OCS oil and gas activities in different parts of the population's range. This study is expected to be completed in 3 years.

In 1982, the Service funded a study in Alaska to test techniques of implanting radio transmitters in sea otters. The most successful techniques will be used for the sea otter status and population dynamics study in California (as discussed above). Additional funds were allocated in 1983 to survey Alaskan waters to locate those sea otters used in the telemetry experiment.

The Service is continuing to fund the ongoing San Nicolas Island study which will yield baseline data on the nearshore biological community. Research has identified San Nicolas Island as the best translocation site. If otters are translocated to San Nicolas this information will be used to compare changes in community structure following otter introduction. The data can then be extrapolated to predict the effect of natural (or artificial) reestablishment of otters in other locations. The baseline data obtained may help determine optimum sustainable population (OSP).



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

During this reporting period, several formal and informal biological opinions were completed, none of which resulted in a jeopardy opinion. Of greatest concern to the protection and conservation of the southern sea otter were two consultations with the MMS. These were OCS lease sale No. 73 and OCS lease sale No. 80 (presently referred to as Proposed Lease Sale for February 1984). Intra-Service consultations were completed for the following permits issued by the Service: Bolt Beranek and Newman, Inc., (reference PRT 2-9740), contracted by MMS, the permittee carried out research regarding the effects on the southern sea otter of acoustical simulation of oil and gas exploration and development; and California Department of Fish and Game (CDF&G), (reference PRT 2-10207), experimental research on containment of southern sea otters. An Intra-Service consultation was also conducted for Sea World's request to capture three southern sea otters for aquarium display and research. This application (reference PRT 2-10022) is pending final disposition and, therefore, not discussed in the previous PERMITS AND REGISTRATIONS section.

In addition, the MMS and NMFS requested joint consultation for research (funded by MMS) on the effects of sounds associated with OCS exploration and development on sea otter and gray whale behavior. This project was funded by MMS and required a permit by NMFS to take (harass) gray whales within sea otter range.

During the report period, 109 sea otter mortalities were reported by salvage personnel. The salvage program is operated by the CDF&G, in cooperation with the Service, and is funded in part under Section 6 (Grant-in-Aid to the States) of the ESA. Of the 109 animals that were recovered, 9 animals were known to have died directly or indirectly by human causes (5 by gunshot wounds, and 4 by gill netting operations). A large percentage of the recovered dead otters were classified as "unknown" for cause of death. It is possible that a significant percentage of these "unknown" cases were sea otters that drowned in gill and trammel nets. Salvage efforts have increased in recent years in an effort to determine the causes of death.

Investigations and observations of gill netting in the Morro Bay and Monterey Bay areas confirmed mortality of sea otters due to entanglement in the nets. These observations indicate that the impact of entanglement of sea otters in gill nets could be very significant. The Service and the State of California are continuing to coordinate their efforts to determine action necessary to protect the sea otter. Incidental catching in gill nets and intentional shooting of sea otters is suspected to be a limiting factor to the otter population in southern California. This suspicion has caused Law Enforcement Special Agents in southern California to set up long range strategy plans to counteract the problem of illegal take. The sea otter has been identified as a priority species with regard to domestic investigations in southern California. The Special Agent

stationed in Santa Maria has monitored sea otter mortality and kept a monthly report on illegal take. Investigations have been opened on all cases of illegal take. The U.S. Solicitor has indicated he would be willing to address cases based on illegal incidental take; therefore, civil cases may be forthcoming on this issue.

The Service has been involved in a variety of population survey efforts:

1. The Service and CDF&G are developing precise ground survey techniques to index changes in the total population size.
2. The Service has continued the intensive, local area shore counts.
3. Aerial surveys of Alaskan sea otter translocations in southeast Alaska and northern Washington were conducted.

Service research for 1983 included the continuation of these ongoing studies recommended in the recovery plan: tagging sea otters; monitoring sea otter movements, relative abundance, distribution and reproduction; and determining the relationship between the otters and the kelp community.

Reports on research activities have been prepared. Several are in press: analysis of population surveys with regard to size and status of the California population; pup ontogeny and dependency; as well as the relationship of sea otters to living marine resources in California. One report has been published: Estes, J.A. and R.J. Jameson. 1983. Summary of available population information on California sea otters. Minerals Management Service, Pacific OCS Region, POCS Technical Reports, 83-11.

The Service provided funding to CDF&G through Section 6 (Grant-in-Aid to the States) of the ESA for the following activities:

1. Improve efficiency of capture techniques.
2. Identify behavioral response to artificial stimuli.
3. Investigate and monitor sea otter mortality (salvage).
4. Monitor population status and herd composition (census).
5. Study feasibility of regulating movement of sea otters (methods to contain distribution). The State's proposal for sea otter containment studies has yet to be made final.
6. Salvage/necropsy.

Service representatives attended a meeting with CDF&G to discuss oilspill contingency plan actions. Rehabilitation sites have been

established at Granite Canyon Research Lab and Diablo Canyon Nuclear Power Plant. Potential rehabilitation sites, such as the University of California at Santa Cruz, and Pacific Gas and Electric Power Plants, were discussed and recommendations for these sites were made to the State. CDF&G is responsible for protection and management decisions regarding State wildlife in the event of an oil spill. While CDF&G was in the process of updating their oilspill contingency plan, the State legislature mandated the development of a Toxic Substance Incidence Response Plan. The determination was made that the Oilspill Contingency Plan would be under this umbrella plan. Both plans are currently being developed.

The ESA, as amended, requires the Service to conduct a review of each listed species at least once every 5 years. The southern sea otter was included in the September 27, 1982, Notice of Review in the Federal Register. The Service has received over 2,300 comment letters regarding the 5-year status review of the southern sea otter. Status review conclusions are expected in May 1984.

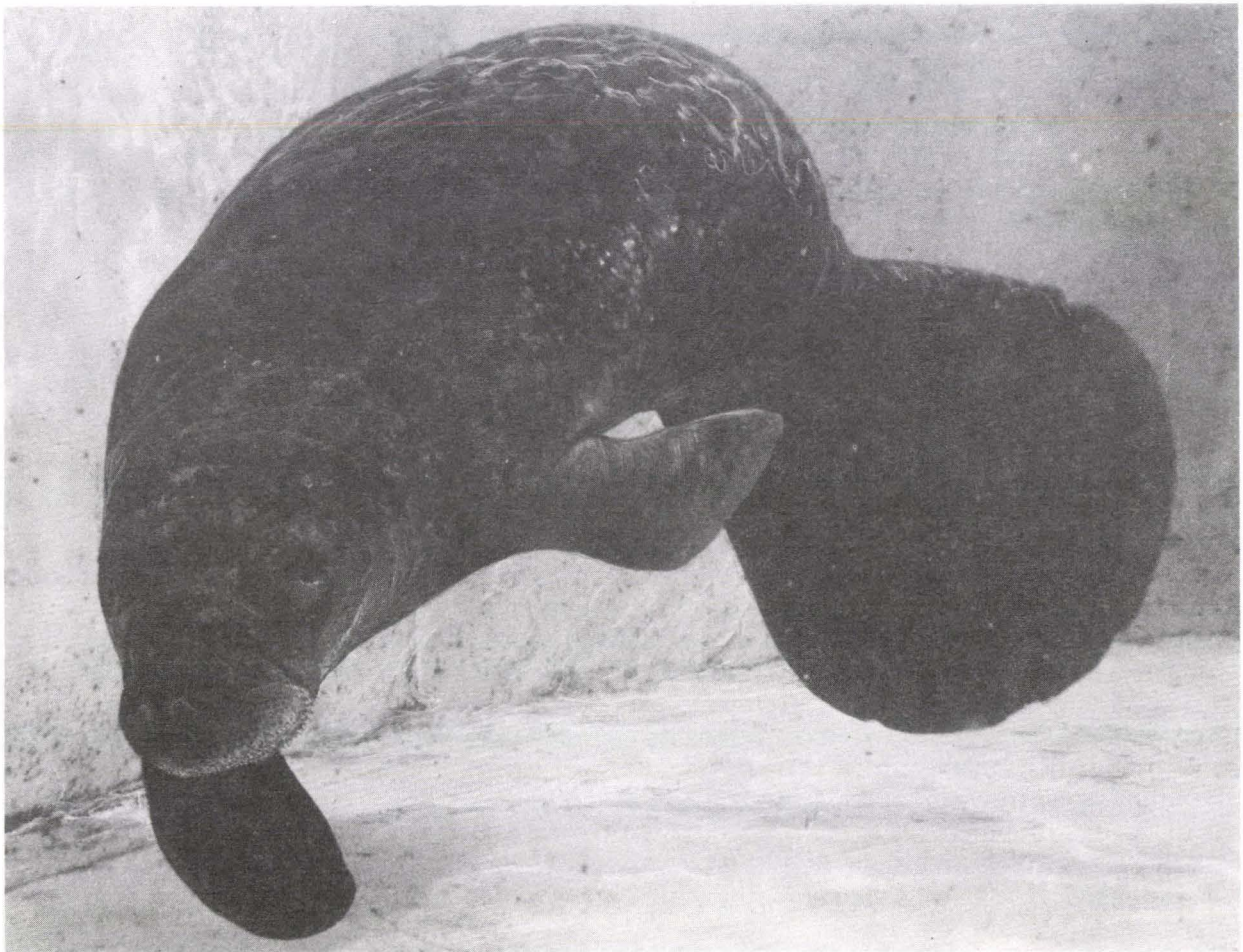
Manatee

There were 80 manatee deaths recorded in 1983. Of the 78 animals recovered for necropsy, the Service and the University of Miami salvage personnel determined the cause of death as follows: thirty-one (39 percent) died of undetermined causes (many of the carcasses were found in an advanced state of decomposition); 14 (18 percent) were killed by collisions with boats and barges; 7 (9 percent) were killed in flood gates and navigational locks (including 4 which drowned in a culvert near the Miami Airport); 5 (6 percent) died of other human-related causes; and 5 (6 percent) died of natural causes. Eighteen (23 percent) dependent calves were found dead.

A variety of materials was collected from carcasses for study by various cooperating scientists. External measurements, photographs and notes were taken for each salvaged carcass and the complete skeletons were cleaned and sent to museums. A detailed manual of procedures for manatee carcass salvage and necropsy was completed in 1983, as was an analysis and summary of mortality patterns for the 5-year period ending March 31, 1981. The Service found that boat-caused deaths are highest in eastern Florida and that manatees are susceptible to cold winter weather, when juveniles and subadults are most likely to succumb. Parasitism has been carefully documented, and one case of death due to a protozoan endoparasite was diagnosed. The environmental contaminant status was determined for organochlorines, lead, mercury and cadmium, none of which occurred at levels indicative of serious problems to manatees. Copper concentrations in livers of manatees may increase to problem levels in areas where large amounts of copper-based herbicides are used. Deaths due to entrapment in flood control devices were most prevalent in southeastern Florida, although recent changes in operating procedures seem to have substantially reduced mortality from this source.

Coordination with the Corps of Engineers (COE) is continuing in an effort to minimize manatee mortality in water control structures and navigation locks operated by that agency. Protective screening has been installed on one structure and is scheduled for installation on a second along the Okeechobee Waterway. A protective screen for Rodman Dam on Lake Ocklawaha is being fabricated for installation. In an analysis of manatee mortality figures conducted by the Florida Cooperative Fish and Wildlife Research Unit (FCFWRU) in Gainesville, 14 manatees were found to have died in navigational locks and water control structures since 1980.

Although the COE has cooperated with the Service in investigating lock/water structure mortality in the past, the seven deaths in 1983 are testimony to the continued presence and extent of this problem. The Service notified the COE that these losses were unacceptable, and requested a summary of all actions implemented to date and those the COE plans to take to reduce manatee mortality at these facilities.



A manatee in a Florida aquarium. U.S. Fish and Wildlife Service photo by the Miami Seaquarium, Florida.

Under contract with the FCFWRU, the Service funded Margaret Kinnaird to conduct "The Site Specific Mortality Reduction Study for Brevard County, Florida," (see 1982 Annual Report). Brevard County and the lower reaches of the St. Johns River were identified as areas of major concern for boat/barge-related manatee mortality. The study was completed in 1983, resulting in the preparation and distribution of the following four reports: "Manatee Use of Two Power Plant Effluents on the St. Johns River in Jacksonville, Florida"; "Aerial Census of Manatees and Boats Over the Lower St. Johns River and the Intracoastal Waterway in Northeastern Florida"; "Evaluation of Potential Management Strategies for the Reduction of Boat-Related Mortality of Manatees"; and "Site-Specific Analysis of Factors Potentially Influencing Manatee Boat/Barge Mortality."

The Service also funded studies to develop manatee abundance and distribution surveys. In 1983, the second year of a 3-year study being conducted by Jane Packard under contract with the FCFWRU, four reports were prepared. "Censusing Manatees: A Report on the Feasibility of Using Aerial Surveys and Mark and Recapture Techniques to Conduct a Population Survey of the West Indian Manatee," provides an overview to guide future research efforts. "Analysis of Manatee Aerial Surveys: A Compilation and Preliminary Analysis of Winter Aerial Surveys Conducted in Florida Between 1977 and 1982," contains survey data and examines the use of an analysis of covariance technique to control for the effect of temperature on survey results, in order to test for changes in manatee counts between years. "Observability Correction Factors for Aerial Surveys of Manatees," examines the use of radio transmitters to estimate the proportion of manatees present, but not sighted, in a survey area. "Sample Size Estimates: A Preliminary Analysis of Sample Sizes Required for Mark-Recovery and Mark-Resighting Studies of Manatees (Trichechus manatus) in Florida," provides information needed for planning mark-recovery studies.

Through a Cooperative Agreement with the FCFWRU, the Service funded Jane Packard to prepare a draft "Proposed Research/Management Plan For Crystal River Manatees," (see 1980 and 1982 Annual Reports). The draft research/management plan, scheduled for distribution and review in early 1984, consists of three volumes: an illustrated executive summary, the technical plan in loose-leaf format, and a compendium of background material. Land-use planning techniques were used to map manatee habitat, human activities and to examine the overlap. Throughout the project, emphasis has been given to encouraging local participation and responsibility in making land-use decisions that affect manatees and their habitat. Local citizens and city, county, regional and State agencies contributed information used to define problems and opportunities for resolution of these problems.

The Service conducted studies of basic reproductive and behavioral characteristics of manatees individually recognized by unique scar patterns. These studies are now culminating in valuable information germane to understanding reproductive characteristics in manatee population biology. At their most prolific pace, manatees can give birth at five years of age, reproduce every two to three years and rarely twin. Calves remain in close contact with their mothers and depend on them for nursing for up to two years. Offspring continue to recognize their mothers through underwater communication sounds for up to four years, and will move little beyond the maternal home range during their first year of independence.

Research by the Service has concentrated on the distribution, status and movements of manatees in northwestern Florida wintering at Crystal River, and on compiling a statewide photographic catalog of distinctly scarred individuals. Based on individually known manatees and aerial surveys, the Crystal River winter population has grown to a peak of about 132 individuals and utilizes the Gulf Coast from Horseshoe Cove northwest of the Suwannee River south to the Chassahowitzka River. The ecosystem requirements of manatees remain poorly understood from the standpoint of food resources, but a microscopic key to the aquatic plants of Florida was completed this year and should lead to an increased understanding of food habits through analysis of stomach contents and fecal samples.

During the reporting period, the Service continued to develop manatee tagging and tracking technology. The full determination of ecosystem relationships will be dependent on development of a saltwater radiotracking technology. Floating, tethered radio transmitters were applied to two free-ranging manatees at Crystal River in the winter. These animals were tracked into the Gulf of Mexico north to the Suwannee River during the summer. No difficulties have arisen and slight modifications to the attachment were made and tried on captive manatees with success. During the reporting period the DWRC's Permit (reference PRT 2-8430) was amended to authorize the attachment of the modified transmitter assemblies to an additional twenty free-ranging manatees in Citrus and Levy Counties.

The Service continues to support the Manatee Rescue Contingency Plan, conducted through Cooperative Agreements with Sea World and Miami Seaquarium. The agreements provide for rescue services and rehabilitation for injured or distressed manatees. The Service has renewed the agreements with these two organizations for 1984.

In 1983, the Service established a third manatee salvage/necropsy team under the direction of the FCFWRU and headquartered on the J.N. "Ding" Darling National Wildlife Refuge, Sanibel Island. This team will provide manatee rescue services in the southwest section of the State, from the Tampa Bay area south to Everglades City.

The Florida Department of Natural Resources (DNR), through the Florida Marine Patrol, continued to operate the toll-free "Manatee Hotline" whereby people in Florida can report observations of injured, distressed or dead manatees. However, as a result of the rapid development of Florida's environment, the DNR announced in March of 1983 that the Manatee Hotline was being expanded to a "Resource Alert Watch Line." In addition to continued reporting of manatees, citizens are being enlisted to report all infractions against the State's public resources. The "Watch Line" will function similar to the old "Hotline" for manatees, that is a network system involving the Marine Patrol District Offices which dispatch officers to investigate manatee reports. If the reports are valid, Marine Patrol notifies the Service's Jacksonville Field Station of injured or distressed animals or it tows and secures the carcasses of dead animals and notifies one of the three salvage/necropsy teams.

During the report period, the Service conducted 48 informal and five formal endangered species consultations for actions that might impact the West Indian manatee. Consultations are required under Section 7 of the ESA and may be requested for any activity requiring Federal permits or Federal funding before implementation. The results, although not binding, must be considered before decisions are made. Consultations result in biological opinions which are issued by the Service's Washington Office, Regional Offices and/or Field Stations. Since manatees are distributed throughout most of Florida's estuaries, bays and coastal waters, a considerable number of Federal actions affect these marine mammals. Four of the five formal consultations conducted during the reporting period were with the COE and concerned proposed construction or expansion of marina facilities. One consultation was with the Service concerning an amendment to the DWRC Permit (reference PRT 2-8430). The Service issued one finding of "will promote the conservation," one finding of "is not likely to jeopardize" and three findings of "is likely to jeopardize" the continued existence of the West Indian manatee.

The Service regularly reviews and consults with the COE on a number of marina permits issued pursuant to Section 404 of the Clean Water Act (see 1982 Annual Report). A typical example of a consultation with the COE concerned the issuance of a permit for the expansion of marina facilities owned and operated by the City of Ft. Pierce. The existing marina is located adjacent to a power plant with boat ramps and docking facilities situated in the plant's warm water discharge area. The Service issued an "is likely to jeopardize" biological opinion, and provided two alternatives to the project proposal as follows: (1) the city would be allowed to proceed with the proposed marina expansion providing the ramp and docking facilities were removed from the warm water discharge area; and (2) the design for the proposed expansion must be modified to allow a "passageway" for manatees to move between the old and new marina facilities.

The Florida Chapter of the Nature Conservancy exercised their option to purchase 33.12 acres of islands in Kings Bay, Crystal River, as indicated in the 1982 Annual Report. In 1983, the Service purchased this acreage from the Nature Conservancy, and established the Crystal River National Wildlife Refuge. The Service is currently negotiating with the present owner of the water bottoms for the purchase of this property.

The DNR held a series of public hearings in connection with the establishment of boat speed zones and is actively working on a manatee warning sign installation/replacement program. The DNR, Florida Power and Light Company (FPL), and the Jacksonville Field Station are actively involved with manatee information and education programs. These efforts include the distribution of leaflets, booklets, brochures and, in the case of the FPL, the distribution of manatee bumper stickers and the presentation of educational programs at various locations around the State. On September 20, 1983, the Secretary of the Department of the Interior presented the FPL with the Department's distinguished Conservation Service Award. The citation noted that the efforts of FPL have had a major impact in assuring the continued survival of the bald eagle, West Indian manatee, American crocodile, and several species of sea turtles.

In recognition of the need for coordination of Statewide manatee activities, the DNR hired a manatee coordinator (see 1981 and 1982 Annual Reports) in March 1983. The Service contributed \$50,000 in partial support of this position. Since October 1, 1983, the DNR has been the sole source of funds for this position.

Dugong

Dugongs occur in limited numbers throughout Indonesia including Palau Island, Trust Territories of the Pacific Islands. This island group has opted for Republic status under the Compact of Free Association between the United States of America and the Trust Territories.

The Service has executed a Memorandum of Understanding (MOU) with the Republic of Palau providing for technical assistance in resource conservation. An item in the MOU is the provision for review of research proposals. This provision was included at the specific request of the Republic of Palau. They do not presently have the staff to make these evaluations or to conduct baseline studies of their resources.

Aerial surveys and citizen interviews designed to determine the distribution and status of dugongs around the Island of Palau were completed. The Service continues to assemble literature on the distribution and status of dugongs.

Traditionally, the dugong had high cultural significance to the Palauans, as well as affording a good source of protein. A

bracelet made from the atlas vertebra of a dugong could be worn only by the chiefs of villages or municipalities, and as a consequence, the dugong was effectively conserved by the chief. At the present, the role of traditional chiefs has been greatly diminished resulting in little protection for this species.

Modern technology (speed boats, explosives, spear guns, etc.) has also had a tremendous impact on the taking of this species. The limited resources of the Republic of Palau are insufficient to promote protection of the dugong from illegal taking.

Unregulated taking of the dugong has become critical. There is substantial disagreement among Palauans and outside researchers on the number of dugongs present in Palau. Aerial surveys made by Brownell, Anderson, Owen and Ralls in 1977 and 1978 led them to estimate that the population consisted of not more than 50 individuals, substantially less than estimates offered by most local residents. Brownell et al., speculated that even if there were 150 animals, the estimated poaching rate of 20 dugongs per year probably exceeded annual recruitment. Therefore, the Palau dugong population could be exterminated by the end of this century.

Service efforts have been directed towards developing a census methodology that is understood and accepted by the Palauans. Without this acceptance, any results derived will be suspect. However, this effort has not been a sustained one due to insufficient resources. An effective methodology which incorporates the observations and concerns of the Palauans is essential. Unless the fragile nature of this isolated dugong population can be clearly demonstrated to the Palauans, any effort to promote conservation of the dugong will be virtually ineffectual.

Hawaiian Monk Seal

Endangered species funding in 1983 for the Hawaiian monk seal was utilized in support of the Service's Field Station at Tern Island, French Frigate Shoals, and for participants on the Monk Seal Recovery Team. A final Hawaiian Monk Seal Recovery Plan was approved March 24, 1983. Service activities relating to monk seals focused on management studies at French Frigate Shoals and on cooperative projects with the NMFS at other islands and atolls in the Hawaiian Islands National Wildlife Refuge. Data analysis continued from past field work.

Refuge staff operated the Tern Island facility throughout 1983, and, in so doing, provided an opportunity to continue management studies initiated in 1979. The seal population using Tern Island was monitored via surveys conducted every four days. The location of all animals identifiable by scars or other marks was recorded. Monthly atoll surveys of other islets were also made by boat from Tern Island. A Service volunteer at Tern Island assisted in census and individual identification of seals that haul out at Tern Island.



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

Seal surveys at French Frigate Shoals in 1983 also included continuation of an aerial photo project begun in October 1981. During supply flights to Tern Island, all sandy islets at French Frigate Shoals were photographed using 35mm color slide film. The objectives of this continuing project are to monitor abundance and distribution of seals within the atoll, to derive an estimate (or index) of pup production, to document age (size) structure of the population, and to monitor habitat conditions and habitat selection by seals. The interval between flights was changed from 30 to 36 days in October 1982, to coincide with the estimated average weaning period in an effort to minimize double-counting of pups on consecutive flights.

NMFS and FWS data for the October 1982 - September 1983 period indicate that pup production was down from the previous year (estimated 90 vs. 100 pups). Aerial survey data for 1983 will be analyzed in 1984 and compared to the previous two years of the project.

The Service completed a disease contingency plan for remote islands and initiated an Hawaiian Islands National Wildlife Refuge Master Planning Project. This project is scheduled for completion in 1984. The master planning project will develop and review long range resource management alternatives, with particular emphasis on French Frigate Shoals, in view of its importance to seals and green sea turtles.