

SURVEY OF FEDERALLY-FUNDED MARINE MAMMAL  
RESEARCH AND STUDIES, FY74 - FY91

George H. Waring

May 1992

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**SURVEY OF FEDERALLY-FUNDED  
MARINE MAMMAL RESEARCH AND STUDIES  
FY74 - FY91**

**George H. Waring, PhD  
Department of Zoology  
Southern Illinois University  
Carbondale, Illinois 62901**

**May 1992**

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## PREFACE

The Marine Mammal Protection Act directs the Marine Mammal Commission, among other things, to conduct a continuing review of research programs conducted or proposed to be conducted under the authority of the Act. To help meet this responsibility, the Commission annually surveys other Federal agencies known or thought to be conducting or supporting research or studies bearing upon the conservation and protection of marine mammals. Information provided in response to the annual surveys is summarized in this report.

The summary is an update of previous summaries prepared by the author for the Marine Mammal Commission (see Table 1). The user of this summary will find the Table of Contents helpful for locating specific information and for understanding the organization and breadth of the material provided. 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 lists all research and study projects identified by the surveys. Appendix A is a list of publications identified by the agencies as sources (or pending sources) of marine mammal information resulting from Federally-funded research and studies. Appendix B lists recent projects beginning with FY90. Comprehensive summaries of research and studies conducted or supported by Federal agencies in fiscal years 1970 through 1979, and from fiscal years 1980 through 1989, are provided in the FY70-FY79 and FY70-FY89 reports, respectively (see p. 5).

Agencies vary in their ability to identify and retrieve information on marine mammal research and studies. Also completeness and accuracy of information provided to the Commission varies by agency and by year. One problem in this regard is the ability of various agencies to differentiate between administrative, management, enforcement, and research costs. Consequently, some of the amounts reported herein may cover activities other than research.

March 16, 1992

George H. Waring, PhD  
Carbondale, IL

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# LIST OF ACRONYMS

<u>Acronym</u>	<u>Definition</u>
AFSC	Alaska Fisheries Science Center
AFWRC	Alaska Fish and Wildlife Research Center
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
DHHS	Department of Health and Human Services
DOI	Department of the Interior
DOS	Department of State
DWRC	Denver Wildlife Research Center
EPA	Environmental Protection Agency
FWS	Fish and Wildlife Service
FY	Fiscal Year
IWC	International Whaling Commission
MMC	Marine Mammal Commission
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
NASA	National Aeronautics and Space Administration
NEFSC	Northeast Fisheries Science Center
NERC	National Ecology Research Center
NFWL	National Fish and Wildlife Laboratory
NIH	National Institutes of Health
NMFS	National Marine Fisheries Service
NMML	National Marine Mammal Laboratory
NOAA	National Oceanic and Atmospheric Administration
NOSC	Naval Ocean Systems Center
NOPPO	National Ocean Pollution Program Office
NPFMC	North Pacific Fisheries Management Council
NPS	National Park Service
NSF	National Science Foundation
NSGCP	National Sea Grant College Program
NWFSC	Northwest Fisheries Science Center
OCRM	Office of Ocean and Coastal Resource Management
OCS	Outer Continental Shelf
OCSEAP	Outer Continental Shelf Environmental Assessment Program
ORCA	Office of Ocean Resources Conservation and Assessment
OMA	Office of Oceanography and Marine Assessment (now ORCA)
SEFSC	Southeast Fisheries Science Center
SI	Smithsonian Institution
SWFSC	Southwest Fisheries Science Center
TQ	Transition Quarter (July-September 1976)
USAF	U.S. Air Force
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

## I. OVERVIEW OF FEDERAL RESEARCH PROGRAMS INVOLVING MARINE MAMMALS

Fourteen department-level Federal agencies reported funding marine mammal research and studies from FY74 through FY91. Often more than one agency within the larger departments funded research. Some agencies funded projects in all years, whereas others supported research or studies during only part of the period. The Department of Transportation (i.e., Coast Guard) and the Veterans Administration gave support to a few projects early in the period; but since no further support has occurred in the past decade, those agencies are no longer included in this survey. The following section in this chapter reviews the types of studies that have been supported by agencies that have funded marine mammal research during at least four of the preceding ten years. Table 1 lists previous survey information on Federally-funded marine mammal research and studies which is available through the National Technical Information Service.

The average annual number of projects funded with Federal monies during the period FY74-FY91 was 149.8 (Table 2). The trends of these data are depicted in Figure 1. Data for 1976 include the 12-month fiscal year plus a transition quarter (TQ76 = July through September 1976) when the first day of the Federal fiscal year was shifted from 1 July to 1 October. Total funds reported expended by each agency annually for marine mammal research and studies are shown in Table 3. Funding by geographical region, taxonomic group, and research issue are listed in Tables 4, 5, and 6, respectively.

## **FEDERAL AGENCIES FUNDING MARINE MAMMAL RESEARCH AND STUDIES**

### **Department of Agriculture (USDA)**

The Department of Agriculture has conducted studies associated with marine mammal health, environmental damage assessment, and economic interrelationships. These studies have included the San Miguel sea lion virus, investigations of epizootics, and natural resource planning.

### **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, basic biology, ecological interactions, and resource management for use in conserving living marine resources. For example, recent NMFS research programs have included Eastern Tropical Pacific tuna/porpoise interactions and the recovery of North Pacific fur seals, Steller sea lions, Hawaiian monk seals, and endangered whales. The cetaceans and pinnipeds (exclusive of the walrus) are among the responsibilities of this department. Research funding is heavily committed to assessment of marine mammal populations and any impacts associated with fisheries and other human activities. More recently, support for studies to determine the causes of unusual marine mammal mortality events have also been supported as well as a national marine mammal tissue banking program. Other units within the National Oceanic and Atmospheric Administration (NOAA) have supported studies on marine mammals, including the National Ocean Pollution Program Office (NOPPO), the National Sea Grant College Program (NSGCP), the Office of Ocean and Coastal Resource Management (OCRM), and the Office of Ocean Resources Conservation and Assessment (ORCA) [formerly called the Office of Oceanography and Marine Assessment (OMA)]. Additionally, the North Pacific Fisheries Management Council (NPFMC) has supported studies. The Outer Continental Shelf Environmental Assessment Program (OCSEAP), managed by NOAA/ORCA, is responsible for parts of the Alaska OCS research. OCSEAP was created through interagency agreement between NOAA and what is now the Minerals Management Service (MMS); project funding comes from MMS.

### **Department of Defense (DOD)**

The Department of Defense conducts marine mammal research through the Headquarters Space Division of the Air Force, the Army Corps of Engineers, and for Navy, the Naval Ocean Systems Center (NOSC) and the Office of Naval Research. DOD research varies from basic environmental impact studies to applied military research to monitoring abundance and distribution of marine mammals at military facilities and bases. 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, health and husbandry, bioacoustics, cognition and memory, as well as sensory perception are supported.

### **Department of Energy (DOE)**

The Department of Energy occasionally supports marine mammal research. Studies have focused primarily on energy flow in aquatic ecosystems as well as on problems associated with monitoring marine mammals.

### **Department of Health and Human Services (DHHS)**

The Department of Health and Human Services, through the National Institutes of Health, funds some research on marine mammals; the research is basically oriented toward understanding mammalian morphology, genetics, physiology, and health (including disease processes).

### **Department of the Interior (DOI)**

The Department of the Interior, through the Minerals Management Service (MMS), supports environmental assessment studies involving the effects of outer continental shelf (OCS) development on marine mammals and their habitats. Special studies on the effects of oil spills, noise, and other variables associated with oil and gas activities are also supported. The Fish and Wildlife Service (FWS) supports management related research on the biology, population dynamics, and ecology of walrus, sea otter, polar bear, and sirenians (manatees and dugong). The U.S. Geological Survey (USGS) has conducted research on marine mammal paleontology, and the National Park Service (NPS) supports some marine mammal studies relative to national park, seashore, and monument development and management.

### **Department of State (DOS)**

The Department of State supports studies to compile and evaluate information on Antarctic and other treaty negotiations that may have a bearing on marine mammals and other marine species. Funds are also provided to further cetacean-related research of the Inter-American Tropical Tuna Commission and the International Whaling Commission, and other organizations.

### **Environmental Protection Agency (EPA)**

The Environmental Protection Agency supports marine mammal research through the study and monitoring of pollutant levels in coastal and pelagic marine organisms and assisting efforts to study causes of marine mammal die-off events.

### **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 supports research on marine mammal assessment and monitoring, especially for the manatees utilizing the environment of the Kennedy Space Center.

### **National Science Foundation (NSF)**

Through its various divisions, the National Science Foundation supports marine mammal research, although there is no directed effort on marine mammals per se. Some 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 National Zoological Park as well as the Department of Vertebrate Zoology and Department of Paleobiology of the Museum of Natural History, supports marine mammal research on evolutionary and general biology, including a salvage program and national stranding data base.

**TABLE 1****Reference list of previous surveys compiled by the author  
and available from the National Technical Information Service**

- 
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY79. Publication PB81-174336, National Technical Information Service, Springfield, Virginia. 235 p. (1981)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY80. Publication PB81-242059, National Technical Information Service, Springfield, Virginia. 43 p. (1981)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY81. Publication PB82-227570, National Technical Information Service, Springfield, Virginia. 65 p. (1982)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY82. Publication PB83-262998, National Technical Information Service, Springfield, Virginia. 83 p. (1983)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY83. Publication PB84-215086, National Technical Information Service, Springfield, Virginia. 84 p. (1984)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY84. Publication PB85-225613, National Technical Information Service, Springfield, Virginia. 99 p. (1985)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY85. Publication PB86-235637, National Technical Information Service, Springfield, Virginia. 108 p. (1986)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY86. Publication PB87-217386, National Technical Information Service, Springfield, Virginia. 120 p. (1987)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY87. Publication PB88-212782, National Technical Information Service, Springfield, Virginia. 133 p. (1988)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY88. Publication PB90-104050, National Technical Information Service, Springfield, Virginia. 143 p. (1989)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY89. Publication PB90-272097, National Technical Information Service, Springfield, Virginia. 154 p. (1990)
- Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY90. Publication PB91-212217, National Technical Information Service, Springfield, Virginia. 44 p. (1991)
-

TABLE 2

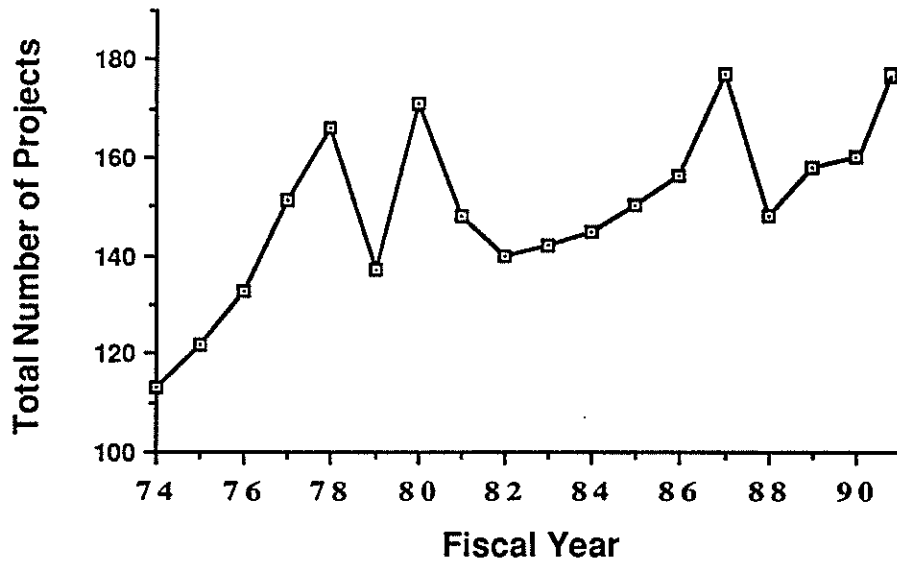
## NUMBER OF MARINE MAMMAL RESEARCH PROJECTS SUPPORTED BY FEDERAL AGENCIES IN FY74-FY91

	FY74	FY75	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91
Department of Agriculture	2	1				2	1	4						9	7			
Department of Commerce																		
National Marine Fisheries Service	13	8	9	13	14	14	34	31	25	31	26	29	34	28	32	35	48	58
National Ocean Pollution Program Office												1						
National Sea Grant	4	2	1	1	2	2	2	2	1	3	2	4	1				1	2
NOAA/OCSEAP (see below)																		
North Pacific Fishery Management Council							1	1	1	1	1							
Ocean and Coastal Resource Management								2	4	6	4	5	9	8	1			
Ocean Resources Conservation and Assessment									2	2	1	1	1	1	1	1	1	
Department of Defense																		
Air Force						1	1	1			2	2	2	2	1	1	1	1
Army						1	2											1
Naval Ocean Systems Center	16	8	7	14	17	8	9	6	8	7	8	12	13	13	12	12	7	7
Naval Research Laboratory						1												
Office of Naval Research	10	8	8	7	7	11	8	7	6	4	4	3	3	11	8	8	1	1
Department of Energy		1	1	2	2		1	1	1					1	1			
Department of Health and Human Services	20	26	17	13	12	8	9	11	12	9	8	11	8	9	13	16	13	10
Department of the Interior																		
Fish and Wildlife Service	15	20	27	40	43	52	44	33	27	29	22	17	21	20	19	22	22	18
Geological Survey				1	1	1	1	1	1	1	1							
Minerals Management Service		1	4	3	4	7	12	8	10	9	12	12	13	26	13	24	26	28
MMS/NOAA/OCSEAP		3	16	11	11	6	6	7	9	8	6	3	4	2	1	1	2	1
National Park Service	1	1	2	3	5	2	2	4	3	3	3		3	3	2	6	2	6
Department of State					2	1	1	2	2	2	2	2	3	3	2	3	3	3
Environmental Protection Agency	1	1												1	1	2	2	4
Marine Mammal Commission	14	32	30	29	34	7	21	16	15	13	30	32	20	25	25	16	18	24
National Aeronautics and Space Administration	1	1	1	2	2			1				1	3	2	1	1	2	2
National Science Foundation	12	7	10	10	8	11	14	8	10	11	10	12	12	10	8	9	12	11
Smithsonian Institution	4	4	2	2	2	2	2	2	3	3	3	3	5	3	1	1	1	1
TOTAL:	113	122	133	151	166	137	171	148	140	142	145	150	156	177	148	158	162	178

**FIGURE 1**

**TRENDS IN FEDERAL SUPPORT OF MARINE MAMMAL RESEARCH**

Total Number of Marine Mammal Projects Reported to the Marine Mammal Commission, FY74-FY91





**TABLE 3**  
**FEDERAL FUNDING OF MARINE MAMMAL RESEARCH \***  
 (Thousands of Dollars)

	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91
Department of Agriculture				209		84.7										
Department of Commerce																
National Marine Fisheries Service	1456.4	2313.8	3603.2	4425.9	5126.7	4531.6	3896.4	4050.7	4077	5021	4628.7	4852.9	4482.9	4801.4	7010.6	11925.1
National Ocean Pollution Program Office										20						
National Sea Grant Program	19.8	25.8	49.7	68	59.7	35.1	30	46.7	79.6	66.4	21.4				32.3	47.3
North Pacific Fishery Mgmt. Council					97.2	28.9	10	11.5	5							
Ocean and Coastal Resource Mgmt.						67	56.6	35.9	81	81.9	185.1	145	63			
Oceanography and Marine Assessment							58	123.6		59	55	15	15	15	25	
Department of Defense																
Air Force				40	15	79.2			6.5	15.5	58.5	58.5	55	55	173.9	106.7
Army				44	122											247.9
Naval Ocean Systems Center	361	718	545	717	1979	1729	1524	1708	1506	1699	2004.5	2094	1982	1909	979	864
Naval Research Laboratory				20												
Office of Naval Research	260.1	414	430	538.4	462.8	302.6	204	195.2	224	407.6	483.8	1284.2	1483.8	2128	160	200
Department of Energy	28	80	80		30	20	25				70	70				
Department of Health and Human Services	1078.5	781	772	392.8	602.5	755.8	899.2	684.4	629	1052.8	852.1	735.2	1089.1	1678.3	1421.5	1324.4
Department of the Interior																
Fish and Wildlife Service	833	933	1042.7	1452.5	1418.9	1127.2	1221	1261.2	1007.7	936.1	1542.3	2349.4	2496.6	3367.6	3007.9	3648.5
Geological Survey		31.2	30.5	20	45.5	79.6	62.8	76	71							
Minerals Management Service	2048.4	2242	2519.8	7457.3	6173.2	3507.2	3830.6	4275.9	3595.9	3140.7	2698.3	1695.9	3025.4	5228.9	3482.9	2963.8
National Park Service	17.2	16.5	64.8	45.8	68	376.9	223	300.4	235		17.5	39.5	27	86.2	50	66
Department of State			51	500	592.9	719.4	644.6	540.6	709.4	795.6	869.4	926.6	913.8	929.2	1148.5	1235.2
Environmental Protection Agency												8.5	8	175	100	212.2
Marine Mammal Commission	581.7	420.3	376.1	152.6	358.7	134.7	84.1	204.9	298.7	197.7	85	100.5	102.8	104.8	92.7	94.2
National Aeronautics and Space Administration	194	50	65		12	143.3				10	8.7	1.8	8.2	6	19.1	17.5
National Science Foundation	690.4	718.9	334.2	479.3	677.6	574.5	560.6	503	691.9	729.8	620.5	757.6	663.4	901.8	820.9	858.3
Smithsonian Institution	102	106.1	101.1	133.4	142.8	152.3	148.8	170.4	207.5	212.5	222.5	212	150	181.2	185	169
<b>TOTAL</b>	<b>7,748.5</b>	<b>8,850.8</b>	<b>10,065.1</b>	<b>16,696</b>	<b>17,984.5</b>	<b>14,449</b>	<b>13,478.7</b>	<b>14,188.4</b>	<b>13,425.2</b>	<b>14,445.6</b>	<b>14,423.3</b>	<b>15,348.4</b>	<b>18,565.8</b>	<b>21,547.4</b>	<b>18,669.3</b>	<b>23,979.8</b>

\*Funding totals provided on this table reflect total annual project costs identified in Appendix B as reported by each agency.

TABLE 4

**REGIONALLY ORIENTED MARINE MAMMAL RESEARCH IN WATERS ADJACENT TO THE UNITED STATES\***  
(Thousands of Dollars; Number of Projects Shown In Parentheses)

Geographical Region	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91
Hawaii	51.5 (2)	102.6 (8)	118.2 (6)	71.4 (2)	411.1 (11)	114.8 (2)	130 (2)	481.7 (4)	302.5 (3)	360.8 (3)	332.9 (4)		3+ (3)	1.5 (1)	429 (4)	487.6 (4)
Alaska	2451.5 (36)	2881.7 (39)	3336.8 (46)	3746.7 (17)	5407.4 (34)	3992.1 (29)	4949.4 (31)	4367.5 (30)	4960.2 (25)	4708 (28)	3787.5 (31)	4294 (39)	2827.5 (23)	5776.2 (34)	5612.9 (33)	8462.8 (49)
Oregon/Washington	81.6 (6)	43.5 (2)	60.3 (4)	68 (2)	229.9 (2)	234.5 (5)	73.6 (4)	165.3 (4)		23.2 (1)			1524.2 (3)	1520.2 (2)	68.6 (2)	37 (3)
California	1370 (18)	1132 (11)	317.2 (12)	1675.2 (11)	3234.9 (19)	862.3 (13)	1160.7 (17)	1693.9 (25)	1491.9 (32)	1505 (24)	1040.2 (23)	1066.8 (19)	1418.5 (12)	1318.8 (8)	1550.7 (8)	2443.7 (10)
Gulf of Mexico	6 (1)		2.4 (2)	144.3 (1)	200 (1)	330.8 (2)	275.5 (3)	20 (1)	238.5 (3)	15 (1)	168.1 (1)		62 (4)	154.2 (4)	248.1 (4)	897.8 (6)
Florida	139.9 (9)	171.2 (10)	269 (12)	656.3 (4)	858.2 (21)	306.8 (9)	429.8 (8)	610.6 (12)	384.8 (8)	622 (10)	295.6 (10)	573.9 (16)	242.5 (18)	504.2 (12)	560.9 (11)	659.5 (9)
Mid-Atlantic States (GA, SC, NC, VA)		199.9 (1)			200 (2)	293.3 (1)	4 (4)		2.6 (1)		1.5 (1)	669.6 (5)	455.9 (6)	725.8 (5)	544.7 (6)	520.6 (7)
NE Coastal States	56.2 (5)	29.3 (3)	1484 (4)	2762.9 (1)	292.7 (14)	1025.1 (8)	170 (6)	145.2 (10)	141.3 (7)	311.1 (11)	642.8 (15)	141.6 (11)	334.5 (9)	438 (13)	861 (17)	2873.2 (26)

\*Note -- Many marine mammal projects reflected in the data on Table 3 were not regionally oriented and thus are not listed on this table.

TABLE 5

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

	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91
<b>Sirenia (Manatee and Dugong)</b>																
Department of Agriculture																
Department of Commerce																
Department of Defense				44	122											
Department of Energy																
Dept. Health and Human Services																
Department of the Interior	173.8	190.2	267.1	580.5	328.7	358	353	391.6	276.8	284.1	224	389.5	396.4	402.6	419.8	437.2
Department of State																
Environmental Protection Agency																
Marine Mammal Commission			0.8		109			2.5	4.5	1.5	5	2	41.4	36	0.8	4
NASA		50	15							10	8.7	1.6	6.2	6	19.1	17.5
National Science Foundation						46.5					94					
Smithsonian Institution																
<b>CATEGORY TOTAL</b>	<b>173.8</b>	<b>240.2</b>	<b>282.9</b>	<b>624.5</b>	<b>559.7</b>	<b>404.5</b>	<b>353</b>	<b>394.1</b>	<b>281.3</b>	<b>295.6</b>	<b>331.7</b>	<b>393.1</b>	<b>444</b>	<b>444.6</b>	<b>439.7</b>	<b>458.7</b>
<b>Carnivora (Polar Bear and Sea Otter)</b>																
Department of Agriculture						22.2										
Department of Commerce				59.7	71	5.1				6.1	10					
Department of Defense																
Department of Energy	28	30	30		30	20	25									
Dept. Health and Human Services																
Department of the Interior	629.3	587.3	717.7	809.4	718	639.2	914	1096.7	1156.3	1303.7	1332.4	1883.4	1995.8	2938	2457.6	3148.2
Department of State																
Environmental Protection Agency														75	50	80
Marine Mammal Commission	103.2	40.6	49.9			18	5.6	31.8	67	33.3		2		7.5		3
NASA																
National Science Foundation				22.6	36.3					149.5		44	44	44		174.3
Smithsonian Institution																
<b>CATEGORY TOTAL</b>	<b>760.5</b>	<b>657.9</b>	<b>797.6</b>	<b>891.7</b>	<b>855.3</b>	<b>704.5</b>	<b>944.6</b>	<b>1128.5</b>	<b>1223.3</b>	<b>1492.6</b>	<b>1342.4</b>	<b>1929.4</b>	<b>2039.8</b>	<b>3064.5</b>	<b>2507.6</b>	<b>3405.5</b>
<b>Pinnipedia (Seals, Sea Lions, Walrus)</b>																
Department of Agriculture				200												
Department of Commerce	760.5	783.8	858.7	956.7	1454.7	940.2	1081.4	1188.8	1269.4	1650.7	1169	49.8	221.1	35.6	1504.8	2022.7
Department of Defense	147	274	325	246	353	149.2	50	72.9	68.5	179.9	233.3	344	264.9	502	173.9	106.7
Department of Energy											70	70				
Dept. Health and Human Services	116.2	141.3		76.6	43.5	51.4	38.4			57	51.8	162.2	143.9	259.5	227.5	178
Department of the Interior	684.6	763.5	684.6	589	467.7	541.9	385.1	268	494.8	75	170.2	639.3	229.1	161.2	267.9	367.8
Department of State																
Environmental Protection Agency																50
Marine Mammal Commission	54.3	64.8	33.7	59.1	106	56	12	159.1	12.5	32.8	8.7	17	3.5	7	14.7	17
NASA																
National Science Foundation	268.3	131.1	141.5	243.2	240.7	292.3	359.1	330.4	420.7	350.7	307.3	354.5	339.4	225	258.4	213.8
Smithsonian Institution	59.2	56.1	45	47.4			11.8	22.4	42.5	42.5	76.5	58				
<b>CATEGORY TOTAL</b>	<b>2090.1</b>	<b>2214.6</b>	<b>2068.5</b>	<b>2418</b>	<b>2665.6</b>	<b>2031</b>	<b>1937.8</b>	<b>2041.6</b>	<b>2308.4</b>	<b>2388.6</b>	<b>2086.8</b>	<b>1694.8</b>	<b>1201.9</b>	<b>1190.3</b>	<b>2447.2</b>	<b>2956</b>

TABLE 5 (continued)

## TAXONOMIC SUMMARY OF FEDERALLY-FUNDED MARINE MAMMAL RESEARCH

	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91
<b>Cetacea (Whales and Porpoises)</b>																
Department of Agriculture						44.6										
Department of Commerce	709.7	1555.8	2794.2	3326.3	3542.8	3118	2304.2	2037	2421.7	2540.7	2935	2376.7	2257.5	2705.5	3111.3	3342.8
Department of Defense	263.1	527	446	746.4	1583.8	1485.6	1355	1522.3	1218	1566.2	1973.5	2532.1	2565.9	2660	1139	1064
Department of Energy																
Dept. Health and Human Services	114.3	144.6	149.6	74.1	167.1	463.4	229.9	146.9	162.4	22.4			84.7	86.5	97.3	108.9
Department of the Interior	126.2	253.4	278	2937.5	2239.8	1910.4	2580.9	1905.6	2354.2	2888.6	1688.6	932.1	1372.7	2193.5	2456.2	1635.7
Department of State				500	592.9	719.4	644.6	540.6	709.4	795.6	860	919.3	911.1	926.1	1146.7	1234
Environmental Protection Agency														100	50	82.2
Marine Mammal Commission	262.8	124.9	169.7	81	133.7	34.4	28	5	63	74	39.8	301.2	27.7	4.5	23	30.3
NASA						143.3										
National Science Foundation	275.2	213.1	163.1	187.9	380.8	235.7	158.3	162.8	221.3	101.1	43	200	200	510.8	444	403.7
Smithsonian Institution	42.8															
<b>CATEGORY TOTAL</b>	<b>1794.1</b>	<b>2818.8</b>	<b>4000.6</b>	<b>7853.2</b>	<b>8640.9</b>	<b>8154.8</b>	<b>7300.9</b>	<b>6320</b>	<b>7150</b>	<b>7988.6</b>	<b>7539.9</b>	<b>7261.4</b>	<b>7419.6</b>	<b>9186.9</b>	<b>8467.5</b>	<b>7901.6</b>
<b>Mixed Species or General Studies</b>																
Department of Agriculture				9		17.9										
Department of Commerce	6			210.9	245.1	635.9	635.4	1042.6	551.5	1050.8	776.2	2586.4	1668.5	2075.3	2565.8	6606.9
Department of Defense	211	331	204	323	520	476	323	318	450	326	340	560.6	690	930		247.9
Department of Energy		50	50													
Dept. Health and Human Services	848	495.1	622.4	242.1	391.9	241	630.9	537.5	466.6	973.4	800.3	573	860.5	1332.3	1098.7	1037.5
Department of the Interior	1382.7	1428.3	1730.4	3999.5	3945.9	1654.3	1091.7	2200.6	624.4	740.4	842.9	279.9	1560	2987.4	746.6	1089.2
Department of State			51								9.4	7.3	2.3	3.1	1.8	1.2
Environmental Protection Agency																
Marine Mammal Commission	141.4	190	122	12.5	10	26.3	38.5	6.5	151.7	56.1	31.5	27.3	30	49.8	54.2	39.9
NASA			50													
National Science Foundation	146.9	374.7	29.6	25.6	19.8		43.2	10	49.9	128.5	176.2	159.1	80	122	118.5	66.5
Smithsonian Institution		50	56.1	86	142.8	152.3	137	148	165	170	146	154	150	161.2	165	169
<b>CATEGORY TOTAL</b>	<b>2736</b>	<b>2919.1</b>	<b>2915.5</b>	<b>4908.6</b>	<b>5275.5</b>	<b>3203.7</b>	<b>2899.7</b>	<b>4263.2</b>	<b>2459.1</b>	<b>3445.2</b>	<b>3122.5</b>	<b>4347.6</b>	<b>5041.3</b>	<b>7661.1</b>	<b>4748.6</b>	<b>9258.1</b>

**TABLE 6**  
**FEDERAL FUNDING OF MARINE MAMMAL RESEARCH BY RESEARCH ISSUE\*\***  
 (Thousands of Dollars)

SPECIAL RESEARCH ISSUE	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FUNDING AGENCY	LINE TOTAL
<b>Tuna/Porpoise:</b>																		
Population Assessment	81	518.5	524.5	462.7	676.9	615	482	570	507.3	485.8	606.5	1079.9	1002	1025.4	919.2	554.2	NMFS	10088.9
		2					4			1.8	1.3						MMC	9.1
				500	592.9	687.1	609.2	673.9	673.9	762	853	914.3	911.1	916.8	1138.4	1225.8	DOS	10458.4
Mortality Reduction	120	299.6	487.8	512.9	433.1	303.6	30	30.9									NMFS	2217.7
	178		67.4			5.6											MMC	251
	119.6	97.1															NSF	216.7
			48														Navy	48
Assessment of Taking	179	169.6	318.7	329.5	346.9	246.7	320.7	225	181.8	179.3	134.7	185.1	185.1				NMFS	3022.1
	12.4																MMC	12.4
Biology	136	138.1	220.4	705.3	362.4	430.2	318.3	331	296.5	319.2	288.8	303.5	381.6	360.1	592.7	902.6	NMFS	6086.7
		12.5	10														MMC	22.5
					31.6												NSF	31.6
<b>International Whaling Commission:</b>																		
Assessment of Stocks and Taking	38.7	52.8	103		340.5	433		700	856	815	753						NMFS	4092
	26.3	33.5	19.8	70.9	65					16.1					3		MMC	234.6
	21.5															49	NSF	70.5
							32.3	35.4	35.3	35.5	33.6	7	5	9.3	8.3	8.2	DOS	209.9
<b>Marine Mammal/Fisheries Conflicts:</b>																		
Southern Ocean Krill	10	14.5	4				10		49.2								MMC	87.7
			51														DOS	51
				25.6													NSF	25.6
Fin Fish/Pinniped Interactions	19.8	25.8	49.7	68		30	30	39.2	79.6	44.6	21.4						NSGCP	408.1
			59.3		4.9	32.5	10									5.5	MMC	112.2
				70	604.6	349.9	309.3	226.4	221.1	701	365.4		801.8	772.9	1255.7	2600.8	NMFS	8278.9
Shell Fish/Sea Otter Interactions					6	5.1				6.1							NSGCP	17.2
					4.5			31				142.5	253.9	242.6	36.9	322.9	FWS	1034.3
							142.4										NMFS	142.4
											10						OCRM	10
Fin Fish/Cetacean Interactions							10										NPFMC	10
					2		5		14.1		3						MMC	24.1
															68	716.8	NMFS	786.6
Incidental Taking							10	12	64.9	26.6	11	4					MMC	144.7
							23		14.8	65	121.3	78.5	165.6		25	3007	NMFS	3506.2
									5		20						NPFMC	5
																	NOPPO	20
<b>Effects of Oil and Gas Development on Marine Mammals:</b>																		
Physiological Studies	91.5	59	65	1097.8	394.1	111.8	1390.3	2485.5	1650.1		221.9		65.5	134.7			MMS	7767.2
		2.6															MMC	4.8
														75	100	180	EPA	355
Risk Analysis							184.4	51.8	617.8	977.5	409.5	454.2	647.2	633.9	994.7	1363.5	MMS	6534.5
								3.3	5.9	6.9				7.5		1.1	MMC	24.7
														923.8	580	978	FWS	2481.8
														30	50		NPS	60
															676.3	32	NMFS	710.3

TABLE 6 (continued)  
Federal Funding of Marine Mammal Research by Research Issue

SPECIAL RESEARCH ISSUE	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FUNDING AGENCY	LINE TOTAL	
<b>Marine Mammal Strandings:</b>																			
Biological Studies	32.3	15						6	1.6	10.5			7.5	32		12.4	MMC	117.5	
	<u>42.8</u>	<u>11.9</u>	<u>14.6</u>		<u>15</u>		<u>20</u>	<u>25</u>	<u>30</u>	<u>30</u>	<u>35</u>	<u>35</u>	<u>35</u>	<u>38</u>	<u>38</u>	<u>50</u>	SI	420.3	
	6			3.5	20	30	31.5	24.6	2							131.6	NMFS	249.2	
		70.4															MMS	70.4	
		<u>15</u>	<u>30</u>	<u>18.7</u>	<u>15</u>			<u>60</u>	<u>103</u>		7.5						FWS	241.7	
																32.2	OCRM	7.5	
																	EPA	32.2	
<b>Bowhead Whale:</b>																			
Assessment of Stocks and Taking	<u>38.7</u>	201	724	871.1	737.2	765.1	456.9	<u>806</u>				441	175.1	359	316.2	192	NMFS	6063.3	
	<u>44.1</u>	<u>42.5</u>	<u>187.2</u>		591	345.3		<u>317.4</u>	<u>625.4</u>	<u>543.8</u>	<u>480</u>	<u>180.3</u>		360	603.3	<u>139.5</u>	MMS	4439.6	
			6.7							4							MMC	10.7	
Biology					590			589.6	724.5	163.5	156.6	123.5	287.7	22.5			MMS	2657.9	
<b>Humpback Whale:</b>																			
Population Assessment	<u>38.7</u>	<u>52.8</u>	<u>103</u>	15	39.1	70.7	39	36.8	30.1	<u>113.1</u>	<u>82.8</u>	<u>45.7</u>	21.2	2.2	23	45	NMFS	760.2	
		25.1	21.4		15	9	5	5		4.5	11		3	1.5	7.4	7.5	MMC	115.4	
											15	15	23	20		20.9	NPS	93.9	
															8		MMS	8	
Biology	11.2	10	31.3	39.8	63	378.3	223	293.4	225			7				<u>13</u>	NPS	1293	
						4.1		12.6	<u>11</u>			3.3	<u>18</u>	<u>20</u>	<u>20</u>	<u>27</u>	<u>20</u>	NMFS	134
			39.7	40.2	42.3												NSF	122.2	
				48	24												Navy	72	
											63	63					OCRM	126	
<b>Gray Whale:</b>																			
Population Assessment	<u>38.8</u>	<u>52.8</u>	<u>103</u>	25.7						<u>53.8</u>	<u>59</u>						NMFS	343.1	
					37	9											Navy	46	
								<u>317.4</u>	<u>536.4</u>	<u>521.5</u>	<u>468.5</u>	<u>180.3</u>			<u>84</u>	<u>79.6</u>	MMS	2187.7	
										45.6							OCRM	45.6	
Biology				187.7	58.1	497				480	188.2				<u>38.8</u>		MMS	1449.8	
										38.7							NSF	38.7	
Assessment of Human-induced Impact	16.5	9.8	20.6			3.8	6			11		10					OCRM	10	
																	MMC	67.7	
<b>Northern Right Whale:</b>																			
Population Assessment						27.8	25	47.7	<u>11</u>	49.7	401.2	<u>285.5</u>	207.1	190	190	194	NMFS	1609	
						3	4		32.1		4		4.2		2	2	MMC	51.3	
												209.8	214.4	215	414.5	195.8	MMS	1249.3	
Biology							9					200	200	249.1	283.3	200.2	Navy	9	
														30	45	45	NSF	1132.6	
															19.6	3.5	MMS	120	
																		23.1	
<b>Killer Whale:</b>																			
Population Assessment	<u>38.8</u>	<u>52.7</u>		3							4						NMFS	98.5	
			7.9													5.4	MMC	13.3	
																5.4	NPS	5.4	
			<u>15.3</u>							5							NSF	20.3	
Biology														32.3	32.3		HSGCP	64.6	
															<u>14</u>		NPS	14	

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TABLE 6 (continued)  
Federal Funding of Marine Mammal Research by Research Issue

SPECIAL RESEARCH ISSUE	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FUNDING AGENCY	LINE TOTAL
<b>Pilot Whales:</b>																		
Population Assessment			15.3														NSF	15.3
												10.4					MMC	10.4
Biology						10									45	10	NMFS	55
																10	USDA	10
																10	NMFS	10
<b>Beluga:</b>																		
Population Assessment	44	42.5	17.2			49.8									84	79.8	MMS	317.1
										4.8		0.2					MMC	5
																25	NMFS	25
Biology	20	10	25		350	525	134	130.3									MMS	284.3
							102	100	182.5	219	224	250					Navy	1987.5
																54.8	NSF	54.8
<b>Harbor Porpoise:</b>																		
Population Assessment					45		30	9.6	1			7	33	67	181	270	NMFS	643.8
								4			9	30					OCRM	43
											10	5.8					MMC	15.8
														5			NPS	5
Biology																3	MMC	3
<b>Dall Porpoise:</b>																		
Population Assessment			210	6.9	264		228	185	185	127.8	112		285	327	553.8	977	NMFS	3426.1
<b>Bottlenose Dolphin:</b>																		
Population Assessment			1.9						15		4.5	13.5			1		MMC	35.9
				180.8	219.9	221.8	248.3	236.5	248.5	292.9	177.7	208.8	82	137	172	31.9	NMFS	2438.1
													8	100			EPA	108
Biology	133	270	168	467	903.9	850	1074	1310	975.5	1130	1305.5	1848.1	1805.9	2318	877	864	Navy	16099.9
													84.7	88.5	97.3	108.9	DHHS	377.4
	20	86.7	92.8	85.3	90.1	107	48.9	58.5	221.3	57.4	8.9				9.1	99.9	NSF	981.9
	15.8	31.8	0.5				4						15.5		10.6		MMC	78.2
				9				13.5						100	2	35	NMFS	159.5
<b>Northern Fur Seal:</b>																		
Population Assessment	354.4	352	387	430.2	248	158.8	263.3	237.4	309.5	274.4	259.8	5	5.5		5.5	5.5	NMFS	3272.2
								4.1									MMC	4.1
Biology	330.2	356	384	269.3	410.9	420.2	285.4	237.4	309.5	274.4	252.5						NMFS	3539.8
									1.5								MMC	1.5
		70	98	88								7					Navy	254
																	OCRM	7
									112						15		MMS	127
<b>Guadalupe Fur Seal:</b>																		
Population Studies	13.3	13.3	18.7														NMFS	43.3
<b>Antarctic Seals:</b>																		
Population Studies			50.3	97			68.4	39.9	49.9	41.8			54.3				NSF	401.8
													180	291	326.8	335	NMFS	1132.8
Biology	241.1	172.7	89	70.4	171.7	252.2	188.5	179	292.9	159.7	231	311.2	242.5	225	115.5	51.4	NSF	2973.8
															2		MMC	2

TABLE 6 (continued)  
Federal Funding of Marine Mammal Research by Research Issue

SPECIAL RESEARCH ISSUE	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FUNDING AGENCY	LINE TOTAL
<b>Arctic Seal:</b>																		
Population Studies	78	157	85						65.7			88					MMS	473.7
																10	NPS	10
Biology	138	201.1	237.6	212		281.6	157		292	19.9	3.5						MMMC	23.4
						38.8				60	75	250				144	MMS	2048.3
								75.5		38.2						102.8	NSF	179.6
											70	70					NMFS	75.5
																	DOE	140
<b>Hawaiian Monk Seal:</b>																		
Population Assessment	38.2	52.3	52	31.2	50.9	31	28	15									FWS	298.6
	13.3	13.3	16.7	3	108.3		102	311.7	300	340.8	328.4				417.9	447.6	NMFS	2400.8
Biology		34.1	25.8		34.9			150									MMC	64.6
											2.5	18					MMC	244.8
																	SI	20.5
																15	NSGCP	15
																20	Army	20
<b>Gray Seal:</b>																		
Population Studies		10.2			2.3	1.3		1.4									MMC	10.2
Biology	110	10	30														NMFS	5
																	Navy	150
<b>Harbor Seal:</b>																		
Population Studies	33.5	17.7	5.2			23.5				5.7		14			5	4	MMC	108.6
	6	6	31	6					3.5		0.5			15		1.2	NPS	89.2
					53.7												NSGCP	53.7
	3			11.5	39.4	3.5	20		0.7	1.3	29.2		29	33	33		NMFS	203.6
Biology	8.6	2.6							0.5	0.5	0.5	0.5					USAF	2
	65	60	50	50					7								MMC	18.4
					25												MMS	225
						36.3		23.8									Navy	25
							15			39.4	12	14					NMFS	83.9
								2.5									OCRM	80.4
							50	20									NSGCP	2.5
																	OMA	70
<b>Northern Elephant Seal:</b>																		
Population Studies	13.3	13.3	16.7	4.1					16		1	1					NMFS	47.4
Biology	27.2	33.1	31.8	41.2	30.2		45	51	61	55		43.3	42.6		142.9		OCRM	18
				10	5.3		12				1.2	3			2		NSF	604.3
					43.5	51.7	38.4			45	39.8	149.3	131.7	30	63.4	70.3	MMC	33.5
												20	25	57.5	27.5		DHHS	683.1
																	MMS	130
<b>California Sea Lion:</b>																		
Population Studies	7			82.5					15	15							NMFS	89.5
Biology					200				3.5								OCRM	30
																	NPS	3.5
																	USDA	200
	37	74	110		247				124	164.4	174.8	285.5	209.9	447			Navy	1873.6
	12.2																MMC	12.2
							11.8	22.4	42.5	42.5	30						SI	149.2
																	OCRM	8



TABLE 6 (continued)  
Federal Funding of Marine Mammal Research by Research Issue

SPECIAL RESEARCH ISSUE	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FUNDING AGENCY	LINE TOTAL		
<b>Stellar Sea Lion:</b>																				
Population Studies	157.1	145.5	155	148	95		34.9										MMS	700.8		
								11.5									NMFS	34.9		
								5		6.8							NPFMC	11.5		
																2.5	MMC	14.3		
																1.2	NPS	1.2		
<b>Walrus:</b>																				
Population Studies	112.8	141.8	52	141.8	231.8	99	50	50	53.9			94.7	201.6	201.1	146.2	195.4	163.6	FWS	1955.5	
							130.3	150.1	25	19.6								MMS	325	
			5									4			7		5	MMC	21	
Biology				20												2		MMC	22	
							77.2	60.5	66.8	15								NSF	219.5	
															36.6		MMS	36.6		
<b>Manatee and Dugong:</b>																				
Population Studies	143.8	159.7	236.6	290.1	265.7	300	150	100	211.8	142	112	97	50.5	18.4			FWS	2277.8		
		50										10	5.2	1.6	6.2	8	13.9	10	NASA	102.9
			0.5		3														NPS	3.5
			0.8		109				4.5			2	16.5	35					MMC	167.8
				10															MMS	10
Biology	30	30	30	127.2	45	52	173	231.6	20	142	112	275	345.9	368	419.8	437.2		FWS	2898.7	
				44	122														Army	311.2
										1.5	5			17.9	1		4	MMC	29.4	
											3.5				5.2	7.5		NASA	16.2	
												17.5		16.2				NPS	33.7	
<b>Polar Bear:</b>																				
Population Studies	401	303.1	223.1	251	140.8	200	80	73.7	80.9	135.8	174.9	602.2	692.9	690.6	673.8	636.5		FWS	5362.3	
Biology	50	50	50		50	54	140	100	80.9	125.1	437	85	168.1	135.4	126.8	122.3		FWS	1774.6	
		150		22.6	36.3													NSF	208.9	
<b>Sea Otter:</b>																				
Population Studies	157.2	151.9	352.1	530.4	400	185.2		100	195.2	120	144.8	85	527.7	572.8	560.9	210.4		FWS	4293.6	
	21.1							770.6	86.1	249.6	96							MMS	1223.6	
Biology	103.2	40.6	49.9			16	5.6	8.9	35.1	1.9		2					3	MMC	286.2	
	28	30	30		30	20	25											DOE	163	
		23.3	27.5	28	169.8	200	470	403.9	196.8	190.7	396.9	775.5	258.5	470	395.3	702.5		FWS	4728.7	
												44	44	44	174.3			NSF	455.8	
																		NPS	6	
		59					124		463.2					4				MMS	843.6	
													90.7	16	83.9	6.8				

\*Amounts underlined are estimated subunits of totals reported by the agency under more general categories.

\*\*Not all projects listed in Appendix B are reflected in this table, and a few projects plus a portion of the funding have been assigned to more than one issue.

## **II. RESEARCH AND STUDIES UNDER AUTHORITY OF THE MARINE MAMMAL PROTECTION ACT OF 1972, AS AMENDED**

The Marine Mammal Protection Act of 1972 (MMPA) established the Marine Mammal Commission and assigned marine mammal protection and conservation responsibilities to the Secretaries of Commerce, the Interior, and State. Such responsibilities have, in some cases, been delegated to agencies within a department. The Act noted the need for better information on the biology, ecology, and management of marine mammals and assigned research responsibilities. Responsibilities for research and its implementation were specified in Sections 108, 109, 111, 112, 202, and 205. Prior to 1982, funding authorized for marine mammal activities conducted by the National Marine Fisheries Service and the Fish and Wildlife Service were authorized under Title I of the Act on a section by section basis. As of Fiscal Year 1982, however, authorized funding for the various sections was combined so that Commerce and Interior now each receive a single authorized funding level that covers all expenses incurred under Title I.

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 versus administrative responsibilities within the National Marine Fisheries Service and the Fish and Wildlife Service from FY74 through FY91 are listed in Table 9.

## RESEARCH RESPONSIBILITIES OF FEDERAL AGENCIES UNDER THE MARINE MAMMAL PROTECTION ACT

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

With the establishment of the Act, the Secretary of Commerce was directed to undertake, in consultation with the Marine Mammal Commission, a study of North Pacific fur seals to determine whether herds of such seals, subject to the jurisdiction of the United States, were at their optimum sustainable population and what population trends were 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 to the Marine Mammal Protection Act, or both, to make the Convention and the Act consistent with one another [Sec. 108].

The Secretary of Commerce was also directed by the Act 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 [Sec. 111]. In 1984, the Secretary of Commerce was directed to commence a research program to monitor the indices of abundance and trends of marine mammal population stocks which are taken incidentally in the course of commercial purse seine fishing for yellowfin tuna. In 1988, the Secretary of Commerce was directed to conduct a study of possible impacts on marine mammals of seal control devices as well as other explosive devices used in the commercial yellowfin tuna fishery. The Secretary also was directed in 1988 to develop a fishery reporting and observation program to obtain reliable estimates of the numbers of marine mammals being taken incidentally in various fisheries in U.S. waters and, in consultation with the Marine Mammal Commission, to develop a recommended system for regulating such takes after 1 October 1993 [Sec. 114].

Both the Secretary of Commerce and the Secretary of the Interior are authorized by the Act to make grants to states to assist them in developing programs for the conservation and management of marine mammals and in administering such programs if management authority for such species is transferred to the state. Such grants are not to exceed 50 per centum of the costs of a particular program's development and implementation [Sec. 109(j)(1 & 2)].

The Secretaries are also authorized to make grants to any Federal or state agency, public or private institution, or other person for the purpose of assisting such agency, institution, or person to undertake research in subjects which are relevant to the protection and conservation of marine mammals [Sec. 110].

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 provisions 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 conditions of the stocks of marine mammals, of methods for their protection and conservation, of humane means of taking marine mammals, of research programs conducted or proposed to be conducted under authority of the Act, and of all applications for permits for scientific research, public display, or enhancing the survival or recovery of a species or stock; 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 gives 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)

<u>Department of Commerce (NMFS)</u>	<u>AUTHORIZED</u>	<u>REQUESTED</u>	<u>APPROPRIATED</u>
FY74	4667	5300	1600
FY75	3667	2550	4445
FY76	3667	2550	4872
FY77	4667	4939	7042
FY78	11700	4872	7228
FY79	11425	7042	7080
FY80	11925	6728	7416
FY81	12425	7875	7475
FY82	7223	7416	7700
FY83	8000	7416	9225
FY84	8800	5571	8475
FY85	8800	5615	9375
FY86	8800	5850	8670
FY87	8800	6150	9375
FY88	8800	7586	8670
FY89	15440	7128	9291
FY90	12740	7061	16595
FY91	21780	19579	19266
<u>Department of the Interior (FWS)</u>			
FY74	1358	700	700
FY75	1358	1358	1358
FY76	1358	1358	1358
FY77	1358	1358	1358
FY78	2050	1358	1539
FY79	2350	1600	2000
FY80	2660	2000	2000
FY81	3376	2000	2000
FY82	1600	1600	1600
FY83	1760	1690	1690
FY84	2000	1658	1249
FY85	2500	1292	1289
FY86	3000	2024	1815
FY87	3000	1050	1310
FY88	3000	1077	1776
FY89	3000	777	1326
FY90	3120	761	1411
FY91	3240	1419	1419

**TABLE 7 (continued)**  
**Federal Funding Under the Marine Mammal Protection Act**

<b>Marine Mammal Commission (MMC)</b>	<b>AUTHORIZED</b>	<b>REQUESTED</b>	<b>APPROPRIATED</b>
FY74	1000	825	412
FY75	1000	1000	750
FY76	1000	1000	900
FY77	1000	1000	1000
FY78	1000	900	900
FY79	1000	702	702
FY80	1000	640	940
FY81	1000	1000	734
FY82	672	672	672
FY83	1000	594	822
FY84	1100	638	929
FY85	1100	648	929
FY86	1100	738	861
FY87	1100	855	910
FY88	1100	862	953
FY89	1100	933	953
FY90	1140	960	960
FY91	1153	1153	1153

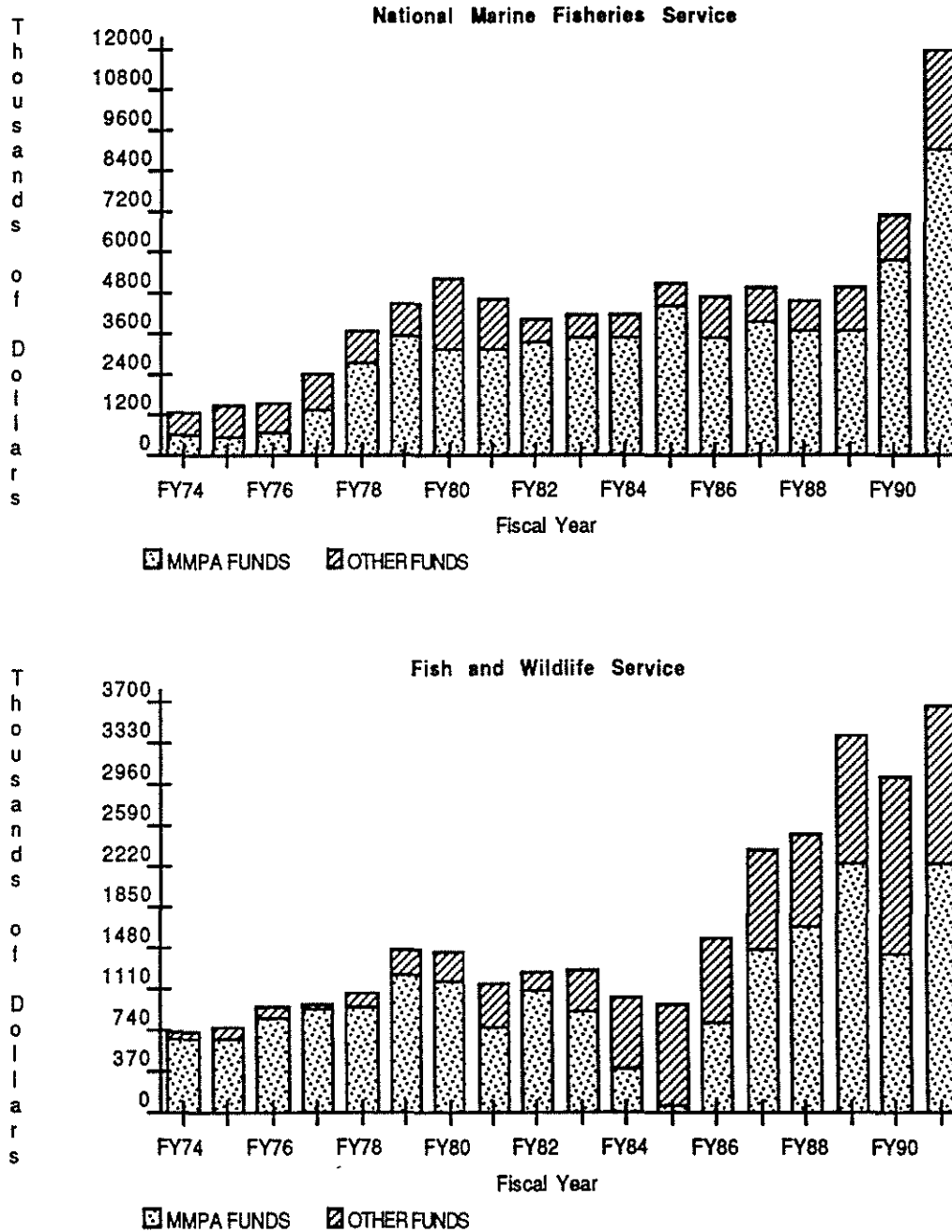
Note: Figures on this table reflect administrative and enforcement costs as well as research costs. The figures for FWS and NMFS are those reported to the Commission by those agencies. Funding under the column headings reflect levels listed as (1) authorized under sections of the Act, (2) requested funding of the agencies, and (3) funds subsequently appropriated by Congress.

**TABLE 8**  
**FUNDS EXPENDED ON MARINE MAMMAL RESEARCH**  
**OTHER THAN THOSE APPROPRIATED UNDER AUTHORITY OF THE**  
**MARINE MAMMAL PROTECTION ACT**  
(Thousands of Dollars)

	FY74	FY75	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91
<b>Department of Commerce, NOAA</b>																		
<b>National Marine Fisheries Service</b>			.															
Fur Seal Act Authorization	309	395	743	595	595	595	595	595	595	595	619	620	654	654	477	368	448	
Reprogramming and Reserves	295	442	59	78														
Endangered Species Act Appropriation				294	294	294	1428.4	775					500	250	350	789	803	2899
<b>NMFS TOTAL</b>	<b>604</b>	<b>837</b>	<b>802</b>	<b>967</b>	<b>889</b>	<b>889</b>	<b>2023.4</b>	<b>1370</b>	<b>595</b>	<b>595</b>	<b>619</b>	<b>620</b>	<b>1154</b>	<b>904</b>	<b>827</b>	<b>1167</b>	<b>1251</b>	<b>2899</b>
<b>Department of the Interior</b>																		
<b>Fish and Wildlife Service</b>			.															
FWS Appropriation	49	75	83.3	16			82.2											
Endangered Species Act Appropriation					93.7	213.1	162	362.9	123	348	614	879	736.3	891	825	1125	1170	1398
National Wildlife Refuge System									11	5								
Administration Act Appropriation																		
Oil Spill Damage Assessment																	414	
<b>FWS TOTAL</b>	<b>49</b>	<b>75</b>	<b>83.3</b>	<b>16</b>	<b>93.7</b>	<b>213.1</b>	<b>244.2</b>	<b>362.9</b>	<b>134</b>	<b>353</b>	<b>614</b>	<b>879</b>	<b>736.3</b>	<b>891</b>	<b>825</b>	<b>1125</b>	<b>1584</b>	<b>1398</b>

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

**FIGURE 2**  
**FUNDS EXPENDED ON MARINE MAMMAL RESEARCH**  
**BY THE NATIONAL MARINE FISHERIES SERVICE AND THE**  
**FISH AND WILDLIFE SERVICE, FY74-FY91\***  
 (Thousands of Dollars)



\*Figure 2 is developed from data shown on Table 3 and Table 8.



TABLE 9

NUMBER OF PERSONNEL ASSIGNED TO MARINE MAMMAL ADMINISTRATIVE AND RESEARCH ACTIVITIES  
IN THE NATIONAL MARINE FISHERIES SERVICE AND FISH AND WILDLIFE SERVICE, FY74-FY90\*

<u>National Marine Fisheries Service**</u>																		
	FY74	FY75	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91
Administrative	28	28	42	7	8	86.5		33.5	27.1	16	19.9	23.2	21.8	11.8	22.3	23.1	38.3	51.7
Research	26	33	31	17	20	48.9		60.7	61.2	42.7	76.3	75.8	76.3	63.5	67.3	70.2	80.5	98.4
NMFS Total	54	61	73	24	28	135.4	166.1	94.2	88.3	58.7	96.2	98.8	98.1	75.3	89.6	93.3	118.8	150.1
<u>Fish and Wildlife Service***</u>																		
	FY74	FY75	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91
Administrative	12.1	14.1	15.2	16.6	17.1	20.3	24.6	23.3	21.5	6	18.1	21.1	19.6	1.5	5.5	5.4	4	4.2
Research	6	11	11.8	14.8	13.2	17.2	17.4	17.8	16.5	16	17.6	17.8	16.5	27.7	29.1	31.4	29.8	37.3
FWS Total	18.1	25.1	27	31.4	30.3	37.5	42	41.1	38	22	35.7	38.9	36.1	29.2	34.6	36.8	33.8	41.5

\*Figures provided by the agencies.

\*\*The National Marine Fisheries Service changed their method of reporting --  
in FY77, to number of personnel; in FY79, to permanent employee man-years; and  
in 1984, to full-time equivalents.

\*\*\*Reported in man-years in FY74-FY81 and as full-time equivalents thereafter.

## APPENDIX A

### SOURCES OF MARINE MAMMAL INFORMATION FROM FEDERALLY-FUNDED RESEARCH AND STUDIES

#### Department of Commerce

##### **National Marine Fisheries Service**

Administrative reports of the various fisheries centers  
 Annual Reports for the Marine Mammal Protection Act  
 Bulletin of Zoological Nomenclature  
 Canadian Journal of Fisheries and Aquatic Sciences  
 (Journal Fisheries Research Board of Canada)  
 Canadian Journal of Zoology  
 Conservation Biology  
 Contributions to edited books  
 Ecology  
 Evolution  
 Fisheries Bulletin (NMFS, NOAA, Department of Commerce)  
 International Whaling Commission Annual Reports  
 International Whaling Commission, Working Papers of the  
 Scientific Committee  
 Journal of Mammalogy  
 Journal of Theoretical Biology  
 Journal of Wildlife Management  
 Marine Fisheries Review (NMFS, NOAA, Department of Commerce)  
 Marine Mammal Division -- Annual Reports on Fur Seal Investigations  
 Marine Mammal Science  
 Marine Pollution Science  
 NOAA Technical Reports, NMFS Scientific Reports--Fisheries  
 North Atlantic Studies  
 Oceanus  
 Pacific Science  
 Physiological Zoology  
 Polar Biology  
 Proceedings of conferences

##### **National Sea Grant College Program**

Marine Mammal Information

**Office of Ocean and Coastal Resource Management, Sanctuary  
Programs Division**

Administrative reports of contractors  
Fishery Bulletin  
Marine Fisheries Review  
NOAA Technical Reports  
Proceedings of conferences

**Department of Defense**

**Air Force**

Headquarters Space Division Technical Reports  
Space Shuttle Final Environmental Impact Statement

**Navy**

Acta Zoologica Fennica  
American Journal of Veterinary Research  
Animal Behavior Processes  
Annals of the New York Academy of Science  
Aquatic Mammals  
Arctic  
Behavioral and Brain Sciences  
Biology of Reproduction  
Brain, Behavior and Evolution  
Breviora  
Canadian Journal of Zoology  
Cetology  
Contributions to edited books  
Deep-Sea Research  
Diseases of Aquatic Organisms  
Fishery Bulletin  
Journal Acoustical Society of America  
Journal American Veterinary Medical Association  
Journal of Mammalogy  
Journal of Morphology  
Journal of Wildlife Diseases  
Marine Fisheries Review  
Marine Mammal Science  
Microbios Letters  
Naval Ocean Systems Center Technical Reports  
Polar Record  
Proceedings of conferences  
Science  
Transactions of the San Diego Society of Natural History  
Vision Research

**Department of Energy**

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

**Department of the Interior****Fish and Wildlife Service**

Acta Anatomica  
 Acta Zoologica  
 Aquatic Mammals  
 Biococial Conservation  
 Bulletin of Marine Science  
 Contributions to edited books  
 Cornell Veterinarian  
 Fishery Bulletin  
 Florida Scientist  
 Journal American Veterinary Medical Association  
 Journal of Comparative Physiology  
 Journal of Mammalogy  
 Journal of Morphology  
 Journal of Wildlife Diseases  
 Journal of Wildlife Management  
 North American Fauna Series  
 Northeast Gulf Science  
 Reports available through the National Technical Information Service  
 U. S. Department of the Interior, Fish and Wildlife Service:  
 a) Annual Reports for the Marine Mammal Protection Act  
 b) Biological Services Reports  
 c) National Fish and Wildlife Laboratory Reports  
 d) Wildlife Research Reports  
 Veterinary Clinical Pathology  
 Zoomorphology

**Geological Survey**

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

**Minerals Management Service**

NOAA/OCEAP Annual Reports  
 NOAA/OCEAP Final Reports  
 NOAA/OCEAP Lease Area Synthesis Reports  
 Project reports available through the National Technical Information Service

**National Park Service**

Administrative reports

**Department of State**

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

**Marine Mammal Commission**

Project reports available through the National Technical  
Information Service  
Marine Mammal Commission Annual Report  
Numerous scientific journals and contributions to edited books

**National Science Foundation**

Antarctic Bibliography  
Antarctic Journal of the United States  
Numerous scientific journals

**Smithsonian Institution**

Behavioral Ecology and Sociobiology  
Contributions to edited books  
Fishery Bulletin  
Florida State Museum, Plaster Jacket  
Journal of Mammalogy  
Marine Mammal Science  
Physiological Zoology  
Proceedings of the Biological Society of Washington  
Smithsonian Institution Contributions to Marine Sciences  
Smithsonian Institution Contributions to Paleontology  
Smithsonian Institution Contributions to Zoology  
Systematic Zoology

## APPENDIX B

### LISTING OF MARINE MAMMAL RESEARCH AND STUDY PROJECTS, PRINCIPAL INVESTIGATORS, AND FUNDING LEVEL FOR FY90-FY91\*

COMPILED FROM INFORMATION PROVIDED  
TO THE MARINE MAMMAL COMMISSION  
BY EACH AGENCY

\* 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, Publication PB81-174336, National Technical Information Service, Springfield, Virginia, 235 p.

For a listing of projects for the period FY80-FY89, see Waring, G. H., 1990, Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY89, Publication PB90-272097, National Technical Information Service, Springfield, Virginia, 154 p.

Department of Agriculture

FY90-FY91

(No projects)

Department of Commerce

## 1. National Marine Fisheries Service

## A. Alaska Fisheries Science Center

FY90

Bengtson, J. (NMML) Antarctic Ecosystem Program (8L1A5T3N)	\$326.8K
Braham, H. W. (NMML) Laboratory Administration (8L1A5T3A)	\$436.6K
Calkins, D. G. (Alaska Dept. of Fish and Game) Assessment of Injury to Steller Sea Lions in Prince William Sound and the Gulf of Alaska ("Exxon Valdez" Oil Spill)	\$171.2K
DeLong, R. L. (NMML) California Current Ecosystem Program (8L1A5T3C)	\$297.5K
Fowler, C. W. (NMML) Ecosystem and Population Assessment Program (8L1A5T3E)	\$447.9K
Jones, L. L. (NMML) High Seas Fisheries Interactions (8L1A5T3H)	\$233.4K
High Seas Squid Driftnet (8L2B5N00)	\$320.2K
Jones, L. L. and D. Withrow (NMML) Arctic Whales Program (8L1A5T3R)	\$316.2K
Lowry, L. and K. Frost (Alaska Dept. of Fish and Game) Assessment of Injury to Harbor Seals in Prince William Sound and Adjacent Areas ("Exxon Valdez" Oil Spill)	\$159.3K
Loughlin, T. R. (NMML) Bering Sea and Gulf of Alaska Ecosystem (8L1A5T3B)	\$715.3K
Matkin, C. and O. von Ziegesar (North Gulf Oceanic Society) Assessment of Injuries to Killer Whales in Prince William Sound, Kodiak Archipelago, and Southeast Alaska ("Exxon Valdez" Oil Spill)	\$255.8K
Matkin, C., D. McSweeney, J. Straley, and O. von Ziegesar Effects of the "Exxon Valdez" Oil Spill on the Distribution and	

Abundance of Humpback Whales in Prince William Sound, Southeast  
Alaska, and the Kodiak Archipelago \$92K

FY91

Bengtson, J. (NMML)  
Antarctic Ecosystem Program (8L1A5T3N) \$335K

Braham, H. W. (NMML)  
Laboratory Administration (8L1A5T3A) \$589K

DeLong, R. L. (NMML)  
California Current Ecosystem Program (8L1A5T3C) \$830K

Fowler, C. W. (NMML)  
Ecosystem and Population Assessment Program  
(8L1A5T3E) \$356K

Jones, L. L. (NMML)  
High Seas Fisheries Interactions (8L1A5T3H) \$977K

Jones, L. L. and D. Withrow (NMML)  
Arctic Whales Program (8L1A5T3R) \$192K

Loughlin, T. R. (NMML)  
Bering Sea and Gulf of Alaska Ecosystem (8L1A5T3B) \$1300K

**B. Alaska Regional Office**

FY90

Spraker, T. (Wildlife Pathology International)  
Humane Observer (0-HAWF-0-00092) \$3.5K

Zacharof, M. (Aleut Community of St. Paul)  
1990 Fur Seal Subsistence Harvest Data (0-HAWF-0-00091) \$2K

FY91

Morris, R. (AKR/PRMD)  
Cook Inlet Beluga Whale Survey \$25K

Munro, N. and D. Hicks (Saltwater, Inc.)  
Marine Mammal Observers: Prince William Sound and  
Unimak Pass Gillnet Fisheries (0-ABNF-0-00036) \$1300K

Spraker, T. (Wildlife Pathology International)  
Humane Observer (0-HAWF-0-00092) \$3.5K

Zacharof, M. (Aleut Community of St. Paul)  
1990 Fur Seal Subsistence Harvest Data (0-HAWF-0-00091) \$2K



## C. Northeast Fisheries Science Center

FY90

Brault, S. (National Research Council) Pilot Whale Population Dynamics (OP.4)	\$45K
Finn, J. (Univ. Massachusetts) North American Right Whale Program: Population Dynamics (OP.1.4)	\$18K
Katona, S. (College of the Atlantic) Humpback Whale Individual Identification (OP.3.2)	\$23K
Kraus, S. (New England Aquarium) North American Right Whale Program: Individual Identification (OP.1.3)	\$79K
Mayo, C. A. (Center for Coastal Studies) Distribution and Habitat Usage of Large Cetaceans (OP.3.1)	\$41K
Mayo, S. (Center for Coastal Studies) North American Right Whale Program: Habitat Requirements (OP. 1.2)	\$33K
Nicolas, J. (NEFSC) Marine Mammal Biological Sampling (ER.2)	\$23K
Payne, P. M. (Manomet Bird Observatory) Fishery Resource and Marine Mammal Sighting Surveys (ER.1.1)	\$46K
Polacheck, T. (NEFSC) Harbor Porpoise Program: Sighting Survey (OP.2.2)	\$75K
Polacheck, T. and D. Potter (NEFSC) Harbor Porpoise Program: Sighting Survey Methods (OP.2.2)	\$49K
Smith, T. (NEFSC) Marine Mammal By-Catch Estimation (HI.2)	\$25K
North American Right Whale Program (OP.1)	\$12K
Harbor Porpoise Program OP.2)	\$25K
North Atlantic Humpback Whale Program (OP.3)	\$6K
Waring, G. (NEFSC) Predation and Spatial Co-Occurrence (ER.1)	\$49K
Cetacean Habitat Survey (ER.1.2)	\$19K

Winn, H. and R. Kenney (Univ. Rhode Island) North American Right Whale Program: Sighting Data and Habitat Use (OP.1.1)	\$93K
<u>FY91</u>	
Brault, S. (National Research Council) Pilot Whale Population Dynamics (OP.4)	\$10K
Christensen, D. (NEFSC) Commercial Fishery Monitoring (HI.1)	\$69K
Crieger, K. and D. Potter (New England Aquarium and NEFSC) Pilot Whale Release (OP.5)	\$10K
Drew, S., P. Gerrior, and G. Power (Manomet Bird Observatory and NEFSC) Domestic Observer Project (HI.1.1)	\$1588K
Finn, J. (Univ. of Massachusetts) North Atlantic Right Whale Program: Population Dynamics (OP.1.4)	\$22K
Gerrior, P. (NEFSC) Foreign Observer Project (HI.1.2)	\$-0-
Katona, S. (College of the Atlantic) North Atlantic Humpback Whale Program: Humpback Whale Individual Identification (OP.3.2)	\$20K
Kraus, S. (New England Aquarium) North Atlantic Right Whale Program: Individual Identification (OP.1.3)	\$79K
Mayo, C.A. (Center for Coastal Studies) Distribution and Habitat Usage of Large Cetaceans (OP.3.1)	\$20K
Mayo, S. (Center for Coastal Studies) North Atlantic Right Whale Program: Habitat Requirements (OP.1.2)	\$33K
Nicolas, J. (NEFSC) Marine Mammal Biological Sampling (ER.2)	\$25K
Palka, D. (NEFSC) Harbor Porpoise Program: Sighting Survey (OP.2.1)	\$180K
Potter, D. (NEFSC) Harbor Porpoise Program: Harbor Porpoise Aerial Survey (OP.2.3)	\$40K
Read, A. and S. Kraus (Woods Hole Oceanogr. Inst. and New England Aquarium) Harbor Porpoise Program: Inshore Sighting Survey (OP.2.2)	\$25K
Smith, T. (NEFSC) Harbor Porpoise Program: HPP (OP.2)	\$25K
Marine Mammal By-Catch Estimation (HI.2)	\$50K

North Atlantic Right Whale Program: NARWP (OP.1)	\$12K
North Atlantic Humpback Whale Program: NAHWP (OP.3)	\$10K
Waring, G. (NEFSC) Predation and Spatial Co-occurrence (ER.1)	\$50K
Northeast Cetacean Aerial Survey (ER.1.1)	\$173K
Cetacean Habitat Survey (ER.1.2)	\$250K
Winn, H. and R. Kenney (Univ. Rhode Island) North Atlantic Right Whale Program: Sighting Data and Habitat Use (OP.1.1)	\$93K
<b>D. Northwest Fisheries Science Center</b>	
<u>FY90</u>	
Varanasi, U. (NWFSC) Chemical and Biochemical Analyses of Marine Mammals	\$27.5K
<u>FY91</u>	
Varanasi, U. (NWFSC) Chemical and Biochemical Analyses of Marine Mammals	\$54.5K
<b>E. Northwest Regional Office</b>	
<u>FY90</u>	
Brown, R. (Oregon Dept. of Fish and Wildlife) Oregon Harbor Seal and Sea Lion Project (NA88-ABD-00103)	\$35.6K
<u>FY91</u>	
Brown, R. (Oregon Dept. of Fish and Wildlife) Oregon Harbor Seal and Sea Lion Project (NA17FX0278-01)	\$35.6K
<b>F. Southeast Fisheries Science Center</b>	
<u>FY90</u>	
McGowan (SEFSC) Image Archival and Processing for Right Whales, Humpback Whales, and Bottlenose Dolphins (FSN100-8L1C4T)	\$16K
Mullin, K. (SEFSC, Pascagoula Laboratory) Deep Water Cetaceans of the Gulf of Mexico	\$83.1K
Powers, J. (SEFSC, Miami Laboratory) Stock Structure Analysis of Bottlenose Dolphins (FSN100-8L1C4T)	\$12K

Low-Level Monitoring of Bottlenose Dolphin Stocks in the Coastal Waters of the Southeastern United States (FSN100-8L1C4T)	\$100K
Photogrammetric Analysis of Bottlenose Dolphin Populations (FSN100-8L1C4T)	\$10K
Regional Aerial Survey of the Gulf of Mexico (FSN100-8L1C4T)	\$50K
Emergency Investigation of Gulf Dolphin Dieoff	\$114K

FY91

Cross, F. (Beaufort Laboratory) Marine Mammal and Turtle Strandings (SEC-9-91-12)	\$9.1K
Kifer, R. (Charleston Laboratory) Marine Mammals and Endangered Species, Research & Technical Support (SEC8-91-03)	\$122.5K
Nichols, S. (Mississippi Laboratory) Low Level Marine Mammal Monitoring (SEC2-91-09)	\$31.9K
Powers, J. (Miami Laboratory) Bottlenose Dolphin Low-Level Monitoring (SEC1)	\$-0-
Bottlenose Dolphin Fishery Interaction I (SEC1)	\$12K
Emergency Investigation -- Gulf of Mexico Dolphin (SEC1)	\$35K
Emergency Investigation -- Megaborg Oil Spill (SEC1)	\$32K
Marine Mammal Assessment Studies I (SEC1)	\$69K
Marine Mammal Assessment Studies III (SEC1)	\$86K
Marine Mammal Assessment Studies IV (SEC1)	\$110K

**G. Southwest Fisheries Science Center**FY90

Barlow, J. and D. P. DeMaster (SWFSC) Coastal Marine Mammals (540)	\$242.9K
Dizon, A. and D. P. DeMaster (SWFSC) Biological Assessment Program (520)	\$457.4K
Gerrodette, T. and D. P. DeMaster (SWFSC) Dolphin Stock Assessment Program (510)	\$583.6K

Gilmartin, W. G. (SWFSC, Honolulu Lab) Hawaiian Monk Seal Research and Recovery (FSR200/8L1A3VW0)	\$392.9K
Northwestern Hawaiian Islands Beach Debris Clean-up (FSR200/8L1A5B7F)	\$25K
Perrin, W. F. (SWFSC) Senior Scientist Unit (060)	\$135.3K
Reilly, S. and D. P. DeMaster (SWFSC) Fishery Dependent Assessment Program (530)	\$335.6K

FY91

Barlow, J. and D. P. DeMaster (SWFSC) Coastal Marine Mammals (540)	\$190K
Coastal Marine Mammals (981)	\$61.8K
Coastal Delphinid Surveys (988)	\$158.6K
Whale and Bottlenose Dolphin Surveys (989)	\$75.2K
Dizon, A. and D. P. DeMaster (SWFSC) Biological Assessment Program (520)	\$470.9K
Edwards, E. and D. P. DeMaster (SWFSC) Fishery Dependent Assessment Program (550)	\$87.8K
Gerrodette, T. and D. P. DeMaster (SWFSC) Dolphin Stock Assessment Program (510)	\$466.4K
Gilmartin, W. G. (SWFSC, Honolulu Lab) Hawaiian Monk Seal Research and Recovery (FSR200/8L1A3VW0)	\$422.6K
Northwestern Hawaiian Islands Beach Debris Clean-up (FSR200/8L1A5B7F)	\$25K
Perrin, W. F. (SWFSC) Senior Scientist Unit (060)	\$150.9K
Reilly, S. and D. P. DeMaster (SWFSC) Dolphin Ecology Program (530)	\$280.8K

**H. Southwest Regional Office**FY90

Hanan, D. (California Dept. Fish and Game) California Coastal Marine Mammals (A90AB-H-FC411)	\$65K
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FY91

California Department of Fish and Game  
Category 1 Fishery Effort and Harbor Seal Monitoring \$219K

Forestell, P. and J. Mobley  
Aerial Surveys of Hawaiian Humpback Whales \$25K

**2. National Ocean Pollution Program Office**FY90-FY91

(No projects reported)

**3. National Sea Grant College Program**FY90

Fay, F. (Univ. Alaska)  
Behavior and Vocalizations of Transient Killer Whales (R/06-C) \$32.3K

FY91

Grau, G., S. Atkinson, & W. Gilmartin (Hawaii Institute of Marine Biology and NMFS)  
Behavior Modification of Male Hawaiian Monk Seals (R/MR-45) \$15K

Ray, F. and J. Kelley (Univ. of Alaska)  
Behavior and Vocalizations of Transient Killer Whales (R/06-31) \$32.3K

**4. North Pacific Fisheries Management Council**FY90-FY91

(No projects reported)

**5. Office of Ocean and Coastal Resource Management**FY90-FY91

(No projects)

**6. Office of Ocean Resources Conservation and Assessment**  
(formerly Office of Oceanography and Marine Assessment)FY90

Basta, D. J. (NOAA Ocean Assessments Division)  
Living Marine Resources Mapping Project:  
Marine Mammals \$25K

FY91

(No projects)

Department of Defense

## 1. Air Force (Space Division, Air Force Systems Command)

FY90

Stewart, B., C. Cooper, and P. K. Yochem (Hubbs Marine Research Center)  
 Field Studies of Pinniped and Seabird Populations Likely to  
 be Affected by Launch-Related Noise of Military Space  
 Vehicles (F0470-88C-0026) \$173.9K

FY91

Stewart, B., C. Cooper, and P. K. Yochem (Hubbs Marine Research Center)  
 Field Studies of Pinniped and Seabird Populations Likely to  
 be Affected by Launch-Related Noise of Military Space  
 Vehicles (F0470-88C-0026) \$106.7K

## 2. Army (Corps of Engineers)

FY90

(No projects)

FY91

Activities associated with planning, construction, operation, and  
 maintenance of civil works projects \$247.9K

## 3. Navy

## A. Naval Ocean Systems Center

FY90

Au, W. W. L. (NOSC)  
 Complex Echo Classification (Tursiops)  
 (MMB2511B01) \$117K

Gisiner, R. C. and J. A. Thomas (NOSC)  
 Echolocation in a False Killer Whale (MMB2511B03) \$102K

Moore, P. W. B. (NOSC)  
 Binaural Hearing (Tursiops) (MMB2511B02) \$130K

Nachtigall, P. E. (NOSC)  
 Risso's Visual Acuity (MMB2511B05) \$108K

Nachtigall, P. E., P. W. B. Moore, and H. L. Roitblat (NOSC)  
 Matching-to-Sample (Tursiops) (MMB2511A01) \$113K

Ridgway, S. H. and D. A. Carder (NOSC)  
 Marine Mammal Medical Research and Animal Health  
 (MM40510N01) \$354K

Sigurdson, J. E. (NOSC)  
 Acoustic Communication (Tursiops) (MMB2511B04) \$55K

FY91

Au, W. W. L. (NOSC)  
 Complex Echo Classification (Tursiops)  
 (MMB2511B01) \$120K

Gisiner, R. C. and W. W. L. Au (NOSC)  
 Echolocation in a False Killer Whale (MMB2511B03) \$130K

Moore, P. W. B. (NOSC)  
 Binaural Hearing (Tursiops) (MMB2511B02) \$130K

Neural Network Models (Tursiops) (ZW29511A01) \$124K

Nachtigall, P. E. (NOSC)  
 Risso's Visual Acuity (MMB2511B05) \$110K

Nachtigall, P. E., P. W. B. Moore, and H. L. Roitblat (NOSC)  
 Matching-to-Sample (Tursiops) (MMB2511A01) \$160K

Ridgway, S. H. and D. A. Carder (NOSC)  
 Marine Mammal Medical Research and Animal Health  
 (MM40510N01) \$90K

**B. Office of Naval Research**

FY90

Nachtigall, P. E. (NOSC)  
 Dolphin Echolocation: Cognitive and Perceptual Processing  
 Models (Tursiops) (4424262-01) \$160K

FY91

Nachtigall, P. E. (NOSC)  
 Dolphin Echolocation: Cognitive and Perceptual Processing  
 Models (Tursiops) (4424262-01) \$200K

**Department of Energy**

FY90-FY91

(No projects)



Department of Health and Human Services

## National Institutes of Health

FY90

Bullock, T. H. (Univ. California, San Diego) Non-Standard Models for Study of Cognition ERPS (R01 NS25963-03)	\$92.1K
Castellini, M. A. (Univ. Alaska) Sleep Apnea in Seals: Metabolic Implications (R29 HL38675-04)	\$86.1K
Fathman, C. G. (Stanford Univ.) Study of a Ternary Complex That Drives T Cell Activation (R01 AI27989-02)	\$185.3K
Hodgson, E. (North Carolina State Univ.) Pesticides and Xenobiotic Metabolizing Enzymes (P01 ES00044-25)	\$132K
Kooyman, G. L. (Univ. California, San Diego) Exercise Physiology to Maximum Lung Volume in Aquatic Mammals (P01 HL17731-16)	\$122.5K
LaMar, G. N. (Univ. California, Davis) Structural and Dynamic Study of Model Heme Complexes (R37 HL16087-17)	\$187.8K
Ortiz, C. L. (Univ. California, Santa Cruz) Developmental Physiology of Elephant Seal Pups During Natural, Prolonged Fasts (S06 GM08132-16)	\$63.4K
Rowell, L. B. (Univ. Washington) Regulation of Blood Flow Distribution (P01 HL16910-17)	\$133.1K
Tyack, P. L. (Woods Hole Oceanographic Institution) Ontogeny of Signature Whistles and Mimicry ( <u>Tursiops</u> ) (R29 DC00429-04)	\$97.3K
Weiner, S. (Weizmann Institute, Israel) Structural Studies of Matrix Proteins in Teeth and Bone (R01 DE06954-06)	\$57.7K
Wichman, H. A. (Univ. Idaho) Mammalian Genomes: Stasis and Change (R29 GM38727-05)	\$90.8K
Wicham, G. M. (Northeastern State Univ., OK) Computer Based Image Analysis of Iris Sections (R15 EY085450-1)	\$95.4K

Witztum, J. L. (Univ. California, San Diego) Apolipoprotein E Deficiency and Atherosclerosis (R01 HL39608-04)	\$78K
<u>FY91</u>	
Castellini, M. A. (Univ. Alaska) Sleep Apnea in Seals: Metabolic Implications (HL38675-05)	\$107.7K
Fathman, C. G. (Stanford Univ.) Study of a Ternary Complex That Drives T Cell Activation (AI27989-03)	\$169.9K
Hodgson, E. (North Carolina State Univ.) Pesticides and Xenobiotic-Metabolizing Enzymes (ES00044-26)	\$134.7K
Hsueh, A. J. W. (Stanford Univ.) Role of Bioactive FSH in Reproduction (HD23273-06)	\$129.1K
Kooyman, G. L. (Univ. California, San Diego) Exercise Physiology to Maximum Lung Volume in Aquatic Mammals (HL17731-17)	\$187.2K
LaMar, G. N. (Univ. California, Davis) Structural and Dynamic Study of Model Heme Complexes (HL16087-18)	\$188.1K
Ortiz, C. L. (Univ. California, Santa Cruz) Developmental Physiology of Elephant Seal Pups During Natural, Prolonged Fasts (GM08132-17)	\$70.3K
Rowell, L. B. (Univ. Washington) Regulation of Blood Flow Distribution (HL16910-18)	\$133.6K
Tyack, P. L. (Woods Hole Oceanographic Institution) Ontogeny of Signature Whistles and Mimicry ( <u>Tursiops</u> ) (DC00429-05)	\$108.9K
Wichman, H. A. (Univ. Idaho) Mammalian Genomes: Stasis and Change (GM38727-06)	\$94.9K

Department of the Interior

1. Fish and Wildlife Service

FY90

Amstrup, S. (AFWRC) Distribution, Timing, and Importance of Polar Bear Denning in Northern Alaska (204.01)	\$45.4K
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Population Definition and Dynamics of Polar Bears in the Beaufort Sea (204.02)	\$324K
Relationships Between Polar Bears, Sea Ice, and Pagophilic Seals (204.03)	\$47.8K
Brownell, R. (NERC)	
Ecological Studies of Sea Otters and Other Marine Mammals (880.11)	\$263.1K
Interactions Between Sea Otters and Nearshore Ecological Communities (880.12)	\$132.2K
Translocation of Sea Otters (880.13)	\$348.6K
DeGange, A. (AFWRC)	
Biological Information Necessary to Establish a Zonal Management Program for Sea Otters in Alaska (210.02)	\$212.3K
Interactions Between Sea Otters and Fisheries in Alaska (210.03)	\$36.9K
Basis for Estimating Sustained Yield, and Means for Regulating Sea Otter Populations in North America (210.04)	\$-0-
Assess the Fate of Sea Otters Oiled and Rehabilitated as a Result of the "Exxon Valdez" Oil Spill (210.06)	\$65K
Magnitude, Extent, and Duration of Impacts from the "Exxon Valdez" Oil Spill on Sea Otter Populations (210.05)	\$515K
Garner, G. (AFWRC)	
Population Definition and Dynamics of Polar Bears in Northwestern and Western Alaska (204.04)	\$349.8K
Inter-Relationships Between Sea Ice Habitats and Polar Bear Distribution in Northwestern Alaska (Bering and Chukchi Sea) (204.05)	33.6K
Hills, S. and L. F. Pank (AFWRC & Maine Cooperative Fish and Wildlife Research Unit)	
Techniques to Monitor Walrus Population Dynamics and Refine Estimates of Numbers (214.01)	\$195.4K
Kitchens, W. (Florida Cooperative Fish and Wildlife Research Unit)	
Manatee Protection Project: Survey of Boat Usage Patterns (540.05)	\$-0-
Evaluation of Manatee Distribution Patterns in Response to Public Use Activities, Crystal River, Florida (540.06)	\$-0-
Evaluation of Cumulative Impacts to the Habitat of the	

Manatee, Crystal River National Wildlife Refuge, Florida (540.07)	\$-0-
Manatee Movements and Foraging in Cumberland Sound and Adjacent Waters (FL 06)	\$25K
Klein, D. (Alaska Cooperative Fish and Wildlife Research Unit) Walrus Harvest Monitoring in Western Alaska (596.01)	\$-?
O'Shea, T. (NERC) Ecological Studies of Manatees and Dugongs (880.10)	\$340.2K
Hobe Sound Sea Grass Study (880.61)	\$54.6K
Schamberger, M. (NERC) Develop a Generalized Microcomputer Capability for Field Offices to Address Large-Scale Resource Assessment (640.17)	\$19K
<u>FY91</u>	
Amstrup, S. (AFWRC) Distribution, Timing, and Importance of Polar Bear Denning in Northern Alaska (00018)	\$44.4K
Population Definition and Estimation of Survival, Recruitment, and Numbers of Polar Bears in the Beaufort Sea (00019)	\$297.7K
Relationships Between Polar Bears, Sea Ice Movement and Condition, and Pagophilic Seals (00020)	\$46K
Ballachey, B. E. (AFWRC) Assess the Fate of Sea Otters Oiled and Rehabilitated as a Result of the "Exxon Valdez" Oil Spill (00041)	\$43.6K
Magnitude, Extent, and Duration of Impacts from the "Exxon Valdez" Oil Spill on Sea Otter Populations (00042)	\$934.4K
Bodkin, J. (AFWRC) Biological Information Necessary to Establish a Zonal Management Program for Sea Otters in Alaska (00023)	\$110.5K
Interactions Between Sea Otters and Fisheries in Alaska (00024)	\$322.9K
Basis for Estimating Sustained Yield, and Means for Regulating Sea Otter Populations in North America (00025)	\$-0-
Cronin, M. (AFWRC) Use of DNA to Define Populations of Birds, Mammals, and Fish of Alaska (00043)	\$36K
Estes, J. (NERC) Ecological Studies of Sea Otters and Other Marine Mammals (00404)	\$322.9K

Interactions Between Sea Otters and Nearshore Ecological Communities (00407)	\$269.1K
Garner, G. (AFWRC) Population Definition and Estimation of Survival, Recruitment, and Number of Polar Bears in Northwestern and Western Alaska (00021)	\$340.8K
Inter-Relationships Between Sea Ice Habitats and Polar Bear Distribution in the Bering and Chukchi Seas in Northwestern Alaska (204.05)	\$31.9K
Gilbert, J., S. Hills, and M. Udevitz (AFWRC & Maine Cooperative Fish and Wildlife Research Unit) Techniques to Monitor Walrus Population Dynamics and Refine Estimates of Numbers (00026)	\$183.6K
Osburn, R. (NERC) Develop a Generalized Microcomputer Capability for Field Offices to Address Large-Scale Resource Assessment (00101)	\$17.1K
O'Shea, T. (NERC) Ecological Studies of Manatees and Dugongs (00406)	\$437.2K
Percival, F. (Florida Coop. Fish and Wildlife Research Unit) Manatee Movements and Foraging in Cumberland Sound and Adjacent Waters (FL RWO 65)	\$-0-
Rathbun, G. (NEFSC) Translocation of Sea Otters (00405)	\$210.4K

## 2. Geological Survey

FY90-FY91

(No projects reported)

## 3. Minerals Management Service

FY90

Becker, P., S. Wise, and R. Zeisler (NOAA, National Inst. of Standards and Technology) Acquisition and Curation of Alaskan Marine Mammal Tissues for Determining Levels of Contaminants Associated with Offshore Oil and Gas Development (OCSEAP RU 692)	\$107K
Brueggeman, J. J. (Ebasco, Inc.) Oregon and Washington Marine Mammal and Seabird Surveys (14-35-0001-30426)	\$33K
Burns, J. (Living Resources, Inc.) Bowhead Whale Book -- Coeditor (PO 83381)	\$22.5K

Carvan, M. (Texas A&M Univ.) A Novel <u>In Vitro</u> System for Marine Toxicological Analysis (PO 13270)	\$15.4K
Davis, R. (Texas A&M Univ.) Production of Sea Otter Reserve Training Videos and Monograph (14-35-0001-30522)	\$83.9K
Geraci, J. and D. St. Aubin (Battelle) Synthesis of Effects of Oil on Marine Mammals (14-12-0001-30293)	\$25K
Goodyear, J. (Univ. Guelph) Application and Construction of Satellite Tags for Large Whales (PO 12886)	\$18.6K
Hain, J. (Associated Scientists at Woods Hole, MA) Publication of Scientific Results on Aspects of the CETAP Program (PO 11206)	\$-0-
Southeast Atlantic Right Whale/Boat Interactions Using Coordinated Airship Overflights (PO 13269)	\$19.6K
Johnson, S. (LGL Alaska Research Associates) Monitoring Beaufort Sea Waterfowl and Marine Birds; Determining Use of Kasegaluk Lagoon by Marine Birds and Mammals (14-35-0001-30491)	\$420K
Kraus, S. et al. (New England Aquarium) Endangered Right Whales of the South Atlantic (14-35-0001-30486)	\$414.5K
Lambertsen, R. (Univ. Pennsylvania) A Baseline Method to Evaluate Chemico-Biological Interactions Involving Cetacea (14-12-0001-30533)	\$56.6K
LeBoeuf, B. (Univ. California, Santa Cruz) Conference on Northern Elephant Seal (14-35-0001-30554)	\$30K
Diving Studies of Northern Elephant Seals (PO 12485) (co-funded with NSF)	\$27.5K
Mate, B. (Oregon State Univ.) Applications of Remote Methods of Large Cetacean Tracking (14-12-0001-30411)	\$329.3K
Mizrock, S. (NMFS) Workshop on the Estimation of Calf Mortality in the North Pacific Humpback Whale (PO 13184) (co-funded with NMML)	\$8K
Moore, S. (SEACO/SAIC) Monitoring the Distribution of Chukchi Whales (14-35-0001-30468)	\$252K

Mullin, K. (NMFS) Relationship Between Sea Turtles and Petroleum Platforms and Whale Species Diversity (14-12-0001-30398)	\$197.8K
Phillips, R. L. (NOAA & USGS) Delineation, Faunal Composition, and Repeated Use of Benthic Feeding Areas by Walrus and Endangered Gray Whales in the Northeastern Chukchi Sea (OCSEAP RU 722)	\$77.2K
Ragen, T. and P. Dayton (Scripps Institute) Migration of Northern Fur Seal Pups in the Bering Sea (PO 12523)	\$15K
Richardson, W. J. et al. (LGL Ecological Research Assoc.) Synthesis of Information on the Effects of Noise on Marine Mammals (14-12-0001-30362)	\$-0-
Normal Behavior of Davis Strait Bowheads: A Control Group for the Western Arctic Stock (14-12-0001-30390)	\$-0-
Effects of Production Activities on Arctic Whales (14-12-0001-30412)	\$715K
Schell, D. (Univ. Alaska) Stable Isotope Analysis of 1987 and 1988 Zooplankton and Bowhead Whale Tissues (14-12-0001-30472)	\$75.7K
Setzler-Hamilton, E. (Univ. Maryland, Eastern Shore) Development of Visual Matrix Charts Which Categorize Research Literature on Endangered Whales (14-12-0001-30208)	\$-0-
Treacy, S. D. (MMS, Alaska OCS Region) Bowhead Whale Aerial Survey Project	\$519.3K
Wartzok, D. (Society for Marine Mammalogy) Bowhead Whale Book (14-35-0004-60148)	\$-0-
Winn, H. E. (Univ. Rhode Island) South Channel Ocean Productivity Experiment (SCOPEX) (PO 14669) (co-funded with NSF)	\$-0-

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Alaska Sea Grant (NOAA) Workshop: Key to Declining Marine Mammal and Seabird Populations (co-funded with Alaska Sea Grant)	\$5K
Becker, P., S. Wise, and R. Zeisler (NOAA, National Inst. of Standards and Technology) Acquisition and Curation of Alaskan Marine Mammal Tissues for Determining Levels of Contaminants Associated with Offshore Oil and Gas Development (OCSEAP RU 692)	\$70K

Brueggeman, J. J. (Ebasco, Inc. and Ecological Consultants, Inc.) Oregon and Washington Marine Mammal and Seabird Surveys (14-35-0001-30426)	\$-0
Burns, J. (Living Resources, Inc.) Bowhead Whale Book -- Coeditor (PO 83381)	\$-0
Davis, R. (Texas A&M Univ. and NMFS/SEFC) Distribution and Abundance of Marine Mammals in the North-Central and Western Gulf of Mexico (14-35-0001-30619)	\$732.8K
Production of Sea Otter Rescue Training Videos (14-35-0001-30522)	\$-0
DeMaster, D. (NMFS/SWFC) Development of Manual to Address the Issue of Safety During Aerial Surveys (PO 15156) (co-funded with NMFS/SWFC)	\$22.1K
Ford, R. G. (Ecological Consulting, Inc.) Combining Marine Mammal and Seabird Databases (14-35-0001-30596)	\$95.2K
Goodyear, J. (Univ. Guelph) Application and Construction of Satellite Tags for Large Whales (PO 12886)	\$13.7K
Hain, J. (Associated Scientists at Woods Hole, MA) Southeast Atlantic Right Whale Behavior and Whale/Boat Interactions Using Coordinated Airship Overflights (PO 13269)	\$3.5K
Publication of Scientific Results on Aspects of the CETAP Program (PO 11206)	\$-0
Johnson, S. and K. Frost (LGL Alaska Research Associates and ADF&G) Monitoring Beaufort Sea Waterfowl and Marine Birds; Determining Use of Kasegaluk Lagoon by Marine Birds and Mammals (14-35-0001-30491)	\$109K
Kraus, S. et al. (New England Aquarium) Endangered Right Whales of the South Atlantic (14-35-0001-30486)	\$195.8K
Lambertsen, R. (Univ. Pennsylvania) A Baseline Method to Evaluate Chemico-Biological Interactions Involving Cetacea (14-35-0001-30533)	\$-0
LeBoeuf, B. (Univ. California, Santa Cruz) Diving Studies of Northern Elephant Seals (PO 12485) (co-funded with NSF)	\$27.5K
Loughlin, T. (NMML) Use of Satellite Tags to Determine Pelagic Areas Important to Declining Populations of Fur Seals and Sea Lions (Interagency 14411)	\$144K
Mate, B. (Oregon State Univ.) Applications of Remote Methods of Large Cetacean Tracking (14-12-0001-30411)	\$58K



Moore, S. (SEACO/SAIC) Monitoring the Distribution of Chukchi Whales (14-35-0001-30468)	\$238.7K
Phillips, R. L. (NOAA &USGS) Delineation, Faunal Composition, and Repeated Use of Benthic Feeding Areas by Walrus and Endangered Gray Whales in the Northeastern Chukchi Sea (OCSEAP RU 722)	\$-0-
Ralls, K. (Smithsonian Inst.) Publication of Sea Otter Manuscripts (PO 11134 & 12419)	\$6.8K
Richardson, W. J. et al. (LGL Ecological Research Assoc.) Normal Behavior of Davis Strait Bowheads: A Control Group for the Western Arctic Stock (14-12-0001-30390)	\$-0-
Synthesis of Information of the Effects of Noise on Marine Mammals (14-12-0001-30362)	\$-0-
Effects of Production Activities on Arctic Whales (14-12-0001-30412)	\$937K
Schell, D. (Univ. Alaska) Stable Isotope Analysis of 1987 and 1988 Zooplankton and Bowhead Whale Tissues (14-12-0001-30472)	\$75.7K
Sherman, K. (NMFS/NEFSC) Workshop: Northeast Shelf Symposium (co-funded with EPA, NMFS, MMC, American Fisheries Society, and Marine Affairs Program, Univ. Rhode Island)	\$2K
Treacy, S. D. (MMS, Alaska OCS Region) Bowhead Whale Aerial Survey Project	\$60K
Truett, J. (LGL Ecological Research Associates) Development of Guidelines for OCS Operations in Polar Bear Habitats (14-35-0001-30631)	\$166.8K
Wartzok, D. (Society for Marine Mammalogy) Bowhead Whale Book -- Publication (14-35-0004-60148)	\$-0-
Winn, H. E. (Univ. Rhode Island) Great South Channel Ocean Productivity Experiment (PO 14669)	\$-0-

#### 4. National Park Service

##### FY90

Rice, B. (NPS) Sea Lion, Harbor Seal, Sea Otter Surveys: Assessment of Oil Spill, Kenai Fjords National Park, Alaska	\$30K
Squibb, R. (NPS) Sea Lion, Harbor Seal, Sea Otter Surveys: Assessment of Oil Spill, Katmai National Park and Preserve, Alaska	\$20K

FY91

Gabriele, C. (NPS) Humpback Whale Monitoring, Glacier Bay National Park, Alaska	\$20.9K
Potts, R. (NPS) Sea Lion and Harbor Seal Survey in Katmai National Park, Alaska	\$10K
Schroeder, M. (NPS) Steller Sea Lion Surveys, Glacier Bay National Park, Alaska	\$1.2K
Harbor Seal Census, Glacier Bay National Park, Alaska	\$1.5K
Sharman, L. (NPS) Whale Prey Monitoring at Glacier Bay National Park, Alaska	\$27.5K
Taggart, J. (NPS) Killer Whale Monitoring, Glacier Bay National Park, Alaska	\$5.4K

Department of State

**Bureau of Oceans and International Environmental and  
Scientific Affairs**

FY90

Gambell, R. (International Whaling Commission) Research Fund of the International Whaling Commission	\$8.3K
Joseph, J. (Inter-American Tropical Tuna Commission) Porpoise/Tuna Investigations	\$1138.4K
Powell D. L. (Commission for the Conservation of Antarctic Marine Living Resources) Scientific Committee Budget	\$1.8K

FY91

Gambell, R. (International Whaling Commission) Research Fund of the International Whaling Commission	\$8.2K
Joseph, J. (Inter-American Tropical Tuna Commission) Porpoise/Tuna Investigations	\$1225.8K
Powell D. L. (Commission for the Conservation of Antarctic Marine Living Resources) Scientific Committee Budget	\$1.2K

Environmental Protection AgencyFY90

Haebler, R. and R. K. Harris (Environmental Research Laboratory  
and Armed Forces Institute of Pathology)  
Assessment of Pathological Processes and Mechanisms  
of Toxicity in Sea Otters That Died Following Exxon  
Valdez Oil Spill \$50K

Haebler, R. and D. Kuehl (Environmental Research Laboratory)  
Environmental Pathotoxicology of Dolphins \$50K

FY91

Haebler, R. and R. K. Harris (EPA/Environmental Research Laboratory  
and Armed Forces Institute of Pathology)  
Assessment of Pathological Processes and Mechanisms  
of Toxicity in Sea Otters That Died Following Exxon  
Valdez Oil Spill \$80K

Haebler, R. and D. Kuehl (EPA/Environmental Research Laboratory)  
Environmental Pathotoxicology of Dolphins \$50K

Haebler, R. and J. Lake (EPA/Environmental Research Laboratory)  
Evaluation of Tissue Contaminant Concentrations in  
Harbor Seals as Monitors of Temporal Trends of Pollution  
in Near Coastal Environments \$50K

Sentinel Species (cetaceans) \$32.2K

Marine Mammal CommissionFY90

Buckland, S. (Scottish Agricultural Statistical Service,  
Aberdeen, Scotland)  
Review of Information Concerning Small Cetacean  
Populations in the Black Sea ( T75133135) \$1K

Domning, D. P. (Howard Univ.)  
Communication of Information Concerning Conservation  
of Manatees and Dugongs ( T75132327) \$0.8K

Fay, F. H. (Univ. Alaska)  
International Workshop on the Ecology and Management  
of Walrus Populations ( T75132903) \$2K

Haigh, J. C. et al. (USDA, Animal and Plant Health Inspection Service)  
Training Course for APHIS Veterinary Inspectors \$6.4K

Justman, R. A. Tern Island Site Survey ( T75132669 & T75132709)	\$3.7K
Kellert, S. R. (Yale Univ.) Development of a Global Marine Environment Ethic ( T75132932)	\$5K
Kraus, S. D. and R. D. Kenney (Univ. Rhode Island and New England Aquarium) Evaluation of Critical Right Whale Habitat ( T75133753 & T75133740)	\$2K
LeBoeuf, B. J. (Univ. California, Santa Cruz) International Conference on Northern and Southern Elephant Seal ( T75133724)	\$2K
National Marine Fisheries Service Workshop to Develop a Recommended Protocol for Evaluating Swim-With-A-Dolphin Programs	\$7.1K
Center for Marine Conservation World Conservation Union: Species Survival Commission Cetacean Action Plan ( T75133685)	\$6K
Pitcher, K. W. (Alaska Dept. of Fish and Game) Tugidak Island Harbor Seal Survey ( T75133261)	\$5K
Reif, J. S. and R. S. Wells (Dept. Environmental Health, Ft. Collins, Colorado, and the Brookfield Zoo) Review of Gulf of Mexico Bottlenose Dolphin Die-off Investigation (T75132851 & T75132864)	\$1K
Scientific Committee on Antarctic Research (Scott Polar Research Institute, Cambridge, United Kingdom) Handbook on Antarctic Seal Research Methods and Techniques ( T75133672)	\$2K
Swartzman, G. L., J. J. Brueggeman, and K. A. Green-Hammond (Univ. Washington; EBASCO Environmental, Albuquerque, NM)) Workshop on the Bering Sea and Southern Ocean Ecosystems ( T75133193, T75133656, T75133669)	\$33.3K
Townsend, R. L. (Townsend Environmental, Otis, OR) Review of Information Concerning Humpback Whales in Hawaii ( T75132495)	\$7.4K
Waring, G. H. (Southern Illinois Univ., Carbondale) Survey of Federally-Funded Marine Mammal Research ( T75133724)	\$3.5K
Watkins, W. A. (Woods Hole Oceanographic Institution) Development of a Computerized Cetacean Bibliography ( T75133685)	\$1K

Würsig, B. (Texas A&M Univ., Galveston) Bottlenose Dolphins as Possible Environmental Indicators ( T75133708)	\$3.5K
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Aguilar, A. (Univ. Barcelona) Mediterranean Dolphin Die-off Sample Archiving (T75134516)	\$2K
Bruchhausen, P. (Condor Expeditions, New York) Marine Mammal Harvests in Argentina (T75134011)	\$0.5K
Calkins, D. (Alaska Dept. of Fish and Game) Update of Steller Sea Lion Species Account (T75136613)	\$2.5K
Clapham, P. J. (Center for Coastal Studies, Provincetown, MA) Project YONAH (Years of the North Atlantic Humpback Whale) (T75136349)	\$4K
Dearborn, R. K. (Univ. Alaska, Fairbanks) Field Guide to Alaska Marine Mammals (T75136394)	\$2K
Geraci, J. and G. Miller (Univ. Guelph and Navigation Systems Command) On-site Evaluation of the Striped Dolphin Die-off in the Western Mediterranean (T75133818)	\$10.4K
Hain, J. (Associated Scientists at Woods Hole, MA) Airship Surveys of Right Whale Mother/Calf Pairs (T75136394)	\$2K
Hoover-Miller, A. (Pacific Rim Research, Philo, CA, & Haines, AK) Update of Alaska Harbor Seal Species Account (T75134749)	\$4K
Alaska Marine Mammal Geographic Information System Feasibility Study (T75136297)	\$5.7K
Kelly, B. P. (Univ. Alaska, Fairbanks) Pacific Walrus Draft Conservation Plan (T75136051)	\$5K
Kimmel, M., K. Wynne, and S. Montgomery (Alaska Sea Otter Commission, Univ. Alaska-Cordova, and Woodstock, Virginia) Alaska Sea Otter Conservation Plan (T75136064, T75136226, T75136336)	\$3K
Mate, B. R. (Oregon State Univ., Newport) Identification of Programs Needed to Meet the Monitoring Requirements of Section 101(a)(5) of the Marine Mammal Protection Act (T75134833)	\$1.1K
Navy Briefing on the Bombing of Sea Lion Rock (T75134736)	\$1.4K
Matkin, C. (North Gulf Oceanic Society, Homer, AK) Alaska Killer Whale Species Account (T75135023)	\$5.4K

Miles, E. (Univ. Washington) Workshop to Identify Issues Meriting Priority Attention by the Newly- Formed North Pacific Marine Science Organization (T75136420)	\$5.4K
Mizroch, S., C. Baker, and J. Calambokidis (NMFS; Univ. Wellington; and Cascadia Research Collective, Olympia, WA) Humpback Whale Calf Mortality Workshops (T75136352)	\$3.5K
Nail, D. L. (Eckerd College, St. Petersburg, FL) Selected International Agreements and Domestic Legislation Affecting Marine Resources and Marine Habitat (T75135573)	\$2.3K
Northridge, S. Second Order Effects of Large-scale High-seas Driftnet Fisheries on the North Pacific Marine Ecosystem (T75135269, T75136200)	\$16K
Reed, A. (Dolphin Biology Research Associates, Sarasota, FL) Harbor Porpoise Age Determination by Tooth Sectioning (T75136381)	\$3K
Sherman, K. (NMFS) Symposium on the Northeast Atlantic Shelf Ecosystem: Stress, Mitigation, and Sustainability (T75135654) (co-funded with MMS)	\$2K
Townsend, R. (Townsend Environmental, Otis, OR) Review of the Department of the Interior's Draft Report to Congress on the Impact of Potential Crude-Oil Spills on the Arctic Ocean on Alaska Natives (T75135764)	\$0.5K
Waring, G. H. (Southern Illinois Univ., Carbondale) Survey of Federally-Funded Marine Mammal Research (T75136103)	\$3.5K
Wilson, W. (LGL Alaska Research Associates, Inc.) Amendments to the Bering Sea/Aleutian Islands Ground Fish Fishery Management Plan (T75135010)	\$5K
Worthy, G. A. J. (Texas A&M Univ., Galveston) Energetic Studies of Manatee Calves and Mothers (T75136365)	\$4K

National Aeronautics and Space Administration

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Lefebvre, L. and J. A. Provancha (USFWS & NASA) Determination of Long Term Changes in a Seagrass Bed Protected from Grazing by Manatees (NAS10-1162AX)	\$5.2K
Provancha, J. A. (NASA) Long Term Monitoring of Distribution and Abundance of Manatees at Kennedy Space Center, Florida (NAS10-11624A)	\$13.9K

FY91

Lefebvre, L. and J. A. Provancha (USFWS & NASA) Determination of Long Term Changes in a Seagrass Bed Excluded from Grazing by Manatees (NAS10-11624-EX)	\$7.5K
Provancha, J. A., M. Provancha, and R. Reddick (NASA) Long Term Monitoring of the Abundance and Distribution of Manatees on Kennedy Space Center, Florida (NAS10-11624-A)	\$10K

National Science FoundationFY90

Beardsley, R. C. and R. Limeburner (Woods Hole Oceanographic Institution) Springtime Circulation in the Great South Channel (SCOPEX) (OCE-8713988)	\$83.3K
Frost, B. and M. Macauley (Univ. Washington) Acoustics of Copepods and Micronekton in the Great South Channel (OCE-8915844)	\$27K
Hain, J. H. (Woods Hole Oceanographic Institution) Airships in Cetacean Research (OCE-9009431)	\$48.6K
LeBoeuf, B. (Univ. California, Santa Cruz) Diving Studies of Northern Elephant Seals (BSR-89169677) (co-funded with MMS)	\$55K
Biological Studies of Northern Elephant Seals (BSR-8919933)	\$70K
Diving and Foraging Behavior of Northern Elephant Seals (INT-9016374)	\$17.9K
Miyamoto, M. (Univ. Florida) Molecular Systematics of Eutherian Mammals and Other Species (BSR-8945103)	\$25K
Palumbi, S. (Univ. Hawaii) Genetic Diversity of Endangered Populations of Mysticete Whales: Mitochondrial DNA and Historical Demography (BSR-9000006)	\$130K
Smuts, B. (Univ. Michigan) Social Behavior in Apes and Dolphins (BNS-885769)	\$66.5K
Testa, J. (Univ. Alaska) Dispersal and Diving Behavior of Seals Determined by Satellite Telemetry (DPP-88-16567)	\$115.5K

Tyack, P. and L. Sayigh (Woods Hole Oceanographic Institution) Development of Signature Whistles in Free-Ranging Bottlenose Dolphins (BNS-9014545)	\$9.1K
Winn, H. E. et al. (Univ. Rhode Island) South Channel Ocean Productivity Experiment (SCOPEX) OCE-8915844)	\$173K
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Beardsley, R. C. and R. Limeburner (Woods Hole Oceanographic Institution) Springtime Circulation in the Great South Channel (SCOPEX) (OCE-9101034)	\$200.2K
Berta, A. (San Diego State Univ.) Phylogenetic Relationships Within the Phocid Pinniped Clade (BSR-9006535)	\$59.8K
Costa, D. P. and R. Wells (Univ. California, Santa Cruz) Free-ranging Energetics of Bottlenose Dolphins (OCE-9018626)	\$78.8K
Felten, D. L. (Univ. Rochester) Neural-Immune Interactions in the Beluga Whale (DCB-9105791)	\$54.6K
Palumbi, S. R. (Univ. Hawaii) Genetic Diversity of Endangered Populations of Mysticete Whales: Mitochondrial DNA and Historical Demography (BSR-9000006)	\$49K
Siniff, D. (Univ. Minnesota) The Behavioral Ecology of Sea Otters at Amchitka Island, Alaska (DPP-9101134)	\$174.3K
Smuts, B. (Univ. Michigan) Social Behavior in Apes and Dolphins (BNS-88-57969)	\$66.5K
Testa, J. (Univ. Alaska) Dispersal and Diving Behavior of Seals Determined by Satellite Telemetry (DPP-88-16567)	\$51.4K
Tyack, P. and L. Sayigh (Woods Hole Oceanographic Institution) Development of Signature Whistles in Free-ranging Bottlenose Dolphins (BNS-90-14545)	\$-0
Wartzok, D. (Univ. Missouri, St. Louis) Under-Ice Behavior of Ringed Seals (DPP-9024106)	\$102.6K
Worthy, G. A. (Texas A&M Univ.) Free-ranging Energetics of Bottlenose Dolphins (OCE-9019962)	\$21.1K



Smithsonian InstitutionFY90

Mead, J. G. (Museum of Natural History)  
Marine Mammal Program (80337100) \$165K

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Mead, J. G. (Museum of Natural History)  
Marine Mammal Program (80337100) \$169K