

Administration of the
MARINE MAMMAL PROTECTION ACT OF 1972
Annual Report
January 1, 1982 - December 31, 1982

Prepared by
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U.S. Fish and Wildlife Service
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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

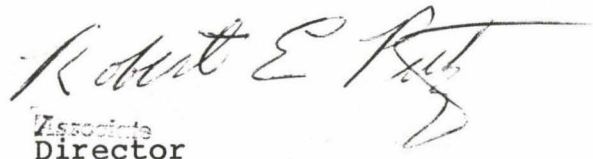
MARINE MAMMAL PROTECTION ACT

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, 1982, to December 31, 1982, on the administration of the Act with regard to those mammals.

Issued at Washington, D.C., dated JUN 20 1983


Associate
Director

ADMINISTRATION OF THE MARINE MAMMAL PROTECTION ACT OF 1972

January 1, 1982 - December 31, 1982

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, walruses, 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.

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>	Sea otter	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 manatus</u>	West Indian manatee	Yes	Endangered
<u>Trichechus inunguis</u>	Amazonian manatee	Yes	Endangered
<u>Trichechus senegalensis</u>	West African manatee	Yes	Threatened

*Southern population (California) only.

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, 1982 - December 31, 1982) covered by this report, however, overlaps FY 1982 and FY 1983, and funds authorized (Auth.) and appropriated (Appr.) for both fiscal years are shown below (in \$000).

Reporting Year Funding (January 1 to December 31, 1982)

	<u>MMPA Section 114</u>		<u>Totals</u>	
	<u>Auth.</u>	<u>Appr.</u>	<u>Auth.</u>	<u>Appr.</u>
FY 82	\$1,600.0	\$1,600.0	\$1,600.0	\$1,600.0
FY 83	1,760.0	1,600.0	1,760.0	1,600.0

The funding breakdown is as follows:

	<u>FY 82</u>	<u>FY 83</u>
<u>Marine Mammal Protection Act</u>		
Research		
Sea otter	\$245.0	\$227.0
Walrus	72.0	72.0
Polar bear	222.0	241.0
Manatee	283.0	288.0
Dugong	11.0	11.0
Monk seal <u>1/</u>	11.0	6.0
	<u>\$844.0</u>	<u>\$845.0</u>
Management		
Permit activities	\$ 22.0	\$ 22.0
Law enforcement activities	465.0	465.0
Other management activities <u>2/</u>	363.0	363.0
	<u>\$850.0</u>	<u>\$850.0</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).

2/ Funds spent in excess of the \$1.6 million appropriated under the MMPA were appropriated under other legislative authorities (e.g. the National Wildlife Refuge System Administration Act of 1966) and spent for the protection and management of marine mammals.

	<u>FY 82</u>	<u>FY 83</u>
<u>Endangered Species Act</u>		
Section 6 (Grants-to-States)		
California - Sea otter	\$ 0.0	\$ 37.5
Florida - Manatee	0.0	0.0
	<u>\$ 0.0</u>	<u>\$ 37.5</u>
Section 15 (Carry-Out-Responsibilities of Act)		
Research		
Sea otter	\$ 73.0	\$ 71.0
Manatee	50.0	176.0
	<u>\$123.0</u>	<u>\$247.0</u>
Management (Protection, Recovery)		
Sea otter	\$144.1	\$120.0
Manatee	183.6	153.7
Monk seal <u>1/</u>	51.5	51.5
	<u>\$379.2</u>	<u>\$325.2</u>

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Polar bear on ice flow.

SUMMARY OF 1982 PROGRAM

OUTER CONTINENTAL SHELF (OCS) OPERATIONS AND ENVIRONMENTAL STUDIES

The FWS 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.

The second reoffering sale was held that included unleased tracts from Lower Cook Inlet/Shelikof Strait (Sale 60), Central California (Sale 53), South Atlantic (Sale 56) and Mid Atlantic (Sale 59). Stipulations adopted by the Secretary for each individual sale to protect or recognize important marine mammal areas remained intact in this combined sale.

Final sale notice for the Eastern Gulf of Mexico Sale 69, part II, advised potential bidders of the West Indian manatee in coastal waters and laws under which the manatees are protected.

ECOLOGICAL CHARACTERIZATIONS OF U.S. COASTAL AREAS

The Division of Biological Services (DBS) is continuing to manage a group of studies for the Minerals Management Service (MMS), in support of OCS leasing, known as ecological characterizations. This ecological information base is designed to assist decisionmakers in comprehensive coastal resource planning and management. Each of the characterizations 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. Maps on marine mammal distributions are also included. Characterizations have been completed for the following areas: Chenier Plain coastal ecosystems of Louisiana and Texas; the Pacific Northwest coastal regions; the rocky coast of Maine; the sea islands and coastal plain of South Carolina and Georgia; the central and northern California coast; the Mississippi Deltaic Plain region; and the Texas Barrier Islands. Two other characterizations are currently underway in the northeastern Gulf of Mexico and the southwestern Florida and Keys region.

The DBS completed the third coastal ecological inventory. The inventory covered 183,400 square miles of Florida, Georgia, Alabama, Mississippi, Louisiana and Texas and their adjacent coastal waters. The inventory's 22 maps depict 538 important plant and animal species, including marine mammals. In addition

to the map series, a 191 page narrative report, "Gulf Coast Ecological Inventory--User's Guide and Information Base," is also available. The report provides detailed explanations and technical information about the ecological data plotted on the maps.

During this report period a workshop was held to discuss the information needed to assess impacts of OCS development on cetaceans and sea turtles in the Gulf of Mexico. The DBS cooperated with the MMS to conduct the workshop. A summary of discussions will be available from the MMS early in 1983.

Results of aerial surveys for marine mammals, birds and turtles of the Gulf of Mexico and nearby Atlantic waters are being prepared for publication during the spring of 1983.

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 82 is summarized below.

Service Conducted

1. Polar bear
 - a. Identify areas critical for high denning success and general movement patterns of adult females.
 - b. Produce a model that will simulate population dynamics of Northern Alaska polar bear population.
 - c. 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. Determine biology and management needs for the California sea otter.
 - c. Determine interactions between sea otters and the nearshore community.
 - d. Determine status of marine otter.
 - e. Determine occurrence and habitat survey of sea otters in Baja California.

- f. Determine baseline data for the San Nicolas Island ecosystem.
3. Walrus
 - a. Evaluate selected areas for potential use for population assessment of walruses and to investigate hauling out patterns.
 4. Hawaiian monk seal
 - a. Determine 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. Define ecosystem relationships of the manatee.
 - d. Determine causes of mortality and salvage stranded manatees.
 - e. Develop manatee tagging and tracking technology.
 - f. Determine parasites and environmental contaminants in manatees and dugongs.
 - g. Determine basic sensory and physiological parameters of manatees.

Contracts

1. San Nicolas Island (California) survey for baseline data and as a potential sea otter translocation site. Principal investigator: W. Doyle, University of California, Santa Cruz (\$106,772).
2. Experimental radiotransmitter implant studies on the sea otter. Principal investigator: D.B. Siniff, University of Minnesota (\$20,000).
3. The development of techniques to analyze the diet of the West Indian manatee. Principal investigator: C.A. Woods, University of Florida (\$8,008).

ENFORCEMENT

The Service's Division of Law Enforcement investigates known, alleged or potential violations of the Act involving the 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.

One hundred and ninety four marine mammal investigations were pending at the start of the reporting period, and Service Agents initiated 140 new investigations. A total of 125 marine mammal investigations were closed, while 209 were pending at the end of the period. Civil penalties totalling \$2,026 were assessed and collected during the period. Marine mammal parts and products with an estimated value of \$15,367 were also forfeited as part of these civil actions. Thirteen subjects criminally convicted paid fines totalling \$30,500 and were sentenced to 2,655 days of jail time, as well as 7,610 days of probation.

Alaska Law Enforcement Actions

Undercover investigations of the illegal trade in marine mammal parts continued at a much reduced scale during 1982. A resident of Nome was arrested in Juneau after he sold polar bear paws, a complete polar bear hide and walrus ivory to an undercover agent. He was sentenced to 60 days in jail and placed on 2 years' probation by the U.S. Magistrate in Juneau.

Charges against a Kodiak Island man are pending in U.S. District Court as a result of his offer to sell three sea otter hides to an Undercover Agent.

An Anchorage pawn shop owner was convicted for selling raw walrus ivory. She was fined \$2,000 and placed on 2 years' probation.

U.S. District Court, Anchorage upheld a \$7,000 civil penalty assessment against a Nome man for illegal possession of a polar bear hide. The defendant appealed to the Ninth Circuit Court of Appeals. The Appellate Court affirmed the U.S. District Court decision.

The U.S. District Court forfeited 36 walrus tusks to the Service in a civil proceeding. Three other forfeiture proceedings involving 79 walrus tusks and 14 sperm whale teeth and an \$8,000 civil penalty are pending.

Civil penalty proceedings have been initiated against a non-native man in Sitka accused of buying raw walrus ivory, carving it and selling it to local gift shops. Search warrants were served on six Sitka gift shops and numerous carvings were seized. Civil penalty proceedings to obtain forfeiture of the items have been initiated.

Alaska Enforcement Summary

1. Active Investigations:
 - a. Walrus 53
 - b. Polar bear 13
 - c. Sea otter 10
2. Closed Investigations:
 - a. Walrus 27
 - b. Polar bear 3
 - c. Sea otter 3
3. Cases Submitted for Civil Penalty:
 - a. Walrus 27
 - b. Polar bear 3
 - c. Sea otter 1
4. Civil Penalties:
 - a. Fourteen people involved in \$4,200 civil penalties, \$5,200 forfeiture value.
5. Criminal Penalties:
 - a. Seven people involved in \$41,500 penalties, 1,395 days of jail, 1,285 days suspended, 110 days served, thirteen years and eleven months probation.

PERMITS AND REGISTRATIONS

The MMPA prohibits the taking or importing of marine mammals and marine mammal products although exceptions may be made under permit for scientific research or public display. Research and public display permits may not be issued, however, unless 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 the marine ecosystems of which they are a part. Permits may also be issued to authorize the buying and 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 and public display, and to issue Registered Agent and Registered Tannery permits. Section 104 provisions are implemented in Title 50 of the Code of Federal Regulations -- 50 CFR 18.23(d) for Registered Agent and Registered Tannery permits and 50 CFR 18.33 for Scientific Research or Public Display permits.

During calendar year 1982, four new scientific research permits were issued, two were denied, one was amended and four were renewed. One new permit was issued for public display. In addition, three new Registered Agent permits were issued and one other was renewed.

The following is a brief description of permit actions taken in 1982:

Scientific Research Permits

New Permits:

- PRT 2-8663, Dr. John R. Fletemeyer, Oceanographic Laboratory, Nova University, Dania, Florida. The permittee is authorized through December 31, 1983, to take (harass) West Indian manatees by use of a side scan sonar to detect manatee movements. The permittee is also permitted to photograph manatees at close range to establish an identification record of individual animals.
- PRT 2-9155, Dr. Robert Cimberg, VTN Oregon, Inc., Wilsonville, Oregon. The permittee is authorized through July 31, 1983, to capture up to 50 sea otters from the Bristol Bay area of Alaska for scientific research, primarily to tag animals and take fecal samples.
- PRT 2-9246, Dr. Donald R. Siniff, University of Minnesota, Minneapolis, Minnesota. The permittee is authorized through September 30, 1983, to capture, tag and collect blood samples from up to 40 sea otters in Alaska and 20 sea otters in California. In addition, 20 of the Alaskan otters and five of the California otters may be radio-tagged under certain permit conditions.
- PRT 2-9740, Mr. Charles Malme, Bolt Beranek and Newman, Inc., Cambridge, Massachusetts. The permittee is authorized to take (harass) sea otters in California by means of discharging recorded sounds of oil and gas exploration and development activities from research vessels to determine the effect the artificial noise has on otters.

Permit Denials:

- PRT 2-8988, Dr. Juan Carlos Jimenez, Marine Mammal Research Foundation, Bayamon, Puerto Rico. For lack of adequate justification, Dr. Carlos Jimenez was denied a permit to collect dead West Indian Manatees for scientific research. No appeal was submitted.

- PRT 2-9221, Dr. Ralph A. Nelson, Carle Foundation Hospital, Urbana, Illinois. Dr. Nelson was denied a permit to import two polar bears from Canada to be used in biomedical research at the Carle Foundation Hospital. The denial was issued because no facilities had been built to hold and maintain the bears. Dr. Nelson, however, appealed the denial in November of 1982 but a decision on the appeal was still pending at the end of 1982.

Permit Amendments:

- 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 free-floating radio transmitter packages on tethers attached to peduncle belts.

Renewed Permits:

- PRT 2-3724, Dr. Bob Brownell, Marine Mammal Section, Denver Wildlife Research Center, San Simeon Field Station, San Simeon, California. The permit has been renewed through March 31, 1985, and authorizes the capture of up to 464 polar bears in Alaska for marking, radio-telemetry and blood sampling.
- PRT 2-6330, Dr. Bob Brownell, Marine Mammal Section, Denver Wildlife Research Center, San Simeon Field Station, San Simeon, California. This permit has been renewed through December 31, 1984, and authorizes the capture of up to 255 Pacific walrus in Alaska for marking, tagging and radio-telemetry.
- PRT 2-6669, Dr. Bob Brownell, Marine Mammal Section, Denver Wildlife Research Center, San Simeon Field Station, San Simeon, California. This permit has been renewed through December 31, 1983, and authorizes the capture of up to 42 sea otters in California for tagging, blood sampling, and salvaging dead animals and caring for injured ones.
- PRT 2-6354, Alaska Department of Fish and Game, Juneau, Alaska. This permit has been renewed through December 31, 1983, and authorizes the sacrifice of up to 60 Pacific walrus from Bristol Bay, Alaska to determine the feeding habits of these animals.

Public Display Permits

New Permits:

- PRT 2-8941, Izu-Mito Sea Paradise Aquarium, Numazu, Japan.

The permittee is authorized through December 31, 1983, to capture six sea otters from Prince William Sound, Alaska for public display.

Registration Permits

New Permits:

- PRT 2-8462, Mr. Harry Wysocki, Wysocki's Taxidermy and Leather, Seattle, Washington. Mr. Wysocki is authorized to receive parts or products of walrus and polar bear from Alaskan natives or other marine mammal Registered Agents.
- PRT 2-8841, Mr. Jack Coughlan, Anchorage, Alaska. Mr. Coughlan is authorized to receive or acquire parts or products of walrus and polar bear from Alaskan natives or other marine mammal Registered Agents.
- PRT 2-8929, Mr. Lawrence R. Madosik, Alaska Wildlife Studio, Anchorage, Alaska. Mr. Madosik is authorized to receive or acquire parts or products of Alaskan sea otters, walrus and polar bear from Alaskan natives or other marine mammal Registered Agents.

Renewed Permits:

- PRT 2-6479, Mr. Darrell Farmen, D. & C. Expeditors, Inc., Anchorage, Alaska. This Registered Agent permit for walrus, polar bear, and sea otter was renewed through July 31, 1984.

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 Endangered Species Act, 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.

Service representatives participated in an international conference on Marine Science in the Red Sea at Hurgada, Egypt,

April 24-28, 1982, on the occasion of the 50th anniversary of the Marine Biological Station at Al Ghardaga. About 100 representatives from Egypt, Israel, the United States, Italy, Pakistan, India and Saudi Arabia attended to discuss cooperative research activities, protection of habitats and strengthening of existing institutions. Carryover funds were also spent on observations and collections of data of dugongs in the Red Sea.

US-USSR Environmental Agreement - Marine Mammal Project

The Service, NMFS, USSR Ministry of Fisheries and USSR Academy of Sciences have developed jointly an extensive laboratory and field research program to promote the conservation and effective management of marine mammals of importance to both countries. Under the auspices of the bilateral US-USSR Environmental Agreement, American and Soviet scientists took part in six long-term exchanges totalling 11 man-months during 1982.

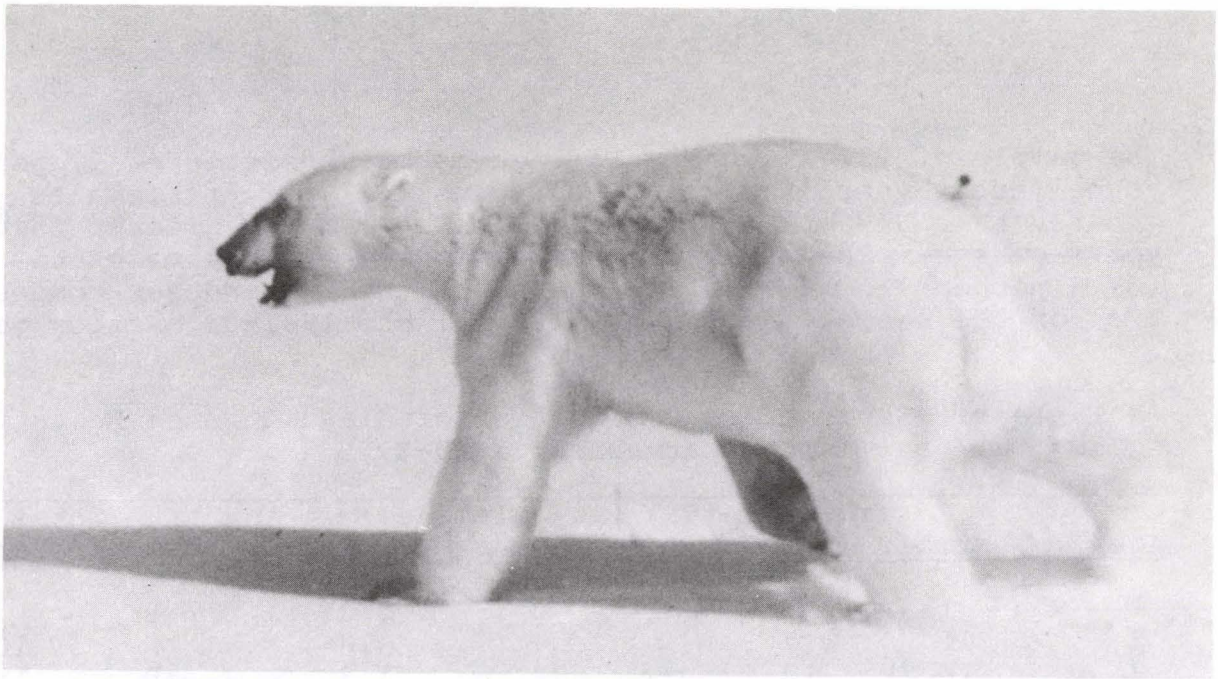
In July-August the third annual U.S.-Soviet walrus and bowhead whale survey was conducted from aboard the Soviet research vessel "Entuziast." Six American scientists participated in the expedition, and copies of their final report are available from the Service's International Affairs Staff. Other visits by U.S. specialists to the USSR in 1982 focused on osteological work in the walrus collections at the marine mammals laboratory in Magadan, and on marine mammal helminthological parasite research at Simferopol State University.

STATUS REPORTS

Polar Bear

Harvest surveys continued in the fall of 1981 and winter of 1982 on polar bears taken by natives off the Alaskan coast for subsistence purposes. The primary objectives of the survey were to determine the numbers, sex and age composition of the polar bear harvest. Alaska Department of Fish and Game (ADF&G) sealing certificates were utilized as were ADF&G metal interlocking tags for affixing to the skull and hide. Cranial measurements were used to correlate age by sex as an additional check to hunter provided information. Two vestigial post canine teeth were extracted for later sectioning and age determination through microscopic reading of annual rings (annuli). Date of harvest, location of harvest, name of hunter, caliber of rifle, meat utilization and any incidental observations were recorded.

The documented minimum polar bear harvest for 1980-81 and 1981-82 hunting seasons were 106 and 90, respectively (Table 1). A minimum of 21 bears were harvested from January 1 to July 30, 1980, according to ADF&G records. These have been included in the pooled sample of 217 killed bears. Of this total: 134 (61.8 percent) represent bears for which complete sex and age



Darted polar bear.

information was obtained; 52 (23.9 percent) represent bears for which adequate sex and/or age class information was obtained; and 31 (14.3 percent) represent bears known to have been killed for which sex and age information is unknown.

Table 1. Alaskan Polar Bear Harvest by Village, 1980-82.

<u>Village</u>	<u>Jan. 1980 to July 1980 ADF&G Data</u>	<u>July 1980 to May 1981 USFWS</u>	<u>May 1981 to March 1982 USFWS</u>
Kaktovik	-	23	1
Barrow	3	7	4
Nuiqsut	1	-	-
Wainwright	3	8	13
Pt. Lay	-	1	4
Pt. Hope	-	9	7
Kivalina	-	-	1
Shishmaref	-	29	22
Wales	5	6	11
Little Diomede	-	1	3
Gambell	2	6	1
Savoonga	7	16	21
Nome	-	-	1
Emmonak	-	-	1
Total	21	106	90

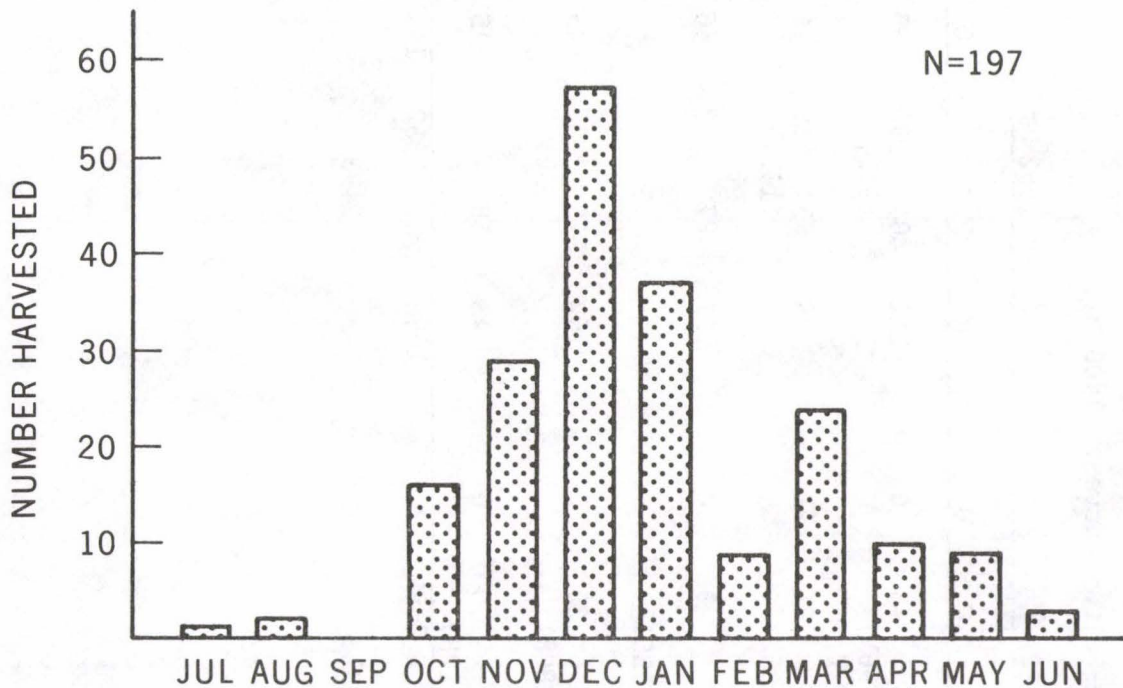
The sample of 134 known sex and age bears consisted of 27 percent young (cubs, yearlings and 2-year olds), 31 percent females greater than 3 years of age and 42 percent males greater than 3 years of age. The sex ratio was 81 (60.4 percent) males to 53 (39.6 percent) females. Table 2 shows the age and sex composition of the harvest during the 1980-81 and 1981-82 hunting years.

Table 2. Sex and Age Composition of Alaskan Polar Bears Harvested, 1980-82.

Age	Male		Female		Total		
	Number	Percent	Number	Percent	Number	Percent	
1	1	.7	0	0.0	1	.7	
2	10	7.5	4	3.0	14	10.5	
3	14	10.4	7	5.3	21	15.7	
4	13	9.8	1	.7	14	10.5	
5	7	5.3	1	.7	8	6.0	
6	8	6.0	4	3.0	12	9.0	
7	4	3.0	5	3.7	9	6.7	
8	8	6.0	3	2.2	11	8.2	
9	6	4.5	5	3.7	11	8.2	
10	1	.7	2	1.5	3	2.2	
11	0	0.0	3	2.2	3	2.2	
12	2	1.5	5	3.7	7	5.2	
13	1	.7	1	.7	2	1.5	
14	1	.7	3	2.3	4	3.0	
15	2	1.5	1	.7	3	2.2	
16+	3	2.2	8	6.0	11	8.2	
Total Males:		81	Total Females:		53		
Average Age:		5.8	Average Age:		9.0		

From January 1980 to April 1982 a minimum average annual removal of 38 females occurred. This figure excluded 31 bears of unknown sex and age. If the percent of adult female bears of known sex and age is applied to the 31 excluded bears, then the average annual female harvest was 44 bears. Polar bears were harvested during each month of the year, except no harvest was known during September (Figure 1). Of 197 bears sampled, 123 (62.4 percent) were harvested during November, December and January. Forty-five bears (22.8 percent) were harvested in October and November, primarily in North Slope villages. The chronology differs markedly from that of the sports hunting era during which the harvest was concentrated during February through April.

Figure 1. Chronology of Polar Bear Harvest in Alaska During the Combined 1980-81 and 1981-82 Hunting Years.



Walrus

Walrus management activities in 1982 included a continuation of the health and harvest study including collection of harvest data in four villages, collection of body parts for heavy metals and pesticides analyses, continued coordination and planning with the Eskimo Walrus Commission (EWC) and Pacific Walrus Technical Committee, and providing walrus distribution and abundance information for the Bristol Bay Cooperative Management Plan (mandated by provisions of the Alaska National Interest Lands Conservation Act).

This year the Service entered into a cooperative walrus harvest monitoring agreement with the EWC. Service biologists were placed in four primary walrus hunting villages (Gambell, Savoonga, Nome and Little Diomed) to collect harvest information on numbers, sex, age and timing of harvested walruses. The EWC agreed to pay for stomach samples and reproductive tracts. The intent of acquiring reproductive tracts and stomach contents was to substantiate the changes in productivity and food availability detected in the 1980 series of samples.

According to ADF&G studies conducted in 1978 approximately 70-80 percent of walruses harvested are taken by residents of five northwest Alaska villages. A summary of walruses harvested in these five villages during the spring is presented in Table 3.

Table 3. Documented Retrieved Spring Walrus Harvest, 1980-82.

Village	1980				1981				1982			
	M	F	C	U	M	F	C	U	M	F	C	U
Gambell (Total)	-	-	-	556	345	373	243	0	211	404	298	29
		(556)				(961)				(942)		
Savoonga (Total)	417	34	5	0	302	258	81	21	79	63	19	6
		(456)				(662)				(167)		
Nome/King Island (Total)	-	-	-	500*	379	367	9	0	567	87	7	46
		(500)				(755)				(707)		
Little Diomedes (Total)	229	437	16	27	458	304	36	10	162	315	35	46
		(709)				(808)				(558)		
Wales (Total)	37	31	0	0	94	34	0	0	43	58	3	15
		(68)				(128)				(119)		
Subtotals	683	502	21	1083	1578	1336	369	31	1062	927	362	142
Grand Totals		2289				3314				2493		

M--Males
 F--Females
 C--Calves
 U--Unknown adults

*Alaska Department of Fish and Game estimate.



Walrus resting on haul out area.

This percentage may have changed in response to walrus availability in other villages due to the increasing population expanding its habitat range. During the last 2 years (summer and fall), opportunities have increased to harvest greater numbers of walrus on the North Slope. In addition, hunting activity in Shishmaref, Pt. Hope and at the Pt. Spencer camp for the hunters from Teller and Brevig Mission increased. Approximately 200 walrus were taken in Shishmaref in 1981 while only a small undetermined number were taken in 1982. In Pt. Hope approximately 250 animals annually were harvested in each of the last 2 years.

Intense walrus hunting activity in the Pt. Spencer area has been observed from the air, but no ground reconnaissance has taken place to verify the number of walrus taken. Wainwright hunters harvested 60-80 walrus this year and an estimated 50 in 1981. Barrow residents harvested an undetermined number of walrus in the last 3 years. The Barrow harvest is believed to be greater than Wainwright and may be significantly higher.

A total of six stranded abandoned walrus calves were transported from Prudhoe Bay in August. Two were sent to Point Defiance Zoo in Tacoma, two went to the New York Aquarium and two were taken to Sea World in San Diego. The first four were captured by Service personnel and were temporarily housed at the Anchorage Zoo. The appearance of these calves in Prudhoe Bay, which is several hundred miles east of their normal range, was probably due to the combined factors of increased use of the Bering Sea from Barrow to Prudhoe Bay by an increasing walrus population and the prevailing condition of pack ice holding walrus close to the coastline. In addition, three calves were rescued in Barrow by a North Slope Borough public health officer and were taken to Sea World.

A video-tape presentation was completed explaining the process and reasons why the Service is collecting walrus samples and monitoring the walrus harvest. The tape was aired to villages via satellite television and copies were sent to each walrus harvesting village. The village schools have the necessary equipment to show videotapes.

In March the Service received the final report "Analysis of Reproductive Organs and Stomach Contents from Walruses Taken in the Alaskan Native Harvest, Spring 1980." This report prepared by F.H. Faye and S.W. Stoker of the Institute of Marine Science, University of Alaska, Fairbanks, and their 1982 report "Reproductive Success and Feeding Habits of Walruses Taken in the 1982 Spring Harvest with Comparisons from Previous Years," suggests that Pacific walrus productivity has declined from 1975 levels as indicated by a higher proportion of less productive females in the population and a depleted food supply. The unit weights of prey (primarily bivalve mollusks) were about the same for 1980 and 1982 but were considerably smaller in size than in 1975. Stomach contents in 1980 and 1982 were very similar but differed markedly from 1975 showing a lower incidence of clams and a higher proportion of other invertebrates and fishes in 1980 and 1982.

Sea Otter-Alaska

Increases in subpopulations of sea otters, range expansions into areas also used by humans, and their ability to greatly reduce the abundance of sea urchins, mussels, clams, abalones and dungeness crabs are causing a growing concern among recreational, commercial and subsistence users of shellfish in some areas of Alaska. Areas where otters are well established and competing with humans for the same shellfish resources are Atka, southern Kenai Peninsula and parts of Prince William Sound. Other areas

where the increase of sea otters is eventually expected to cause similar conflicts are the Kodiak Archipelago, the south side of the Alaska Peninsula, north Gulf of Alaska coast and southeast Alaska. These are all areas where human populations are utilizing shellfish resources that otters prey upon. Unless some remedial actions are taken, competition between otters and humans will intensify. This in turn will heighten animosity toward sea otters and lead to increased illegal killing. Other ecological impacts of sea otters are expected but few have been documented. In some areas predation by sea otters has reduced invertebrate grazers and kelps have increased. Obviously, changes in primary production and the assemblage of primary producers is likely to have pronounced effects on other marine community components.

A preliminary survey of sea otter distribution along the outer Kenai Peninsula was accomplished during 1982. The primary objective of this effort was to determine distribution of sea otters and the ratio of dependent young to adults. The survey covered the coastline from Seldovia to Resurrection Bay. The Service vessel R/V Sea Otter, a 7-ton, 32-ft. motor vessel served as the survey platform.

In the study area 880 adult sea otters with 156 dependent young were recorded. Observations were recorded at 223 locations. Twenty of these localities accounted for 469 adults, or 53 percent of all adults sighted. Groups of sightings are considered to be local population centers. The area from Point Adam to Chugach Bay, including the Chugach Islands, supports a large population, in all accounting for about 50 percent of the adults observed.

During the last quarter of the report period background data concerning the sea otter/shellfish conflict in the Cordova area was collected and a study plan initiated to address this problem. The objective of this proposed study is to determine distribution and monitor movements of sea otters from Orca Inlet near Cordova and waters of Hinchinbrook Island eastward into the Copper River Flats and Controller Bay.

The ADF&G in Cordova is concerned over increased sightings of sea otters in the Cordova Flats. This eastward movement may result in the establishment of a new population of otters in Controller Bay. This bay is presently utilized as an important commercial dungeness fishery by the Cordova fleet.



Sea otter in kelp.

Sea Otter-Southern

The Southern Sea Otter Recovery Plan was approved February 3, 1982. The Recovery Plan outlines actions needed both for recovery of the 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 during the last reporting period to map available and relevant biological, ecological and socioeconomic information for the Pacific Coast from Washington to California.

Due to difficulty in obtaining information for the mapping study in a timely manner and the need for adequate reviews, several no-cost time extensions have been given. The Service also recognized the need to conduct an additional meeting of the Technical Review Team for this project and allocated additional funds for this purpose. The final product is now due by the first quarter of 1983 (during the next reporting period).

Numerous letters and petitions were received by the Service indicating both support for, and opposition to, translocations of sea otters to the Channel Islands. Presumably these letters and petitions were stimulated by reports that the Service had made a

decision to translocate sea otters to the Channel Islands. The Pacific Coast mapping study will aid the Service in making a determination of the potential translocation site(s), however, such a determination has not been made by the Service. The Service also responded to numerous Congressional requests for information regarding sea otter management and potential translocations.

The Service worked closely with the Pacific OCS Office of the MMS to develop studies for the southern sea otter. One study under consideration for funding by MMS involves research on the status and population dynamics of southern sea otters in the central part of their current range in California. The primary objective of the study, 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. Currently, data indicates juvenile otter mortality is higher in the central part of the range. This increased mortality is believed to be due primarily to competition with adult otters. If the study supports this theory, then the juvenile otters might be utilized in translocation efforts without negatively affecting the population's status (reference PRT 2-9246).

The Service funded a study in Alaska to test techniques of implanting radio transmitters in sea otters (reference PRT 2-9246). This technique could be used for the sea otter status and population dynamics study above if funded.

The MMS is also funding a preliminary study, in cooperation with the Service, to monitor the effects of OCS exploration and development activities (via sound recordings) on sea otter behavior. This will be conducted in conjunction with a similar study on gray whales in California (reference PRT 2-9740).

The Service sought funding support from the American Petroleum Institute (API) for sea otter research. A Sea Otter Task Force was established by the API affiliated Western Oil and Gas Association (WOGA) to provide guidance to WOGA. The present proposal by WOGA is to develop an oilspill risk assessment and was to be submitted to API for further action.

A report entitled "Potential Methods for Influencing the Movements and Distribution of Sea Otters - Assessment of Research Needs" was completed in September 1982. This report was funded by the MMC in cooperation with the Service (see 1981 Annual Report). The report identifies potential techniques for management of sea otters and identifies the associated research needs and priorities. The report concludes that movements of otters could be controlled by a combination of techniques which include: (a) capture and relocation from "non-otter zones" to

"otter zones;" (b) natural barriers; (c) artificial barriers; (d) herding sea otters with acoustic repellents; (e) negative conditioning to augment natural barriers; (f) selective killing of otters that disperse into "non-otter zones;" (g) manipulation of demographic parameters; (h) habitat improvement; and/or (i) mariculture enclosures. These techniques could be useful in response to limiting exposure of otters to oilspills and managing translocated populations of otters.

The Service is continuing to fund the ongoing San Nicolas Island study which will yield baseline data on the nearshore community. The information can be used to compare changes in community structure following introduction for natural reestablishment of otters here or in other locations. The funding is scheduled to continue through fiscal year 1983.

During this report period, four formal Section 7 consultations were completed. Of these consultations, three were with the Service, and one was a combined consultation with the MMS and NMFS. All of the consultations resulted in the Service issuing findings of "is not likely to jeopardize" the southern sea otter.

The joint consultation involving MMS and NMFS involved research projects funded by MMS regarding the effects of sounds associated with OCS exploration and development on sea otter and gray whale behavior. The two studies were to run concurrently using the same source of acoustic stimuli. NMFS sought consultation regarding their issuance of a permit to take (harass) gray whales within sea otter range.

During the report period, 99 sea otters were reported dead by salvage personnel. The salvage program is operated by the California Department of Fish and Game (CDF&G), in cooperation with the Service and is funded in part with ESA Section 6 Grant-in-Aid to the States. Of the 99 animals that were recovered, State and Service personnel could determine the causes of death as follows: 12 animals were known killed directly by human causes (6 by gunshot wounds, and 6 by gill netting operations); and 4 animals died of natural causes (shark attacks). There were 28 pups and 13 subadults confirmed salvaged and 5 pups were recorded alive (i.e., lived more than 1 day after recovery).

Investigation and observations of gill netting in Morro Bay and Monterey Bay confirmed the deaths 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. In June of 1982, Governor Brown signed into law a bill prohibiting the use of entangling fishing nets within the 10 fathoms (60-foot) depth contour in Monterey Bay to protect marine birds. There may be possible beneficial effects on marine mammals.

Aerial censuses of both peripheral portions of the sea otters' range revealed an apparent reduction in the numbers of otters. Although this may represent a dispersal of migrant front males back into the range, this is the first time in the last 9 years that the southern front has not extended "en masse" into new unforaged areas in the spring.

Service research personnel published a paper summarizing the results of the data gathered from a lumber spill off the California coast in 1978 (Science, Vol. 215, March 1982). The lumber spread through most of the southern sea otter range within 4 weeks. The movement rates of the lumber was believed to be similar to that of oil slicks observed elsewhere. This indicates that a major oilspill could expose significant numbers of otters in California to oil contamination. Service research also summarized past translocation efforts with Alaskan sea otters (Wild. Bull. 10 (2:100-107, Summer 1983)). Conclusions were drawn on the results of these translocations. This information should be useful for developing a translocation plan for the southern sea otter.

The Service planned and organized a joint law enforcement meeting with the CDF&G regarding enforcement and protection of the southern sea otter. Subjects covered at the meeting included problem areas in enforcement of illegally taken otters and incidental catch in gill nets.

The Service provided funding to CDF&G through Section 6 (Grant-in-Aid to the States) carry-over funds 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. Census of index areas to monitor population status and herd composition.

Service representatives attended a meeting with CDF&G to discuss oilspill contingency plan actions. Potential rehabilitation sites 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 oilspill. While the 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.

The Service published on September 27, 1982, a Notice of Review of the status of 20 listed species in the Federal Register (47 FR

42387). The ESA, as amended, requires the Service to conduct a review of each listed species at least once every 5 years following the year of its listing. The southern sea otter was included in this year's Notice of Review. Comments were originally due by January 25, 1983, but the deadline was extended for 90 days. Review of the submissions and decisions concerning any change in status will be made during the next reporting period.

Manatee

There were 123 manatee deaths recorded in 1982. Of the 117 animals that were recovered for necropsy, the Service and University of Miami salvage personnel determined the causes of death as follows: thirty-seven (32 percent) died of undetermined causes; 40 (34 percent) died of natural causes; and 26 (22 percent) were killed directly or indirectly by human activities (21 by collisions with boats and barges, 3 in floodgates and 2 by fishing gear related causes). Fourteen (12 percent) dependent calves were found dead.

An unusual die-off of manatees occurred in Lee County, Florida in February, March and April of 1982. This die-off accounted for 37 of the manatee deaths due to natural causes and represents the largest known localized die-off of manatees not related to cold weather. The cause of the deaths is believed to be a result of neurotoxic poisoning linked to a red tide outbreak. This event was a result of the occurrence of several normally unrelated factors: (1) a seasonal dispersal of manatees from winter aggregations; (2) an unusual drought and compensatory water management practices which produced high salinities, poor flushing of the Calooshattee River and a decline of fresh water vegetation; (3) a red tide outbreak; and (4) an apparently unusual occurrence of relatively dense patches of ascidians or tunicates. The most likely route of the toxic poisoning was a result of one or more of the following: (1) manatees coincidentally ingested tunicates while feeding on vegetation. Tunicates are filter feeding marine organisms which filter the red tide agents (dinoflagellates) from the water and thus concentrate the toxic fractions; (2) manatees ingested the dinoflagellates and toxic fractions or other affected marine organisms while feeding; and (3) manatees were exposed to red tide aerosols while breathing at the water's surface. It should be noted that the events contributing to die-offs such as this are difficult to foresee. Thus, there is insufficient time to react so that impacts may be reduced.

Four stranded manatees were rescued and released. Two rehabilitated manatees that had been picked up in the Ft. Meyers area during the red tide die-off were released in July. One captive female manatee, Alexandra, died after drowning while



Manatee fitted with radio transmitter.

trapped in a dislodged drain cover at the Miami Seaquarium. The drain cover screws corroded and the cover became dislodged. The cover has been permanently affixed. It is hoped that Alexandra's death will contribute to developing an aging technique for manatees. Alexandra was of a known age and was previously injected with tetracycline (see Permit PRT-2-8430) which is deposited in bone tissue. The tetracycline fluoresces under certain lights and may reveal a suitable technique for aging manatees. Three manatee births occurred this year at the Seaquarium. This has given valuable information about calving intervals and age at first reproduction of captive manatees.

The Service provided start-up funds to establish a salvage-necropsy station in southwest Florida. This area has not been adequately covered in the past due to logistical problems from the current Gainesville and Miami salvage center locations.

The Service funded studies to develop abundance and distribution surveys. These surveys will be used to obtain a manatee population index and to develop mark and recapture methodologies appropriate for estimating population parameters of manatees. The 3-year studies are being conducted through the Florida Cooperative Fish and Wildlife Research Unit in Gainesville.

The products from the Crystal River Research/Management Plan Contract (see 1980 Annual Report) were judged unacceptable by the Service. The Plan is now being completed through the Cooperative Fish and Wildlife Research Unit in Gainesville, Florida, under Cooperative Agreement. The final product is expected to be completed during the next reporting period.

The Site Specific Mortality Reduction Study for Brevard County, Florida (see last year's report - Contract #3), is progressing well. Preliminary recommendations have been made to reduce mortalities in the Sykes Creek area where 21 percent of the boat/barge mortality occurs in Brevard County.

The Service continues to support the Manatee Rescue Contingency Plan, conducted through Cooperative Agreements with Sea World and Miami Seaquarium.

During the report period, the Service conducted eight 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 involvement before implementation. The results, although not binding, must be considered before decisions are made. They are issued by the Service's Washington, regional, and field offices in the form of "biological opinions" for formal consultations.

Of the eight formal consultations, two were with the MMS, one was

with the Corps of Engineers (COE), one was with the U.S. Coast Guard (USCG) and four were with the Service. Of these eight consultations, the Service issued five findings of "is not likely to jeopardize," two findings of "will promote the conservation" and one finding of "is likely to jeopardize the continued existence" of the West Indian manatee.

Consultation with MMS concerned leasing and exploration for the OCS Sale #78 (South Atlantic) and the Gulf of Mexico. The Service issued "is not likely to jeopardize" opinions on each of these consultations, however, advisory statements were given in the opinions concerning development and production of these areas.

Consultation with the COE concerned permit issuance for an art project (the Surrounded Islands Project) in Biscayne Bay, Florida. A "not likely to jeopardize" opinion was issued. However, numerous permit conditions and precautions were specified to insure protection of the manatee.

Consultation with the USCG resulted in the issuance of an "is likely to jeopardize" biological opinion concerning the proposed construction and operation of a permanent mainland facility at 59th Street on the West bank of Lake Worth in Florida. This facility would relocate and consolidate vessels and personnel resources from current operations on Peanut Island in Lake Worth Inlet. The proposed facility location is in close proximity to Florida Power and Light Company's (FPL) Riviera Beach Power Plant. The discharge from this plant attracts over 100 manatees during winter cold spells between mid-November and mid-March of each year. The USCG boats would traverse this concentration area. The proposed facility location also lies within a designated idle speed zone for manatees.

According to USCG figures for 1981, the Coast Guard conducted 36 sorties (an average of three per month) with a 95-foot patrol boat and 800 Search and Rescue (SAR) missions (an average of 67 per month) with two 41-foot boats from the current facility. Approximately 42 percent of the SAR's would be conducted during the November through March period during which manatee concentrations are most likely to occur. Manatee salvage data revealed that since January 1976 six carcasses were recovered in the Lake Worth Inlet area. Based on necropsy data and carcass condition the deaths most likely occurred in the area. All but one was killed in the winter months and three deaths were determined to have resulted from boat/barge collisions. The potential for increased deaths due to boat collisions was evident.

The Service provided two alternatives to the USCG project proposal as follows: (1) renovate and maintain the existing

Peanut Island Station with shore support staged from the city marina, Port of Palm Beach, or other site such that the 25-foot motor cargo boat (used to transport personnel and supplies) would not traverse the manatee concentration area; and (2) locate a new site such that the majority of SAR calls would not traverse the concentration area. Both alternatives suggested development of a management use or disposal plan for the existing 120 x 10 foot pier to insure protection of the manatee. The property at 59th Street was purchased in 1978 and pier construction was completed in 1979 without compliance with Section 7 of the ESA.

The Service reviews and consults with the COE on a number of marina permits issued pursuant to Section 404 of the Clean Water Act. The Service has expressed concern to the COE concerning the cumulative impacts of these permits on the manatees. The Service has suggested to the COE that studies are needed for specific areas in order to assess and quantify the impacts on manatees from permit issuance. The Service believes that reviews of individual permits are piecemealing the consideration of impacts. The COE does not believe it is their responsibility to fund such studies. The Service is continuing to seek a remedy to this situation.

The Comprehensive Work Plan, a revision of the Recovery Plan's Step-down Outline, Recovery Narrative and Implementation Schedule was approved February 4, 1982. Copies can be obtained from the U.S. Fish and Wildlife Reference Service, Unit 1, Denver, Colorado 80205.

The Florida Chapter of the Nature Conservancy obtained a purchase option for 42 acres of islands in Kings Bay, Crystal River as reported in last year's report. This year they exercised the option and purchased the 14 islands. The property will be leased to the Service.

The Service met with State personnel at Manatee Spring State Park in July to assess the potential for managing the spring run for natural reintroduction of manatees. There has been a significant increase in sightings this year at the Spring.

The Service attended a State of Florida Department of Environmental Regulation (DER) Outstanding Florida Waters workshop for Crystal River. The DER subsequently designated Crystal River as an Outstanding Florida Water area.

The FPL continued to support manatee surveys. In cooperation with the Florida Audubon Society, FPL contributed valuable monitoring flight surveys during the Lee County manatee die-off reported above. The FPL, in cooperation with Eckerd College,

will be conducting aerial surveys of FPL power plants during the coldest winter months. The Service requested FPL to consider that additional support may be needed if there is a severely long and cold winter in order to maintain study consistency with prior surveys.

In addition, FPL is sponsoring:

1. A Manatee Identification Catalog prepared by the Service through the DWRC in Gainesville;
2. A series of manatee workshops for the public around the State;
3. Reprint of 25,000 additional manatee boat stern stickers; and
4. An update and reprint of the Boater's Guide and Manatee Information Booklets.

The Florida Department of Natural Resources (DNR) conducted the second phase of "A Statewide Survey of Public Awareness and Attitude Toward the Endangered Florida Manatee" (see 1981 Annual Report). The document will require a review before issuance. The legislature has also added five new slow speed zones to the original 13 areas, as recommended by DNR.

The DNR has recognized the need for coordination of Statewide manatee activities. The DNR plan involves hiring a coordinator and possibly a marine mammologist. An increase of boater registration fees by \$0.50 is required to provide the approximately \$250,000 needed for the project.

Dugong

Within the Trust Territory of the Pacific Islands the dugong occurs only in the Palau 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.

Traditionally, the dugong had high cultural significance to the Palauans, as well as affording a good source of protein, and as a consequence, the dugong was effectively conserved by village chiefs. A bracelet made from the atlas vertebrae of a dugong

could be worn only by the chiefs of villages or municipalities. At the present time the role of traditional chiefs has been greatly diminished, resulting in little protection for this species. Modern technology - speed boats, explosives, spear guns, etc., have no doubt 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.

This unregulated taking of the dugong has become critical. There is substantial disagreement among Palauans and outside researchers on the numbers of dugong 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 no 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, this isolated 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 1982 for the Hawaiian monk seal was utilized in support of the Fish and Wildlife Service station at Tern Island, French Frigate Shoals, and for participation on the Monk Seal Recovery Team by the Hawaiian Islands NWR manager. An agency review draft of the Monk Seal Recovery Plan was prepared and distributed in December 1982. Service activities relating to monk seals focused on management studies at French Frigate Shoals and on cooperative projects with National Marine Fisheries Service at other islands and atolls in the Refuge.

Refuge staff operated the Tern Island facility throughout 1982, and, in so doing, provided an opportunity to continue management studies initiated in 1979. The seal population using Tern Island was monitored on surveys conducted every 4 days. The location of all animals identifiable by scars or other marks was recorded. In addition, boat surveys were conducted to other islands at French Frigate Shoals at 36 day intervals. Pup production was also noted on these boat surveys. The most significant data

derived from these surveys include the documented continuing increase of seals utilizing Tern Island. Between July 1979 and December 1981, the monthly mean on 4 day seal counts at Tern Island increased from 5.7 animals to a high of 43.5 animals (November 1981). The Tern Island numbers continued to increase throughout 1982. The highest monthly mean (56.1) occurred in November 1982. Sue Schulmeister completed a draft paper on monk seal observations at French Frigate Shoals between July 1979 and December 1981. The paper was edited for publication in 1983.

Seal surveys at French Frigate Shoals in 1982 also included continuation of an aerial photo project begun in October 1981. During supply flights to Tern Island, on approximately 30 day intervals, all sandy islets at French Frigate Shoals were photographed on 35mm color slide film. Between October 1981 - September 1982, all islands were photographed. 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 condition and habitat selection by seals. A ground count of seals was conducted simultaneously at Tern Island on each monthly flight and at Tern, Whale-Skate, and East Islands during an intensive (3 flights per day for 4 days) survey in May 1982.

Data for the October 1981 - September 1982 period demonstrate a substantial reduction (45 percent) of hauled seals during rainy, cold weather when compared to typically sunny days. The degree and variability of population underestimation was found to be least during afternoon aerial surveys. Analysis of data relating to pup production and age/size composition of the population review indicates that spacing of flights at intervals less than the estimated average weaning period (36-38 days) will result in an overestimation of total pups produced. To some extent, this error is compensated for by the underestimation of actual numbers of each aerial survey. Intervals between flights were lengthened to 36-38 days beginning October 1982 to reduce the effects of duplication in counting, but further analysis is necessary to fully assess the efficiency of the aerial photo techniques for estimating pup production.

Refuge staff enforced special use permit provisions regulating activities of cooperating researchers and fishermen in the Hawaiian Islands NWR. Field surveys to Midway included documentation of seals present and coordination with Navy and contractor staff to minimize conflicts with monk seals. In this regard, the Honolulu Field Station completed an evaluation of wildlife management options for Midway Atoll to secure more long-term protection for seals and other fish and wildlife at this site. Review of management options for Tern Island continued through coordination with NMFS and State biologists. A draft MOU was developed and reviewed for coordination between NMFS and FWS on monk seal management. This MOU should be completed in 1983.