

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

**FY74 – FY00**

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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 and the Smithsonian Institution, a trust instrumentality of the United States, to learn of research or studies they are either supporting or conducting which bear 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 FY00. Comprehensive summaries of research and studies conducted or supported by Federal agencies and the Smithsonian Institution in fiscal years 1970 through 1979, 1980 through 1989, and 1990 through 1999 are provided in the FY70-FY79, FY70-FY89, and FY74-FY99 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.

August 10, 2001

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# TABLE OF CONTENTS

	Page
<b>PREFACE</b> .....	ii
<b>LIST OF TABLES</b> .....	v
<b>LIST OF FIGURES</b> .....	vi
<b>LIST OF ACRONYMS</b> .....	vii
<b>I. OVERVIEW OF FEDERAL RESEARCH PROGRAMS</b> .....	1
Federal Agencies Funding Marine Mammal Research and Studies .....	2
Reference List of Previous Surveys Compiled by the Author and Available from the National Technical Information Service .....	5
Number of Marine Mammal Research Projects Supported by Federal Agencies in FY74-FY00 .....	6
Trends in Federal Support of Marine Mammal Research	
--By Number of Projects Supported, FY74-FY00.....	7
--By Agency, FY83-FY00.....	8
--By Geographical Region, FY84-FY00.....	9
--By Taxonomic Group, FY84-FY00.....	10
--By Research Issue, FY84-FY00.....	12
<b>II. RESEARCH AND STUDIES UNDER AUTHORITY OF THE MARINE MAMMAL PROTECTION ACT OF 1972, AS AMENDED.....</b>	<b>17</b>
Research Responsibilities of Federal Agencies Under the Act.....	18
Federal Funding Authorized, Requested, and Appropriated Under the Act, FY74-FY00.....	20
Funds Expended on Marine Mammal Research Other Than Appropriated Under Authority of the Act by the National Marine Fisheries Service and the Fish and Wildlife Service, FY81-FY00.....	22

Funds Expended on Marine Mammal Research by the National Marine Fisheries Service and the Fish and Wildlife Service, FY74-FY00.....	23
Number of Personnel Assigned to Marine Mammal Administration and Research Activities in the National Marine Fisheries Service and the Fish and Wildlife Service, FY80-FY00.....	24

**APPENDIX A**

Published Sources of Marine Mammal Information From Federally-Funded Research and Studies.....	25
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**APPENDIX B**

Listing of Marine Mammal Research and Study Projects, Principal Investigators, and Funding Levels for FY00.....	29
--Department of Agriculture.....	30
--Department of Commerce.....	30
--Department of Defense.....	37
--Department of Health and Human Services.....	42
--Department of the Interior.....	43
--Department of State.....	48
--Department of Transportation.....	49
--Environmental Protection Agency.....	49
--Marine Mammal Commission.....	49
--National Aeronautics and Space Administration.....	49
--National Science Foundation.....	49
--Smithsonian Institution.....	52

# LIST OF TABLES

Table	Page
1. Reference list of previous surveys compiled by the author and available from the National Technical Information Service.....	5
2. Number of marine mammal research projects supported by Federal agencies in FY74-FY00.....	6
3. Federal funding of marine mammal research by agency.....	8
4. Regionally oriented marine mammal research in waters adjacent to the United States.....	9
5. Taxonomic summary of Federally-funded marine mammal research.....	10
6. Federal funding of marine mammal research by research issue.....	12
7. Federal funding under the Marine Mammal Protection Act.....	20
8. Funds expended on marine mammal research other than those appropriated under authority of the Marine Mammal Protection Act.....	22
9. Number of personnel assigned to marine mammal activities in the National Marine Fisheries Service and the Fish and Wildlife Service, FY80-FY00.....	24

# LIST OF FIGURES

<b>Figure</b>	<b>Page</b>
1. Trends in Federal support of marine mammal research: Total number of marine mammal projects reported to the Marine Mammal Commission, FY74-FY00.....	7
2. Funds expended on marine mammal research by the National Marine Fisheries Service and the Fish and Wildlife Service, FY74-FY00.....	23

# LIST OF ACRONYMS

<u>Acronym</u>	<u>Definition</u>
AFSC	Alaska Fisheries Science Center
AFWRC	Alaska Fish and Wildlife Research Center
ARPA	Advanced Research Projects Agency
ASC	Alaska Science Center (formerly AFWRC)
BRD	Biological Resources Division
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
MESC	Midcontinent Ecological Science Center (formerly NERC)
MMC	Marine Mammal Commission
MMM	Marine Mammals Management Office (USFWS)
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
NASA	National Aeronautics and Space Administration
NBS	National Biological Service
NCCOSC	Naval Command, Control, & Ocean Surveillance Center (formerly NOCS)
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
NOS	National Ocean Service
NOSC	Naval Ocean Systems Center
NUWC	Naval Undersea Warfare 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 (formerly OMA)
OMA	Office of Oceanography and Marine Assessment
SBSC	Southern Biological Science Center
SEFSC	Southeast Fisheries Science Center
SERDP	Strategic Environmental Research and Development Program
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
USCG	U.S. Coast Guard
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 FY00. 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) has intermittently funded projects. The Veterans Administration and Department of Energy gave support to a few projects early in the period; but since no further support has occurred in the past decade, these 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-FY00 was 174.3 (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. The agency provides monies in the form of grants to USDA research agencies, state agricultural experiment stations, the state land-grant university system, cooperating state institutions, and participants in USDA's National Research Initiative Competitive Grants Program. In turn, these organizations may use some of the grant money, along with money from other sources, to fund marine mammal research. Information regarding these projects is available on the World Wide Web (<http://cristel.nal.usda.gov/>).

### **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 Ocean Service (NOS), 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). Additionally, the North Pacific Fisheries Management Council (NPFMC) has supported studies. The former Outer Continental Shelf Environmental Assessment Program (OCSEAP), managed by NOAA/ORCA, was responsible for part of the Alaska OCS research. OCSEAP was created through interagency agreement between NOAA and the Minerals Management Service (MMS); project funding came 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; for Navy -- the Assistant Secretary of the Navy for Installations and Environment, CNO Operational Activities, the SPAWAR Systems Center, Naval Undersea Warfare Center, Navy Legacy Program, plus the Office of Naval Research; and the joint, multi-agency Strategic Environmental Research and Development Program

(SERDP) plus the Advanced Research Projects Agency (ARPA). 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 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. Through the end of FY93, the Fish and Wildlife Service (FWS) supported management related research on the biology, population dynamics, and ecology of walruses, sea otters, polar bears, and sirenians (manatees and dugong). With the beginning of FY94, the newly formed National Biological Service (NBS) took over conduct of research on the biology, population dynamics, and ecology of these species, in support of FWS and other DOI resource management bureaus. In FY96, NBS became a part of the U.S. Geological Survey (USGS). Subsequently, within USGS the Biological Resources Division conducts research and studies on marine mammals. Marine mammal studies relative to national park, seashore, and monument development and management is supported by the National Park Service (NPS).

### **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, the International Whaling Commission, the National Academy of Sciences, the Marine Mammal 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 implementation 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 Commission's research program.

### **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, a trust instrumentality of the United States, supports marine mammal research on evolutionary and general biology, including a salvage program and national cetacean stranding data base, through the National Zoological Park and the Department of Vertebrate Zoology of the Museum of Natural History.

TABLE 1

Reference list of previous surveys compiled by the author  
and available from the National Technical Information Service (NTIS)

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Survey of Federally-Funded Marine Mammal Research and Studies,

- FY70-FY79. Publication PB81-174336, NTIS, Springfield, Virginia. 235 p. (1981)  
FY70-FY80. Publication PB81-242059, NTIS, Springfield, Virginia. 43 p. (1981)  
FY70-FY81. Publication PB82-227570, NTIS, Springfield, Virginia. 65 p. (1982)  
FY70-FY82. Publication PB83-262998, NTIS, Springfield, Virginia. 83 p. (1983)  
FY70-FY83. Publication PB84-215086, NTIS, Springfield, Virginia. 84 p. (1984)  
FY70-FY84. Publication PB85-225613, NTIS, Springfield, Virginia. 99 p. (1985)  
FY70-FY85. Publication PB86-235637, NTIS, Springfield, Virginia. 108 p. (1986)  
FY70-FY86. Publication PB87-217386, NTIS, Springfield, Virginia. 120 p. (1987)  
FY70-FY87. Publication PB88-212782, NTIS, Springfield, Virginia. 133 p. (1988)  
FY70-FY88. Publication PB90-104050, NTIS, Springfield, Virginia. 143 p. (1989)  
FY70-FY89. Publication PB90-272097, NTIS, Springfield, Virginia. 154 p. (1990)  
FY70-FY90. Publication PB91-212217, NTIS, Springfield, Virginia. 44 p. (1991)  
FY74-FY91. Publication PB92-190222, NTIS, Springfield, Virginia. 56 p. (1992)  
FY74-FY92. Publication PB93-227189, NTIS, Springfield, Virginia. 66 p. (1993)  
FY74-FY93. Publication PB94-195021, NTIS, Springfield, Virginia. 76 p. (1994)  
FY74-FY94. Publication PB95-238929, NTIS, Springfield, Virginia. 90 p. (1995)  
FY74-FY95. Publication PB97-104749, NTIS, Springfield, Virginia. 115 p. (1996)  
FY74-FY96. Publication PB98-148281, NTIS, Springfield, Virginia. 125 p. (1998)  
FY74-FY97. Publication PB98-121816, NTIS, Springfield, Virginia. 141 p. (1998)  
FY74-FY98. Publication PB99-171720, NTIS, Springfield, Virginia. 150 p. (1999)  
FY74-FY99. Publication PB01-103492, NTIS, Springfield, Virginia. 174 p. (2001)
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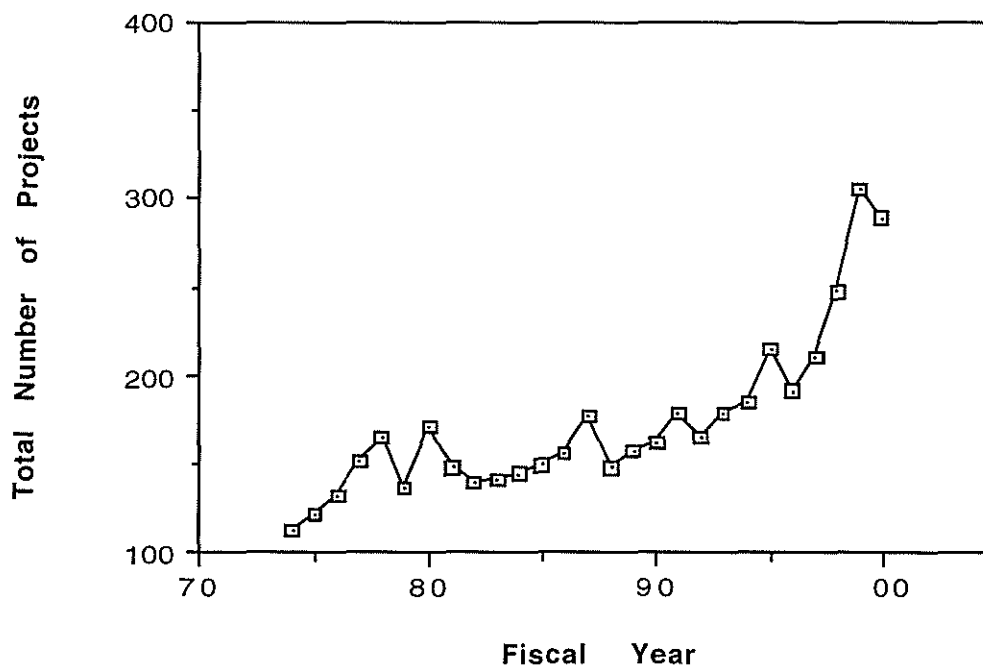
TABLE 2

## NUMBER OF MARINE MAMMAL RESEARCH PROJECTS SUPPORTED BY FEDERAL AGENCIES IN FY74-FY2000

	'74	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00
Department of Agriculture	2	1				2	1	4						9	7								3	5	3	7	5
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	41	46	55	73	64	70	72	92	56
National Ocean Pollution Program Office												1															
National Ocean Service																									1	9	34
National Sea Grant	4	2	1	1	2	2	2	2	1	3	2	4	1				1	2	4	6	4	6	1	3	3	1	5
North Pacific Fishery Management Council							1	1	1	1	1																
Ocean and Coastal Resource Management								2	4	6	4	5	9	8	1							2	10	19	13		
Ocean Resources, Conservation, and Assessment									2	2	1	1	1	1	1	1	1	1	1	1	2						
Oceanic and Atmospheric Research																								3		1	
Department of Defense																											
Advanced Research Projects Agency (ARPA)																					3	2	2	4			1
Air Force						1	1	1			2	2	2	2	1	1	1	1	2	1	2	1	1	1	1	1	1
Army						1	2											1	1	1							
Navy	26	14	13	21	24	20	17	13	14	11	12	15	16	24	20	20	8	8	16	39	46	54	45	35	47	63	60
Strategic Environmental Research (SERDP)																			2	6	3	9	9	7	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	4		5	7	4	12	10	8	8
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	16	15	2	2	2	9	18	11	18
Geological Survey				1	1	1	1	1	1	1	1													13	20	36	33
Minerals Management Service		1	4	3	4	7	12	8	10	9	12	12	13	26	13	24	26	28	23	10	8	5	7	8	8	7	7
MMS/NOAA/OCSEAP		3	16	11	11	6	6	7	9	8	6	3	4	2	1	1	2	1									
National Biological Service																					14	14	14				
National Park Service	1	1	2	3	5	2	2	4	3	3	3		3	3	2	6	2	6	10	10	6	2	6	12	10	16	21
Department of State					2	1	1	2	2	2	2	2	3	3	2	3	3	3	3	2	5	6	2	2	2	2	2
Department of Transportation (Coast Guard)																					1	1	1	1	2	3	3
Environmental Protection Agency	1	1												1	1	2	2	5	6	5	3	3	2	1	2		
Marine Mammal Commission	14	32	30	29	34	7	21	16	15	13	30	32	20	25	25	16	18	24	23	29	16	19	5	7	9	9	2
National Aeronautics and Space Administration	1	1	1	2	2			1				1	3	2	1	1	2	2	2	2	2	2	2	2	3	3	2
National Science Foundation	12	7	10	10	8	11	14	8	10	11	10	12	12	10	8	9	12	11	12	9	4	11	9	13	11	36	31
Smithsonian Institution	4	4	2	2	2	2	2	2	3	3	3	3	5	3	1	1	1	1	1	2	1	2	2	1	1	1	1
TOTAL:	113	122	133	151	166	137	171	148	140	142	145	150	156	177	148	158	162	180	165	180	185	216	192	227	246	305	292

**FIGURE 1**  
**TRENDS IN FEDERAL SUPPORT OF MARINE MAMMAL RESEARCH**

Total Number of Marine Mammal Projects Reported to the  
Marine Mammal Commission, FY74-FY00





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

	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Department of Agriculture														35	35	35	35	35
Department of Commerce																		
National Marine Fisheries Service	4050.7	4077	5021	4628.7	4852.9	4482.9	4801.4	7010.6	11925.1	16445.9	14464.7	14339.8	16582.5	12972.9	12350.9	17194	17422.4	19547.3
National Ocean Pollution Program Office			20															
National Ocean Service																25	173	2512
National Sea Grant Program	46.7	79.6	66.4	21.4				32.3	47.3	105.5	220.5	249.1	387	157.6	135.7	152.2	25	301.2
North Pacific Fishery Mgmt. Council	11.5	5																
Ocean and Coastal Resource Mgmt.	35.9	81	81.9	185.1	145	63							2	76.4	170	215		
Ocean Resources Conserv. and Assessmt	123.6		59	55	15	15	15	25	425	425	425	848						
Oceanic and Atmospheric Research																254		200
Department of Defense																		
Advanced Research Projects Agency											224	751	842	1144.2	250.4			619
Air Force		6.5	15.5	58.5	58.5	55	55	173.9	106.7	244.4	173.2	349.7	126.8	89	135.3	100		270
Army									247.9	248.5	580		282	282				
Navy	1903.2	1730	2105.6	2488.3	3378.2	3465.8	4037	1139	1064	2430	3907.2	3597.1	5438.9	4861.5	6364	11258.4	6625.2	8379.3
Strategic Environmental Research (SERDP)											2249	1894	852	2684.4	2120.1	1908	370	397
Department of Energy				70	70													
Department of Health and Human Services	684.4	629	1052.8	852.1	735.2	1089.1	1678.3	1421.5	1324.4	576.9		606.6	788.5	361.2	?	?	?	?
Department of the Interior																		
Fish and Wildlife Service	1261.2	1007.7	936.1	1542.3	2349.4	2498.6	3367.6	3007.9	3648.5	3034	3052	169.4	182.1	161.2	213.7	578.2	433.2	647
Geological Survey	76	71													2151	1795	2305.9	1938.4
Minerals Management Service	4275.9	3595.9	3140.7	2698.3	1695.9	3025.4	5228.9	3462.9	3088.1	2712.8	1691	618	648	1026.9	1150	1349	1689.9	508.4
National Biological Service												3088.7	2431.7	2118.9				
National Park Service	300.4	235		17.5	39.5	27	86.2	50	66	1300	621.8	84.1	6.4	30.7	444.4	185.5	378.3	1056
Department of State	540.6	709.4	795.6	869.4	926.6	913.8	929.2	1148.5	1235.2	1488.9	1300.4	1669.5	1162.5	1012.1	993.3	1113.3	607.7	717.5
Department of Transportation												80	80	80	80	140	285	217
Environmental Protection Agency					8.5	8	175	100	227.2	119.2	158.9	142.6	85	1378.5		35		
Marine Mammal Commission	204.9	298.7	197.7	85	100.5	102.6	104.8	92.7	94.2	250.9†	150.9-	135.8Δ	45.6	13.1	43.5	15.3	131.2	5
National Aeronautics and Space Admin.			10	8.7	1.6	6.2	6	19.1	17.5	16.5	30	30	30	25.5	23.5	31	33	28
National Science Foundation	503	691.9	729.8	620.5	757.6	663.4	901.8	820.9	858.3	1039.7	549.6	316.9	1292	1054.1	1025	274.8	4165.2	4791.9
Smithsonian Institution	170.4	207.5	212.5	222.5	212	150	161.2	165	169	144.4	182.1	144.2	238.6	269.3	155	170.6	172.4	177.5
<b>TOTAL</b>	<b>14,188.4</b>	<b>13,425.2</b>	<b>14,445.6</b>	<b>14,423.3</b>	<b>15,346.4</b>	<b>16,565.8</b>	<b>21,547.4</b>	<b>18,669.3</b>	<b>24,544.4</b>	<b>30,331.7</b>	<b>29,829.4</b>	<b>28,978.7</b>	<b>31,503.6</b>	<b>29,834.5</b>	<b>27,840.8</b>	<b>36,829.3</b>	<b>34,852.4</b>	<b>42,347.5</b>

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

† Included in this total is \$127,000 transferred from other agencies to the Marine Mammal Commission.

- Included in this total is \$100,000 transferred from other agencies to the Marine Mammal Commission.

Δ Included in this total is \$91,500 transferred from other agencies to the Marine Mammal Commission.

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	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Hawaii	302.5 (3)	360.8 (3)	332.9 (4)	(1)	3+ (3)	1.5 (1)	429 (4)	487.6 (4)	747 (3)	1033.7 (6)	833 (3)	1504 (4)	1458.8 (2)	10 (5)	834.3 (4)	5 (1)	1983 (11)
Alaska	4960.2 (25)	4708 (28)	3787.5 (31)	4294 (39)	2827.5 (23)	5776.2 (34)	5612.9 (33)	8462.6 (49)	7714.8 (43)	6435.2 (38)	6081.9 (36)	6258.1 (33)	6105.2 (35)	7993.9 (39)	7571.2 (48)	10740.2 (70)	12707.7 (68)
Oregon/Washington	(1)	23.2 (1)	(3)		1524.2 (3)	1520.2 (2)	68.6 (2)	37 (3)			85 (2)	25 (6)	7 (5)	371.4 (5)	451.2 (6)	556.7 (5)	1619.5 (14)
California	1491.9 (32)	1505 (24)	1040.2 (23)	1066.8 (19)	1418.5 (12)	1318.8 (8)	1550.7 (8)	2868.7 (11)	3548.1 (14)	2281.1 (14)	2531.9 (10)	2745.3 (12)	3326.4 (13)	1562.1 (18)	832.9 (17)	1368.2 (24)	1378.5 (27)
Gulf of Mexico	238.5 (3)	15 (1)	168.1 (1)	(1)	62 (4)	154.2 (4)	248.1 (4)	897.8 (6)	3353.3 (4)	3214.3 (6)	3167.7 (5)	2139.5 (3)	14 (1)		134 (2)	80 (3)	1090 (6)
Florida	384.8 (8)	622 (10)	295.6 (10)	573.9 (16)	242.5 (18)	504.2 (12)	560.9 (11)	659.5 (9)	1327.7 (8)	1346.1 (8)	779.4 (4)	1583.9 (9)	829.5 (6)	631.7 (10)	433.7 (14)	104.5 (9)	982.9 (26)
Mid-Atlantic States (GA, SC, NC, VA)	2.6 (1)		1.5 (1)	669.6 (5)	455.9 (6)	725.8 (5)	544.7 (6)	520.6 (7)	437 (6)	120 (1)	885 (6)	926.9 (8)	327.4 (6)	2510.2 (9)	1665.6 (8)	1463.2 (12)	1748.6 (12)
NE Coastal States	141.3 (7)	311.1 (11)	642.8 (15)	141.6 (11)	334.5 (9)	438 (13)	661 (17)	2873.2 (26)	962.3 (13)	1513.9 (15)	1111.7 (15)	3430 (28)	2391.1 (33)	1005.9 (18)	1269.7 (4)	2282.2 (14)	3301.3 (15)

\* 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)

	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00
<b>Sirenia (Manatees and Dugong)</b>																	
Department of Agriculture													?	?			
Department of Commerce																	
Department of Defense												656.5	612				64.2
Department of Energy																	
Dept. Health and Human Services																	
Department of the Interior	276.8	284.1	224	389.5	396.4	402.6	419.8	437.2	739.3	681	594.3	619.9	483.5	608.2	665	699.8	455.1
Department of State																	
Environmental Protection Agency																	
Marine Mammal Commission	4.5	1.5	5	2	41.4	36	0.8	4	4.5	18.2	2.5				3		
NASA		10	8.7	1.6	6.2	6	19.1	17.5	16.5	30	30	30	25.5	23.5	20	25	25
National Science Foundation			94						50	52							
Smithsonian Institution																	
<b>CATEGORY TOTAL</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>810.3</b>	<b>781.2</b>	<b>626.8</b>	<b>1306.4</b>	<b>1121</b>	<b>631.7</b>	<b>688</b>	<b>724.8</b>	<b>544.3</b>
<b>Carnivora (Polar Bear and Sea Otter)</b>																	
Department of Agriculture																	
Department of Commerce		6.1	10														
Department of Defense											149						
Department of Energy																	
Dept. Health and Human Services																	
Department of the Interior	1156.3	1303.7	1332.4	1883.4	1995.8	2938	2457.6	3148.2	2435.7	2504.1	1425.8	1452	980.4	909	1359.2	1178.3	1518.3
Department of State																	
Environmental Protection Agency						75	50	80		40							
Marine Mammal Commission	67	33.3		2		7.5		3	14		19.2	6		2			
NASA																	
National Science Foundation		149.5		44	44	44		174.3	122.4	122.4							4.9
Smithsonian Institution																	
<b>CATEGORY TOTAL</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>2572.1</b>	<b>2666.5</b>	<b>1594</b>	<b>1458</b>	<b>982.4</b>	<b>911</b>	<b>1371.2</b>	<b>1190.2</b>	<b>1672.8</b>
<b>Pinnipedia (Seals, Sea Lions, Walrus)</b>																	
Department of Agriculture													?	?	?	?	?
Department of Commerce	1269.4	1650.7	1169	49.8	221.1	35.6	1504.8	2447.7	4522.3	3700.7	3836.2	3978.2	5061.8	4618.2	4608.4	4637.5	9206.6
Department of Defense	68.5	179.9	233.3	344	264.9	502	173.9	106.7	184.4	417.9	909.7	791.4	480.1	466.6	391.2	917.2	776.4
Department of Energy			70	70													
Dept. Health and Human Services		57	51.8	162.2	143.9	259.5	227.5	178	72.1		161.2	45.4	66.4	?	?	?	?
Department of the Interior	494.8	75	170.2	639.3	229.1	161.2	267.9	367.8	1140.6	391.9	33.6	169	572.7	121.7	685	640.8	641
Department of State											20	15					
Environmental Protection Agency								50	25		12.1	10					
Marine Mammal Commission	12.5	32.8	8.7	17	3.5	7	14.7	17	11.3	10	10	2.8			3.1	3	
NASA																	
National Science Foundation	420.7	350.7	307.3	354.5	339.4	225	258.4	213.8	480.9	333.7	209.9	332	19.7	85	248.1	1173.4	2223.8
Smithsonian Institution	42.5	42.5	76.5	58								94.6	115				
<b>CATEGORY TOTAL</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>3381</b>	<b>6436.6</b>	<b>4920.4</b>	<b>5192.7</b>	<b>5438.4</b>	<b>6315.7</b>	<b>5291.5</b>	<b>5935.8</b>	<b>7371.9</b>	<b>12847.8</b>

TABLE 5 (continued)

## TAXONOMIC SUMMARY OF FEDERALLY-FUNDED MARINE MAMMAL RESEARCH

	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00
<b>Cetacea (Whales and Porpoises)</b>																	
Department of Agriculture													?	?	?	?	?
Department of Commerce	2421.7	2540.7	2935	2376.7	2257.5	2705.5	3111.3	3342.8	7515.1	7088.1	6679.2	7080.1	3022.9	3996.1	8461.7	7427.7	7540.5
Department of Defense	1218	1566.2	1973.5	2532.1	2565.9	2660	1139	1064	2300	3017.1	4148.8	4222.8	6011.6	3985.9	5986.7	3492.6	4542.6
Department of Energy																	
Dept. Health and Human Services	162.4	22.4			84.7	86.5	97.3	108.9			221	743.1	294.8	?	?	?	?
Department of the Interior	2354.2	2888.6	1688.6	932.1	1372.7	2193.5	2456.2	1760.2	2517.8	565	638	495	540.7	1207.3	905.5	1160	747.4
Department of State	709.4	795.6	860	919.3	911.1	926.1	1146.7	1234	1486.9	1300.4	1649.5	1132.5	1012.1	993.3	1113.3	607.7	717.5
Department of Transportation																	
Environmental Protection Agency						100	50	97.2	94.2	118.9	130.5	5	150				
Marine Mammal Commission	63	74	39.8	301.2	27.7	4.5	23	30.3	61.4	44	14.3	21.8	6.6	21	2	3	
NASA															9	8	
National Science Foundation	221.3	101.1	43	200	200	510.8	444	403.7	324.9	41.5	107	299	247	257	26.7	816.9	895.2
Smithsonian Institution																	
<b>CATEGORY TOTAL</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>8041.1</b>	<b>14302.3</b>	<b>12175</b>	<b>13668.3</b>	<b>14079.3</b>	<b>11365.7</b>	<b>10540.6</b>	<b>16644.9</b>	<b>13800.9</b>	<b>14660.2</b>
<b>Mixed Species or General Studies</b>																	
Department of Agriculture													?	?	?	?	?
Department of Commerce	551.5	1050.8	776.2	2586.4	1668.5	2075.3	2565.8	6606.9	4939	4321.4	4659.3	5839.3	8109.1	2690.4	4758.1	4812.8	5658.9
Department of Defense	450	326	340	560.6	690	930		247.9	438.5	3368.4	1284.3	1871	1957.4	4417.3	6888.5	2585.4	4282.1
Department of Energy																	
Dept. Health and Human Services	466.6	973.4	800.3	573	860.5	1332.3	1096.7	1037.5	504.8		224.4				?	?	
Department of the Interior	624.4	740.4	842.9	279.9	1560	2987.4	746.6	1089.2	213.4	1222.8	1268.5	442.3	693.8	1678.9	293	1128.4	788
Department of State			9.4	7.3	2.3	3.1	1.8	1.2				15					
Environmental Protection Agency												75	75		35		
Marine Mammal Commission	151.7	56.1	31.5	27.3	30	49.8	54.2	39.9	159.7	78.7	89.8	15	6.5	20.5	7.2	125.2	5
NASA															2		3
National Science Foundation	49.9	128.5	176.2	159.1	80	122	118.5	66.5	61.5			521	680.4	683		2170	1672.9
Smithsonian Institution	165	170	146	154	150	161.2	165	169	144.4	115.9	144.2	144	154.3	155	170.6	172.4	177.5
<b>CATEGORY TOTAL</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>	<b>6461.3</b>	<b>9107.2</b>	<b>7670.5</b>	<b>8922.6</b>	<b>11676.5</b>	<b>9645.1</b>	<b>12154.4</b>	<b>10994.2</b>	<b>12587.4</b>

\* In some cases, studies were related to human health and medicine or other topics with little or no bearing on the marine mammal subjects.

TABLE 6

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

SPECIAL RESEARCH ISSUE	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FUNDING AGENCY †	LINE TOTAL
<b>Tuna/Porpoise:</b>																			
Population Assessment	507.3	485.8	606.5	1079.9	1002	1025.4	919.2	554.2	1036.6	1020.1	362.3	229.7	228.4	92.2	3699.5	3224.6		NMFS	16073.7
		1.8	1.3															MMC	3.1
Mortality Reduction	673.9	762	853	914.3	911.1	916.8	1138.4	1225.8	1443.9	1238.5	1537.9	1070	1000.2	979.1	1091	600	700	DOS	17055.9
									1351.4	475.7	450	450	237.5	237.2	228.3		110	NMFS	3540.1
									17									MMC	17
Assessment of Taking	181.8	179.3	134.7	185.1	185.1													NMFS	866
Biology	296.5	319.2	288.8	303.5	361.6	360.1	592.7	902.6	245	357	269.4	405.5	465.2	325.8	322.8	120.5		NMFS	5936.2
<b>International Whaling Commission:</b>																			
Assessment of Stocks and Taking	<u>856</u>	<u>815</u>	<u>753</u>								74.5	184			69.9	107.9	393.2	NMFS	3253.5
		16.1				3				8				21				MMC	48.1
								49										NSF	49
	35.5	33.6	7	5		9.3	8.3	8.2	45	61.9	111.6	62.5	11.9	14.2	22.3	7.7	17.5	DOS	461.5
<b>Marine Mammal/Fisheries Conflicts:</b>																			
Southern Ocean Krill	49.2																	MMC	49.2
Fin Fish/Pinniped Interactions	79.6	44.6	21.4						5.5	3	5						21.5	NSGCP	167.1
																		MMC	13.5
	221.1	701	365.4		801.8	772.9	1255.7	2600.8	1617.3	1331.1	1508.3	592.7	1495	1969.8	1502.6	2369.7	3373.7	NMFS	22478.9
																		NOS	229.6
Fisheries/Sea Otter Interactions		6.1																NSGCP	6.1
				142.5	253.9	242.6	36.9	322.9	204.6	207.3	157	157	132					NBS/FWS	1856.7
														132				USGS	132
				10														OCRM	10
												3						MMC	3
Fin Fish/Cetacean Interactions	14.1		3															MMC	17.9
							68	718.8	337	535.5	231	344.9	615		505.5	<u>539.3</u>	2019.7	NMFS	5914.7
													25					OCRM	25
Incidental Taking	64.9	26.8	11	4				16				5						MMC	127.7
	14.8	65	121.3	78.5	165.6		25	3007	1497.7	767.2	1167	1449	1402.4	194.7	798.1	2697.1	242.6	NMFS	13693
	5																	NPFMC	5
		20																NOPPO	20
														98.4				NSGCP	98.4
<b>Effects of Oil/Gas Development and Chemicals on Marine Mammals:</b>																			
Physiological Studies	1650.1		221.9		65.5	134.7												MMS	2072.2
						75	100	195	25	73.9								EPA	468.9
								425	425	425	425							ORCA	1700
												50						NMFS	50
Risk Analysis	617.8	977.5	409.5	454.2	647.2	833.9	994.7	1363.5	1872.6	1142	953							MMS	10265.9
	5.9	6.9				7.5		1.1										MMC	21.4
						923.8	580	978		598.7	224.9	3.2	109.2					FWS/NBS	3417.8
						30	50											NPS	80
							678.3	32	438.6	409	743	425	441.4				200	NMFS	3367.3
											423							ORCA	423
														2.4				OCRM	2.4
															75			USGS	75
																		NSGCP	157.6
																		EPA	1303.5

\* 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.

† See page vii for clarification of acronyms

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

SPECIAL RESEARCH ISSUE	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FUNDING AGENCY	LINE TOTAL
<b>Marine Mammal Strandings:</b>																			
Biological Studies	1.8	10.5			7.5	32		12.4	5								1	MMC	70.2
	<u>30</u>	<u>30</u>	<u>35</u>	<u>35</u>	<u>35</u>	<u>38</u>	<u>38</u>	<u>50</u>	<u>50</u>		<u>9</u>	<u>9</u>	<u>9</u>	<u>9</u>	<u>10</u>	<u>10</u>	<u>10</u>	SI	407
	2							131.6	120	120	146.5	167.5	80		49	57	367	NMFS	1240.6
	<u>103</u>																	FWS	108
		7.5											42	13	25			OCRM-NOS	174.5
								32.2	71.2	75	75	75						EPA	328.4
											3	6.4	21.2					NPS	30.6
															2	3	3	NASA	8
<b>Bowhead Whale:</b>																			
Assessment of Stocks and Taking	<u>805</u>			441	175.1	359	316.2	192	655	499.3	313.9	298.2	315	412.6	465	400		NMFS	5648.3
	<u>625.4</u>	<u>543.6</u>	<u>480</u>	<u>180.3</u>		<u>360</u>	<u>603.3</u>	<u>284</u>	<u>512.8</u>	<u>549</u>	<u>549</u>	<u>495</u>	<u>482</u>	<u>484.6</u>	<u>450</u>	<u>450</u>	<u>266</u>	MMS	7295
		4																MMC	4
																		NSF	14.1
Biology	589.6	724.5	163.5	156.6	123.5	287.7	22.5		54.8					625	376	650		MMS	3773.7
<b>Humpback Whale:</b>																			
Population Assessment	30.1	<u>113.1</u>	<u>82.8</u>	<u>45.7</u>	21.2	2.2	23	45	250	240	387.8	207.6		175.4	135.6	<u>121.2</u>		NMFS	1880.7
		4.5	11		3	1.5	7.4	7.5	1.5	8		10						MMC	54.4
			15	15	23	20		20.9	16	16	20			70	70	60	228	NPS	574.9
											265	45	241					SERDP	551
							8											MMS	8
Biology	225			7				<u>13</u>					<u>1</u>	<u>1.5</u>	<u>11.5</u>	<u>61</u>	<u>2</u>	OCRM-NOS	102.9
	<u>11</u>		3.3	<u>16</u>	<u>20</u>	<u>20</u>	<u>27</u>	<u>20</u>										NPS	272
			63	63						43.4								NMFS	117.3
																	59.9	OCRM-NOS	185.9
																		NSGCP	43.4
												2						MMC	2
															10	218.4		NSF	228.4
<b>Gray Whale:</b>																			
Population Assessment		<u>63.8</u>	<u>59</u>												60.5	65.1	54.4	NMFS	302.8
	<u>536.4</u>	<u>521.5</u>	<u>468.5</u>	<u>180.3</u>			<u>84</u>	<u>79.6</u>										MMS	1870.3
			45.6										2	1.5	<u>1</u>	<u>1</u>	13	OCRM-NOS	64.1
Biology		480	188.2				<u>38.6</u>											MMS	706.8
		38.7																NSF	38.7
													124.7	143		147.5		Navy	415.2
					10													OCRM	10
Assessment of Human-Induced Impact		11								2		1						MMC	14
<b>Northern Right Whale:</b>																			
Population Assessment	<u>11</u>	49.7	401.2	<u>265.5</u>	207.1	190	190	194	234.6	324	509.9	371	827	379.2	552.1	869	1796.6	NMFS	7371.9
	<u>32.1</u>		4		4.2		2	2	28.4	20			5.8			1		MMC	99.5
				209.6	214.4	215	414.5	195.8										MMS	1249.3
											80							USCG	365
														970	350	693.4	611.3	Navy	2624.7
																	56.5	NSGCP	56.5
																	217	DOT	217
Biology					200	200	249.1	283.3	200.2			90	80.2				197.3	Navy	367.5
							30	45	45									NSF	1132.6
								19.6	3.5	12.5			227.6	96.9	51		212	NMFS	707.5
																		MMS	35.6
																		OCRM	25
															80	140		USCG	220
<b>Killer Whale:</b>																			
Population Assessment			4															NMFS	4
								5.4										MMC	5.4
								5.4										NPS	5.4
		5																NSF	5
																		OCRM-NOS	5.5
Biology							32.3	32.3										NSGCP	64.6
								<u>14</u>										NPS	14

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

SPECIAL RESEARCH ISSUE	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FUNDING AGENCY	LINE TOTAL	
<b>Pilot Whales:</b>																				
Population Assessment				10.4														MMC	10.4	
							45	10										NMFS	55	
Biology								10	12.3									NMFS	22.3	
<b>Beluga:</b>																				
Population Assessment																		MMS	266.7	
		4.8		0.2													75.4	MMC	7	
								25	184	275.5	172.8	185	205	405	205	198.5	185.5	NMFS	2041.3	
Biology	162.5	219	224	250							171.7	387.4	115	5			185.5	Navy	1534.6	
								54.6	57.1		107	209	146	106		90	90	NSF	859.7	
<b>Harbor Porpoise:</b>																				
Population Assessment	1			7	33	67	181	270	327	553.5	353	531.5	239.5	324.9	87	555.2	69.9	NMFS	3600.5	
			9	30														OCRM	39	
			10	5.8														MMC	15.8	
						5												NPS	5	
Biology									24	12								NSGCP	36	
								3		107.5	21.1							Navy	128.6	
												9						NMFS	9	
<b>Dall's Porpoise:</b>																				
Population Assessment	165	127.6	117		285	327	553.6	977										NMFS	2552.2	
<b>Bottlenose Dolphin:</b>																				
Population Assessment	15		4.5	13.5			1		3.5	5					1			MMC	43.5	
	248.5	292.9	177.7	208.8	62	137	172	31.9	105	65	750	845			722.1	600.6	442.8	NMFS	4861.3	
					8	100			23	10	55.5	5						EPA	201.5	
											86.3	82.7	82.7					NSGCP	251.7	
																5		NASA	14	
															9			NPS	9.5	
																205.7		NSF	205.7	
Biology	975.5	1130	1305.5	1848.1	1805.9	2318	677	864	525	676.5	785.5	1504.2	974.8	670.9	633.5	805.2	1397.7	Navy	18897.3	
					84.7	86.5	97.3	108.9											DHHS	412.8
	221.3	57.4	6.9				9.1	99.9	167.8				35.4	18	151	16.7	159.7	NSF	1069.7	
					15.5		10.6												MMC	26.1
					100	2		35	250			20							NMFS	437.8
																10	251.8	NOS	261.8	
																12.5	12.5	NSGCP	25	
<b>Northern Fur Seal:</b>																				
Population Assessment	309.5	274.4	259.9	5	5.5		5.5	5.5	6	7	9	95	23.7	24.1	24.3	106.1	603	NMFS	1763.5	
Biology	309.5	274.4	252.5						4	4					74		1956.8	NMFS	2875.2	
	1.5																	MMC	1.5	
			7															OCRM	7	
	112							15										MMS	127	
												138						NSF	138	
<b>Antarctic Seals:</b>																				
Population Studies	49.9	41.8			54.3						35	140			119	209.9	143.7	NSF	793.6	
					180	291	326.8	335	415	445	393.1	347	200					NMFS	3625.9	
											20							DOS	20	
Biology	292.9	159.7	231	311.2	242.5	225	115.5	51.4	377.2	333.7	174.9	6	8.8		234.6	615.3	1339.4	NSF	4719.1	
							2								2			MMC	4	
													1200					NMFS	1200	

TABLE 6 (continued)

## Federal Funding of Marine Mammal Research by Research Issue

SPECIAL RESEARCH ISSUE	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FUNDING AGENCY	LINE TOTAL
<b>Arctic Seals:</b>																			
Population Studies	65.7			88				10					368	9.7	340	165		MMS	1036.4
															37.3	42.5		NPS	10
															106.8	293.4	292.7	NSGCP	79.8
Biology		19.9	3.5															NMFS	692.9
	292	60	75	250				144	25									MMC	23.4
		38.2						102.6	98.7									MMS	846
			70	70														NSF	239.5
													172.3				40	DOE	140
																	40	Navy	252.3
<b>Hawaiian Monk Seal:</b>																			
Population Assessment	300	340.6	326.4				417.9	447.6	731.2	717	519	1109	1450		769.3		1151.7	NMFS	8279.7
							3.7											MMC	3.7
												30	8.8					Navy	38.8
Biology			2.5	18											5	5		NPS	10
								15	14.3	33.7								SI	20.5
								20										NSGCP	63
																	745	Army	20
																		NMFS	745
<b>Gray Seal:</b>																			
Population Studies													30	23.9	26			NMFS	79.9
												0.8						MMC	0.8
Biology																	19	NMFS	19
<b>Harbor Seal:</b>																			
Population Studies	3.5	5.7	0.5	14		15	5	4	237	18.1		2	2	50	35		132	MMC	30.7
								1.2										NPS	494.3
									12.1									NSGCP	12.1
	0.7	1.3	29.2	29	33	33		300.4	101			20	590.3	702.3	838.4	748.9	741.7	NMFS	4169.2
	0.5	0.5	0.5	0.5														USAF	2
Biology	7														19			OCRM	19
											66.3							Navy	7
									500	450	443.5	475					27	NMFS	1918.3
		39.4	12	3.8	14												19	OCRM-NOS	91.4
									24.3							26		NSGCP	24.3
																	5	NPS	5
<b>Northern Elephant Seal:</b>																			
Population Studies	16		1	1						170	120		7	37	30			OCRM	18
																		NPS	364
Biology	61	55		43.3	42.6		142.9				12.1		10.9		13.5	9.5	100	EPA	12.1
			1.2	3		2												NSF	478.7
		45	39.8	149.3	131.7	30	63.4	70.3			52	45.4	53.2					MMC	6.2
				20	25		57.5	27.5	25									DHHS	680.1
																		MMS	155
											406.5	298.2	120	122.8	20.8			Navy	988.3
												10						EPA	10
<b>California Sea Lion:</b>																			
Population Studies	15	15																OCRM	30
	3.5																	NPS	3.5
Biology	124	164.4	174.8	285.5	209.9	447					55.4		13.2	53.6	146.8	862.2		DHHS	13.2
	42.5	42.5	30															Navy	2523.6
			8															SI	115
																		OCRM	8



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

SPECIAL RESEARCH ISSUE	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FUNDING AGENCY	LINE TOTAL	
<b>Stellar Sea Lion:</b>																				
Population Studies									191.3	101			779.4	1580.4	1407	1202.9	2559.8	NMFS	7821.8	
																	1099.9	NOS	1099.9	
		6.8						2.5										MMC	9.3	
								1.2	2	15.5				20	20		3	NPS	61.7	
									24.6	20.4								NSGCP	45	
Biology									689.9	712.5	750	591	895.3	304.3				NMFS	3943	
																15		Navy	15	
																	512.1	NOS	512.1	
<b>Walrus:</b>																				
Population Studies	53.9		94.7	201.6	201.1	146.2	195.4	183.6	166.6	153.9					178	162	236	FWS	1973	
	19.6																	MMS	19.6	
			4			7		5	5									MMC	21	
Biology															52	145	250	USGS	447	
								2										MMC	2	
	66.8	15										188		5		370.3	177.6	NSF	822.7	
								38.6										MMS	38.6	
												169	120		20	215.8		NBS.USGS	524.8	
																	15	FWS	15	
<b>Manatees and Dugong:</b>																				
Population Studies	211.8	142	112	97	50.5	18.4			22.9					47.2	186	1	76	FWS	964.8	
		10	5.2	1.6	6.2	6	13.9	10	10	23.5	23.5	23.5	25.5	23.5	20	25	25	NASA	252.4	
	4.5			2	16.5	35				3.3	12.5				3			MMC	76.8	
																		USGS	630	
															231	231.7	167.3	NPS	11	
Biology	20	142	112	275	345.9	368	419.8	437.2	716.4	681	594.3	619.9	483.5	152	3	172	32	FWS/NBS	5574	
																		USGS	1037.9	
																		Army	709.2	
		1.5	5		17.9	1		4		5.7								MMC	35.1	
			3.5				5.2	7.5	6.5	6.5	6.5	6.5	6.5	6.5				NASA	42.2	
				17.5		16.2												NPS	33.7	
									50	52								NSF	102	
												374.5	330					Navy	704.5	
<b>Polar Bear:</b>																				
Population Studies	80.9	135.8	174.9	602.2	692.9	690.6	679.8	638.5	605.9	657.5	465	423	374.4		25		40	FWS/NBS	6280.4	
															343	355	283	55	USGS	1036
											14		17.2					MMC	33.2	
Biology	80.9	125.1	437	85	168.1	135.4	126.8	122.3	112.2	121.6	133	257.8	276	8			17	MMS	17	
																	25	FWS/NBS	2239.2	
																100	141.7	USGS	241.7	
<b>Sea Otter:</b>																				
Population Studies	195.2	120	144.8	85	527.7	572.8	560.9	210.4	24.1	15.3	43	124	45	6.5	115.5	73.2	193	FWS/NBS	3056.4	
														329	598.5	551.8	353.2	USGS	1832.5	
	86.1	249.6	96															MMS	431.7	
									360	360								NPS	720	
												3						MMC	3	
Biology	35.1	1.9		2				3							9.1	7	4.5	OCRM-NOS	20.6	
																		MMC	42	
	196.8	190.7	366.9	775.5	258.5	470	395.3	702.5	690.3	543.7	403	409	429	8	70.7		150	NSGCP	150	
																	25	FWS/NBS	5964.9	
		149.5		44	44	44		174.3	122.4	122.4				105	194.5	170	483.4	USGS	952.9	
																4.9		NSF	705.5	
			2		4												68.3	180	NPS	254.3
	463.2				90.7	16	83.9	6.8										MMS	660.6	
											149							USAF	149	
													2	5.3	5	7		OCRM-NOS	19.3	

## **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. Public Laws 102-523, 102-587, and 103-238 added additional research and study responsibilities regarding fishery conflicts, marine mammal health, marine mammal strandings, and ecosystem health and stability. Funding authorized for marine mammal activities conducted by the National Marine Fisheries Service and the Fish and Wildlife Service under Title I of the Act is authorized under Section 116 of the Act. Additional funding authority for cooperative agreements between the agencies and Alaska Native organizations, including cooperative research activities is provided in Section 119. Separate funding authority for activities related to marine mammal health and stranding response under Title IV of the Act is set forth in Section 408.

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 FY80 through FY00 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].

Among other things, the Secretary of Commerce was 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]. Title IV was added to the Act in 1992, directing the Secretary to develop contingency plans for responding to, and determining the cause and effect of, unusual marine mammal stranding events. The Secretary was also directed to establish the National Marine Mammal Tissue Bank and to develop guidance for analysis of tissue samples to monitor health trends of, and contaminant levels in, marine mammals.

Amendments enacted in 1994 require establishment of three regional scientific review groups to advise the Secretary on the status and trends of marine mammal stocks that occur in U.S. waters [Sec. 117]. Among other things, the scientific review groups are to identify research needed to resolve uncertainties regarding stock separation, abundance, or trends; factors affecting the distribution, size, or productivity of the stock; and the number, age, sex, and reproductive status of marine mammals that comprise the stock. The scientific review groups are also charged with advising the Secretary on research needed to identify modifications in fishing gear and practices likely to reduce the incidental mortality and serious injury of marine mammals. The Secretary is also required to undertake a research program to monitor the health and stability of the Bering Sea marine ecosystem and to resolve uncertainties concerning observed declines in marine mammals, sea birds, and other marine resources [Sec. 110]. The amendments also direct the Secretary to undertake an investigation of the impacts of California sea lions and Pacific harbor seals on endangered, threatened, or vulnerable salmonid stocks, and on the coastal ecosystems of Washington, Oregon, and California [Sec. 120].

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]. In 1994, provisions were added to specifically study the Gulf of Maine ecosystem and the Bering Sea ecosystem. Additional authority for grants to Alaska Native organizations for research conducted pursuant to a cooperative agreement with the Secretary was added in 1994 [Sec. 119].

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)

<b>Department of Commerce (NMFS)</b>	<b>AUTHORIZED</b>	<b>REQUESTED</b>	<b>APPROPRIATED</b>
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
FY92	21780	20400	20805
FY93	22331	23428	20588
FY94	32138	21101	18059
FY95	32623	30149	20326
FY96	33128	34860	21686
FY97	33653	26091	21444
FY98	34200	21769	26269
FY99	34768	25619	22927
FY00	?	?	?

<b>Department of the Interior (FWS, NBS, USGS)</b>	<b>AUTHORIZED</b>	<b>REQUESTED</b>	<b>APPROPRIATED</b>
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	3236	3236
FY92	3370	3632	3632
FY93	3500	3763	3763
FY94	8000	4742	4742
FY95	8600	4094	4094
FY96	9000	3891	3891

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

Department of the Interior (cont.)	AUTHORIZED	REQUESTED	APPROPRIATED
FY97	9400	4132	4132
FY98	9900	3428	3428
FY99	10296	4104	4104
FY00	10296	4701	4701
<b>Marine Mammal Commission (MMC)</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	906	953
FY89	1100	933	953
FY90	1140	960	960
FY91	1190	1003	1153
FY92	1230	1153	1250
FY93	1280	1310	1260
FY94	1500	1290	1290
FY95	1550	1390	1384
FY96	1600	1425	1190
FY97	1650	1334	1190
FY98	1700	1384	1185
FY99	1750	1436	1240
FY00	1750	1400	1265

Note: Figures on this table reflect administrative and enforcement costs as well as research costs. In August 1997 for the Department of the Interior (FWS & USGS), data were corrected beginning with FY91 to include management (i.e., administrative), enforcement, and permit activities as well as research costs. The figures for FWS & USGS 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. Implementation of the 1988 "Interim Exemptions" evident in the NMFS appropriations beginning in FY90.

TABLE 8

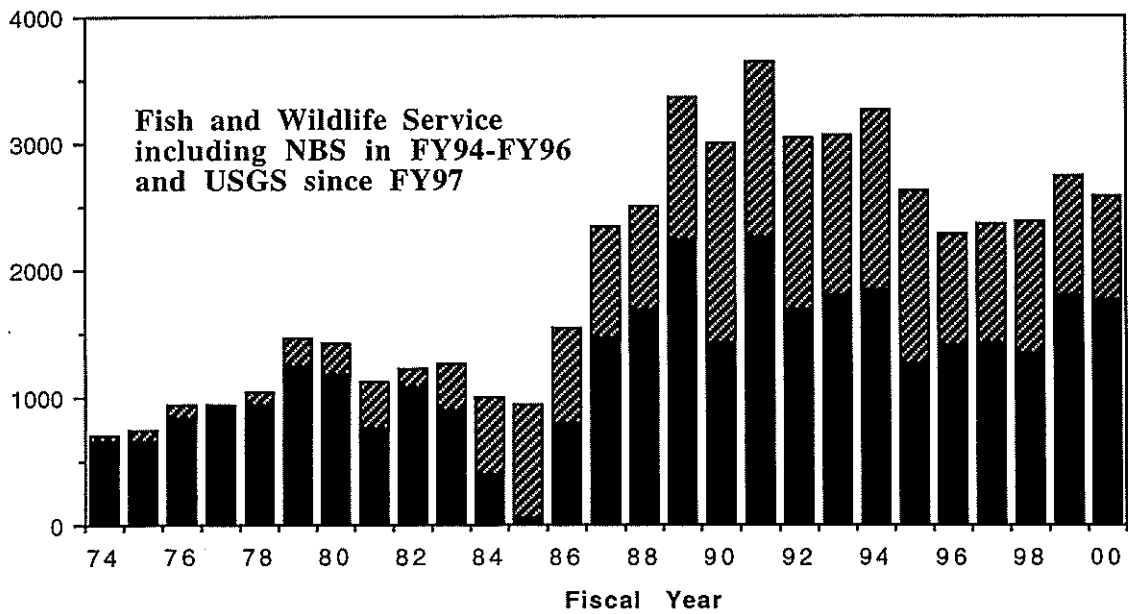
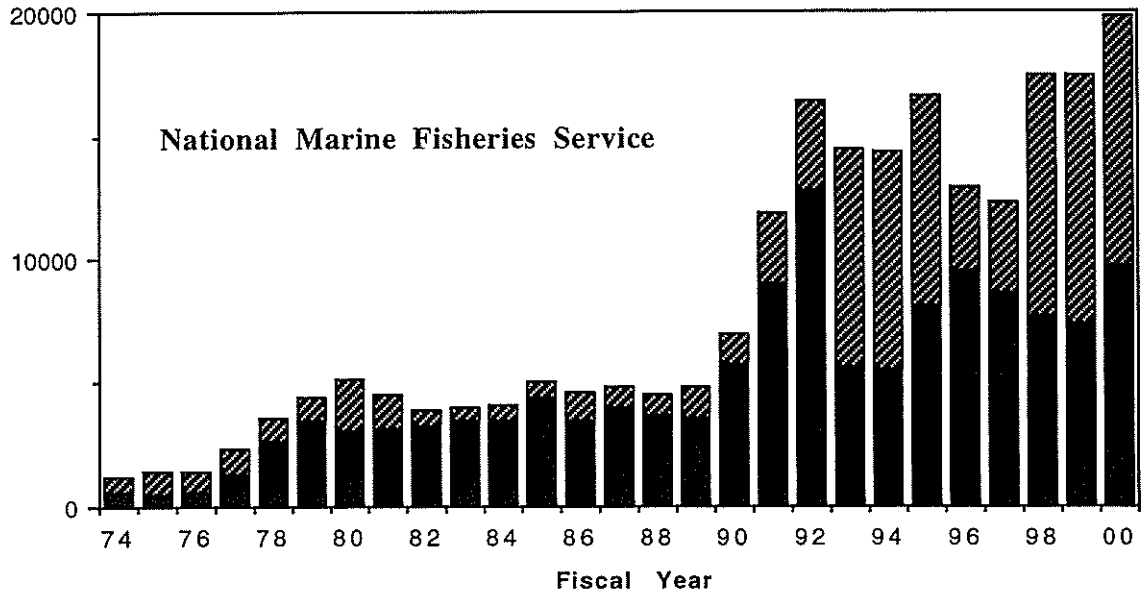
**FUNDS EXPENDED ON MARINE MAMMAL RESEARCH  
OTHER THAN THOSE APPROPRIATED UNDER AUTHORITY OF THE  
MARINE MAMMAL PROTECTION ACT  
(Thousands of Dollars)**

	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00
<b>Department of Commerce, NOAA</b>																				
<b>National Marine Fisheries Service</b>																				
Fur Seal Act Authorization	595	595	595	619	620	654	654	477	368	448										
Reprogramming and Reserves																				
Endangered Species Act Appropriation	775					500	250	350	799	803	2899	3609	8821	8812	8430	3474	3770	9710	19000	?
<b>NMFS TOTAL</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>3609</b>	<b>8821</b>	<b>8812</b>	<b>8430</b>	<b>3474</b>	<b>3770</b>	<b>9710</b>	<b>19000</b>	<b>?</b>
<b>Department of the Interior</b>																				
<b>Fish and Wildlife Service, National Biological Service (re FY94-96) and U.S. Geological Survey (re FY97-present)</b>																				
FWS/NBS Appropriation														298	298					
Endangered Species Act Appropriation	362.9	123	348	614	879	736.3	891	825	1125	1170	1398	1348	1253	1050	1050	872	945	1037	930	823
National Wildlife Refuge System Administration Act Appropriation		11	5																	
Oil Spill Damage Assessment										414				63						
<b>FWS/NBS/USGS TOTAL</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>	<b>1348</b>	<b>1253</b>	<b>1411</b>	<b>1348</b>	<b>872</b>	<b>945</b>	<b>1037</b>	<b>930</b>	<b>823</b>

**FIGURE 2**

**FUNDS EXPENDED ON MARINE MAMMAL RESEARCH  
BY THE NATIONAL MARINE FISHERIES SERVICE AND THE  
FISH AND WILDLIFE SERVICE, FY74-FY00**

(Thousands of Dollars)



Legend: ■ MMPA Funds    ▨ Other Funds

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 THE FISH AND WILDLIFE SERVICE, FY80-FY00\*

National Marine Fisheries Service**																					
	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Administrative		33.5	27.1	16	19.9	23.2	21.8	11.8	22.3	23.1	38.3	51.7	58.7	53.3	59.7	58.5	9.5	20.3	70.1	17.34	52.15
Research		60.7	61.2	42.7	76.3	75.6	76.3	63.5	67.3	70.2	80.5	98.4	134.8	131.2	125.3	120.1	51	66.5	92.1	52.75	114.5
NMFS Total	166.1	94.2	88.3	58.7	96.2	98.8	98.1	75.3	89.6	93.3	118.8	150.1	193.5	184.5	185	178.6	60.5	86.8	162.2	70.09	166.65
Fish and Wildlife Service (incl. National Biological Service FY94-FY96 and U.S. Geological Survey FY97-present) ***																					
	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Administrative	24.6	23.3	21.5	6	18.1	21.1	19.6	13.5	13.5	13.5	13.5	19.5	19.5	19.5	17.5	17.5	22.5	23.5	32.3	26	19.5
Research	17.4	17.8	16.5	16	17.6	17.8	16.5	27.7	29.1	31.4	29.8	37.3	30.2	28.1	29	29	21.3	18.6	29.3	21.7	26.7
FWS Total	42	41.1	38	22	35.7	38.9	36.1	41.2	42.6	44.9	43.3	56.8	49.7	47.6	46.5	46.5	43.8	42.1	61.6	47.7	46.2

\* Figures provided by the agencies.

\*\* The National Marine Fisheries Service has periodically changed their method of reporting --  
in FY77, to number of personnel; in FY79, to permanent employee man-years; in FY84, to full-time equivalents; and, in FY00, to person-years.

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

## APPENDIX A

### SOURCES OF PUBLISHED INFORMATION FROM FEDERALLY-FUNDED RESEARCH AND STUDIES ON MARINE MAMMALS

#### 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  
 Fishery 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  
 Biological Conservation  
 Bulletin of Marine Science  
 Conservation Biology  
 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  
 Marine Mammal Science  
 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  
 U. S. Department of the Interior, National Biological Service:  
   a) Information and Technology Reports  
   b) Our Living Resources Report  
 Veterinary Clinical Pathology  
 Wildlife Society Bulletin  
 Zoomorphology

**Geological Survey**

A variety of scientific journals, bulletins, and proceedings, including:  
 Alaska Dept. Fish, Game, and Wildlife Technical Bulletins  
 Arctic  
 Audubon Wildlife Report  
 Canadian Journal of Zoology  
 Charleston Museum Publications  
 Ecological Applications  
 Ecology  
 Endangered Species Bulletin  
 Journal of Wildlife Management  
 Marine Mammal Science  
 Society for Marine Mammalogy, Special Publications  
 Smithsonian Institution Contributions to Paleontology  
 Systematic Zoology  
 U. S. Geological Survey: a) Information and Technology Reports b) Our Living Resources  
 Veterinary and Human Toxicology

**Minerals Management Service**

American Zoologist  
 Bulletin of Marine Science  
 Canadian Journal of Zoology  
 Contributions to edited books  
 Fishery Bulletin  
 Journal of Herpetology  
 Journal of Mammalogy  
 Journal of Wildlife Management  
 Marine Mammal Science  
 NOAA/OCEAP Annual Reports  
 NOAA/OCEAP Final Reports  
 NOAA/OCEAP Lease Area Synthesis Reports  
 Project reports available through the National Technical Information Service  
 Regional information transfer meetings  
 Southwestern Naturalist  
 Various workshops

**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 (also...to Paleontology...to Zoology)  
 Systematic Zoology

**APPENDIX B**

**LISTING OF MARINE MAMMAL RESEARCH AND  
STUDY PROJECTS, PRINCIPAL INVESTIGATORS,  
AND FUNDING LEVEL  
FOR FY2000\***

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.

For a listing of projects for the period **FY90-FY99**, see Waring, G. H., 2001, Survey of Federally-Funded Marine Mammal Research and Studies, FY74-FY99, Publication PB2001-103492, National Technical Information Service, Springfield, Virginia, 174 p.

Department of AgricultureFY00

Busbee, D. L. (Texas A&M Univ.) Reporter gene systems for detecting and investigating chemicals with endocrine disruptive activities (TEX08696)	\$ *
Cliver, D. O. (Univ. California, Davis) <i>Cryptosporidium parvum</i> and <i>Giardia lamblia</i> as potential causes of foodborne and waterborne disease (CALV-AH-158)	\$ *
Gilbert, J. R. (Univ. Maine) Role of harbor and grey seals in the coastal Gulf of Maine ecosystem (ME08660)	\$ *
Mate, B. R. (Oregon State Univ.) Whale behavior and habitat assessment from satellite-monitored radio tags (ORE00914)	\$ *
Shea, D. (North Carolina State Univ.) Pesticide exposure assessment: new methods of measurement and modeling (NC06543)	\$ *

\* USDA/REE reported total funding of marine mammal research in FY00 was less than \$35K.  
Dollar amounts for specific projects above were not available.

Department of Commerce**1. National Marine Fisheries Service****A. Alaska Fisheries Science Center**FY00

Bengtston, J. L. (NMML) Polar ecosystem program (FS6442)	\$585.4K
DeLong, R. L. (NMML) California Current ecosystem program (FS6444)	\$523.8K
DeMaster, D. P. (NMML) Program management support (FS6440)	\$454.3K
Fowler, C. W. (NMML) Systematic management studies (FS6445)	\$170K
Loughlin, T. R. (NMML) Alaska ecosystem program (FS6441)	\$2260.9K
Moore, S. E. (NMML) Cetacean assessment and ecology program (FS6443)	\$767.5K

**B. Alaska Regional Office**FY00

Alaska Department of Fish and Game Harbor seals	\$603K
Steller sea lion research	\$939.8K
Alaska Eskimo Whaling Commission Bilateral agreement	\$65K
Administrative grant	\$304.8K
Alaska Native Harbor Seal Commission Harbor seal monitoring, research and management	\$138.7K
Alaska Sea Life Center Steller sea lion research	\$900K
Aleut Marine Mammal Commission Research and coordination project	\$115.5K
Bristol Bay Native Association Marine mammal monitoring, research and management in Bristol Bay	\$46.2K
North Pacific Marine Science Foundation and North Pacific Marine Mammal Research Consortium Steller sea lion research	\$720K
North Slope Borough Alaska Beluga Whale Committee	\$185.5K

**C. Northeast Fisheries Science Center**FY00

Christensen, D. (NEFSC) Monitoring incidental takes in northeast multispecies sink gillnets (M-99-NEC-04)	\$744.9K
Observer coverage in the mid-Atlantic coastal gillnet fishery (M-99-NEC-05)	\$507.3K
Clapham, P. (NEFSC) North Atlantic right whale research	\$1511.6K
Merrick, R. (NEFSC) MMPA administrative mandates (MM-00-NEC-01)	\$43.1K
Ecosystem impacts of the implementation of the Gulf of Maine harbor porpoise take reduction plan (HPTRP) (MM-99-NEC-09)	\$32.8K



Palka, D. (NEFSC)		
Passive acoustic and visual abundance survey (MM-00-NEC-02)		\$19.6K
Waring, G. T. (NEFSC)		
Stock structure and biology of common dolphins in the northwest Atlantic (MM-99-NEC-02)		\$51K
Marine mammal abundance surveys (MM-99-NEC-01)		\$403.6K
Harbor and gray seal ecology and life history (MM-99-NEC-13)		\$38K
Harbor porpoise stock identification (MM-00-NEC-01)		\$17.5K
<b>D. Northwest Fisheries Science Center</b>		
	<u>FY00</u>	
Krahn, M. M. and G. Ylitalo (NWFSC)		
Marine mammal health and stranding response program		\$300K
Park, L., G. Winans, R. DeLong and H. Huber (NWFSC & AFSC)		
Genetic identification of salmonids from pinniped scat samples		\$74K
Tynan, C. T. and D. G. Ainley (NWFSC and H.T.Harvey&Associates)		
GLOBEC target species: interactions with top trophics		\$100.5K
<b>E. Northwest Regional Office</b>		
	<u>FY00</u>	
Scordino, J. and A. Didier, Jr. (Pacific States Marine Fisheries Commission)		
Studies of expanding pinniped populations (NA87FX0464)		\$465K
<b>F. Office of Protected Resources</b>		
	<u>FY00</u>	
	(No information received)	
<b>G. Southeast Fisheries Science Center</b>		
	<u>FY00</u>	
Contillo, J. and S.L. Swartz (SEFRC, Miami)		
South Florida bottlenose dolphin assessment (8L1ASFP4)		\$36K
Hohn, A. (SEFSC, Beaufort)		
Mid-Atlantic bottlenose dolphin mortality observers (8L2B1P05)		\$171.8K
Hohn, A. and P. Rosel (SEFSC, Beaufort)		
Mid-Atlantic bottlenose dolphin stock identification (8L1A5M04)		\$215K

Mase, B. and R. Ewing (SEFSC, Miami) SE marine mammal stranding response program (8L2BSPST, 8L2B1PST, 8L1A5MST)	\$67K
Mullin, K. (SEFSC, Pascagoula) Sperm whale stock assessment in the Gulf of Mexico (BL1AQ200)	\$800K
Marine mammal survey of U.S. Gulf of Mexico shelf and oceanic waters (8L1ARS00)	\$140K
Note: funding for these projects provided by Minerals Management Service	
Rosel, P. (SEFSC, Charleston) Biomolecular genetics program (8L1A5M03)	\$188.1K
Slay, C. (New England Aquarium) Southeast early warning surveys for right whales (RL1A8H, RL1ANV, RL1ARX, RL1AWR) [funded by Naval Facilities Command, US Coast Guard, and Army Corps of Engineers]	\$240K
Swartz, S. (SEFSC, Miami) Marine mammal base program (8L1C4MM)	\$190K
MMPA research implementation (8L2B1P02)	\$50K
MMPA administrative implementation (8L2B1P01)	\$27.8K
International Whaling Commission (8L2BWC00)	\$23.4K
Passive acoustics (8L2B1PAC)	\$70K
Endangered whale surveys in the eastern Caribbean (8L1CLD00)	\$10K
Evaluation of right whale critical habitat and behavior in the winter calving grounds (8L2BERRW)	\$212K
Yeung, C. and T. Eguchi (SEFRC, Miami) Quantitative staff support (8L1A5M10)	\$104.1K
Wells, R. S. (Chicago Zoological Society and Mote Marine Laboratory) Sarasota bottlenose dolphin research (8L2B1P08)	\$20K

#### H. Southeast Regional Office

##### FY00

Zoodsma, B. (Georgia Department of Natural Resources) Recovery of threatened and endangered species in Georgia (NA87FL0477)	\$45K
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**I. Southwest Fisheries Science Center**FY00

Antonelis, G. A., Jr (SWFSC, Honolulu)	
Marine mammal research program (8L1AMS70)	\$601.7K
Hawaiian monk seal population assessment (8L2BER70)	\$550K
Hawaiian monk seal recovery efforts (8L2BER79)	\$745K
Barlow, J. (SWFSC)	
Mortality estimation and population studies of marine mammal species incidentally caught in California gillnet fisheries (8L2B1P50)	\$72.6K
Brownell, R. (SWFSC)	
Protected resources division (8L1A5V50)	\$1633K
Edwards, E. (SWFSC)	
Dolphin safe technologies program (8L1ADT50)	\$110K
Flesness, N. R. (International Species Information System)	
Cooperative agreement (ISIS & NMFS/PR1) (NA87FM5074)	\$85.5K

**J. Southwest Regional Office**FY00

Price, T. (NMFS/SWRO)	
Assessment of pinniped impacts on salmonids in the San Lorenzo River (M-00-SWR)	\$50K

**2. National Ocean Service**FY00

Au, W. (Univ. Hawaii, Hawaii Institute)	
Feasibility of using acoustic DIFAR technology to localize and estimate the Hawaiian humpback whale population	\$13.5K
Baird, R. (Hawaii Wildlife Fund)	
Conduct research on diving and nighttime behavior of humpback whales	\$7.8K
Barlow, J. (NMFS)	
NMFS marine mammal surveys	\$3K
Bowlbv, E. (Olympic Coast National Marine Sanctuary)	
Annual research cruise	\$42K
Burns, J. (Univ. Alaska, Anchorage)	
The role of physiological constraint in the acquisition of foraging ability: development of diving capacity in juvenile Steller sea lions	\$153.9K

Calambokidis, J. (Cascadia Research Collective)	
Abundance and movements of humpback and blue whales off California from long-term studies using photo-ID	\$-0-
Photo-identification of humpback and blue whales	\$5K
Offshore whale surveys	\$5K
Cartwright, R. (Keiki Kohola Project)	
Behavior and development in humpback whale calves whilst in nursery waters	\$4.8K
Churnside, J. and R. Thorne (NOAA Environmental Technology Lab and Prince William Sound Science Center)	
Investigation of foraging behavior of Steller sea lions in the vicinity of Kodiak Island, Alaska	\$157.4K
Croll, D. and B. Marinovic (Univ. California, Santa Cruz)	
Wind to whales: trophic links in a coastal upwelling system (blue whale)	\$12K
Darling, J. (West Coast Whale Research Foundation)	
Study of the function of the humpback whale song	\$4.5K
DeVogelaere, A. and J. Harvey (Monterey Bay National Marine Sanctuary and Moss Landing Marine Labs)	
Beach COMBERS (coastal ocean mammal/bird education and research surveys)	\$21K
DeVogelaere, A. and M. Tamburri (Monterey Bay National Marine Sanctuary and Monterey Bay Aquarium Research Institute)	
Biological characterization of the Davidson Seamount: science, resource management, and education	\$2.5K
Fair, P. A. (Center for Coastal Environmental Health & Biomolecular Research)	
Marine mammal health assessment	\$178.2K
Fangman, S. (Channel Islands National Marine Sanctuary)	
Sanctuary aerial monitoring spatial analysis program	\$30K
Foy, R. (Univ. Alaska, Kodiak)	
Seasonal assessment of prey competition between Steller sea lions and walleye pollock	\$202.3K
Howard, D. (Cordell Bank National Marine Sanctuary)	
Ecosystem dynamics study (cetaceans)	\$93K
Hunt, G. and K. Coyle (Univ. California and Univ. Alaska)	
Climate-driven bottom-up processes and killer whale abundance as factors in Steller sea lion population trends in the Aleutian Islands	\$1099.9K
Jameson, R. and S. Jeffries (USGS and Washington Department of Fish and Wildlife)	
Sea otter monitoring	\$-?-

Jeffries, S. and H. Huber (Washington Department of Fish and Wildlife & NMML) Monitoring pinniped haul-out sites	\$-?
Laidre, K. and E. Bowlby (NMFS and Olympic Coast National Marine Sanctuary) Sea otter carrying capacity	\$4.5K
Matilla, D. (Center for Coastal Studies) 2000 Gulf of Maine humpback whale program	\$24.5K
McFee, W. (Center for Coastal Environmental Health & Biomolecular Research) Marine mammal stranding and life history	\$73.6K
Mobley, J. (Marine Mammal Research Consultants) Aerial surveys and aerial photogrammetry of humpback whales wintering in Hawaiian waters – Year 2000	\$23K
Norberg, B. and M. S. Brancato (NMFS and Olympic Coast NMS) Marine mammal stranding network	\$-?
Ostman-Lind, J. (Hawaii Marine Mammal Consortium) Shore-based monitoring of humpback whales along the Kohala Coast of the big island of Hawaii	\$4.8K
Pack, A. (The Dolphin Institute) Investigating humpback whale demographics, behavior, and growth in the Hawaiian Islands using a new technique to measure the size of individual humpback whales at sea	\$2.9K
Perryman, W. (NMFS) Gray whale calf survey	\$1.3K
Roletto, J. (Gulf of the Farallones National Marine Sanctuary) Beach watch (for dead marine mammals)	\$66K
Sanctuary education, awareness and long-term stewardship	\$46K
Rowlett, R. (Olympic Coast National Marine Sanctuary) Marine mammal surveys	\$1.5K
Trites, A. (North Pacific Marine Mammal Research Commission) Predator-prey investigations of killer whales and Steller sea lions in Alaska	\$200.8K
Weinrich, M. and D. Morin (Whale Center of New England) Interactions between humpback whales and sandlance on Stellwagen Bank	\$27.3K

### 3. National Sea Grant College Program

#### FY00

Caswell, H. (Woods Hole Oceanographic Institute) Demographic analysis of the north Atlantic right whale (NA86RG0075-63)	\$56.5K
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Conrad, P. (California Sea Grant College Program) Transmission vectors of protozoal encephalitis in southern sea otters (NA06RG0142-89)	\$150K
Quinn II, T. (Alaska Sea Grant College Program) Has local depletion of walleye pollock occurred in Steller sea lion critical habitat? (NA86RG0050)	\$21.5K
Stegeman, J. (Woods Hole Oceanographic Institution) Estradiol dynamics: A molecular basis for potential endocrine disruption in marine mammals (NA86RG0075)	\$48.2K
West, K. (Hawaii Sea Grant College Program) Reproduction and development in captive rough-toothed and bottlenose dolphins (NA86RG0041)	\$25K

#### 4. Office of Oceanic and Atmospheric Research

##### FY00

Krahn, M. and T. O'Hara (NOAA and North Slope Borough of Alaska) Compiling and summarizing persistent organic pollutant data from the U.S. arctic for the AMAP program	\$200K
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#### Department of Defense

##### 1. Air Force (Air Force Space Command)

##### FY00

Thorson, P. H. and J. K. Francine (SRS Technologies) Effects of rocket launch noise and sonic booms on California sea lions, northern elephant seals, and Pacific harbor seals at Vandenberg AFB and the northern Channel Islands.	\$270K
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##### 2. Defense Advanced Research Projects Agency (DARPA)

##### FY00

Moore, P. and D. A. Helweg (SPARWAR Systems Center, San Diego) Hardware implementation and evaluation of dolphin-based mine hunting principles (DARPA 1) ( <i>Tursiops</i> )	\$619K
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##### 3. Navy

##### A. CNO Operational Activities (CNO N45)

##### FY00

Barlow, J. (NOAA, Southwest Fisheries Science Center) LMRIS support services and applications of acoustic sensing to vessel-based marine mammal line transect surveys (CNO 1)	\$150K
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Hildebrand, J. (Scripps Institution of Oceanography)		
Baleen whale calls and seasonal ocean ambient noise (00PR03921)		\$50K
Ketten, D. R. (Woods Hole Oceanographic Institution)		
Anatomical investigations of auditory structures of beaked whales (00PR04774)		\$6K
Experimental measures of blast trauma in marine mammals (00PR07201)		\$157K
Mullin, M. (Univ. California, San Diego)		
SWFSC marine mammal abundance data for input into LMRIS (00PR07888)		\$50K
Watkins, W. (Woods Hole Oceanographic Institution)		
Whale signature analysis from IUSS data (00PR07614)		\$250K
<b>B. Naval Air Systems Command (NAVAIR)</b>		
	<u>FY00</u>	
Ward, J. A., C. Lazauski, T. Fetherston and G. Mitchell (NAVSEA, Newport)		
East Coast shallow water training range (ECSWTR) marine mammal acoustic impact assessment (MMAIA) (NAVAIR 1)		\$120K
<b>C. Naval Submarine Medical Research Laboratory</b>		
	<u>FY00</u>	
Clark, C. W. and P. Tyack (Cornell Laboratory of Ornithology and Woods Hole Oceanographic Institution)		
Surveillance towed array sensor system low frequency active (SURTASS LFA) -- low frequency sound scientific research program (LFS SRP) (NSMRL 1)		\$260.9K
<b>D. Office of Naval Research</b>		
	<u>FY00</u>	
Altes, R. A. (CHIRP Corp.)		
Image-based processing for biosonar target recognition (00PR05091)( <i>Tursiops</i> )		\$90K
Biomimetic SAS and mine classification – signal processing models and biological experiments (00PR07057 ( <i>Tursiops</i> ))		\$13.5K
Brill, R. (SPAWAR Systems Center, San Diego)		
Alternative mine detection and classification technology (00PR00956)( <i>Tursiops</i> )		\$400K
Burgess W. C. (Greeneridge Sciences, Inc.)		
Development of a miniature acoustic recording tag to assess marine wildlife response to sound (00PR01154)		\$159.8K
Calambokidis, J. (Cascadia Research, Monterey Bay)		
Examination of vocal and underwater behavior of blue whales using a suction-cup attached CRITTERCAM (00PR094457)		\$17.8K

Chiu, C.-S. (Naval Postgraduate School) Monitoring whales using the Pt. Sur acoustical array -- a feasibility study (99PR02636) (blue whale)	\$20K
Clark, C. W. (Cornell Univ.) New directions in the study of low-frequency sound in baleen whales (00PR00724)	\$82.8K
Crocker, D. (Univ. California, Santa Cruz) Tool for assessment of marine mammal critical habitats (00PR01156)	\$49.6K
Croll, D. (Univ. California, Santa Cruz) New directions in the study of low-frequency sound in baleen whales (00PR00723)	\$204K
Ellisom, W. T. (Marine Acoustics, Inc.) Acoustic integration model (AIM) development (00PR01157)	\$70K
Finneran, J. J. (Space and Naval Warfare Systems Center, San Diego) Low frequency marine mammal hearing thresholds in response to acoustic pressure and particle velocity (00PR00725)	\$115K
Fox, C. (NOAA/PMEL/OERD) Tools and techniques for marine animal sound analysis (00PR07234)	\$104.6K
Hain, J. H. W. (Woods Hole Oceanographic Institution) An aerostat/elevated antenna component to aid VHF radiotelemetry and tracking of right whales in critical habitats (00PR02831)	\$51.5K
Howle, L. E. (Duke Univ.) Undulatory flap propulsion -- reduction to practice (00PR00934)	\$95.5K
Kelly, B. P. (Univ. Alaska, Fairbanks) Effects of low frequency sound on ringed seal navigation and behavior in their sub-ice habitat (99PR06285)	\$40K
Kraus, S. and C. Slay (New England Aquarium) VHF radiotelemetry tracking of right whales in S.E. U. S. coastal waters (00PR04746)	\$59.8K
Kuczaj, S. (Univ. Southern Mississippi) The ontogeny of the dolphin echolocation system (00PR05880) ( <i>Tursiops</i> )	\$251K
Lutcavage, M. and S. Kraus (New England Aquarium) Satellite imagery, ecosystem-based GIS study of bluefin tuna and right whale distribution and movements in the Gulf of Maine and NW Atlantic (00PR08059)	\$100K
Mate, B. R. (Oregon State Univ.) Right whale habitat and migration in the North Atlantic Ocean (00PR01656)	\$137K
McDonald, R. J. (Coastal Systems Station, Panama City, FL)	



Broadband, broadbeam, biomimetic minehunting principles (00PR08058) (dolphin)	\$63.9K
McGehee, D. E. (BAE Systems) Lower trophic level oceanographic measurements for SOLMR (00PR07202)	\$100.2K
Moore, P. and D. Helwig (SPAWAR Systems Center, San Diego) Jitter echo delay resolution (00PR00849) ( <i>Tursiops</i> )	\$160K
Moretti, D. (Naval Undersea Warfare Center, Newport) Marine mammal monitoring of Navy undersea acoustic ranges (M3R) (00PR01757)	\$300K
Nachtigall, P. (Univ. Hawaii) Cetacean echolocation: biosonar experiments for improved Navy sonar signal processing (00PR02592)	\$292.9K
Nachtigall, P. and W.L. Au (Univ. Hawaii) Low frequency odontocete hearing (00PR02603)	\$153.8K
Pabst, D. A. (Univ. North Carolina, Wilmington) Blubber: an elastic energy storage system in parallel with the swimming muscles of dolphins (99PR01960)	\$27.6K
Pavan, G. (Univ. Pavia) Bioacoustic characterization of the Mediterranean Sea (00PR02872)	\$150K
Reidenberg, J. and J. T. Laitman (Mt. Sinai Medical School) Assessment of mechanical damage to odontocete respiratory tract tissues after controlled exposure to blasting (00PR01644)	\$20K
Ridgway, S. H. (SPAWAR Systems Center, San Diego) Marine mammal acoustic safety criteria (00PR01357)	\$300K
Ritchie, B. (Univ. Georgia Research Foundation) Nucleic acid vaccination in the bottlenose dolphin ( <i>Tursiops truncatus</i> ) (00PR06312)	\$24.2K
Roberts, S. (National Academy of Sciences, National Research Council) Potential impacts of ambient noise in the ocean on marine mammals (00PR09362)	\$80K
Romano, T. (Texas A&M Univ.) Investigation of immune competence in Navy marine mammals: implications for health, viability, and mission readiness (00PR01150)	\$196.8K
Schusterman, R. (Univ. California, Santa Cruz) Equivalence relations and cross-model transfer as a tool for feature identification in biosonar returns (00PR02582)	\$186.6K
Pinniped bioacoustics: auditory mechanisms, temporary threshold shift, and effects of noise on signal reception (00PR02539)	\$173.6K

Pinniped bioacoustics: new techniques for assessing the effects of anthropogenic noise (99PR0618)	\$234.7K
Stott, J. (Univ. California, Davis) Reagents and techniques for vaccine development and immune response assessment in California sea lions (00PR06096)	\$58.1K
Tyack, P. L. (Woods Hole Oceanographic Institution) Development and field testing of the DTAG for deep-diving odontocetes (00PR02606)	\$59.6K
Assessing risk factors in right whale vessel collision using an acoustic recording tag and controlled sound exposure (00PR02622)	\$60.3K
Van Bonn, W. (SPAWAR Systems Center, San Diego) Continued investigation of plasmid gene expression in marine mammals (00PR06292)	\$49.5K
Williams, T. M. (Univ. California, Santa Cruz) Marine mammals as models for cost efficient autonomous underwater vehicles: performance specifications of oscillating hydrofoils (00PR06299)	\$50K
Zenteno-Savin, T. (Centro de Investigaciones Biológicas del Noroeste, S.C., Mexico) Coping with ischemia and reperfusion: physiology of free radicals in diving birds and mammals (00PR05102)	\$27.3K

**E. PMS 400**

FY00

Fetherston/Mitchell/Kenney (NAVSEA, Newport) Gulf of Maine biological assessment (PMS 1)	\$40K
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**F. U.S. Atlantic Fleet (CINCLANTFLT)**

FY00

Higginson, D. (Geo-Marine, Inc.) Charleston and Jacksonville operating area marine resources assessment (00060CLF10)	\$340.4K
Manatee aerial survey (00389M0081)	\$64.2K
St. Croix underwater tracking range (UTR) and Puerto Rico operating area marine resources assessment (00060CLF10)	\$396.4K
Vieques exercise aerial surveys (mitigation) (00389M0082)	\$400K
Virginia Capes operating area marine resources assessment (00060CLF10)	\$493.4K
Mitchell/Fetherston//Kenney/Phelps (NAVSEA, Newport) OPAREA habitat assessment (CINCLANT 1)	\$60K

Mitchell/Vars/Tompsett/Ward/Kenney (NAVSEA, Newport) SINKEX biological assessment (CINCLANT 2)	\$50K
O'Connor/Fetherston/Mitchell/Ward/Lazauski (NAVSEA, Newport) New Providence Channel marine mammal stranding investigation (CINCLANT 3)	\$60K
Sloger, W. (Naval Facilities Engineering Command) Aerial Surveys for Northern Right Whales and Other Listed Species (LANFLT101)	\$400K

**G. U.S. Pacific Fleet (CINCPACFLT)**

FY00

Ward/Fetherston/Lazauski/Mitchell/Jette (NAVSEA, Newport) West Coast shallow water training range (WCSWTR) marine mammal acoustic impact assessment (MMAIA) (CINCPAC 1)	\$200K
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**4. Strategic Environmental Research and Development Program (SERDP)**

FY00

Helwig, D. (SPAWARSYSC, San Diego) Information and technology tools for assessment and prediction of potential impact of military noise on marine mammals (CS-1082) (cetaceans)	\$397K
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**Department of Health and Human Services**

**National Institutes of Health**

FY00

Bossart, G. (Univ. Miami, Coral Gables) Pilot – Immune system of Atlantic bottlenose dolphin (5P30ES005705-100003)	\$-?-
Fripp, D. R. (Woods Hole Oceanographic Institution) A quantitative test for vocal learning (5F32DC0000410-02)	\$-?-
Jennings, P. A. (Stanford Univ.) Time resolved small angle x-ray scattering of refolding of sperm whale apomyoglobin (2P41RR001209-210287)	\$-?-
Ortiz, C. L. (Univ. California, Santa Cruz) Developmental physiology of elephant seal pups during natural prolonged fasts (5R25GM58903-02 0009)	\$-?-
Minority international research training (2T37TW000024-08) (so. elephant seal)	\$-?-
Safe, S. H. (Texas A&M Univ.) Toxicology of environmental contaminants (5T32ES07273-09) ( <i>Tursiops</i> )	\$-?-

Thorton, S. (Stanford Univ.) MR imaging of an elephant seal: measurement of splenic diving response (3P41RR09784-0551 0044)	\$-?-
Tyack P. L. (Woods Hole Oceanographic Institution) Social influences of vocal development (5R01DC04191-02)	\$-?-

**Department of the Interior**

**1. Fish and Wildlife Service**

FY00

Bowles, A. (Hubbs-Sea World Research Institute) Manatee behaviors in the presence of fishing gear	\$22K
Comerci, L. and L. Jack (FWS/MMM and the Alaska Sea Otter and Steller Sea Lion Commission) Sea otter biological sampling program	\$10K
Dickerson, L. (FWS/MMM and Eskimo Walrus Commission) Walrus harvest monitoring project	\$96K
Doroff, A. and D. Burn (FWS/MMM) Sea otter population surveys in southwest Alaska	\$193K
Evans, T. (FWS/MMM) Investigation of metal and organochlorine concentrations in polar bear tissues	\$25K
Evans, T., S. Schliebe, S. Kalxdorff, A. Fishbach (FWS/MMM) and G. W. York (USGS/BRD) Aerial surveys of polar bears in the Chukchi Sea	\$40K
Flamm, R. (FWC Florida Marine Research Institute) Manatee "hot-spot" mapping	\$10K
Gorbics, C. and K. Trust (FWS/MMM and FWS/WAES) Investigation of contaminants in sea otter tissues	\$15K
Harris, M. Stranded southern sea otter program: carcass collection	\$4.5K
Stranded southern sea otter program: carcass shipment	\$0.5K
Kraus, J. (Chassahowitzka NWR Refuges Complex) Aerial survey for manatees	\$6K
Manly, B. (Western Ecosystems Technology) Evaluate the potential for use of mark-recapture methods to estimate the size and trend of the Pacific walrus population	\$15K

Mcdonald, R., J. Garlich-Miller, and J. Wollington (FWS Togiak NWR, FWS/MMM, and Alaska Department of Fish and Game) Bristol Bay walrus haulout monitoring	\$90K
Pitchford, T. (FWC Florida Marine Research Institute) An assessment of wounds and internal trauma associated with watercraft-related manatee deaths and injuries occurring between 1999 and 2000	\$10K
An assessment of live and dead manatees either rescued or salvaged as a result of exposure to the cold during the period 1999-2000	\$10K
Shapiro, S. (FWC Florida Marine Research Institute) The effectiveness of manatee protection zones	\$50K
Smirnov, G., J. Garlich-Miller and C. Jay (Chukotka TINRO) Ecological monitoring of walrus haulouts in the Gulf of Anadyr, Russia	\$15K
Smirnov, G., J. Garlich-Miller and J. Olanna (Chukotka TINRO, FWS/MMM, and Eskimo Walrus Commission) Russia walrus harvest monitoring project	\$35K

## 2. Geological Survey

### FY00

Amstrup, S. C. (Alaska Biological Science Center) Oil spill polar bear interaction modelling (5003368)	\$55K
Population ecology of polar bears in western Alaska and adjacent portions of Russia (5001214)	\$141.7K
Amstrup, S. C., P. Becker, T. Rowles, L. K. Thorsteinson, and G. Weston York (Alaska Biological Science Center) Alaska marine mammal tissue archival project (5003225)	\$100K
Beck, C. A. et al. (Florida Caribbean Science Center) Reproductive traits and population dynamics of Florida manatees based on photo-identification techniques (5002023)	\$124.3K
Bodkin, J. L. and D. Esler (Alaska Biological Science Center) Patterns and processes of population change in selected nearshore vertebrate predators (sea otters) (5004634)	\$-0-
Bodkin, J. L., G. Esslinger and D Monon (Alaska Biological Science Center) Process structuring coastal marine communities in Alaska: DOI trust resource (sea otters) (5001234)	\$180K
Bodkin, J. L. and D. Monson (Alaska Biological Science Center) Assessment of sea otter population status in Alaska 5001256)	\$120K
Davis, R. W. (USGS/BRD, Eastern Regional Office) GulfCet II: distribution and abundance of marine mammals in the northern Gulf of Mexico (5001315)	\$-0-

Deutsch, C. J. et al. (Florida Caribbean Science Center) Movements, spatial use patterns, and habitat utilization of radio-tagged West Indian manatees along the Atlantic coast of Florida and Georgia (5002031)	\$80K
Estes, J. and R. Jameson (Western Ecological Research Center) Population biology and behavior of sea otters (5002737)	\$150K
Interactions between sea otters and nearshore communities (5002736)	\$170K
Estes, J. et al. (Western Ecological Research Center) Monitoring program for environmental contaminants in the nearshore marine ecosystem at Adak Island, Alaska (5003874)	\$-0-
Farley, S. D., G. P. Landis, and V. Chadwick (Alaska Biological Science Center) Heavy metal contaminants in Pacific walrus (5003457)	\$-0-
Garcia-Rodreguez, A. I., R. K. Bonde, L. W. Lefebvre, B. Bowen and P. McGuire (Florida Caribbean Science Center) Genetic analysis of the West Indian manatee (5002034)	\$43K
Holland-Bratels, L. et al. (Alaska Biological Sciences Center) Mechanisms of impact and potential recovery of nearshore vertebrate predators from the Exxon Valdez oil spill (5001228)	\$-0-
Jameson, R. (Western Biological Research Center) Population biology of the reintroduced Washington sea otter population (5003927)	\$83.2K
Jay, C. V. and B. Manly (Alaska Biological Science Center) Pacific walrus telemetry studies (5003456)	\$135K
Jay, C. V. and P. M. Outridge (Alaska Biological Science Center) Use of stable isotopes and heavy metals in studies of Pacific walrus movements and dietary habits (5003455)	\$-0-
Jay, C. V., M. S. Udevitz and S. L. Talbot (Alaska Biological Science Center) Population trends of Pacific walrus (5003458)	\$115K
Jay, C. V. et al. (Alaska Biological Science Center) Sensitive non-endangered mammals in the Chuckchi and Beaufort Seas (5001217)	\$-0-
Lefebvre, L. W. (Florida Caribbean Science Center) Florida manatee modeling and management (5004505)	\$-0-
Lefebvre, L. W. et al. (Florida Caribbean Science Center) Evaluation of releases of captive-born and captive-reared manatees (5002029)	\$64.6K
Mulcahy, D. M. (Alaska Biological Science Center) Wildlife veterinary medicine and surgery (5001239)	\$95K
Mullin, K. D. (USGS/BRD, Eastern Regional Office)	

GulfCetII: distribution and abundance of marine mammals in the northern Gulf of Mexico (5002792)	\$-0-
Percival H. F. (Florida Cooperative Fish and Wildlife Research Unit) Movements, spatial use patterns, and habitat utilization of radio-tagged West Indian manatees along the Atlantic coast of Florida and Georgia (5001317)	\$-0-
Reid, J. P., L. W. Lefebvre, C. R. Kruer, and W. J. Kenworthy (Florida Caribbean Science Center) Determination of manatee use patterns and characterization of seagrass areas important to manatees in Puerto Rico and Vieques Island (5002027)	\$35.2K
Samuel, M. D. et al. (Western Ecological Research Center) Disease and contaminant problems in southern sea otters (5004736)	\$133.4K
Talbot, S. et al. (Alaska Biological Science Center) Using genetic markers to determine population status and management strategies of mammals (5001210)	\$14K
Thomas, N. J., R. A. Code, L. H. Creekmore, and C. U. Meteyer (National Wildlife Health Center) Causes of southern sea otter mortality (5003274)	\$-0-
Udevitz, M. S. (Alaska Biological Science Center) Quantitative methods for studies of arctic and subarctic wildlife (5001254)	\$99K
Van Blaricom, G. R. (Washington Cooperative Fish and Wildlife Unit) Estimation of indirect efforts of chase and encirclement by the tuna fishery on the dynamics of depleted dolphin populations in the eastern Pacific Ocean (5003122)	\$-0-
Assessment of harvested marine mammal populations in Alaska (5003714)	\$-0-
Sea otter prey populations in Prince William Sound, Alaska (5004159)	\$-0-

### 3. Minerals Management Service

#### FY00

Amstrup, S. (USGS-BRD) Polar bear den surveys (IA 15963)	\$17K
Frost, K. J. and L. F. Lowry (Univ. Alaska, Fairbanks) Post-summering distribution and movement of beluga whales (satellite tracking of eastern Chukchi Sea beluga whales in Beaufort and Arctic) (1435-01-98-CA-30909) (TO 15179)	\$75.4K
Monitoring distribution and abundance of ringed seals in northern Alaska (CA 14-35-0001-30810)	\$-0-
Kelly, B. and L. Quakenbush (Univ. Alaska, Fairbanks) Correction factor for ringed seal surveys in northern Alaska (15162)	\$-0-

Lang, B. (NMFS)	Marine mammal and sea turtle observations from NMFS Gulf of Mexico ichthyoplankton cruises	\$150K
Richardson, W. J. (LGL Limited)	Bowhead whale feeding in the eastern Alaskan Beaufort Sea: update of scientific and traditional information (CT-30842)	\$-0-
Treacy, S. (MMS, Alaska OCS Region)	Bowhead whale aerial survey project (OAS IA 05052)	\$266K

#### 4. National Park Service

##### FY00

Basch, L. (Glacier Bay National Park)	Effects of sea otter on subtidal communities in Glacier Bay National Park	\$100K
Bodkin, J. (USGS/BRD)	Interactions between sea otters and the nearshore communities in Glacier Bay	\$80K
	Spatial distribution of small schooling fish and associated predators in Glacier Bay, Alaska, and their relationship to oceanographic and bathymetric parameters: marine predator surveys	\$480K
Deecke, V., J. Ford and C. Matkin (Univ. British Columbia)	Acoustic monitoring of killer whales in Glacier Bay National Park	\$-0-
DeLong, R. (NMFS)	Population biology of pinnipeds at San Miguel Island	\$-0-
Gabriele, C. M. (Glacier Bay National Park)	Humpback whale population monitoring in Glacier Bay and adjacent waters	\$70K
	Underwater acoustic monitoring in Glacier Bay (humpback whale)	\$159K
Hayes, S. (Univ. California, Santa Cruz)	Evaluation of underwater territory defense and display behaviors of male harbor seals through playback experiments	\$-0-
Hohn, A. (NMFS)	Mid-Atlantic beach-based marine mammal observer program	\$-0-
Kelly, B. P. and J. N. Womble (Univ. of Alaska Southeast)	Interactions between humpback whales and vessels	\$27K
Klimley, A. P. (Univ. California, Davis)	Population biology of white sharks at Point Reyes headlands	\$-0-
Mathews, E. A. and J. Driscoll (Glacier Bay National Park and Univ. of Alaska Southeast)	Disturbance of harbor seals at the Spider Island reefs in Glacier Bay	\$5K



Mathews, E. A. and L. Dzinich (Glacier Bay National Park and Univ. of Alaska Southeast) Harbor seal population monitoring on ice and land habitats	\$87K
Effects of vessel traffic on harbor seals in a glacial fjord in Glacier Bay, 1994-1999	\$35K
Mathews, E. A., L. Dzinich, A. Hopkins and L. Robinson (Glacier Bay National Park and Univ. of Alaska Southeast) Pilot study to determine the feasibility of conducting adult/pup counts, behavioral observations, and observations of branded or marked Steller sea lions at Graves Rocks, a new rookery	\$3K
Mathews, E. A. and T. Lewis (Glacier Bay National Park and Univ. of Alaska Southeast) Feasibility of aerial surveys of harbor seals in a glacial fjord using GPS-linked computer program	\$10K
Matkin, D. (Glacier Bay National Park) Killer whale population assessment in northern eastern Alaska	\$-0-
Read, A. (Duke Univ.) Habitat use of bottlenose dolphins in Tampa Bay	\$-0-
Schwarz, L. (San Diego State Univ.) Influence of man-made noise on gray whale migration	\$-0-
Tork, M. (NMFS) Assessment of incidental marine mammal take in the dory fishery ( <i>Tursiops</i> ) (North Carolina)	\$-0-
Zagzebski, K. (Marine Mammal Center, California) Rescue of all live and stranded marine mammals	\$-0-

**Department of State**

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

**FY00**

Allen, R. (Inter-American Tropical Tuna Commission) Tuna/dolphin investigations	\$700K
Gambell, R. (International Whaling Commission) Research fund of the International Whaling Commission	\$17.5K

**Department of Transportation****Coast Guard**FY00

Mandatory Ship Reporting System (northern right whale) (re MA)	\$57K
Northeast Sighting Advisory System (northern right whale) (re MA)	\$80K
Southeast Early Warning System (northern right whale) (re FL)	\$80K

**Environmental Protection Agency**FY00

(No projects)

**Marine Mammal Commission**FY00

Huntington, H. P. (Huntington Consulting) Assessment of activities of the Arctic Council	\$4.3K
Reeves, R. R. (Okapi Wildlife Associates) The value of sanctuaries, parks, and reserves (protected areas) as tools for conserving marine mammals	\$0.7K

**National Aeronautics and Space Administration**FY00

Scheidt, D. M., M. J. Mota, R. H. Lowers, A. Provancha, and J. R. Weidlich (Dynamac Corp./NASA, Ecological Programs KSC) Southeastern United States marine mammal stranding network (NAS10-12180)	\$3K
Scheidt, D. M., R. H. Lowers, J. A. Provancha, and R. A. Reddick (Dynamac Corp./NASA, Ecological Programs KSC) Long-term monitoring of the abundance and distribution of manatees on the Kennedy Space Center (NAS10-12180)	\$25K

**National Science Foundation**FY00

Ashjian, C. J. (Woods Hole Oceanographic Institution) How physical-biological coupling in the western Arctic Ocean influences marine mammal abundance and native subsistence harvests (OPP-0083507)	\$291.1K
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Bengtson, J. L., P. L. Boveng, and J. L. Laake (NOAA/NMFS) Antarctic pack ice seals: ecological interactions with prey and the environment (OPP-9815961)	\$66K
Buck, J. R. (Univ. Massachusetts, Dartmouth) CAREER: instruments and algorithms for marine mammal behavioral acoustics (OCE-9733391)	\$100.3K
Burns, J. M. (Univ. Alaska, Anchorage) Foraging ecology of crabeater seals ( <i>Lobodon carcinophagus</i> ) (OOP-0003956)	\$116.1K
Castellini, M. A. (Univ. Alaska, Fairbanks) Antarctic pack ice seals: nutritional physiology and body condition of seals (OOP-9815176)	\$90.3K
Coale, K. H., R. S. Miller, and J. M. Prince (San Jose State Univ) Ship operations (OCE-0071348)	\$466.6K
Costa, D. P. and D. E. Crocker (Univ. California, Santa Cruz) Foraging ecology of crabeater seals ( <i>Lobodon carcinophagus</i> ) (OOP-9981683)	\$116.1K
Davis, R. W. and M. Horning (Texas A&M Univ.) Collaborative research: hunting behavior and energetics of free-ranging Weddell seals (OPP 9909422)	\$342.6K
Fruiman, L. A. (Univ. Texas, Austin) Collaborative research: hunting behavior and energetics of free-ranging Weddell seals (OPP-9909863)	\$134.5K
Grebmeier, J. M. and L. W. Cooper (Univ. Tennessee, Knoxville) Collaborative research: hydrographic change and effects on bivalve communities and top avian consumers in the Bering Sea (OPP-9813946) (walrus)	\$121.4K
Hildebrand, J. A., S. Moore, and M. A. McDonald (Scripps Institution, Univ. California, San Diego) GLOBEC: mysticete whale acoustic census (OPP-9910007)	\$182.9K
Hillman, G. R., B. G. Würsig, and N. Kehtarnavaz (Univ. Texas, Galveston) A content-indexed image database of cetacean fins (DBI-0071655)	\$291.1K
Huntington, H. P., K. J. Frost, M. E. Fernandez-Gimenez (Huntington Consulting) Traditional ecological knowledge of beluga whales: local documentation and cooperative application in Alaska (OPP-9817923)	\$90K
Johnson, J. I. (Michigan State Univ.) Collaborative research: accessing brain collection information and images via internet, CD-ROM, and centralized location (IBN-9814911)	\$72.9K
Jue, T. (Univ. California, Davis) Collaborative research: oxygen transportation and utilization during sleep apnea in elephant seals (IBN-0077595)	\$25K

Leonard, J. J. (Massachusetts Institute of Technology) CAREER: dynamic sonar perception and navigation (BAS-9733040)	\$85K
Lovvorn, J. R. (Univ. Wyoming) Collaborative research: hydrographic change and effects on bivalve communities and top avian consumers in the Bering Sea (OPP-9813979) (walrus)	\$56.2K
Lowenstine, L. and J. L. Stott (Univ. California, Davis) Ecology of herpesvirus infection and cancer in sea lions (DEB-0094919)	\$463.1K
Noe, A. (American Registry of Pathology) Collaborative research: accessing brain collection information and images via internet, CD-ROM, and centralized location (IBN-9814912)	\$36.3K
Pietsch, T. W. (Univ. Washington) Biodiversity of Sakhalin Island (Russian Kuril Archipelago) (DEB-0071655)	\$391.1K
Ponganis, P. J. (Scripps Institution, Univ. California, San Diego) Collaborative research: oxygen transportation and utilization during sleep apnea in elephant seals (IBN-0078540)	\$75K
The Kooyman Symposium on Diving Physiology and Biology (OPP-0000186)	\$6.5K
Quetin, L. B. and R. M. Ross (Univ. California, Santa Barbara) Antarctic pack ice seals: ecological investigations with prey and the environment (OPP-9816016)	\$127K
Smith, T. D. (Univ. Alaska, Fairbanks) Ship operations (OCE-0070791)	\$298.4K
Siniff, D. B. (Univ. Minnesota, Twin Cities) Use of a long-term data base and molecular genetic techniques to examine the behavioral ecology and dynamics of Weddell seal ( <i>Leptonychotes weddellii</i> ) populations (OPP-9725820)	\$143.7K
Siniff, D. B., I. Stirling, and C. Strobeck (Univ. Minnesota, Twin Cities) An examination of genetic patterns and phylogeny of Antarctic pack ice seals: a coordinated multinational project (OPP-9815786)	\$103.8K
Thewissen, J. G. and S. T. Hussain (Northeastern Ohio College of Medicine) Paleobiology of the first whales: radiation of pakicetid cetaceans in Eocene Pakistan (EAR-9902830)	\$84.3K
Torres, J. J. (Univ. South Florida) Antarctic pack ice seals: ecological interactions with prey and the environment (OPP-9815973)	\$100.2K
Tyack, P. L. and A. Samuels (Woods Hole Oceanographic Institution) Social functions of signature whistles and whistle imitation in bottlenose dolphins, <i>Tursiops truncatus</i> (IBN-9975523)	\$61.6K
Welker, W. I. (Univ. Wisconsin, Madison) Collaborative research: accessing brain collection information and images	

via internet, CD-ROM, and centralized location (IBN-9812712) \$110K

Williams, T. M. (Univ. California, Santa Cruz)  
Collaborative research: hunting behavior and energetics of free-ranging  
Weddell seals (OPP-9909862) \$142.8K

**Smithsonian Institution**

FY00

Mead, J. G. and C. W. Potter (National Museum of Natural History)  
Marine Mammal Program (001-3370) \$177.5K