

Survey of Federally-Funded Marine Mammal Research and Studies,
FY 70 - FY81

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June 1982

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MARINE MAMMAL RESEARCH AND STUDIES
FY 70 - FY81

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ABSTRACT

A comprehensive survey of marine mammal research funded by the United States government from FY70 through FY81 is presented. More than thirteen hundred research projects are considered. Fourteen different federal department-level agencies funded the research; of these, five were especially involved in research relevant to needs under the Marine Mammal Protection Act of 1972. These agencies were the Departments of Commerce, Defense, and Interior as well as the Marine Mammal Commission and the National Science Foundation. In the FY74-FY81 interval, these five agencies funded 72-91% of the annual number of projects and supported 70-93% of the annual cost of federally-funded research involving marine mammals. Beginning in FY79 the Department of State emerged as another major contributor to research relevant to the Marine Mammal Protection Act.

During the period FY70-FY80, federal funding of marine mammal research had an upward trend. For example, funding increased from \$6.2 million in FY75 to more than \$18 million in FY80. FY81 funding was 81% of the peak year FY80. More regionally-oriented research has occurred in waters adjacent to Alaska than along any other state or group of adjacent states. For the period FY74-FY77, federal funding of cetacean and pinniped research was about equal; however, beginning in FY78, support of cetacean research increased substantially more than for other taxonomic groups. In FY81, funding of cetacean research exceeded funding of pinniped research by more than four times. Not only did research on the tuna/porpoise issue receive more funding, but also new studies on endangered and threatened whales and porpoises were initiated. Funding for manatee and sea otter research also increased markedly beginning in FY78. Reduced funding was the common trend in FY81.

With enactment of the Marine Mammal Protection Act, responsibility for marine mammals was divided between the Department of Commerce and the Department of the Interior. Through FY79, both agencies successively increased funding of marine mammal research. In FY80, the funding level began to drop for Interior; Commerce experienced a drop in FY81. Within Commerce, expenditures on marine mammal studies by the National Marine Fisheries Service in peak year FY80 had more than quadrupled since FY74. Within Interior, annual funding by the Fish and Wildlife Service for marine mammal research doubled over the period FY74-FY80; the Bureau of Land Management, by comparison, funded no marine mammal studies in FY74 but expended more than \$7 million in its high year of FY79. The research trends of the National Marine Fisheries Service and the Fish and Wildlife Service reflect corresponding trends in agency appropriations under the Marine Mammal Protection Act and the Endangered Species Act. Research funded by the Marine Mammal Commission, National Science Foundation, U.S. Navy, and other agencies has fluctuated from year to year.

Wasteful duplicative research was not found to occur. Research topics have been numerous and, as a whole, focused on problems relevant to issues under the Marine Mammal Protection Act. Some investigators and research institutions have simultaneously had more than one marine mammal project under federal funding either by the same or by different agencies. In recent years, over one-half of the federal funds expended annually on marine mammal research has been for studies conducted by scientists employed by federal agencies as opposed to the non-federal scientific community.

PREFACE

The following review of federally-funded marine mammal research and studies is a reference document presented in tabular form rather than as a continuous text. It is an update of previous surveys compiled by the author for the Marine Mammal Commission.¹ The Commission conducts a continuing review of research programs conducted or proposed to be conducted under the authority of the Marine Mammal Protection Act and undertakes or causes to be undertaken such other studies as it deems necessary or desirable in connection with its assigned duties as to the protection and conservation of marine mammals [Section 202 (a) 2,3]. Under Sec. 205 of the Act, the Commission is provided access to all studies and data compiled by federal agencies regarding marine mammals so as to ensure that unnecessary duplication of research is avoided and to carry out the purposes of the Act.

The user of this document will find the Table of Contents especially helpful for locating specific information and for understanding the organization and breadth of the material. The first section is an overview of all federally-funded research involving marine mammals. The second section focuses upon research and studies conducted under authority of the Act. The last section list all research projects identified in the FY80 and FY81 surveys.

The data came from two major sources: (1) directly from agency officials at the request of the Marine Mammal Commission and (2) from the Smithsonian Science Information Exchange. More than two dozen U.S. government agency offices were surveyed by the Commission. Principal investigators have on a few occasions supplemented information on their projects. Appendix A is a listing of publications identified by the agencies as sources (or pending sources) of marine mammal information resulting from federally-funded research. Unless otherwise noted, the tables and figures summarize data supplied directly to the Commission by each agency. Appendix B is a listing of all FY80 and FY81 projects that were identified by the sources.

Agencies vary in their ability to identify and retrieve information on special projects. From year to year, both intra- and interagency variability occurs reducing the accuracy of the data for comparative purposes. Inherent also in such a study is the difficulty of separating administrative costs from costs specifically for data collection and analyses. Generally the funds reported included both costs and must be viewed accordingly.

20 March 1982

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Carbondale, IL

¹See Waring, G.H. 1981. Survey of federally-funded marine mammal research and studies, FY70-FY79. Final report for MMC contract MM1533588-3. U.S. Dept. Commerce, National Technical Information Service PB81-174336. 235p.

TABLE OF CONTENTS

	Page
ABSTRACT.....	iii
PREFACE.....	iv
LIST OF FIGURES.....	vii
LIST OF TABLES.....	viii
I. OVERVIEW OF FEDERAL RESEARCH PROGRAMS.....	1
Federal Agencies Funding Marine Mammal Research	2
Number of Marine Mammal Research Projects Supported by Federal Agencies (FY70-FY80) as Reported by the Smithsonian Science Information Exchange.....	5
Number of Marine Mammal Research Projects Supported by Federal Agencies in FY74-81, Comparing Smithsonian Science Information Exchange Data to Information Provided Directly to the Marine Mammal Commission by Each Agency	6
Trends in Federal Support of Marine Mammal Research (FY70-FY81).....	7
Federal Funding of Marine Mammal Research (FY74-FY81):	
--By Agency.....	8
--By Geographical Region.....	10
--By Taxonomic Group.....	11
--By Research Issue.....	12
II. RESEARCH AND STUDIES UNDER AUTHORITY OF THE MARINE MAMMAL PROTECTION ACT OF 1972.....	16
Research Responsibilities of Federal Agencies Under the Act.....	17
Federal Funding Authorized, Requested and Appropriated Under the Act.....	19

Funds Expended on Marine Mammal Research Other than Appropriated under Authority of the Act (NOAA/NMFS and FWS), FY73-FY81.....	20
Funds Expended on Marine Mammal Research by the National Marine Fisheries Service and the Fish and Wildlife Service, FY73-FY81.....	22
Number of Personnel Assigned to Marine Mammal Administration and Research Activities in the National Marine Fisheries Service and the Fish and Wildlife Service, FY73-FY81.....	23
III. APPENDIX A	
Publications Identified by Agencies as Sources or Pending Sources of Marine Mammal Information from Federally-Funded Research.....	24
IV. APPENDIX B	
Listing of Marine Mammal Research Projects, Principal Investigators and Funding Level for FY80 and FY81.....	27
--Department of Agriculture.....	28
--Department of Commerce.....	28
--Department of Defense.....	36
--Department of Energy.....	40
--Department of Health and Human Services....	41
--Department of the Interior.....	43
--Department of State.....	56
--Department of Transportation.....	57
--Environmental Protection Agency.....	57
--Marine Mammal Commission.....	57
--National Aeronautics and Space Administration.....	61
--National Science Foundation.....	62
--Smithsonian Institution.....	64
--Veterans Administration.....	65

LIST OF FIGURES

Figure	Page
1. Trends in federal support of marine mammal research: Total number of marine mammal projects as reported by the Smithsonian Science Information Exchange, FY70-FY80, and to the Marine Mammal Commission by each agency, FY74-FY81.....	7
2. Funds expended on marine mammal research by the National Marine Fisheries Service and the Fish and Wildlife Service, FY73-FY81.....	22

LIST OF TABLES

Table	Page
1. Number of marine mammal research projects supported by federal agencies as reported by Smithsonian Science Information Exchange.....	5
2. Number of marine mammal research projects supported by federal agencies in FY74-81, comparing Smithsonian Science Information Exchange data to information provided directly to the Marine Mammal Commission by each agency.....	6
3. Federal funding of marine mammal research.....	8
4. Regionally oriented marine mammal research in waters adjacent to the United States.....	10
5. Taxonomic summary of federally-funded marine mammal research.....	11
6. Federal funding of marine mammal research by research issue.....	12
7. Federal funding under the Marine Mammal Protection Act.....	19
8. Funds expended on marine mammal research other than those appropriated under authority of the Marine Mammal Protection Act.....	20
9. Number of personnel assigned to marine mammal activities in the National Marine Fisheries Service and the Fish and Wildlife Service, FY73-FY81..	23

I. OVERVIEW OF FEDERAL RESEARCH PROGRAMS INVOLVING MARINE MAMMALS

Fourteen departmental-level federal agencies participated in funding marine mammal research and studies from FY70 through FY81. Some agencies funded projects in all years, whereas others supported studies during only part of the period. Often more than one agency within the larger departments participated in funding research. The Smithsonian Science Information Exchange (SSIE) reported an average of 46.5 projects were funded with federal monies in each of the years surveyed (Table 1); nevertheless using the Marine Mammal Commission (MMC) information solicited directly from each agency, the average annual number of projects for FY74-FY81 was 143 (Table 2). The trends of these data are depicted in Figure 1. Data for year 76 include the 12-month fiscal year plus a transition quarter (TQ76=July to September 1976) when the first day of the federal fiscal year was shifted from 1 July to 1 October. Total funds expended by each agency annually for marine mammal research are shown in Table 3. Funding by geographic region, taxonomic group, and research issue are listed in Tables 4, 5, and 6, respectively.

FEDERAL AGENCIES FUNDING MARINE MAMMAL RESEARCH

Department of Agriculture (USDA)

The Department of Agriculture has conducted studies related to contagious disease organisms associated with marine mammals. The San Miguel sea lion virus has been of special interest. Clinically, the sea lion virus infection resembles the lesions of foot-and-mouth disease in ruminants.

Department of Commerce (DOC)

The Department of Commerce, through the National Marine Fisheries Service (NMFS), conducts marine mammal and fisheries research with emphasis on resource surveys, biological and ecological investigations, and resource management for the use and conservation of living marine resources. The cetaceans and pinnipeds (exclusive of the walrus) are among the responsibilities of this Department. Research funding has been concentrated on the northern fur seal, the incidental take of porpoise in the yellow-fin tuna purse-seine fishery, and whale assessment. In addition, the National Sea Grant Program and other offices in the National Oceanic and Atmospheric Administration (NOAA) have supported studies on marine mammals. OCSEAP (the Outer Continental Shelf Environmental Assessment Program managed by NOAA) was created through interagency agreement between the Bureau of Land Management (BLM) and NOAA; it is responsible for most Alaska OCS research funded by BLM.

Department of Defense (DOD)

The Department of Defense conducts marine mammal research through the Headquarters Space Division of the Air Force, the Corps of Engineers of the Army, and through the Navy. Units of the Navy conducting this research include the Naval Ocean Systems Center (formerly Naval Undersea Center) and the Office of Naval Research. DOD research varies from basic environmental impact research to applied military research. Differentiating marine mammals from military targets, furthering the understanding of the undersea environment, and the utilization of marine mammals with specific behavioral traits for applied research are the major thrusts of the Navy program; studies on behavior modification, husbandry, bioacoustics, migration and distribution, and sensory perception are supported. Navy research also includes studies of the bacterial, viral, fungal and parasitic diseases of marine mammals with particular emphasis on those diseases that can be transmitted.

Department of Energy (DOE)

The Department of Energy (formerly the Atomic Energy Commission of the Energy Research and Development Administration) has occasionally supported marine mammal research. The thrust of the research has been directed at the behavioral ecology of sea otters, especially at Amchitka Island in the area of the CANNIKAN Shot, and also on problems associated with censusing marine mammals.

Department of Health and Human Services (DHHS)

The Department of Health and Human Services, formerly the Department of Health, Education and Welfare--(HEW), through the National Institutes of Health, funds some research related to marine mammals; the research is basically oriented toward an understanding of human health and physiology. It consists primarily of research on physiological mechanisms and adaptations. Marine mammals are often one of several vertebrates used in the research projects.

Department of the Interior (DOI)

The Department of the Interior, through the Bureau of Land Management, supports environmental assessment studies involving the effects of outer continental shelf development on marine mammals and their habitats. Special studies such as the effects of hydrocarbons and other disturbances from oil and gas activities are also supported. The Fish and Wildlife Service (FWS) supports management related research on the biology and population ecology of walrus, sea otter, polar bear, and sirenians (manatees and dugong). Additional studies are conducted on tissue contaminant levels in marine mammals, marine mammal tagging, and population assessment of the Hawaiian monk seal in the Hawaiian Islands National Wildlife Refuge. The Geological Survey conducts research in marine mammal paleontology and the National Park Service supports some marine mammal studies relative to national park and monument development.

Department of State (DOS)

The Department of State has supported studies of the Antarctic krill resource (a major food resource of Southern Ocean marine mammals) in consideration of the prospect of international commercial exploitation of krill in waters adjacent to Antarctica. Funds have also been provided to further cetacean research of the Inter-American Tropical Tuna Commission and the International Whaling Commission.

Department of Transportation (DOT)

The Department of Transportation, through the Coast Guard, has supported research to identify potential applied uses of the perception and capabilities of animals, including marine mammals.

Environmental Protection Agency (EPA)

The Environmental Protection Agency has indirectly supported marine mammal research through the study and monitoring of pollutant levels in coastal and pelagic marine organisms.

Marine Mammal Commission (MMC)

The Marine Mammal Commission supports research and studies pertaining to the conservation and protection of marine mammals to improve the operation of the Marine Mammal Protection Act. Policy studies; methodological research; information overviews; issue-specific research on population assessment, critical habitats, taking, man-induced hazards, ecological inter-relationships, and socio-economic/legal aspects of marine mammal conservation; and reviews of agency actions and research under the Act are integrated into the directed research program of the Commission.

National Aeronautics and Space Administration (NASA)

The National Aeronautics and Space Administration develops and provides technological support for marine mammal research and studies of user agencies. Telemetric and remote sensing capabilities through aircraft and satellite support are provided.

National Science Foundation (NSF)

Through its various divisions, the National Science Foundation supports marine mammal research; however, there is no directed effort on marine mammals per se. The studies of Antarctic marine mammals have been supported through this agency in accordance with the Antarctic Treaty.

Smithsonian Institution (SI)

The Smithsonian Institution, through the Department of Vertebrate Zoology and the Department of Paleobiology of the Museum of Natural History, supports their staff on marine mammal research in evolution and general biology. The Scientific Event Alert Network gathers information on beached and stranded marine mammals.

Veterans Administration (VA)

The Veterans Administration has supported a few projects on the physiological characteristics of marine mammals. Among these has been an electroencephalographic study of sleep in the pilot whale.

TABLE 1

NUMBER OF MARINE MAMMAL RESEARCH PROJECTS
SUPPORTED BY FEDERAL AGENCIES AS REPORTED
BY SMITHSONIAN SCIENCE INFORMATION EXCHANGE*

	Fiscal Year										
	70	71	72	73	74	75	76	77	78	79	80
Department of Agriculture	-	2	1	-	3	3	1	-	1	-	-
Department of Commerce	-	2	6	4	12	8	14	3	15	-	-
Department of Defense	8	13	16	17	5	18	10	1	12	10	15
Department of Energy (formerly AEC and ERDA)	1	-	-	1	1	1	-	-	1	-	1
Department of Health and Human Services (formerly HEW)	6	9	7	8	5	16	15	7	2	3	4
Department of the Interior	2	1	1	9	-	1	1	7	3	-	3
Department of State	-	-	-	-	-	-	-	-	-	-	-
Department of Transportation	-	-	-	-	-	-	-	-	-	-	-
Environmental Protection Agency	-	-	-	1	-	1	1	-	-	-	-
Marine Mammal Commission	-	-	-	-	-	-	22	18	12	6	-
National Aeronautics and Space Administration	-	-	-	1	1	-	1	1	-	-	1
National Science Foundation	9	8	17	5	8	13	13	6	12	9	8
Smithsonian Institution	-	-	1	2	-	2	2	2	-	-	-
Veterans Administration	2	1	2	2	-	1	2	-	2	-	-
TOTAL	28	36	51	50	35	64	82	46	60	28	32

*Not an all inclusive listing of federally-funded marine mammal research

TABLE 2

NUMBER OF MARINE MAMMAL RESEARCH PROJECTS SUPPORTED BY
FEDERAL AGENCIES IN FY74-81, COMPARING SMITHSONIAN SCIENCE
INFORMATION EXCHANGE DATA (A) TO INFORMATION PROVIDED DIRECTLY
TO THE MARINE MAMMAL COMMISSION BY EACH AGENCY (B)

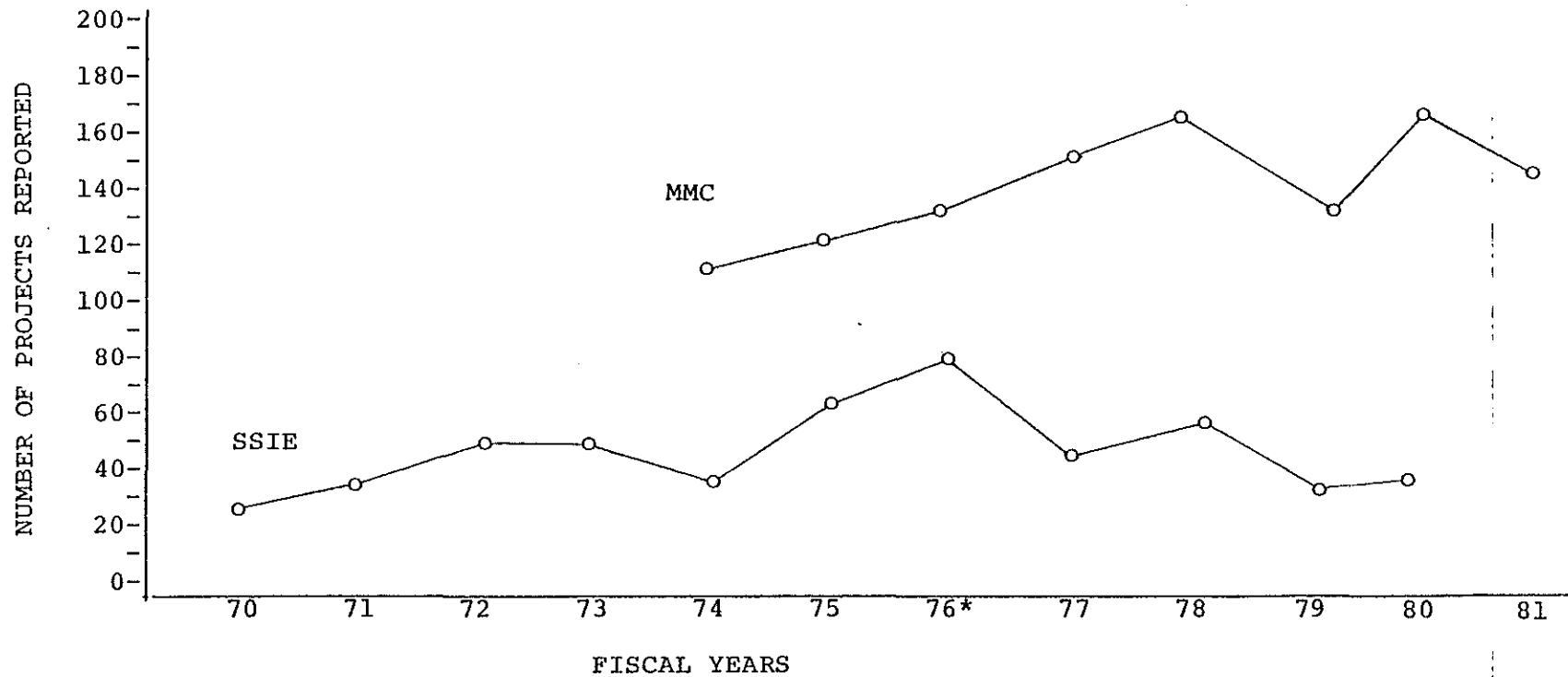
	FY74		FY75		FY76		FY77		FY78		FY79		FY80		FY81	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Department of Agriculture	3	2	3	1	1	-	-	-	1	-	-	2	-	1		1
Department of Commerce																
National Marine Fisheries Service	9	13	7	8	10	9	-	13	15	14	-	14	-	34		31
Sea Grant	3	4	1	2	4	1	3	1	-	2	-	2	-	2		2
NOAA/OCSEAP (see below)	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
North Pacific Fishery Management Council	-	-	-	-	-	-	-	-	-	-	-	-	-	1		1
Department of Defense																
Air Force	-	-	-	-	-	-	-	-	-	-	-	1	-	1		1
Army	-	-	-	-	-	-	-	-	-	-	-	1	-	2		-
Naval Ocean Systems Ctr. (NMC)	2	16	8	8	3	7	-	14	2	17	2	8	3	9		6
Naval Research Laboratory	-	-	-	-	-	-	-	-	-	-	-	1	-	-		-
Office of Naval Research	3	10	10	6	7	6	1	7	10	7	8	11	12	8		7
Department of Energy	1	-	1	1	-	1	-	2	1	2	-	-	1	1		1
Department of Health and Human Services	5	20	16	26	15	17	7	13	2	12	3	8	4	9		11
Department of Interior																
Bureau of Land Mgmt.	-	-	-	1	-	4	-	3	-	4	-	7	2	12		8
BLM/NOAA/OCSEAP	-	-	-	3	-	16	-	11	-	11	-	6	-	7		8
Fish & Wildlife Service	-	15	-	20	-	27	5	40	2	43	-	52	1	44		32
Geological Survey	-	-	1	-	1	-	-	1	1	1	-	1	-	1		1
National Park Service	-	1	-	1	-	2	2	3	-	5	-	2	-	2		4
Department of State	-	-	-	-	-	-	-	-	-	2	-	1	-	1		2
Department of Transportation	-	-	-	-	-	-	-	-	-	-	-	-	-	1		-
Environmental Protection Agency	-	1	1	1	1	-	-	-	-	-	-	-	-	-		-
Marine Mammal Commission	-	14	-	32	22	30	18	29	12	34	6	7	-	21		16
National Aeronautics & Space Administration	1	1	-	1	1	1	1	2	-	2	-	-	1	-		1
National Science Foundation	8	12	13	7	13	10	6	10	12	8	9	11	8	12		8
Smithsonian Institution	-	4	2	4	2	2	3	2	-	2	-	2	-	2		2
Veterans Administration	-	-	1	-	2	-	-	2	2	2	-	-	-	-		1
TOTAL	35		64		82		46		60		28		32			
SSIE Data																
MMC Data	113		122		133		153		168		137		171			143

FIGURE 1

TRENDS IN FEDERAL SUPPORT OF MARINE MAMMAL RESEARCH

Total Number of Marine Mammal Projects as Reported:

By the Smithsonian Science Information Exchange (SSIE) and
To the Marine Mammal Commission (MMC) by Each Agency.



*Includes Transitional Quarter (July-September 1976)

TABLE 3

FEDERAL FUNDING OF MARINE MAMMAL RESEARCH
(Thousands of Dollars)

	<u>FY74</u>	<u>FY75</u>	<u>FY/TQ76</u>	<u>FY77</u>	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>
Department of Agriculture	37.2	9.3	---	---	---	209	---	10
Department of Commerce								
National Marine Fisheries Service	1218.7	1386.6	1456.4	2313.8	3603.2	4425.9	5156.7	4568.2
National Sea Grant Programs	77.2	82.3	19.8	25.8	49.7	68	59.7	35.1
North Pacific Fishery Mgmt. Council	---	---	---	---	---	---	97.2	28.9
Department of Defense								
Air Force	---	---	---	---	---	40	15	79.2
Army	---	---	---	---	---	44	122	---
Naval Ocean Systems Ctr.	658	425	361	718	545	717	1979	1729
Naval Research Laboratory	---	---	---	---	---	20	---	---
Office of Naval Research	485.4	270	260.1	414	430	538.4	462.8	302.6
Department of Energy	---	18.3	28	80	80	---	30	20
Department of Health and Human Services	916.9	1573.5	1078.5	781	772	392.8	602.5	755.8
Department of Interior								
Bureau of Land Management	---	706.7	2046.4	2242	2519.8	7457.3	6146.2	3413.8
Fish & Wildlife Service	706	734.2	933	933	1042.7	1452.5	1418.9	1127.2
Geological Survey	---	---	---	31.2	30.5	20	30	92.5
National Park Service	6	6	17.2	16.5	64.8	45.8	68	376.9
Department of State	---	---	---	---	51	500	592.9	719.4
Department of Transportation	---	---	---	---	---	---	95	---
Environmental Protection Agency	47	49.8	---	---	---	---	---	---
Marine Mammal Commission	258.8	446.7	561.7	420.3	376.1	152.6	358.7	134.7
National Aeronautics & Space Administration	45	100	194	50	65	---	12	143.3

∞

TABLE 3 (continued)
Federal Funding of Marine Mammal Research

	<u>FY74</u>	<u>FY75</u>	<u>FY/TQ76</u>	<u>FY77</u>	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>
National Science Foundation	515.6	292.8	690.4	718.9	334.2	479.3	677.6	574.5
Smithsonian Institution	68.5	80.1	102	106.1	101.1	133.4	142.8	152.3
Veterans Administration	---	---	---	102.6	98.9	---	---	---
TOTAL	\$5013.3K	\$6181.3K	\$7748.5K	\$8953.2K	\$10,164K	\$16,696K	\$18,207K	\$14,818.4K

TABLE 4

REGIONALLY ORIENTED MARINE MAMMAL RESEARCH IN WATERS ADJACENT TO THE UNITED STATES

(Thousands of Dollars; Number of Projects in Parentheses)

Geographical Region	74	75	Fiscal Year		78	79	80	81
			76*	77				
Hawaii	---	5 (1)	51.5 (2)	102.6 (8)	118.2 (6)	71.4 (2)	411.1 (11)	114.8 (2)
Alaska	780.4 (22)	1,670.5 (31)	2,451.5 (36)	2,861.7 (39)	3,336.8 (46)	3,746.7 (17)	5,407.4 (34)	3,992.1 (29)
Oregon/ Washington	17 (1)	87.3 (6)	81.6 (6)	43.5 (2)	60.3 (4)	68 (2)	229.9 (2)	234.5 (5)
California	102.5 (4)	805.4 (9)	1,370 (18)	1,132 (11)	317.2 (12)	1,675.2 (11)	3,234.9 (19)	795.3 (11)
Gulf of Mexico	7.9 (1)	---	6 (1)	---	2.4 (2)	144.3 (1)	200 (1)	296.2 (1)
Florida	121.3 (4)	187.5 (6)	139.9 (9)	171.2 (10)	269 (12)	656.3 (4)	858.2 (21)	306.8 (9)
Georgia, South Carolina and North Carolina	---	---	---	199.9 (1)	---	---	200 (2)	296.3 (1)
NE Coastal States	31.9 (3)	43.3 (3)	56.2 (5)	29.3 (3)	1,484 (4)	2,762.9 (1)	292.7 (14)	1,025.1 (8)

*Includes Transition Quarter (July-September 1976)

TABLE 5

TAXONOMIC SUMMARY OF FEDERALLY-FUNDED MARINE MAMMAL RESEARCH
(Thousands of Dollars)

	Agr.	Comm.	Def.	DOE	DHHS	DOI	DOS	DOT	EPA	MMC	NASA	NSF	SI	VA	TOTAL
Sirenia	74					60									60
(Manatees	75					119.2									119.2
and Dugong)	76					173.8									173.8
	77					190.2					50				240.2
	78					267.1					15				282.9
	79		44			580.5				0.8					624.5
	80		122			328.7				109					559.7
	81					358						46.5			404.5
Carnivora	74					90									90
(Polar Bear	75			18.3	27.3	375				15.3					435.9
and Sea	76			28		629.3				103.2					760.5
Otter	77			30		587.3				40.6					657.9
	78			30		717.7				49.9					797.6
	79	59.7				809.4						22.6			891.7
	80	71		30		718						36.3			855.3
	81	5.1		20		639.2				18					682.3
Pinnipedia	74	37.2	586.8	90		56.3				56.2		268	49.5		1150
(Seals, Sea	75	9.3	752.7	140		210.7				154.9		156.6	51.8		1647
Lions and	76		760.5	147		116.2				54.3		268.3	59.2		2090.1
Walrus)	77		783.8	274		141.3				64.8		131.1	56.1	102.6	2317.2
	78		858.7	325						33.7		141.5	45		2068.5
	79	200	956.7	246		76.6				59.1		243.2	47.4		2418
	80		1454.7	353		43.5				106		240.7			2665.6
	81		873.2	149.2		51.4				56		292.3			1964
Cetacea	74		695.5	344		294.2				77.9		170.1	19		1600.7
(Whales and	75		675	250.5		365.1				190.9		61	28.3		1570.8
Porpoises)	76		709.7	263.1		114.3	126.2			262.8		275.2	42.8		1794.1
	77		1555.8	527		144.6	253.4			124.9		213.1			2818.8
	78		2794.2	446		149.6	278			169.7		163.1			4000.6
	79		3326.3	746.4		74.1	2937.5	500		81		187.9			7853.2
	80		3542.8	1583.8		167.1	2200.8	592.9		133.7		380.8			8601.9
	81	10	3118	1485.6		463.4	1817	719.4		34.4	143.3	235.7			8026.8
Mixed Species	74		13.6	682.4		566.4	556		47	124.7	45	77.5			2112.6
or General	75		41.2	304.5		970.4	781.7		49.8	85.6	100	75.2			2408.4
Studies	76		6	211		848	1382.7			141.4		146.9			2736
	77			331	50	495.1	1428.3			190		374.7	50		2919.1
	78			204	50	622.4	1730.4	51		122	50	29.6	56.1	98.9	3014.4
	79	9	210.9	323		242.1	3999.5			12.5		25.6	86		4908.6
	80		245.1	520		391.9	3945.9	95		10		19.8	142.8		5370.5
	81		635.9	476		241	1654.3			26.3			152.3		3185.8

TABLE 6

FEDERAL FUNDING OF MARINE MAMMAL
RESEARCH BY RESEARCH ISSUE
(Thousands of Dollars)

SPECIAL RESEARCH ISSUE	74	75	76	77	78	79	80	81	FUNDING AGENCY
Tuna/Porpoise: Population Assessment	85.1	108	81	516.5 2	524.5	462.7	676.9	615	NMFS MMC
Mortality Reduction	167.4	140.2	120 178 119.6	299.6 97.1	487.6 67.4	512.9	592.9 433.1	687.1 303.6 5.6	DOS NMFS MMC NSF
Assessment of Taking			179	189.6	318.7	329.5	346.9	246.7	Navy NMFS
Biology	3.5 271.3 26	9.8 342.9	12.4 136	138.1 12.5	220.4 10	705.3	382.4	430.2	MMC NMFS Navy MMC NSF
International Whaling Convention: Assessment of Stocks and Taking (overview studies)	32	(33.6)	(38.7) 26.3 21.5	(52.8) 33.5	(103) 19.8	70.9	340.5 65	32.3 433	DOS NMFS MMC NSF
Marine Mammal/Fisheries Conflicts: Southern Ocean Krill			10	14.5	4 51	25.6			MMC DOS NSF
Fin Fish/Pinniped Interactions		17.7	19.8	25.8	49.7 59.3	68	4.9 604.6	30 32.5 349.9	Sea Grant MMC NMFS
Shell Fish/Sea Otter Interactions						70	6 4.5	5.1 142.4	Sea Grant FWS NMFS
Fin Fish/Porpoise Interactions							2		NMC
Effects of Oil on Marine Mammals: Physiological Studies			91.5	59 2.8	65	1097.8	394.1	111.8 2	BIM MMC
Marine Mammal Strandings: Biological Studies	15 (6.4)	25 (18.3)	32.3 (42.8) 6	15 (11.9) 70.4 (15)	(14.6) (30)	3.5 (18.7)	(15) 20 (15)	30	MMC SI NMFS BIM FWS

SPECIAL RESEARCH ISSUED (Cont.)	FISCAL YEAR								FUNDING AGENCY
	74	75	76	77	78	79	80	81	
Bowhead Whales: Assessment of Stocks and Taking	16	(20.6)	(38.7) (44.1)	201 (42.5)	724 (167.2) 6.7	871.1	737.2 591	765.1 345.3	NMFS BLM MMC
Biology							590		BLM
Humpback Whale: Population Assess- ment			(38.7)	(52.8) 25.1	(103) 21.4	15	39.1 15	70.7 9	NMFS MMC
Biology			11.2	10	31.3	39.8	63	376.3 4.1	NPS NMFS NSF Navy
					39.7	40.2 48	42.3 24		
Gray Whale: Population Assess- ment	31.4	(32.7)	(38.8)	(52.8)	(103)	25.7			NMFS Navy
Assessment of Human- Induced Impact		14.7	16.5	9.8	20.6		37	9	MMC
Biology							187.7	58.1	BLM
Killer Whale: Population Assess- ment	17	(17.6) 37.9	(38.8)	(52.7)			3		NMFS MMC NSF
Pilot Whales: Population Assess- ment	10								Navy NSF
Biology	(6.3)	(5)			(15.3)			10	SI USDA
Belukha: Population Assess- ment			(44)	(42.5)	(17.2)			49.8	BLM
Biology			20	10	25		350	525	Navy
Harbor Porpoise Population Assess- ment:							45		NMFS
Dall Porpoise: Population Assess- ment						210	6.9	264	NMFS

SPECIAL RESEARCH ISSUES (Cont.)	FISCAL YEAR								FUNDING AGENCY
	74	75	76	77	78	79	80	81	
Bottlenose Dolphin: Population Assessment	55	68.3			1.9	180.8	219.9	221.8	MMC
Biology	211 38.1 54.3	100 55.6	133 20 15.8	270 86.7 31.8	168 92.8 0.5	467 85.3 9	903.9 90.1	850 107	Navy HEW NSF MMC NMFS
Northern Fur Seal: Population Assessment and Monitoring	395.2	339.5	354.4	352	(367)	430.2	246	152.6	NMFS
Biology	145.5	330.9 32.2	330.2	366 70	384 96	269.3 88	410.9	420.2	NMFS MMC Navy
Guadalupe Fur Seal: Population Studies			(13.3)	(13.3)	(16.7)				NMFS
Antarctic Seals: Population Studies	125.8	115.5			50.3	97			NSF
Biology	64.3	15.2	241.1	172.7	89	70.4	171.7	252.2	NSF
Arctic Seals: Population Studies	18.3 9.7	(20.6)							NMFS Sea Grant
Biology	7	55	78 136	157 201.1	85 237.6	212		281.6 38.8	BLM MMC Sea Grant BLM NSF
Hawaiian Monk Seal: Population Assessment		55	38.2 (13.3)	52.3 (13.3)	52 (16.7)	31.2 3	60.9 50.9 138.3	31	MMC FWS NMFS
Biology				34.1	25.8		34.9		MMC
Gray Seal: Population Studies	(5.2)			10.2					MMC
Biology		90	110	10	30		2.3	1.3	NMFS Navy
Harbor Seal: Population Studies	(5.3) 6	27 6	33.5 6 3	17.7 6	5.2 31	6 11.5	53.7 39.4	23.5 3.5	Sea Grant MMC NPS NMFS MMC
Biology		2.3	8.6 65	2.8 60	(50)	50	25	36.3	BLM Navy NMFS

SPECIAL RESEARCH ISSUED (Cont.)	74	75	76	77	78	79	80	81	FUNDING AGENCY
Northern Elephant Seal: Population Studies			(13.3)	(13.3)	(16.7)	4.1			NMFS
Biology	27.9	25.9	27.2	33.1	31.8	41.2 10	30.2 5.3 43.5	51.7	NSF NMC DHHS
California Sea Lion: Population Studies			7			82.5			NMFS
Biology	37.2 40 29.3 50	9.3 35 64.7 2	37 12.2	74	110	200	247		USDA Navy HEW NSF MMC
Steller Sea Lion: Population Studies			157.1	145.5	155	148	95	34.9	BLM NMFS
Walrus: Population Studies		(160)	112.8	141.6	52	141.8	231.8	99	FWS BLM MMC
Biology	17.6 38.7	27.3 48.4			5	20		130.3	Sea Grant MMC
Manatees & Dugong: Population Studies	(60)	100	(143.8)	159.7 50	236.6	290.3	(265.7)	(300)	FWS NASA NPS MMC
Biology		19.2	(30)	(30)	(30)	144.3* (127.2) 44	3 109 45 122	(52)	BLM FWS Army
Polar Bear: Population Studies	(45)	214.3	(401)	(303.1)	(223.1)	251	(140.8)	(200)	FWS
Biology		35.7	(50)	(50) (150)	(50)	22.6	(50) 36.3	(54)	FWS NSF
Sea Otter: Population Studies	(45)	(125)	157.2 21.1	151.9	352.1	(530.4)	(400)	(185.2)	FWS BLM
Biology	13.5	27.3 15.3 18.3	103.2 28	40.6 30 23.3 59	49.9 30 27.5		30 (189.8)	16 20 200	HEW MMC DOE FWS BLM

Amounts indicated in parentheses are estimated subunits of totals reported by agencies under more general categories

*Pilot Study: Only 5-10% was for study of manatees.

II. RESEARCH AND STUDIES UNDER AUTHORITY OF THE MARINE MAMMAL PROTECTION ACT OF 1972

The Marine Mammal Protection Act of 1972 (MMPA) established the Marine Mammal Commission and distributed marine mammal protection and conservation responsibilities to the Secretary of Commerce and the Secretary of the Interior, including the agencies under their purview. The Act acknowledged the need for further information and encouraged research; some responsibilities for research and its implementation were designated in Sections 108, 109, 111, 112, 202, and 205. Table 7 is a list of annual funding authorized under the various sections of the Act, the amounts requested by agencies pursuant to the Act, and amounts appropriated by Congress. Additional federal funds have been spent in activities related to marine mammals; the additional sources and amounts of research funding are shown in Table 8 and Figure 2. The number of personnel assigned to marine mammal research verses administrative responsibilities within the National Marine Fisheries Service and the Fish and Wildlife Service from FY73 through FY81 are listed in Table 9.

RESEARCH RESPONSIBILITIES OF FEDERAL
AGENCIES UNDER THE MARINE MAMMAL PROTECTION ACT

Congress, in developing the Marine Mammal Protection Act, recognized that there was inadequate knowledge of the ecology and population dynamics of marine mammals as well as of other factors important for marine mammal protection and conservation. The Act, therefore, specified certain research and study responsibilities for the Department of Commerce, Department of Interior, and the Marine Mammal Commission.

The Secretary of Commerce was directed to undertake, in consultation with the Marine Mammal Commission, a study of the North Pacific fur seals to determine whether herds of such seals, subject to the jurisdiction of the United States, are presently at their optimum sustainable population and what population trends are evident. The Secretary was also to undertake a comprehensive study in consultation with the Secretary of State, to determine what modifications, if any, should be made to the provisions of the North Pacific Fur Seal Convention, or of the Marine Mammal Protection Act, or both, to make the Convention and the Act consistent with each other. These studies were to be completed by 21 October 1973 [Sec. 108(b)(1)].

The Secretary of Commerce was also directed to immediately undertake a program of research and development for the purpose of devising improved fishing methods and gear so as to reduce to the maximum extent practicable the incidental taking of marine mammals in connection with commercial fishing. For purposes of this research, Congress authorized the sum of \$1,000,000 to be appropriated for both FY 73 and FY 74. Funds appropriated for this research remain available until expended [Sec. 111(a)].

Both the Secretary of Commerce and the Secretary of Interior are authorized by the Act to make grants to each state whose laws and regulations relating to protection and management of marine mammals which primarily inhabit waters or lands within the boundaries of that state are found to be consistent with the purposes and policies of the Act. The purpose of such grants shall be to assist such states in developing and implementing state programs for the protection and management of such marine mammals. Such grants are not to exceed 50 per centum of the costs of a particular program's development and implementation [Sec. 109(b)].

The Secretaries are also authorized to make, after review by the Marine Mammal Commission, grants to any federal or state agency,

public or private institution, or other person to enable research on topics relevant to the protection and conservation of marine mammals. Authorized to be appropriated for these grants in FY73 and for each of the next four fiscal years was an amount not to exceed \$2,500,000--one-third of the sum to be available to the Secretary of Interior and two-thirds of the Secretary of Commerce [Sec. 110 (a) (b) (c)].

The Secretaries, as appropriate, are directed to review annually the operation of each program in which the United States participates involving the taking of marine mammals on land [Sec. 112 (d)]. The secretaries are required by the Act to report annually to the public and to the Congress on the current status of all marine mammal species and population stocks subject to the provision of the Act [Sec. 103 (f)].

The Marine Mammal Commission established under Section 201 of the Act was directed in Section 202(a) to:

1. Undertake a review and study of the activities of the United States pursuant to existing laws and international conventions relating to marine mammals, including, but not limited to, the International Convention for the Regulation of Whaling, the Whaling Convention Act of 1949, the Interim Convention on the Conservation of North Pacific Fur Seals, and the Fur Seal Act of 1966;
2. Conduct a continuing review of the condition of the stocks of marine mammals, of methods for their protection and conservation, of humane means of taking marine mammals, of research programs conducted under authority of the Act, and of all applications for permits; and
3. Undertake or cause to be undertaken such other studies as it deems necessary or desirable in connection with its assigned duties as to the protection and conservation of marine mammals.

The Act gave the Commission access to all studies and data compiled by federal agencies regarding marine mammals. With the consent of the appropriate Secretary or agency head, the Commission may also utilize the facilities or services of any federal agency and shall take every feasible step to avoid duplication of research and to carry out the purposes of the Act [Sec. 205].

TABLE 7
 FEDERAL FUNDING UNDER THE MARINE MAMMAL PROTECTION ACT
 (Thousands of Dollars)

	AUTHORIZED ^a					REQUESTED ^b					APPROPRIATED ^c				
	Sec 109	Sec 110	Sec 114	Sec 207	Total	Sec 109	Sec 110	Sec 114	Sec 207	Total	Sec 109	Sec 110	Sec 114	Sec 207	Total
Department of Commerce (NMFS)															
FY73	1000*	1667	2000	-	4667	375*	-	1090	-	1465	-	-	-	-	-
FY74	1000*	1667	2000	-	4667	900*	-	4400	-	5300	-	250	1350	-	1600
FY75	-	1667	2000	-	3667	-	250	2300	-	2550	-	250	1350	-	1600
FY76	-	1667	2000	-	3667	-	250	2300	-	2550	-	1100	1697	-	2797
FY77	-	1667	3000	-	4667	-	1667	3272	-	4939	-	1667	2778	-	4445
FY78	-	200	11500	-	11700	-	-	4872	-	4872	-	-	4872	-	4872
FY79	225	2700	8500	-	11425	-	200	6842	-	7042	-	200	6842	-	7042
FY80	225	2700	9000	-	11925	-	100	6628	-	6728	-	100	7128	-	7228
FY81	225	2700	9500	-	12425	-	100	7775	-	7875	-	100	6980	-	7080
FY82	-	-	7223	-	7223	-	-	6821	-	6821	-	-	6821	-	6821
Department of Interior (FWS)															
FY73	-	833	700	-	1553	-	100	700	-	800	-	0	0	-	0
FY74	-	833	525	-	1358	-	400	300	-	700	-	400	300	-	700
FY75	-	833	525	-	1358	-	833	525	-	1358	-	833	525	-	1358
FY76	-	833	525	-	1358	-	833	525	-	1358	-	833	525	-	1358
FY77	-	833	525	-	1358	-	833	525	-	1358	-	833	525	-	1358
FY78	-	1200	850	-	2050	-	833	525	-	1358	-	950	589	-	1539
FY79	400	1300	650	-	2350	-	1000	600	-	1600	400	1000	600	-	2000
FY80	400	1500	760	-	2660	400	1000	600	-	2000	400	1000	600	-	2000
FY81	400	2100	876	-	3376	400	1000	600	-	2000	400	1000	600	-	2000
FY82	-	1000	600	-	1600	-	1000	600	-	1600	-	1000	600	-	1600
Marine Mammal Commission															
FY73	-	-	-	1000	1000	-	-	-	0	0	-	-	-	0	0
FY74	-	-	-	1000	1000	-	-	-	825	825	-	-	-	412	412
FY75	-	-	-	1000	1000	-	-	-	1000	1000	-	-	-	750	750
FY76	-	-	-	1000	1000	-	-	-	1000	1000	-	-	-	900	900
FY77	-	-	-	1000	1000	-	-	-	1000	1000	-	-	-	1000	1000
FY78	-	-	-	1000	1000	-	-	-	900	900	-	-	-	900	900
FY79	-	-	-	1000	1000	-	-	-	702	702	-	-	-	702	702
FY80	-	-	-	1000	1000	-	-	-	640	640	-	-	-	940	940
FY81	-	-	-	1000	1000	-	-	-	1000	1000	-	-	-	940	940
FY82	-	-	-	1000	1000	-	-	-	1000	1000	-	-	-	734	734

*Section 111 funds

^a Authorized under sections of the Act

^b Requested funding of the agencies

^c Funds subsequently appropriated by Congress

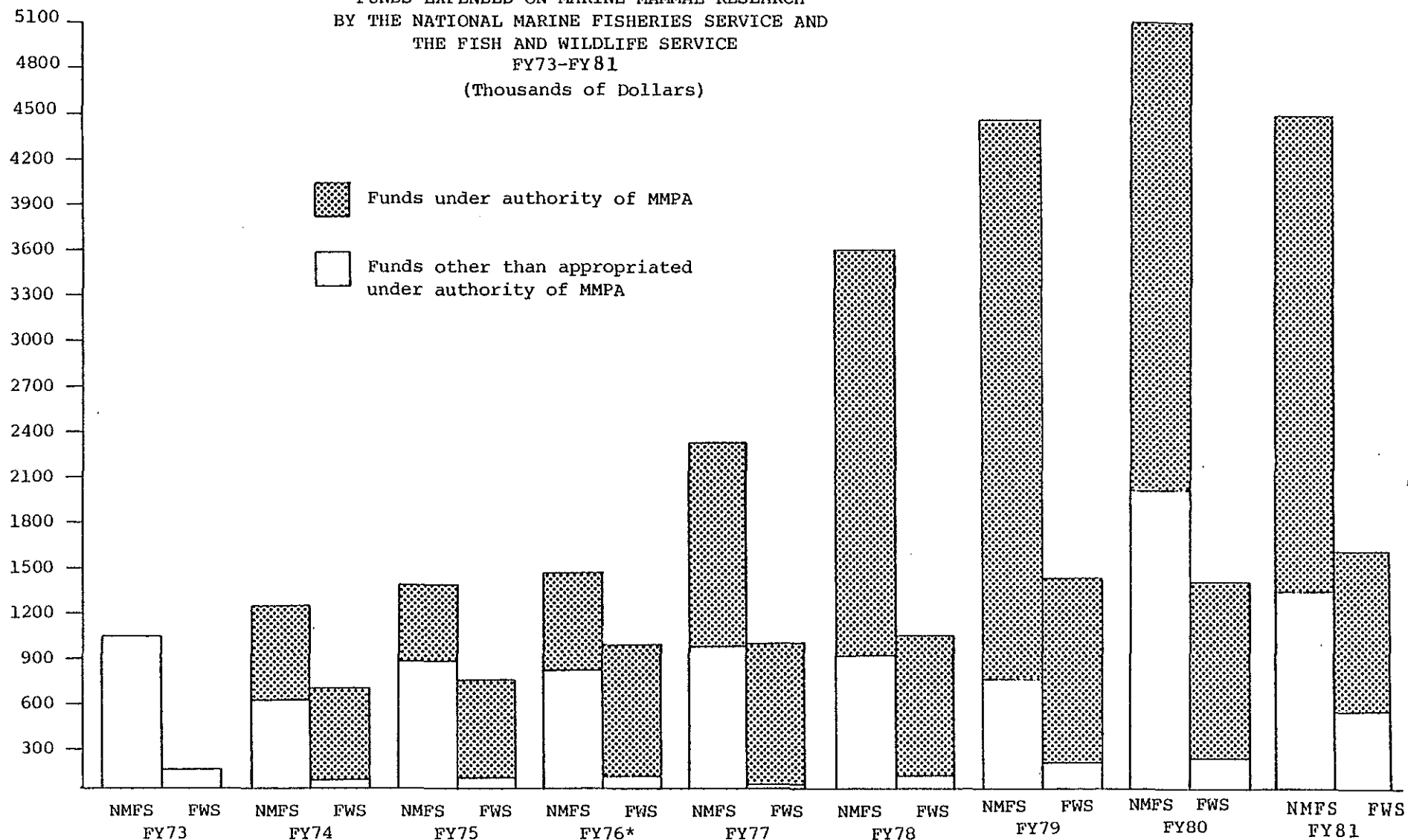
FUNDS EXPENDED ON MARINE MAMMAL RESEARCH
OTHER THAN THOSE APPROPRIATED UNDER AUTHORITY OF THE
MARINE MAMMAL PROTECTION ACT
(Thousands of Dollars)

<u>NOAA/National Marine Fisheries Service</u>	<u>Source</u>	<u>Amount</u>
FY73	NMFS Reprogramming	300
	NOAA Reserve	424
	Fur Seal Act Authorization	309
FY74	Fur Seal Act Authorization	309
	Reprogramming and Reserve	295
FY75	Fur Seal Act Authorization	395
	NOAA Reserve	442
FY76	Fur Seal Act Authorization	595
	NMFS Reprogramming	59
TQ76	Fur Seal Act Authorization	148
FY77	Fur Seal Act Authorization	595
	Endangered Species Act Authorization	294
	Saltonstall-Kennedy Reserve	78
FY78	Fur Seal Act Authorization	595
	Endangered Species Act Authorization	294
FY79	Endangered Species Act Authorization	132
	Fur Seal Act Authorization	595
FY80	Endangered Species Act	1428.4
	Fur Seal Act Authorization	595
FY81	Endangered Species Act	775
	Fur Seal Act Authorization	595
<u>DOI/Fish and Wildlife Service</u>		
FY73	FWS Appropriation	149
FY74	FWS Appropriation	49
FY75	FWS Appropriation	75
FY76	FWS Appropriation	67.2
TQ76	FWS Appropriation	16.1
FY77	FWS Appropriation	16
FY78	Endangered Species Act Authorization	93.7

TABLE 3 (Cont.)

<u>NOAA/National Marine Fisheries Service</u>	<u>Source</u>	<u>Amount</u>
FY79	Endangered Species Act Authorization	213.1
FY80	Endangered Species Act Authorization	162
	FWS Appropriation	82.2
FY81	Endangered Species Act Authorization	521.7

FIGURE 2
 FUNDS EXPENDED ON MARINE MAMMAL RESEARCH
 BY THE NATIONAL MARINE FISHERIES SERVICE AND
 THE FISH AND WILDLIFE SERVICE
 FY73-FY81
 (Thousands of Dollars)



*FY76 data include transition quarter (July-September 1976)

TABLE 9

NUMBER OF PERSONNEL ASSIGNED TO MARINE MAMMAL
ADMINISTRATIVE AND RESEARCH ACTIVITIES IN
THE NATIONAL MARINE FISHERIES SERVICE AND
FISH AND WILDLIFE SERVICE, FY73- FY81*

<u>National Marine Fisheries Service Personnel**</u>	<u>73</u>	<u>74</u>	<u>75</u>	<u>76</u>	<u>TQ76</u>	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>	<u>81</u>
Administrative (Included enforcement)	11	28	28	42	49	7	8	86.5		33.5
Research	23	26	33	31	29	17	20	48.9		60.7
NMFS Total	34	54	61	73	78	24	28	135.4	166.1	94.2
 <u>Fish and Wildlife Service Personnel***</u>										
Administrative	?	12.1	14.1	15.2	****	16.6	17.1	20.3	24.6	23.3
Research	2.6	6.0	11.0	11.8	****	14.8	13.2	17.2	17.4	17.8
FWS Total	2.6+	18.1	25.1	27.0	****	31.4	30.3	37.5	42.0	41.1

*Figures provided by the Agencies

**The National Marine Fisheries Service changed their method of reporting at least twice--once in FY77 (to number of personnel) and again in FY79 (to permanent employee man-years).

***Reported in man-years

****Man-years maintained at 24% of the FY76 level.

III. APPENDIX A

PUBLICATIONS IDENTIFIED BY AGENCIES AS
 SOURCES OR PENDING SOURCES OF
 MARINE MAMMAL INFORMATION FROM FUNDED RESEARCH

Department of Commerce

--National Marine Fisheries Service

Administrative reports of the various fisheries centers
 Marine Mammal Division - Annual Report on Fur Seal
 Investigations
 Fishery Bulletin (NMFS, NOAA, Department of Commerce)
 Marine Fisheries Review (NMFS, NOAA, Department of
 Commerce)
 Journal of Mammalogy
 International Whaling Commission Annual Reports
 Journal Fisheries Research Board of Canada (Canadian
 Journal of Fisheries and Aquatic Sciences)
 Proceedings of the Second Conference on the
 Biology of Marine Mammals
 NOAA Technical Reports/NMFS Scientific Reports-Fisheries
 Other journals as appropriate

--National Sea Grant College Program

Marine Mammal Information

--NOAA/OCSEAP reports (see Bureau of Land Management below)

Department of Defense

--Department of the Air Force

Headquarters Space Division Technical Report
 Space Shuttle Final Environmental Impact
 Statement

--Department of the Navy

Naval Ocean Systems Center Technical Reports
 Marine Fisheries Review
 Annals of New York Academy of Science
 Fishery Bulletin
 Vision Research
 Cetology
 Deep-Sea Research
 Journal Acoustical Society of America
 American Journal of Veterinary Research
 Science
 Arctic

--Department of the Navy (Cont.)

Journal of Wildlife Diseases
Microbios Letters
Journal American Veterinary Medical Association
Transactions of the San Diego Society of Natural
History
Journal of Mammalogy
Contributions of edited books

Department of Energy

Progress reports on projects
Canadian Journal of Fisheries and Aquatic Sciences
Ecological Monographs
Wildlife Society Bulletin
Environmental Conservation
Journal American Veterinary Medical Association

Department of the Interior

--Bureau of Land Management

NOAA/OCSEAP Annual Reports
NOAA/OCSEAP Final Reports
NOAA/OCSEAP Lease Area Synthesis Reports
Other reports available through National Technical
Information Service

--Fish and Wildlife Service

North America Fauna Series
U.S. Department of the Interior,
Fish and Wildlife Service
Wildlife Research Reports
U.S. Fish and Wildlife Service,
National Fish and Wildlife
Laboratory Reports

--Geological Survey

Systematic Zoology
Smithsonian Institution Contributions to
Paleobiology
Geological Survey Professional Papers
Publications of the Charleston Museum

--National Park Service

Project reports to National Park Service

Department of State

Project reports available through National
Technical Information Service
EIS: Possible Regime for Conservation of Antarctic
Marine Living Resources
IWC Scientific Reports

Marine Mammal Commission

Reports available through the National
Technical Information Service

Smithsonian Institution

Fishery Bulletin
Journal of Mammalogy
Proceedings of the Biological Society of Washington
Systematic Zoology
Smithsonian Institution Contributions to Paleobiology
Florida State Museum, Plaster Jacket
Contributions to edited books

IV. APPENDIX B
LISTING OF MARINE MAMMAL RESEARCH PROJECTS,
PRINCIPAL INVESTIGATORS, AND FUNDING LEVEL
FOR FY80 AND FY81*

COMPILED FROM INFORMATION PROVIDED
THE MARINE MAMMAL COMMISSION
BY EACH AGENCY
AND SUPPLEMENTED
WITH INFORMATION FROM THE
SMITHSONIAN SCIENCE INFORMATION EXCHANGE (SSIE)

*For a listing of projects for the period FY70-FY79, see Waring, G. H., 1981, Survey of federally-funded marine mammal research and studies, FY70-FY79, U. S. Dept. Commerce, National Technical Information Service PB81-174336. 235p.

Department of Agriculture

Gelberg, H. (Plum Island Animal Disease Center)

FY80

Comparative Swine and Pinniped
 Pathology of Swine Vesicular Exanthema
 and San Miguel Sea Lion Viruses \$?

FY81

Forrester, D. J. (U. Florida)

Epizootiology of Parasites of Wildlife
 in Florida--Pilot Whale (FL-VY-01851) \$ 10K

Department of Commerce

1. National Marine Fisheries Service

A. Northeast Fisheries Center

FY80

Austin, H. M. (Virginia Institute of Marine Sci.)
 Distribution and Abundance of
 Bottlenose Dolphins in the Nearshore
 Waters of Virginia (NA80FA-D8) \$ 9.9K

Gilbert, J. R. (U. Maine)
 Impact of Harbor Seal Populations
 on New England Fisheries (NA80FA-C29) \$36.7K

Katona, S. K. (College of the Atlantic)
 Creating and Maintaining a Catalog
 of Individually Identified Humpback
 Whales (NA80FA-D6) \$23.4K

Mayo, C. A. III (Provincetown Center of
 Coastal Studies)
 Summary of Recent Observations from
 Whale-Watching Boats off Provincetown,
 Massachusetts (NA80FA-D3) \$ 4.9K

Powers, K. D. (Manomet Bird Observatory) Development and Supervision of an Oceanic Marine Mammal Observer Training Program (NA80FA-D4)	\$24.7K
Powers, K. D. (Manomet Bird Observatory) Habitat Usage by Harbor Seals at Winter Haul-Out Site in Cape Cod Bay (NA80FA-D5)	\$ 9.4K
Prescott, J. H. (New England Aquarium) Characterization of Habitat and Distribu- tion; an Estimate of Population Size; and an Assessment of the Impact of Human Activities on the Harbor Porpoise (NA80FA-D9)	\$45 K
Prescott, J. H. (New England Aquarium) An Assessment of the Distribution and Relative Abundance of Large Cetaceans in the Western Approaches to the Bay of Fundy (NA80FA-C48)	\$20.7K
Prescott, J. H. (New England Aquarium) Organize and Convene a Workshop on Humpback Whales of the Western North Atlantic in Fall 1980 (NA80FA-C55)	\$15.7K
Prescott, J. H. (New England Aquarium) Investigation of Harbor Seal Mortality and Determination of the Infectious Agent in the New England Region (NA80FA-H9)	\$30 K
Schurman, V. R (Cape Cod Museum of Natural History) A Report on the Grey Seal Population at Nantucket, Massachusetts (NA80FB-A229)	\$ 2.3K
Sears, R. (Mingan Island Cetacean Study, Falmouth) Behavioral and Distribution of Cetaceans on the North Shore of the Gulf of St. Lawrence (NA80FB-A241)	\$ 2.5K
Stangroom, R. (Kendall Whaling Museum, Sharon) Compilation of Biological Data from 19th Century Whaling Logbooks and Journals (NA80FA-D2)	\$ 5 K

FY81

Conlogue, G. and J. Ogden (Yale U.) Radiographing Harbor Seal Flippers as a Method of Determining Age (NA-81-FB-A-00230)	\$ 1.5K
Gilbert, J. (U. Maine) Harbor Seal Population Estimation and Marine Mammal/Fisheries Interactions (NA-80-FA-C-00029)	\$45.9K
Coordinate Winter Census of Harbor Seals, Block Is. to Eastport, ME (amendment to above)	\$ 3.5K
Katona, S. (College of the Atlantic) Maintaining and Improving the Humpback Whale Fluke Catalog (NA-81-FA-C-00027)	\$47.1K
Mattila, D. Humpback Whale Fluke Identification Off the NW Coast of Puerto Rico (NA-81-FA-D-00003)	\$ 9.2K
Nichols, G., H. Winn and J. Lien (Ocean Research and Education Society, Boston) Support of Steering Committee to Establish International Consortium for Humpback Whale Research (NA-81-FB-A-00221)	\$ 2 K
Powers, K. (Manomet Bird Observatory) Implementation of Marine Observer Program Aboard NMFS Ships (NA-81-FA-C-00023)	\$41.2K
Prescott, J. (New England Aquarium) The North Atlantic Right Whale in the Lower Bay of Fundy (NA-81-FA-C-00030)	\$25.3K
Winter Aerial Survey of the Bay of Fundy (amendment of above)	\$ 2.5K

Schurman, V. (Cape Cod Museum of Natural History) Population Survey of Grey Seals at Nantucket Island, MA (NA-81-FB-A-00282)	\$ 1.3K
Weinrich, M. (Gloucester Fishermen's Museum) Behavior and Ecology of Humpback Whales Off Gloucester, MA (NA-81-A-00231)	\$ 2.1K
B. Northwest and Alaska Fisheries Center, National Marine Mammal Laboratory	

FY80

Braham, H. (NMML) Arctic Whales--Bowhead (NWC-59)	\$737.2K
DeLong, R. and R. Everitt (NMML & Wash. Dept. of Game) Washington-Oregon Marine Mammal/ Fisheries Interactions (NWC-53)	\$176.2K
Fiscus, C. and R. DeLong (NMML) Pinnipeds (NWC-53)	\$ 98.5K
Fowler, C. W. and A. Roppel (NMML) Northern Fur Seal Population (NWC-3)	\$246 K
Gentry, R. (NMML) Fur Seal Studies--St. George (NWC-51)	\$278.4K
Jones, L. (NMML) Dall's Porpoise Investigations (NWC-4)	\$264 K
Kajimura, H. (NMML) Marine Mammal Ecosystem --Pelagic (NWC-57)	\$132.5K
Keyes, M. C. (NMML) Veterinary Medical Services (NWC-56)	\$ 61.8K

McAlister, W. B. (NMML)
 Marine Mammal-Fishery Interactions
 --Bering Sea (NWC-8) \$155.5K

Rice, D. et al. (NMML)
 Endangered Cetaceans (NWC-58) \$340.5K

FY81

Braham, H. and B. Krogman (NMML)
 Arctic Whales--Bowhead (NWC-059) \$765.1K

DeLong, R. (NMML)
 Pinnipeds (including Columbia River
 Marine Mammal/Fishery Inter-
 action Study (NWC-053) \$148.5K

Fowler, C. W. and A. Roppel (NMML)
 Northern Fur Seal Population
 (NWC-003) \$152.6K

Gentry, R. (NMML)
 Fur Seal Studies--St. George
 (NWC-051) \$287.7K

Jones, L. and D. Rice (NMML)
 Endangered and Small Cetaceans
 (including Dall's Porpoise) (NWC-058) \$433.0K

Kajimura, H. (NMML)
 Marine Mammal Ecosystem--Pelagic
 (NWC-057) \$132.5K

Keyes, M. C. (NMML)
 Veterinary Medical Services
 (NWC-056) \$ 61.8K

McAlister, W. B. and R. DeLong (NMML)
 Marine Mammal/Fishery Interactions--
 Bering Sea (NWC-008) \$155.5K

---Alaska Region, NMFS

FY81

Calkins, D. (Alaska Department of Fish
and Game)
Study of Pinnipeds in Southern
Alaska (81-ABC-00280) \$ 69.7K

Hall, J. D. (Solace Enterprises)
Population Studies of Humpback
Whales and Monitoring of Vessel
Traffic in Southwestern Prince
William Sound, Alaska (81-ABC-00265) \$ 14.4K

B. Southeast Fisheries Center

FY80

Benigno, J. (SEFC)
Marine Mammals Project Management
(88C4L1KB) \$ 51.8K

Benigno, J. and R. Ford (SEFC)
Tursiops Local Herd Biodynamics
(88C4L1KC) \$105 K

Benigno, J. and R. Ford (SEFC)
Marine Mammal and Sea Turtle
Stranding and Salvage Network
(88C4L1KG) \$ 20 K

Benigno, J. and R. Gracy (SEFC)
Tursiops Population Analysis \$105 K

FY81

Benigno, J. (SEFC)
Marine Mammal Project Management
--Tursiops (88C4L1KB) \$ 56.8K

Ford, R. Jr. (SEFC)
Tursiops Local Herd Biodynamics
(88C4L1KC) \$118 K

Marine Mammal Stranding/Salvage
Network (88C4L1KN) \$ 30 K

Gracy, R. and J. Powers (SEFC)
Tursiops Population Survey and
Analysis (88C4L1KD) \$ 47 K

D. Southwest Fisheries Center

FY80

Gilmartin, W. (SWFC) Hawaiian Monk Seal	\$138.3K
Perrin, W., D. Au, and J. Henderson (SWFC) Assessment of Coastal Marine Mammals for Management	\$111.5K
(California Fish and Game) Assessment of Conflicts Between Marine Mammals and Fisheries in California Waters (\$74K) *[Additional \$65K funded by Southwest Region of NMFS]	\$ (65K)*
Perrin, W., J. Coe, and W. Stunz (SWFC) Marine Mammal Technology, Behavior and Physiology	\$433.1K
Perrin, W., A. Myrick and J. Jennings (SWFC) Marine Mammal Biological Studies	\$382.4K
Smith, T., R. Holt and D. Au (SWFC) Porpoise Stock Assessment	\$676.9K
Smith, T., C. Oliver and N. Lo (SWFC) Quantitative Analysis and Data Management	\$346.9K

FY81

DeMaster, D. P. (SWFC) Assessment of Coastal Marine Mammals for Management (096)	\$176.1K
Perrin, W. F. (SWFC) Marine Mammal Technology, Behavior and Physiology (010)	\$303.6K
Research on the Biology of Dolphins for Stock Assessment (011)	\$430.2K

Smith, T. D. (SWFC)
 Assessment of Dolphin Populations
 for Management (008) \$615 K

Marine Mammal Mortality Monitoring
 and Data Management (057) \$246.7K

--Southwest Region, NMFS

FY81

Miller, D. (California Department of
 Fish and Game)
 Marine Mammal/Fishery Interaction
 Study (80-JG-054) \$142.4K

2. NOAA/OCSEAP (See Department of Interior--BLM)

3. National Sea Grant College Program

FY80

Cicin-Sain, B. (U. California, San Diego)
 Marine Mammals/Fisheries Conflicts:
 Emphasis on Sea Otter/Shellfish
 Conflicts in California \$ 6 K

Mate, B. B. (Oregon State U.)
 Population Growth and Feeding Habits
 of Harbor Seals in an Aquacultural-
 Enhanced Environment \$ 53.7K

FY81

Cicin-Sain, B. (U. California, Santa Barbara)
 Marine Mammal/Fisheries Conflicts:
 Emphasis on Sea Otter/Shellfish
 Fishery Conflicts (NA80AA-D-00120A) \$ 5.1K

Mate, B. R. (Oregon State U.)
 Seal Exclusion System
 (NA81AA-D-00086) \$ 30 K

4. North Pacific Fishery Management Council

FY80

Fay, F. H. and L. F. Lowry (U. Alaska and
Alaska Department of Fish and Game)
Seasonal Use and Feeding Habits of
Walrus in the Proposed Bristol Bay
Clam Fishery Area \$ 97.2K

FY81

Calkins, D., L. Lowry and K. Frost
(Alaska Department of Fish and Game)
Compilation and Evaluation of Data on
Feeding Habits and Food Requirements
of Marine Mammals in the Bering Sea
(81-4) \$ 28.9K

Department of Defense

1. Air Force (Headquarters Space Division)

FY80

Jehl, J. R. and R. Schreiber (Hubbs-
Sea World Research Institute)
Effects of Loud Impulse Noises in
Causing Startle Behavior and/or
Panic Responses in Pinnipeds \$ 15 K

FY81

Jehl, J., C. Cooper and B. Stewart
(San Diego State U. and Hubbs-Sea
World Research Institute)
Field Studies of Pinniped Populations
Likely to be Affected by Sonic Boom
from the Space Shuttle \$ 79.2K

2. Army (Corps of Engineers)

FY80

Bengston, J. (U. Minnesota)
St. John's River Manatee Project
Study \$ 44 K

Haller, W. T. (U. Florida)
Herbicide Residues in Crystal River \$ 78 K

FY81

None

3. Navy

A. Naval Ocean Systems Center

FY80

Bowers, C. A. (NOSC) Marine Mammal Capabilities (<u>Delphinapterus</u>) (MM01510C)	\$350	K
Gilmartin, W. G. (NOSC) Captive Dolphin Breeding (<u>Tursiops</u>) (MM02510B)	\$ 95	K
Gilmartin, W. G. and S. H. Ridgway (NOSC) Marine Mammal Medical Research and Animal Health (MM01510N)	\$405	K
Hui, C. A. (NOSC) Dolphin Bioenergetics (<u>Delphinus</u>) (MM02510H)	\$ 79	K
Nachtigall, P. E. (NOSC) Dolphin Behavioral and Biosonar Research (<u>Tursiops</u>) (MM01510K)	\$600	K
Nachtigall, P. E. (NOSC) <u>Tursiops</u> Directional Hearing (MM02510D)	\$ 60	K
Ridgway, S. H. (NOSC) Neurophysiological Research (<u>Tursiops</u>) (ZS39510A)	\$143	K

Schusterman, R. V. (California State U., Hayward) Pinniped Behavioral Evaluation (<u>Zalophus</u>) (MM02510E)	\$ 27 K
Scronce, B. (NOSC) Sea Lion Training Evaluation: Wild Caught vs. Captive Born (<u>Zalophus</u>) (MM01510T)	\$220 K

FY81

Bowers, C. A. (NOSC) Marine Mammal Capabilities (MM01511C) (<u>Delphinapterus</u>)	\$525 K
Hughes, T. W. (NOSC) Dolphin Hydrodynamics (MM02511T)	\$150 K
Johnson, W. (NOSC) Captive Dolphin Breeding (MM02511B)	\$100 K
Nachtigall, P. E. (NOSC) Dolphin Behavioral Research (MM01511K)	\$600 K
Ridgway, S. H. (NOSC) Marine Mammal Medical Research & Animal Health (MM01511N)	\$211 K
Neurophysiological Research (ZS39511A)	\$143 K

B. Office of Naval Research

FY80

Altes, R. (Oricon Corp.) Computer and Mathematical Analysis of Dolphin Whistles	SSIE \$ 5.9K
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Cummings, W. D. (U. California, San Diego) Distribution and Identification of Low Frequency Biological Noises in the Ocean	SSIE	\$ 35 K
Evans, W. E. (Hubbs Sea World Research Inst.) Research on Small Pacific Ocean Cetaceans (NR083-102-31)		\$ 10 K
Gilmartin, W. G. (NOSC) Martin Mammal Bionosis (NR-204-008)		\$ 30 K
Malins, D. C. and U. Varanasi (Seattle U.) The Biochemistry of Lipids Peculiar to Organs and Tissue of Cetaceans and Involved in Sound Transmission	SSIE	\$ 18.9K
Mate, B. (Oregon State U.) The Distribution of Cetaceans (Gray Whale) (NR-083-102-31)		\$ 37 K
Schusterman, R. (California State U., Hayward) Marine Mammal Acoustics (California sea lion and northern fur seal) (NR-104-131)		\$ 66 K
Vedros, N. A. (Naval Biosciences Lab.) Marine Mammal Diseases and Immunity (NR-204-001)		\$ 85 K
Wartzok, D. and G. C. Ray (Johns Hopkins U.) Marine Mammal Behavior, Acoustics and Ecology (spotted seal and harbor seal) (NR-104-676)		\$ 25 K
Watkins, W. A. and W. E. Schevill (Woods Hole Oceanographic Inst.) Marine Biological Sounds (NR083-004-39)		\$126 K
Winn, H. E. (U. Rhode Island) Bioacoustics and Behavior of Marine Mammals (Humpback Whale) (NR-083-165-4)		\$ 24 K

Evans, W. E. (Hubbs-Sea World Research Institute) Research on Small Pacific Ocean Cetaceans (NR-104-157)	(no funds extension)
Mate, B. (Oregon State U.) The Distribution of Cetaceans (NR083-102-31)	\$ 9 K
Ridgway, S. H. (NOSC) Marine Mammal Bionosis (NR204-008)	\$ 25 K
Schusterman, R. J. (California State U., Hayward) Marine Mammal Visual and Acoustical Capabilities (NR104-131)	\$ 70 K
Vedros, N. A. (Naval Biosciences Lab.) Marine Mammal Diseases and Immunity (NR204-001)	\$ 97 K
Watkins, W. A. & W. E. Schevill (Woods Hole Oceanographic Institution) Marine Biological Sounds (NR083-004-39)	\$101.6K
Winn, H. E. (U. Rhode Island) Bioacoustics and Behavior of Marine Mammals (Humpback Whales) (NR083-165-4)	(no funds extension)

Department of Energy

FY80

Tester, J. R. and D. B. Siniff (U. Minnesota) Vertebrate Behavior and Ecology (sea otter) (DE-AC0Z-76EV01332)	\$ 30 K
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FY81

Tester, J. R. and D. B. Siniff (U. Minnesota) Vertebrate Behavior and Ecology (sea otter) (DE-AC0Z-76EV01332)	\$ 20 K
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Department of Health and Human Services

National Institutes of Health

FY80

Atassi, M. Z. (Mayo Foundation) Immunochemical Studies on Hemo- globin and Myoglobin (whales)	\$ 89.1K
Bryan, W. P. (Indiana U. School of Medicine) The Role of Water in Protein Structure and Function (whales, human)	\$ 47.4K
Elsner, R. W. (U. Alaska) Comparative Pathophysiology of Myocardial Ischemia (dog, seals)	\$ 85.2K
Gurd, F. R. (Indiana U.) Structure and Reactivity of Proteins and Lipoproteins (human, cetaceans, etc.)	\$147.3K
Gurd, F. R. (Indiana U.) Specific Enrichment of Myoglobins for Carbon 13 NMR (cetaceans)	\$ 78 K
Hawkridge, F. M. (Virginia Common- wealth U.) Electron Transfer at Surface Elec- trodes (horse, whales)	\$ 38.3K
Howard, E. B. (U. Southern California) Toxicologic, Immunologic Effect of Environmental Contamination (marine mammals)	\$ 17.1K
Kooyman, G. L. (U. California, San Diego) Physiological Basis of Pulmonary Disease: Comparative Physiology (vertebrates)	\$ 56.6K
Ortiz, C. L. (U. California, Santa Cruz) Northern Elephant Seal in its Natural Habitat	\$ 43.5K

FY81

Atassi, M. Z. (Mayo Foundation) Immunochemical Studies on Hemoglobin and Myoglobin (whales) (5R01AM18920-06)	\$ 93.3K
Bryan, W. P. (Indiana U. School of Medicine) The Role of Water in Protein Struc- ture and Function (whales, human) (5R01GM27036-02)	\$ 44.1K
Elsner, R. W. (U. Alaska) Comparative Pathophysiology of Myocardial Ischemia (dog, seal) (5R01HL23950-03)	\$ 91.2K
Fathman, C. G. (Stanford U.) Antigen Reactive T Cell Clones: Isolation and Characterization (whales) (IR01AI18705-01)	\$101.4K
Gurd, F. R. (Indiana U.) Structure and Reactivity of Proteins and Lipoproteins (cetacea) (5R01HL05556-22)	\$151.6K
Specific Enrichment of Myoglobins for Carbon 13 NMR (cetacea) (5R01HL14680-10)	\$ 84.1K
Hawkridge, F. M. (Virginia Common- wealth U.) Electron Transfer at Surface Electrodes (horse, whales) (5R01GM27208-02)	\$ 36.9K
Howard, E. B. (U. Southern California) Toxicologic, Immunologic Effects of Environmental Contamination (cetacea) (5P30ES01965-04)	\$ 13.3K
Kooyman, G. L. (U. California, San Diego) Physiological Basis of Pulmonary Disease (seals, sea lions, porpoises) (5P01HL17731-07)	\$ 68.8K

Ogden, J. A. (Yale U.)
 Normal and Abnormal Postnatal
 Skeletal Development (whales)
 (5R01HD10854-05) \$ 19.7K

Ortiz, C. L. (U. California, Santa
 Cruz)
 The Physiology of Fasting in Young
 Northern Elephant Seals
 (2S06RR08132-07) \$ 51.4K

Department of the Interior

1. Bureau of Land Management

FY80

Albert, T. (U. Maryland)
 Tissue Analysis of Endangered Whales
 in the Beaufort Sea (AA851-CTO-22) \$350 K

Braithwaite, L. (Brigham Young U.)
 The Effect of Oil on the Feeding
 Mechanism of the Bowhead Whale
 (AA851-CTO-55) \$ 44.1K

Dohl, T. P. (U. California, Santa Cruz)
 Marine Mammal and Seabird Study of
 Central and Northern California \$2,442.8K

Fraker, M. and J. Richardson (LGL
 Ecological Research Associates)
 Possible Effects of Acoustic and Other
 Stimuli Associated with Oil and Gas
 Exploration/Development on the
 Behavior of the Bowhead Whale
 (AA851-CTO-44) \$590 K

Fritts, T. H. (U. S. Fish and Wildlife
 Service)
 Gulf of Mexico and South Atlantic
 Endangered Species Study, Year 1
 (AA851-MUO-21) \$494.9K

Geraci, J. R. and D. J. St. Aubin (U. Guelph) Study of the Effects of Oil on Marine Mammals (AA851-CT9-29)	\$ 0
Hobbs, L. (Marine Mammal Tagging Office) Development of Large Cetacean Tagging and Tracking Capability in OCS Lease Areas (AA851-IAO-32)	\$244.5K
Linder, E., B. Gayles, S. Johnson, P. Thompson (Naval Ocean Systems Center) Study of the Effects of Sound on Marine Mammals (AA851-IAO-5)	\$512.7K
Ljungblad, D. (Naval Ocean Systems Center) Aerial Surveys of Bowhead Whales, North Slope of Alaska (AA851-IAO-1)	\$591 K
Mate, B. (Oregon State U.) Monitoring the Movements of Whales in and Adjacent to OCS Lease Areas (AA551-CT9-34)	\$ 25.7K
Watkins, W. (Woods Hole Oceanographic Inst.) Effects of Whale Monitoring System Attachment Devices on Whale Tissues (AA851-CTO-23)	\$ 74.5K
Winn, R., R. Edel and M. Hyman (U. Rhode Island) Characterization of Marine Mammals and Turtles in the North and Mid-Atlantic Areas of the U. S. Outer Continental Shelf (AA551-CT8-48)	\$ 0

FY81

Fritts, T. H. (USFWS, Belle Chasse, LA) Gulf of Mexico and South Atlantic Endangered Species Study (AA851-MUO-21)	\$500 K
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Geraci, J. (U. Guelph) Effects of Oil on Marine Mammals (AA551-CT9-29)	\$111.8K
Hobbs, L. (NMFS, Marine Mammal Tagging Office) Development of Large Cetacean Tagging and Tracking Capability in OCS Lease Areas (AA851-IAO-32)	\$ 41.9K
Lindner, E. (Naval Ocean Systems Center) Effects of Sound on Marine Mammals (AA851-IAO-5)	\$178.6K
Ljungblad, D. (Naval Ocean System Center) Aerial Surveys of Endangered Whales-- Northern Bering, Chukchi and Beaufort Seas (AA851-IA2-3)	\$345.3K
Mate, B. (Oregon State U.) Development of Large Cetacean Tagging and Tracking Capability in OCS Lease Areas (AA851-CT9-34)	\$ 25 K
Richardson, J., M. Fraker, B. Wursig, R. Payne, et al. (LGL Ecological Research Associates, Inc.) Possible Effects of Acoustic and Other Stimuli Associated with Oil and Gas Exploration/Development on the Behavior of the Bowhead Whale (AA851-CTO-44)	\$741.4K
Winn, H. (U. Rhode Island) Characterization of Marine Mammals and Marine Turtles in the North and Mid-Atlantic (AA551-CT8-48)	\$942 K

2. BLM/NOAA/OCSEAP

FY80

Calkins, D. and K. Pitcher (Alaska Dept. Fish & Game) Population Assessment, Ecology and Trophic Relationships of Steller Sea Lions in the Gulf of Alaska (RU243)	\$ 95 K
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Fay, F. (U. Alaska) Morbidity and Mortality of Key Marine Mammal Species (RU194)	\$ 82 K
Jones, L. and H. Braham (National Marine Mammal Lab.) Collection and Analysis of NMFS Marine Mammal Platforms of Opportunity Data (RU68)	\$ 47 K
Lowry, L., J. Burns and K. Frost (Alaska Dept. Fish & Game) Trophic Relationships, Habitat Use, Winter Ecology Among Ice-Inhabiting Phocid Seals and Functionally Related Marine Mammals in the Arctic (RU232)	\$ 90 K
Nerini, M. and H. Braham (National Marine Mammal Lab.) Feeding Ecology of the Gray Whale in the Norton Basin (RU593)	\$150 K
Rice, D. and W. Wolman (National Marine Mammal Lab.) Habitat Use by Humpback, Gray and Fin Whales in the Gulf of Alaska (RU592)	\$300 K
Taber, A. and H. Braham (National Marine Mammal Lab.) Habitat Utilization by the Gray Whale of Nelson Lagoon, Alaska (RU605)	\$ 12 K

FY81

Burns, J. J. (Alaska Dept. Fish & Game) Biological Investigations of Belukha Whales in the Coastal Waters of Alaska (RU612)	\$ 49.8K
Burns, J. J. (Alaska Dept. Fish & Game) Investigations of Ice-Dependent Marine Mammals in the Coastal Zone During Summer and Autumn (RU613)	\$163.3K

Fay, F. H. (U. Alaska) Modern Populations, Migrations, Demography, Trophics, and Historical Status of the Pacific Walrus in Alaska (RU611)	\$130.3K
Hessing, P. (College, Alaska) Gray Whale Migration Into the Bering Sea	\$ 9.5K
Jones, L., H. Braham and L. Consiglieri (NMFS) Collection and Analysis of NMFS Marine Mammal Platforms of Opportunity Program Data (RU68)	\$ 8.0K
Lowry, L. F., J. J. Burns and K. J. Frost (Alaska Dept. Fish & Game) Trophic Relationships, Habitat Use, and Winter Ecology Among Ice- Inhabiting Phocid Seals and Functionally Related Marine Mammals in the Arctic (RU232)	\$118.3K
Nerini, M. and H. Braham (NMFS) Feeding Ecology of the Gray Whale in the Chirikof Basin (RU593)	\$ 48.6K
3. Fish and Wildlife Service --Polar Bear	
	<u>FY80</u>
	\$190.8K
DeMaster, D. (National Fish and Wildlife Lab.) Satellite Tracking of Bears (904.02.01)	
Biological Parameters of Bears of Western Beaufort Sea (904.02.02)	
Feasibility of Ecosystem-Oriented Studies of Bears in Beaufort Sea (904.02.03)	

Biology and Ecology of Bears of
Arctic Ocean (904.02.04)

Summer Distribution and Ecology
of Bears (904.02.05)

DeMaster, D. (NFWL) and D. Siniff
(U. Minnesota)
Produce Model to Simulate Population
Dynamics of the Northern Alaska
Polar Bear Population (904.02.06)

Staff (NFWL)
Annual Status Report (904.02.07)

Siniff, D. B. (U. Minnesota)
Development and Field and Lab
Testing of Radio Telemetry Pack-
ages and Systems for Polar Bears
(as well as Sea Otters, Walruses,
and Manatees (\$67K)

FY81

\$254 K

Amstrup, S. (FWS/DWRC)
Identify Areas Critical for High
Denning Success and General
Movement Patterns of Adult
Females (904.21)

Develop Alternative Techniques
to Capture Free-Ranging Polar
Bears (904.22)

Produce Model that Will Simulate
Population Dynamics of the Northern
Alaska Polar Bear Population (904.23)

Determine Biological Parameters of
Polar Bears of the Western and
Northern Populations (904.24)

Siniff, D. B. (U. Minnesota)
Monitoring Polar Bear Movements
(\$13K)

--Sea Otters and Marine Otter

FY80

\$594.2K

- Jameson, R. J. (NFWL)
 Biology and Management Needs
 for Sea Otters in California
 (904.03.01)
- Estes, J. A. and G. R. Van Blaricom
 (NFWL)
 Interaction Between Sea Otters and
 the Nearshore Community
 (904.03.02)
- Johnson, A. M. (NFWL)
 Annual and Seasonal Distribution,
 Abundance and Composition of
 Populations of Sea Otters and Other
 Marine Mammals in Prince William
 Sound, Alaska (904.03.04)
- Brownell, R. L. (NFWL)
 Parasites and Environmental
 Containments in Sea Otters
 (904.03.07)
- Staff (NFWL)
 Annual Status Report (904.02.08)
- Doyle, W. (U. California, Santa Cruz)
 Kelp Canopy Interactions in
 Monterey Bay (\$31K)
- Economics of Pismo Clam Fishery
 (\$4.5K)
- San Nicolas Island (California)
 Survey for Baseline Data and as
 Potential Sea Otter Translocation
 Site (\$133.2K)
- Hardy, R. A. (California Dept. Fish &
 Game)
 Sea Otter Mortality Rates and
 Causes (E-M-2)

Interrelationship Between Sea Otters
and Their Habitat (E-M-2)

Size, Distribution and Movements of
California's Sea Otter Population

Feasibility of Translocating Sea Otters

FY81

\$385.2K

Brownell, R. (FWS/DWRC)
Status of Marine Otter
(904.33)

Parasites and Environmental Contam-
inants in Marine Mammals (904.34)

Dobbin , J. L.
Compilation and Mapping of
Available Biological, Ecological
and Socioeconomic Information
Relative to the Protection, Man-
agement and Restoration of the
Southern Sea Otter
(\$80K, ESA; \$10K, MMC)

Doyle, W. (U. California, Santa Cruz)
Kelp-Canopy Interactions in
Monterey Bay (\$32K)

San Nicolas Island Survey for
Baseline Data (\$121.2K)

Estes, J. (FWS/DWRC)
Occurrence and Habitat Survey of
Sea Otters in Baja California
(904.35)

Estes, J. and G. Van Blaricom
(FWS/DWRC)
Interactions Between Sea Otters
and the Nearshore Community
(904.32)

Jameson, R. (FWS/DWRC)
Biology and Management Needs for
California Sea Otter (904.31)

Johnson, A. (FWS/DWRC)
 Annual and Seasonal Distribution,
 Abundance and Composition of
 Populations of Sea Otters and Other
 Marine Mammals at Prince William
 Sound, Alaska (904.26) (\$49K)

Staff (FWS/DWRC)
 Annual Status Reports (904.36)

--Walrus

FY80

\$231.8K

DeMaster, D. (NFWL)
 Biological Activity of Pacific and
 Atlantic Walrus (904.03.06)

Brownell, R. (NFWL)
 Parasites and Environmental Con-
 taminants in Walrus (904.03.07)

Staff (NFWL)
 Annual Status Reports on Pacific
 and Atlantic Walrus (904.03.08)

Doyle, W. (U. California, Santa Cruz)
 Round Island Walrus Survey (\$17.7K)

Alaska Regional Office, FWS
 Aerial Walrus Survey

FY81

\$ 99 K

Doyle, W. (U. California, Santa Cruz)
 Round Island Walrus Survey (\$14.7K)

Johnson, A. (FWS/DWRC)
 Evaluate Selected Areas for Potential
 Use for Population Assessment, Assess
 the Size of Populations and Investigate
 Hauling Out Patterns (904.25)

--Hawaiian Monk Seal

FY80

\$ 50.9K

Johnson, A. M. (NFWL)
 Biological Studies to Determine
 Status of Population (904.03.05)

FY81

\$ 31 K

Johnson, A. (FWS/DWRC)
 Biological Studies to Determine
 Status of Hawaiian Monk Seal
 (904.27)

--Manatees

FY80

\$319.3K

Rathbun, G. B. (NFWL)
 Distribution and Status of All
 Manatee Taxa and Populations
 (904.01.01)

Basic Reproductive and Behavioral
 Characteristics of West Indian
 Manatees (904.01.02)

Define Ecosystem Relationships
 of the Manatee, and Assess Effects
 of Habitat Alterations (904.01.03)

Determine Causes of Manatee
 Mortality, and Study and Salvage
 Stranded Manatees and Other
 Marine Mammals (904.01.04)

Influence of Warm Water Effluents
 on Manatee Distribution and Move-
 ments Around Selected Powerplants
 (904.01.05)

Basic Sensory and Physiological
 Parameters of West Indian Manatees
 as Related to Technical Needs
 (904.01.06)

Develop Manatee Tagging and Tracking
 Technology (904.01.07)

Brownell, R. L. (NFWL)
Parasites and Environmental Con-
taminants in Manatees
(904.01.08)

Staff (NFWL)
Annual Status Reports (904.01.09)

Forrester, D. (U. Florida)
Study of Parasites and Diseases
of the West Indian Manatee (\$5K)

Doyle, W. (U. California, Santa Cruz)
Evaluation of Existing Manatee-
Propeller Guard Technology
(\$1.8K)

Siniff, D. B. (U. Minnesota)
Ecology and Behavior of the West
Indian Manatee in the St. Johns
River, Florida (\$40K)

FY81

\$352 K

(plus \$18K from MMC)

Florida Marine Patrol
(Florida Department of Natural
Resources)
Aerial Survey Investigations (\$8K)

Forrester, D. (U. Florida)
Study of Parasites and Diseases
of the West Indian Manatee (\$5K)

Odell, D. K. (U. Miami)
Study of Marine Ecosystems and
Habitats, with Special Reference
to Manatees (\$22K)

Packard, J. M. (U. Minnesota)
Abundance, Distribution and Feeding
Areas of Manatees in the Riviera
Beach/Hobe Sound Area of Florida
(\$18K, MMC)

Rathbun, G. B. (FWS/DWRC)
Distribution and Status of All Taxa
and Populations of Sirenians (904.11)

Basic Reproductive and Behavioral
Characteristics of West Indian
Manatees (904. 12)

Define Ecosystem Relationships of
the Manatee (904. 13)

Causes of Mortality and Salvage
Stranded Manatees and Other
Marine Mammals (904. 14)

Develop Manatee Tagging and Tracking
Technology (904. 15)

Determine Parasites and Environ-
mental Contaminants in Manatee and
Dugong (904. 16)

Mortality Assessment (\$15K, ESA)

Staff (FWS/DWRC)

Prepare Annual Status Reports on
Manatee and Dugong (904. 17)

Tabb, D. (Tropical Bio-Industries)
Crystal River Manatee Management
and Research Plan (\$25K)

--Dugong

FY80

\$ 6.4K

Brownell, R. L. (NFWL)
Distribution and Status of All
Dugong Populations (904.01.01)

Parasites and Environmental
Contaminants in Dugongs
(904.01.08)

Staff (NFWL)

Annual Status Report (904.01.09)

FY81

\$ 6 K

Brownell, R. L. (FWS/DWRC)
Distribution and Status of All
Dugong Populations

--Marine Mammal Tagging

FY80

\$ 25.5K

Hobbs, L. (NFWL)

Serve as Clearinghouse and Information Center for Marine Mammal Tagging Operations (904.04.01)

Stimulate Research and Development of Marine Mammal Tags and Techniques (904.04.02)

Archive Data From Tagging/Marking Studies (904.04.03)

4. Geological Survey

FY80

Whitmore, F. C. (USGS)

Vertebrate Biostratigraphy and Paleogeography, Atlantic and Gulf Coastal Plain

\$ 30.0K

FY81

Whitmore, F. C. (USGS)

Vertebrate Biostratigraphy and Paleogeography, Atlantic and Gulf Coastal Plain

\$ 92.5K

5. National Park Service

FY80

Dean, F. (U. Alaska), C. & V. Jurasz (Sea Search) Glacier Bay Humpback Whale Data Analysis (CK9000-0-E099)	\$ 65 K
— Everglades National Park, NPS Manatee Survey	\$ 3.0K

FY81

English, T. S. (U. Washington) Humpback Whale Prey Study (9140-0002-182/81-ABC-00116)	\$ 90.5K
Herman, L. M. (U. Hawaii) Behavioral Study of Humpback Whales (9140-0002-182/81-ABC-00114)	\$113.5K
Jurasz, C. & V. (Sea Search, Ltd.) Humpback Whale Data Purchase (CX-9000-9-E073-C05)	\$ 35.9K
Malme, C. I. (Bolt, Baranek and Newman, Inc.) Acoustic Environment Study (9140-0002-182/81-ABC-00115)	\$137 K

Department of StateFY80Bureau of Oceans and International Environment and
Scientific Affairs

Joseph, J. (Inter-American Tropical Tuna Commission) Porpoise-Tuna Investigations	\$592.9K
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FY81

Gambell, R. (International Whaling Commission) Research Fund for International Whaling Commission	\$ 32.3K
Joseph, J. (Inter-American Tropical Tuna Commission) Porpoise-Tuna Investigations	\$687.1K

Department of Transportation

Coast Guard, Office of Research and Development

FY80

Naval Ocean Systems Center Final Report on the Coast Guard Pro- gram in Biological Phenomena	\$ 95.0K
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FY81

(No projects)

Environmental Protection AgencyFY80 - FY81

(No projects reported)

Marine Mammal CommissionFY80

Ainley, C. and H. Huber (Point Reyes Bird Observatory) Analysis of Tagged Elephant Seal Data Collected on the Farallon Islands, California (MM1801125-6)	\$ 5.3K
Cedar Creek Laboratory (U. Minnesota) Provide Radio Transmitters for Hawaiian Monk Seal Dive Profile (MM1800944-6)	\$ 2.8K

Clark, W. (U. Washington) Continuation of Population Analysis and Research on Stocks of Great Whales (MM1801114-6)	\$ 42.0K
Fish and Wildlife Service Manatee Recovery Activities Coordinator (MM1800908-6)	\$ 50.0K
Pilot Program--Development of Site-Specific Research/Management Plans for Areas of Special Signifi- cance to the West Indian Manatee (MM1801024-4)	\$ 25.0K
Initiation of a Study to Assess and Characterize Food Preference and Feeding Areas of Manatees in the Crystal River of Florida (MM1801025-7)	\$ 18.0K
Johnson, B. & P. Johnson Evaluation of Hawaiian Monk Seal Survey and Molt Data Collected and Laysan Island in 1977-1979 (MM1533701-4)	\$ 6.9K
Kasuya, T. (Ocean Research Institute) The Fishery-Dolphin Conflict in the Iki Island Area of Japan (MM1533791-7)	\$ 2.0K
Mayo, C. (Provincetown Center for Coastal Studies) Field Observations of Cetacea of the Provincetown, Massachusetts Area: 1975-1979 (MM1800925-5)	\$ 9.7K
National Academy of Science Evaluation of Marine Ecosystem Research in the Antarctic (MM1800913-2)	\$ 10.0K
National Marine Fisheries Service Continuation and Expansion of Monk Seal Population Studies (MM1800911-6)	\$ 50.0K

Workshop to Develop a Monk Seal Die-Off Response Plan (MM1800967-9)	\$ 4.0K
Assessment and Monitoring of Endangered Whales, Harbor Porpoise, and Other Centaceans Along the Northeast Coast of the United States (MM1801023-1)	\$ 65.0K
Workshop on Humpback Whales of the Western North Atlantic (MM1801038-3)	\$ 15.0K
Analyses of Data Concerning the Biology, Ecology, Behavior and Population Dynamics of Monk Seals in Laysan Island (MM1801102-3)	\$ 21.0K
Nolan, R. (Ocean Research Consulting and Analysis, Ltd.) Review of Available Information Concerning the Possible Effects of a Shark Control Program on Shark Populations and Other Components of Marine Communities of the Vicin- ity of Kure Atoll or Elsewhere in the Northwest Hawaiian Islands (MM1801065-5)	\$ 4.2K
Seaco (Kailua, Hawaii) Identification and Evaluation of On- Going and Planned Fisheries in the Northwest Hawaiian Islands (MM1801069-7)	\$ 6.9K
State of Florida Department of Natural Resources Workshop for the Education of Florida Law Enforcement Officers Relating to Manatees (MM1800941-7)	\$ 6.8K
Manatee Advisory Group (MM1800942-0)	\$ 4.2K

Manatee Education and Information Program (MM1801124-3)	\$ 5.0K
Swartzman, G. (U. Washington) Exploring Interactions Between Fur Seal Populations and Fisheries in the Bering Sea (MM1800969-5)	\$ 4.9K

FY81

Fish and Wildlife Service Compilation and Mapping of Available Biological, Ecological and Socioeconomic Information Bearing on Protection, Management and Restoration of the Southern Sea Otter (MM2079330-0)	\$ 10 K
Green-Hammond, K. (Ecosystem Modeling, Inc.) Requirements for Effective Implementa- tion of the Antarctic Living Resources Convention (MM2079173-9)	\$ 9.5K
Preparation for the Fourth Meeting of the Ad Hoc Group of U. S. Antarctic Scientists (MM2079349-4)	\$ 4.3K
Hubbs-Sea World Research Institute Logistic Support Meeting on Alterna- tive Methods of Fishing for Yellowfin Tuna (MM2079237-2)	\$ 5.6K
National Marine Fisheries Service Marine Mammal/Fisheries Interactions in the Columbia River and Adjacent Waters (MM2079221-7)	\$ 25 K
Antarctic Minke Whale Assessment Cruise (MM2079354-6)	\$ 11.5K
Individual Recognition and Assessment of Right Whales in the Northwest Atlantic (MM2079355-9)	\$ 2.5K
Partial Support for International Symposium on Cetacean Reproduction (MM2079356-2)	\$ 2 K

National Oceanic and Atmospheric Administration Third Meeting of Ad Hoc Group of U. S. Antarctic Scientists (MM2079305-4)	\$ 5.5K
Packard, J. M. (U. Minnesota) Research Needs Relative to Zonal Management of Sea Otters (MM2079342-3)	\$ 6 K
Swartz, S. L. (Cetacean Research Associates) Report on Preliminary Results of Ongoing Studies of Gray Whales (<u>Eschrichtius robustus</u>) in Laguna San Ignacio, Baja California Sur, Mexico (MM2079219-4)	\$ 3.8K
Waring, G. H. (Southern Illinois U.) Survey of Federally-Funded Marine Mammal Research (MM1801196-8; MM2079343-6)	\$ 7 K
Washington Department of Fish and Game Workshop on Marine Mammal-Fisheries Interactions (MM2079345-2)	\$ 7.5K
Assessment of Harbor Seal Popula- tions and Feeding Habits in the Columbia River and Adjacent Waters (MM2079357-5)	\$ 23.5K
Whitehead, H. and K. Chu (Cambridge U.) Distribution Patterns and Movement of Humpback Whales in the North Atlantic (MM2079259-2)	\$ 9 K
Williams, T. D. (Monterey, CA) Cleaning and Reconditioning the Pelage of Oil-Contaminated Sea Otters (MM2079247-9)	\$ 2 K

National Aeronautics and Space Administration

FY80

Ray, G. C., D. Wartzok (Johns Hopkins U.)
and P. Sebesta (Ames Research Center)
Study of Predictive Ecological Models
Useful for the Management and Conser-
vation of Bering Sea Mammals SSIE \$ 12 K

FY81

Smith, R. C., K. S. Baker and P. Dustan
(U. California, San Diego)
Ship Satellite Bio-Optical Research
in the California Bight (Cetaceans) \$143.3K

National Science FoundationFY80

Awbrey, F. T. (San Diego State U.)
Artificial Aggregating System for
Tuna Purse Seining SSIE \$ 0

Dawson, W. W. (U. Florida)
Physiology of Vision in Dolphins
and Other Cetaceans (79-14129) \$ 99.2K

Fay, F. H. (U. Alaska)
Energy Cost and Control of Molting
in Bering Sea Harbor and Spotted
Seals (80-06957) \$ 38.8K

Hall, E. R. (U. Kansas)
A Systematic Classification of North
American Ursus (80-14252) \$ 36.3K

Herman, L. M. (U. Hawaii, Manoa)
Behaviors and Social Organization
of Humpback Whales in Hawaiian
Waters (77-24943) \$ 42.3K

Dolphin Information-Processing
Capabilities (77-16882) \$ 43.5K

- Jehl, J. R. and W. E. Evans (Hubbs-Sea
World Institute)
Distribution and Ecology of Orcinus
and Globicephala in the Antarctic
(80-22633) \$ 33.8K
- Kooyman, G. L. (Scripps Inst. Oceano-
graphy)
Biology of Weddell Seals During the
Austral Summer (79-23623) \$ 95.3K
- LeBoeuf, B. J. (U. California, Santa
Cruz)
Biological Studies of the Northern
Elephant Seal (77-17063) \$ 30.2K
- Morgane, P. J. (Worcester Foundation
for Experimental Biology, Inc.)
Archicortical-Limbic Formations
of Dolphin Brain (77-8660) \$ 46.6K
- Norris, K. S. (U. California, Santa
Cruz)
Behavior of the Hawaiian Spinner
Dolphin (78-24683) \$ 83.8K
- Siniff, D. B. (U. Minnesota)
The Role of the Leopard Seal in the
Antarctic Marine Ecosystem
(80-17257) \$ 76.4K
- The Development of Satellite Tracking
and Antarctic Position/Activity Moni-
toring for Selected Antarctic Verte-
brates (80-17348) \$ 19.8K
- Wormuth, J. (Texas A & M U.)
A Study of Feeding Relationships in
Tuna and Porpoise Through the Appli-
cation of Cephalopod Beak Analysis
(79-24779) SSIE \$ 31.6K

FY81

Bengtson, J. and D. B. Siniff (U. Minnesota) Changes in Reproduction Patterns of Antarctic Seals as Indicators of Shifts in Ecosystem Structure and Function (DPP 80-20087)	\$ 78.5K
Domning, D. P. (Howard U.) Tertiary Sirenian Systematics and Paleontology in West Atlantic and Caribbean (DEB 80-20265)	\$ 46.5K
Fay, F. H. (U. Alaska) The Energy Cost and Control of Molting in Bering Sea Harbor and Spotted Seals (DPP 80-06957)	\$ 40.1K
Herman, L. M. (U. Hawaii) Dolphin Information Processing: Linguistic Competencies (BNS 81-09653)	\$107 K
Kooyman, G. (Scripps Inst. Oceanography) Biology of Weddell Seals During the Austral Winter (DPP 79-23623)	\$ 68 K
Morgane, P. J. (Worcester Foundation for Experimental Biology) Neocortical Formations of Dolphin Brain (BNS 81-00064)	\$ 44.9K
Norris, K. S. (U. California, Santa Cruz) Behavior of the Hawaiian Spinner Dolphin (BNS 78-24683)	\$ 83.8K
Siniff, D. B. (U. Minnesota) Seasonal Movements and Interactions of Weddell Seals and Antarctic Cod in McMurdo Sound, Antarctica (DPP 80-20097)	\$105.7K

FY80

Mead, J. (National Museum of Natural History)	
Marine Mammal Program	\$ 93.5K
Ray, C. (National Museum of Natural History)	
Fossil Marine Mammals	\$ 49.3K

FY81

Mead, J. (National Museum of Natural History)	
Marine Mammal Program	\$103 K
Ray, C. (National Museum of Natural History)	
Fossil Marine Mammals	\$ 49.3K

Veterans AdministrationFY80 - FY81

(No projects)