

**SURVEY OF FEDERALLY-FUNDED
MARINE MAMMAL RESEARCH AND STUDIES
FY74 - FY90**

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

June 1991

**Final Report to U.S. Marine Mammal Commission
in Fulfillment of Contract T-75133766**

Availability Unlimited

**Prepared for
U.S. Marine Mammal Commission
1825 Connecticut Ave., N.W. - Room 512
Washington, D.C. 20009**

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL INFORMATION SERVICE
SPRINGFIELD, VA. 22161

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. PB91-212217	2. REPORT DATE June 1991	3. REPORT TYPE AND DATES COVERED	
4. TITLE AND SUBTITLE Survey of Federally-Funded Marine Mammal Research and Studies, FY74 - FY90		5. FUNDING NUMBERS Contract T-75133766	
6. AUTHOR(S) George H. Waring		8. PERFORMING ORGANIZATION REPORT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) George H. Waring, Ph.D. Department of Zoology Southern Illinois University Carbondale, Illinois 62901			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Marine Mammal Commission 1825 Connecticut Avenue, NW, Room 512 Washington, DC 20009		10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The data and information contained in this report were given, in final form, to the involved agencies for review and comment. The agencies consider the contents of this report to be accurate.			
12a. DISTRIBUTION/AVAILABILITY STATEMENT See page ii		12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words)			
14. SUBJECT TERMS			15. NUMBER OF PAGES 51
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT Unlimited

PREFACE

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

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

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

April 1, 1991

George H. Waring, PhD
Carbondale, IL

TABLE OF CONTENTS

	Page
PREFACE	ii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF ACRONYMS	vii
I. OVERVIEW OF FEDERAL RESEARCH PROGRAMS	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-FY90	6
Trends in Federal Support of Marine Mammal Research	
--By Number of Projects Supported, FY74-FY90.....	7
--By Agency, FY76-FY90.....	8
--By Geographical Region, FY76-FY90.....	9
--By Taxonomic Group, FY76-FY90.....	10
--By Research Issue, FY76-FY90.....	12
II. RESEARCH AND STUDIES UNDER AUTHORITY OF THE MARINE MAMMAL PROTECTION ACT OF 1972, AS AMENDED.....	17
Research Responsibilities of Federal Agencies Under the Act.....	18
Federal Funding Authorized, Requested, and Appropriated Under the Act.....	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, FY74-FY90.....	22

Funds Expended on Marine Mammal Research by the National Marine Fisheries Service and the Fish and Wildlife Service, FY74-FY90.....	23
---	----

Number of Personnel Assigned to Marine Mammal Administration and Research Activities in the National Marine Fisheries Service and the Fish and Wildlife Service, FY74-FY90.....	24
---	----

APPENDIX A

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

APPENDIX B

Listing of Marine Mammal Research and Study Projects, Principal Investigators, and Funding Levels for FY90.....	29
--Department of Agriculture.....	30
--Department of Commerce.....	30
--Department of Defense.....	34
--Department of Energy.....	35
--Department of Health and Human Services.....	35
--Department of the Interior.....	36
--Department of State.....	40
--Environmental Protection Agency.....	41
--Marine Mammal Commission.....	41
--National Aeronautics and Space Administration.....	43
--National Science Foundation.....	43
--Smithsonian Institution.....	44

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-FY90.....	6
3. Federal funding of marine mammal research.....	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, FY74-FY90.....	24

LIST OF FIGURES

Figure	Page
1. Trends in Federal support of marine mammal research: Total number of marine mammal projects reported to the Marine Mammal Commission, FY74-FY90.....	7
2. Funds expended on marine mammal research by the National Marine Fisheries Service and the Fish and Wildlife Service, FY74-FY90.....	23

LIST OF ACRONYMS

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

I. OVERVIEW OF FEDERAL RESEARCH PROGRAMS INVOLVING MARINE MAMMALS

Fourteen department-level Federal agencies reported funding marine mammal research and studies from FY74 through FY90. Often more than one agency within the larger departments funded research. Some agencies funded projects in all years, whereas others supported research or studies during only part of the period. The Department of Transportation (i.e., Coast Guard) and the Veterans Administration gave support to a few projects early in the period; but since no further support has occurred in the past decade, those agencies are no longer included in this survey. The following section in this chapter reviews the types of studies that have been supported by agencies that have funded marine mammal research during at least four of the preceding ten years. Table 1 lists previous survey information on Federally-funded marine mammal research and studies which is available through the National Technical Information Service.

The average annual number of projects funded with Federal monies during the period FY74-FY90 was 148 (Table 2). The trends of these data are depicted in Figure 1. Data for 1976 include the 12-month fiscal year plus a transition quarter (TQ76 = July through September 1976) when the first day of the Federal fiscal year was shifted from 1 July to 1 October. Total funds reported expended by each agency annually for marine mammal research and studies are shown in Table 3. Funding by geographical region, taxonomic group, and research issue are listed in Tables 4, 5, and 6, respectively.

FEDERAL AGENCIES FUNDING MARINE MAMMAL RESEARCH AND STUDIES

Department of Agriculture (USDA)

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

Department of Commerce (DOC)

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

Department of Defense (DOD)

The Department of Defense conducts marine mammal research through the Headquarters Space Division of the Air Force, the Corp of Engineers of the Army, and the Navy. Units of the Navy conducting research include the Naval Ocean Systems Center (NOSC) and the Office of Naval Research. DOD research varies from basic environmental impact studies to applied military research to monitoring abundance and distribution of marine mammals at military facilities and bases. Differentiating marine mammals from military targets, furthering the understanding of the undersea environment, and the utilization of marine mammals with specific behavioral traits for applied research are the major thrusts of the Navy program; studies on behavior modification, health and husbandry, bioacoustics, cognition and memory, as well as sensory perception are supported.

Department of Energy (DOE)

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

Department of Health and Human Services (DHHS)

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

Department of the Interior (DOI)

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

Department of State (DOS)

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

Environmental Protection Agency (EPA)

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

Marine Mammal Commission (MMC)

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

National Aeronautics and Space Administration (NASA)

The National Aeronautics and Space Administration supports research on marine mammal assessment and monitoring, especially for the manatees utilizing the environment of the Kennedy Space Center.

National Science Foundation (NSF)

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

Smithsonian Institution (SI)

The Smithsonian Institution, through the National Zoological Park as well as the Department of Vertebrate Zoology and Department of Paleobiology of the Museum of Natural History, supports marine mammal research on evolutionary and general biology, including a salvage program and national stranding data base.

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

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

TABLE 2

NUMBER OF MARINE MAMMAL RESEARCH PROJECTS SUPPORTED BY FEDERAL AGENCIES IN FY74-FY90

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

FIGURE 1
TRENDS IN FEDERAL SUPPORT OF MARINE MAMMAL RESEARCH

Total Number of Marine Mammal Projects Reported to the
Marine Mammal Commission, FY74-FY90

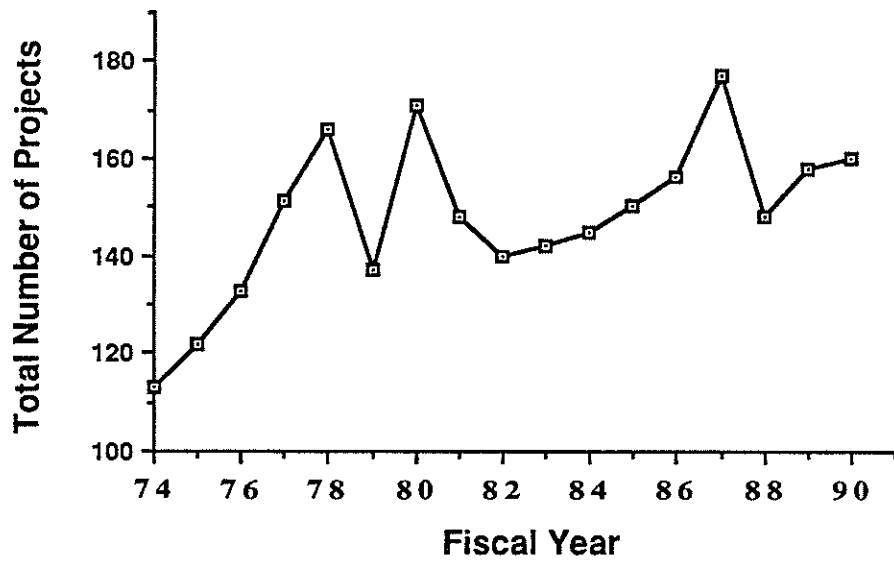


TABLE 3
FEDERAL FUNDING OF MARINE MAMMAL RESEARCH *
(Thousands of Dollars)

	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90
Department of Agriculture				209		84.7									
Department of Commerce															
National Marine Fisheries Service	1456.4	2313.8	3603.2	4425.9	5126.7	4531.6	3896.4	4050.7	4077	5021	4628.7	4852.9	4482.9	4801.4	7010.6
National Ocean Pollution Program Office										20					
National Sea Grant Program	19.8	25.8	49.7	68	59.7	35.1	30	46.7	79.6	66.4	21.4				32.3
North Pacific Fishery Mgmt. Council					97.2	28.9	10	11.5	5						
Ocean and Coastal Resource Mgmt.						67	56.6	35.9	81	81.9	185.1	145	63		
Oceanography and Marine Assessment							58	123.6		59	55	15	15	15	25
Department of Defense															
Air Force				40	15	79.2			6.5	15.5	58.5	58.5	55	55	173.9
Army				44	122										
Naval Ocean Systems Center	361	718	545	717	1979	1729	1524	1708	1506	1699	2004.5	2094	1982	1909	979
Naval Research Laboratory				20											
Office of Naval Research	260.1	414	430	538.4	462.8	302.6	204	195.2	224	407.6	483.8	1284.2	1483.8	2128	160
Department of Energy	28	80	80		30	20	25				70	70			
Department of Health and Human Services	1078.5	781	772	392.8	602.5	755.8	899.2	684.4	629	1052.8	852.1	735.2	1089.1	1678.3	1421.5
Department of the Interior															
Fish and Wildlife Service	933	933	1042.7	1452.5	1418.9	1127.2	1221	1261.2	1007.7	936.1	1542.3	2349.4	2498.6	3367.6	3007.9
Geological Survey		31.2	30.5	20	45.5	79.6	62.8	76	71						
Minerals Management Service	2046.4	2242	2519.8	7457.3	6173.2	3507.2	3830.6	4275.9	3595.9	3140.7	2698.3	1695.9	3025.4	5228.9	3290.2
National Park Service	17.2	16.5	64.8	45.8	68	376.9	223	300.4	235		17.5	39.5	27	86.2	50
Department of State			51	500	592.9	719.4	644.6	540.6	709.4	795.6	869.4	926.6	913.8	929.2	1148.5
Environmental Protection Agency												8.5	8	175	100
Marine Mammal Commission	561.7	420.3	376.1	152.6	358.7	134.7	84.1	204.9	298.7	197.7	85	100.5	102.6	104.8	92.7
National Aeronautics and Space Administration	194	50	65		12	143.3				10	8.7	1.8	6.2	6	19.1
National Science Foundation	690.4	718.9	334.2	479.3	677.6	574.5	560.6	503	691.9	729.8	620.5	757.6	663.4	901.8	820.9
Smithsonian Institution	102	106.1	101.1	133.4	142.8	152.3	148.8	170.4	207.5	212.5	222.5	212	150	161.2	165
TOTAL	7,748.5	8,850.6	10,065.1	16,696	17,984.5	14,449	13,478.7	14,168.4	13,425.2	14,445.6	14,423.3	15,346.4	16,565.8	21,547.4	18,496.6

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

TABLE 4

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

Geographical Region	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90
Hawaii	51.5 (2)	102.6 (8)	118.2 (6)	71.4 (2)	411.1 (11)	114.8 (2)	130 (2)	481.7 (4)	302.5 (3)	360.8 (3)	332.9 (4)	(1)	3+	1.5 (1)	429 (4)
Alaska	2451.5 (36)	2861.7 (39)	3336.8 (46)	3746.7 (17)	5407.4 (34)	3992.1 (29)	4949.4 (31)	4367.5 (30)	4960.2 (25)	4708 (28)	3787.5 (31)	4294 (39)	2827.5 (23)	5776.2 (34)	5612.9 (33)
Oregon/Washington	81.8 (6)	43.5 (2)	60.3 (4)	68 (2)	229.9 (2)	234.5 (5)	73.6 (4)	165.3 (4)	(1)	23.2 (1)	(3)	(3)	1524.2 (3)	1520.2 (2)	68.6 (2)
California	1370 (18)	1132 (11)	317.2 (12)	1675.2 (11)	3234.9 (19)	862.3 (13)	1160.7 (17)	1693.9 (25)	1491.9 (32)	1505 (24)	1040.2 (23)	1066.8 (19)	1418.5 (12)	1318.8 (8)	1550.7 (8)
Gulf of Mexico	6 (1)		2.4 (2)	144.3 (1)	200 (1)	330.8 (2)	275.5 (3)	20 (1)	238.5 (3)	15 (1)	168.1 (1)	(1)	62 (4)	154.2 (4)	248.1 (4)
Florida	139.9 (9)	171.2 (10)	269 (12)	656.3 (4)	858.2 (21)	306.8 (9)	429.8 (8)	610.6 (12)	384.8 (8)	622 (10)	295.6 (10)	573.9 (16)	242.5 (18)	504.2 (12)	560.9 (11)
Mid-Atlantic States (GA, SC, NC, VA)		199.9 (1)			200 (2)	293.3 (1)	4 (4)		2.6 (1)		1.5 (1)	669.6 (5)	455.9 (6)	725.8 (5)	544.7 (8)
NE Coastal States	56.2 (5)	29.3 (3)	1484 (4)	2762.9 (1)	292.7 (14)	1025.1 (8)	170 (6)	145.2 (10)	141.3 (7)	311.1 (11)	642.8 (15)	141.6 (11)	334.5 (9)	438 (13)	661 (17)

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

TABLE 5

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

	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90
Sirenia (Manatees and Dugong)															
Department of Agriculture															
Department of Commerce															
Department of Defense				44	122										
Department of Energy															
Dept. Health and Human Services															
Department of the Interior	173.8	190.2	267.1	580.5	328.7	358	353	391.6	276.8	284.1	224	389.5	396.4	402.6	419.8
Department of State															
Environmental Protection Agency															
Marine Mammal Commission			0.8		109			2.5	4.5	1.5	5	2	41.4	36	0.8
NASA		50	15							10	8.7	1.6	6.2	6	19.1
National Science Foundation						46.5					94				
Smithsonian Institution															
CATEGORY TOTAL	173.8	240.2	282.9	624.5	559.7	404.5	353	394.1	281.3	295.6	331.7	393.1	444	444.6	439.7
Carnivora (Polar Bear and Sea Otter)															
Department of Agriculture						22.2									
Department of Commerce				59.7	71	5.1				6.1	10				
Department of Defense															
Department of Energy	28	30	30		30	20	25								
Dept. Health and Human Services															
Department of the Interior	629.3	587.3	717.7	809.4	718	639.2	814	1086.7	1156.3	1303.7	1332.4	1883.4	1995.8	2938	2457.8
Department of State															
Environmental Protection Agency														75	50
Marine Mammal Commission	103.2	40.6	49.9			18	5.6	31.8	67	33.3		2		7.5	
NASA															
National Science Foundation				22.6	36.3					149.5		44	44	44	
Smithsonian Institution															
CATEGORY TOTAL	760.5	657.9	797.6	891.7	855.3	704.5	944.6	1128.5	1223.3	1492.6	1342.4	1929.4	2039.8	3064.5	2507.8
Pinnipedia (Seals, Sea Lions, Walrus)															
Department of Agriculture				200											
Department of Commerce	760.5	783.8	858.7	956.7	1454.7	940.2	1081.4	1188.8	1269.4	1650.7	1169	49.8	221.1	35.6	1504.8
Department of Defense	147	274	325	246	353	149.2	50	72.9	68.5	179.9	233.3	344	264.9	502	173.9
Department of Energy											70	70			
Dept. Health and Human Services	116.2	141.3		76.6	43.5	51.4	38.4			57	51.8	162.2	143.9	259.5	227.5
Department of the Interior	684.8	763.5	664.6	589	467.7	541.9	385.1	268	494.8	75	170.2	639.3	229.1	161.2	267.9
Department of State															
Environmental Protection Agency															
Marine Mammal Commission	54.3	64.8	33.7	59.1	106	56	12	159.1	12.5	32.8	8.7	17	3.5	7	14.7
NASA															
National Science Foundation	288.3	131.1	141.5	243.2	240.7	292.3	359.1	330.4	420.7	350.7	307.3	354.5	339.4	225	258.4
Smithsonian Institution	59.2	56.1	45	47.4			11.8	22.4	42.5	42.5	76.5	58			
CATEGORY TOTAL	2090.1	2214.6	2068.5	2418	2665.6	2031	1937.8	2041.6	2308.4	2388.6	2086.8	1694.8	1201.9	1190.3	2447.2

TABLE 5 (continued)

TAXONOMIC SUMMARY OF FEDERALLY-FUNDED MARINE MAMMAL RESEARCH

	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90
Cetacea (Whales and Porpoises)															
Department of Agriculture						44.6									
Department of Commerce	709.7	1555.8	2794.2	3326.3	3542.8	3118	2304.2	2037	2421.7	2540.7	2935	2376.7	2257.5	2705.5	3111.3
Department of Defense	263.1	527	446	746.4	1583.8	1485.6	1355	1522.3	1218	1566.2	1973.5	2532.1	2565.9	2660	1139
Department of Energy															
Dept. Health and Human Services	114.3	144.6	149.6	74.1	167.1	463.4	229.9	146.9	162.4	22.4			84.7	86.5	97.3
Department of the Interior	126.2	253.4	278	2937.5	2239.8	1910.4	2580.9	1905.6	2354.2	2888.6	1688.6	932.1	1372.7	2193.5	2456.2
Department of State				500	592.9	719.4	644.6	540.6	709.4	795.6	860	919.3	911.1	926.1	1146.7
Environmental Protection Agency														100	50
Marine Mammal Commission	262.8	124.9	169.7	81	133.7	34.4	28	5	63	74	39.8	301.2	27.7	4.5	23
NASA						143.3									
National Science Foundation	275.2	213.1	163.1	187.9	380.8	235.7	158.3	162.6	221.3	101.1	43	200	200	510.8	444
Smithsonian Institution	42.8														
CATEGORY TOTAL	1794.1	2818.8	4000.6	7853.2	8640.9	8154.8	7300.9	6320	7150	7988.6	7539.9	7261.4	7419.6	9186.9	8467.5
Mixed Species or General Studies															
Department of Agriculture				9		17.9									
Department of Commerce	6			210.9	245.1	635.9	635.4	1042.6	551.5	1050.8	776.2	2586.4	1668.5	2075.3	2565.8
Department of Defense	211	331	204	323	520	476	323	318	450	326	340	560.6	690	930	
Department of Energy		50	50												
Dept. Health and Human Services	848	495.1	622.4	242.1	391.9	241	690.9	537.5	466.6	973.4	800.3	573	860.5	1332.3	1096.7
Department of the Interior	1382.7	1428.3	1730.4	3999.5	3945.9	1654.3	1091.7	2200.6	624.4	740.4	842.9	279.9	1560	2987.4	746.6
Department of State			51								9.4	7.3	2.3	3.1	1.8
Environmental Protection Agency															
Marine Mammal Commission	141.4	190	122	12.5	10	26.3	38.5	6.5	151.7	56.1	31.5	27.3	30	49.8	54.2
NASA			50												
National Science Foundation	146.9	374.7	29.6	25.6	19.8		43.2	10	49.9	128.5	176.2	159.1	80	122	118.5
Smithsonian Institution		50	56.1	86	142.8	152.3	137	148	165	170	146	154	150	161.2	165
CATEGORY TOTAL	2796	2919.1	2915.5	4908.6	5275.5	3203.7	2899.7	4263.2	2459.1	3445.2	3122.5	4347.6	5041.3	7661.1	4748.6

TABLE 6

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

SPECIAL RESEARCH ISSUE	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FUNDING AGENCY	LINE TOTAL
Tuna/Porpoises:																	
Population Assessment	81	516.5	524.5	462.7	676.9	615	462	570	507.3	485.8	608.5	1079.9	1002	1025.4	919.2	NMFS	9534.7
		2								1.8	1.3					MMC	9.1
				500	592.9	687.1	609.2	673.9	673.9	762	853	914.3	911.1	916.8	1138.4	DOS	9232.6
Mortality Reduction	120	299.6	487.6	512.9	433.1	303.6	30	30.9								NMFS	2217.7
	178		67.4			5.6										MMC	251
	119.6	97.1														NSF	216.7
			48													Navy	48
Assessment of Taking	179	189.6	318.7	329.5	346.9	248.7	320.7	225	181.8	179.3	134.7	185.1	185.1			NMFS	3022.1
	12.4															MMC	12.4
Biology	138	138.1	220.4	705.3	382.4	430.2	318.3	331	296.5	319.2	288.8	303.5	361.8	360.1	592.7	NMFS	5184.1
		12.5	10													MMC	22.5
					31.8											NSF	31.8
International Whaling Commission:																	
Assessment of Stocks and Taking	38.7	52.8	193		340.5	433		700	858	815	753					NMFS	4092
	26.3	33.5	19.8	70.9	65					16.1				3		MMC	234.6
	21.5															NSF	21.5
							32.3	35.4	35.3	35.5	33.6	7	5	9.3	8.3	DOS	201.7
Marine Mammal/Fisheries Conflicts:																	
Southern Ocean Krill	10	14.5	4				10		49.2							MMC	87.7
			51													DOS	51
				25.6												NSF	25.6
Fin Fish/Pinniped Interactions	19.8	25.6	49.7	68		30	30	39.2	79.6	44.8	21.4					NSGCP	408.1
			59.3		4.9	32.5	10									MMC	106.7
				70	604.8	349.9	309.3	226.4	221.1	701	365.4		601.8	772.9	1255.7	NMFS	5676.1
Shell Fish/Sea Otter Interactions					6	5.1				6.1						NSGCP	17.2
					4.5			31					142.5	253.9	242.8	FWS	711.4
						142.4										NMFS	142.4
											10					OCRM	10
Fin Fish/Cetacean Interactions							10									NPFMC	10
					2		5		14.1		3					MMC	24.1
															68	NMFS	68
Incidental Taking							10	12	64.9	26.8	11	4				MMC	128.7
							29		14.8	65	121.3	78.5	165.6		25	NMFS	499.2
									5							NPFMC	5
										20						NOPPO	20
Effects of Oil and Gas Development on Marine Mammals:																	
Physiological Studies	91.5	59	85	1097.8	394.1	111.8	1390.3	2485.5	1650.1			221.9		65.5	134.7	MMS	7767.2
		2.8				2										MMC	4.8
														75	100	EPA	175
Risk Analysis							184.4	51.8	617.8	977.5	409.5	454.2	647.2	833.9	994.7	MMS	5171
								3.3	5.9	8.9				7.5		MMC	23.8
														923.8	580	FWS	1503.8
														30	50	NPS	60
														678.3		NMFS	678.3
Marine Mammal Strandings:																	
Biological Studies	32.3	15						6	1.8	10.5			7.5	32		MMC	105.1
	42.8	11.9	14.6		15		20	25	30	30	35	35	35	38	38	SI	370.3
	6			3.5	20	30	31.5	24.6	2							NMFS	117.6
		70.4														MMS	70.4
		15	30	18.7	15			60	103							FWS	241.7
										7.5						OCRM	7.5

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

SPECIAL RESEARCH ISSUE	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FUNDING AGENCY	LINE TOTAL
Bowhead Whale:																	
Assessment of Stocks and Taking	38.7	201	724	871.1	737.2	785.1	456.9		808			441	175.1	359	316.2	NMFS	5891.3
	44.1	42.5	167.2		591	345.3		317.4	625.4	543.6	480	180.3		360	603.3	MMS	4300.1
			6.7							4						MMC	10.7
Biology					590				589.6	724.5	163.5	156.6	123.5	287.7	22.5	MMS	2657.9
Humpback Whale:																	
Population Assessment	38.7	52.8	103	15	39.1	70.7	39	38.8	30.1	113.1	82.8	45.7	21.2	2.2	23	NMFS	715.2
		25.1	21.4		15	9	5	5		4.5	11		3	1.5	7.4	MMC	107.9
											15	15	23	20		NPS	73
															8	MMS	8
Biology	11.2	10	31.3	39.8	63	376.3	223	293.4	225			7				NPS	1280
						4.1		12.6	11		3.3	18	20	20	27	NMFS	114
			39.7	40.2	42.3											NSF	122.2
				48	24											Navy	72
											63	63				OCRM	126
Gray Whale:																	
Population Assessment	38.8	52.6	103	25.7						63.8	58					NMFS	343.1
					37	9										Navy	46
								317.4	536.4	521.5	458.5	180.3			84	MMS	2108.1
											45.6					OCRM	45.6
Biology					187.7	58.1	497			480	166.2				38.6	MMS	1449.6
										38.7						NSF	38.7
												10				OCRM	10
Assessment of Human-Induced Impact	16.5	9.8	20.6			3.8	6			11						MMC	67.7
Northern Right Whale:																	
Population Assessment						27.6	25	47.7	11	49.7	401.2	265.5	207.1	190	190	NMFS	1415
						3	4		32.1		4		4.2		2	MMC	49.3
												209.6	214.4	215	241.8	MMS	880.8
Biology							9									Navy	9
												200	200	249.1	283.3	NSF	932.4
														30	45	NMFS	75
															19.6	MMS	19.6
Killer Whale:																	
Population Assessment	38.8	52.7		3												NMFS	98.5
			7.9													MMC	7.9
			15.3							5						NSF	20.3
Biology															32.3	NSGCP	32.3
Pilot Whales:																	
Population Assessment			15.3										10.4			NSF	15.3
															45	MMC	10.4
																NMFS	45
Biology						10										USDA	10
Belukha:																	
Population Assessment	44	42.5	17.2			49.8									84	MMS	237.5
										4.8		250				MMC	254.8
Biology							134	130.3								MMS	264.3
	20	10	25		350	525	102	100	162.5	219	224	250				Navy	1987.5
Harbor Porpoise:																	
Population Assessment					45		30	9.8	1			7	33	67	181	NMFS	373.6
								4								OCRM	43
											9	30				MMC	15.8
											10	5.8				NPS	5

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

SPECIAL RESEARCH ISSUE	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FUNDING AGENCY	LINE TOTAL	
Dall Porpoise:																		
Population Assessment			210	6.9	264		228	165	165	127.6	117		285	327	553.6	NMFS	2449.1	
Bottlenose Dolphin:																		
Population Assessment			1.9						15		4.5	13.5			1	MMC	35.9	
				180.8	219.9	221.8	248.3	236.5	248.5	292.9	177.7	208.8	62	137	172	NMFS	2406.2	
Biology	133	270	168	467	903.9	850	1074	1310	975.5	1130	1305.5	1848.1	1805.9	2318	677	Navy	15235.9	
	20	86.7	92.8	85.3	90.1	107	48.9	56.5	221.3	57.4	6.9		84.7	86.5	97.3	DHHS	268.5	
	15.8	31.8	0.5				4								9.1	NSF	882	
				9				13.5					15.5		10.6	MMC	78.2	
													100	2		NMFS	124.5	
Northern Fur Seal:																		
Population Assessment	394.4	352	387	430.2	246	156.6	263.3	237.4	309.5	274.4	259.9	5	5.5		5.5	NMFS	3266.7	
Biology	330.2	368	384	269.3	410.9	420.2	285.4	237.4	309.5	274.4	252.5					MMC	4.1	
		70	96	88					1.5							NMFS	3539.8	
										1.5						MMC	1.5	
												7				Navy	254	
																OCRM	7	
									112						15	MMS	127	
Guadalupe Fur Seal:																		
Population Studies	13.3	13.3	16.7														NMFS	43.3
Antarctic Seals:																		
Population Studies			50.3	97			68.4	39.9	49.9	41.8			54.3			NSF	401.6	
Biology	241.1	172.7	89	70.4	171.7	252.2	168.5	179	292.9	159.7	231	311.2	242.5	225	115.5	NSF	2922.4	
														2		MMC	2	
Arctic Seals:																		
Population Studies	78	157	85						65.7			88				MMS	473.7	
Biology	136	201.1	237.6	212		281.6	157		292	60	75	250				MMC	23.4	
						38.8				38.2						MMS	1902.3	
								75.5								NSF	77	
											70	70				NMFS	75.5	
																DOE	140	
Hawaiian Monk Seal:																		
Population Assessment	38.2	52.3	52	31.2	50.9	31	28	15								FWS	298.6	
	13.3	13.3	16.7	3	108.3		102	311.7	300	340.6	326.4				417.9	NMFS	1953.2	
Biology		34.1	25.8		34.9			150							3.7	MMC	64.6	
											2.5	18				MMC	244.8	
																SI	20.5	
Gray Seal:																		
Population Studies		10.2			2.3	1.3		1.4									MMC	10.2
Biology	110	10	30														NMFS	5
																	Navy	150
Harbor Seal:																		
Population Studies	33.5	17.7	5.2			23.5				5.7		14			5	MMC	104.6	
	6	6	31	6					3.5		0.5			15		NPS	88	
					53.7											NSGCP	53.7	
	3			11.5	39.4	3.5	20		0.7	1.3	29.2		22	33	33	NMFS	203.6	
									0.5	0.5	0.5	0.5				USAF	2	

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

SPECIAL RESEARCH ISSUE	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FUNDING AGENCY	LINE TOTAL
Harbor Seal (cont.):																	
Biology	8.6	2.8							7							MMC	18.4
	65	60	50	50	25											MMS	225
																Navy	25
							36.3	23.8								NMFS	63.9
							15			39.4	12	14				OCRM	80.4
								2.5								NSGCP	2.5
							50	20								OMA	70
Northern Elephant Seal:																	
Population Studies	13.3	13.3	16.7	4.1												NMFS	47.4
									16							OCRM	18
Biology	27.2	33.1	31.8	41.2	30.2		45	51	61	55		43.3	42.6	142.9		NSF	604.3
				10	5.3		12					1.2	3	2		MMC	33.5
					43.5	51.7	38.4			45	39.8	149.3	131.7	30	63.4	DHHS	592.8
												20	25	57.5		MMS	102.5
California Sea Lion:																	
Population Studies	7			82.5												NMFS	69.5
									15	15						OCRM	30
Biology				200					3.5							NPS	3.5
																USDA	200
	37	74	110		247				124	164.4	174.8	285.5	209.9	447		Navy	1873.6
	12.2															MMC	12.2
							11.8	22.4	42.5	42.5	30					SI	149.2
											8					OCRM	8
Stellar Sea Lion:																	
Population Studies	157.1	145.5	155	146	95											MMS	700.6
						34.9										NMFS	34.9
									11.5							NPFMC	11.5
								5		6.8						MMC	11.8
Walrus:																	
Population Studies	112.8	141.6	52	141.8	231.8	99	50	50	53.9		94.7	201.6	201.1	146.2	195.4	FWS	1771.9
						130.3	150.1	25	19.6							MMS	325
Biology			5	20								4				MMC	16
														2		MMC	22
							77.2	60.5	66.8	15						NSF	219.5
														38.6		MMS	38.6
Manatee and Dugong:																	
Population Studies	143.8	159.7	236.6	290.3	285.7	300	159	109	211.8	142	112	97	50.5	18.4		FWS	2277.8
		50										10	5.2	1.6	6.2	8	13.9
			0.5		3												
			0.8		109				4.5			2	16.5	35			
				10													
Biology	30	30	30	127.2	45	52	173	291.8	20	142	112	275	345.9	368	419.8	FWS	2461.5
				44	122											Army	168
										1.5	5			17.9	1		
											3.5				5.2		
												17.5		16.2			
																NPS	33.7
Polar Bear:																	
Population Studies	401	303.1	223.1	251	140.8	200	80	73.7	80.9	135.8	174.9	602.2	692.9	690.6	673.8	FWS	4723.8
Biology	50	50	50		50	54	140	100	80.9	125.1	437	85	168.1	135.4	126.8	FWS	1852.3
		150		22.6	36.3											NSF	208.9

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

SPECIAL RESEARCH ISSUE	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FUNDING AGENCY	LINE TOTAL
Sea Otter:																	
Population Studies	157.2	151.9	352.1	<u>530.4</u>	<u>400</u>	<u>185.2</u>		<u>100</u>	<u>195.2</u>	<u>120</u>	<u>144.8</u>	85	527.7	572.8	560.9	FWS	4083.2
	21.1							770.8	86.1	249.6	96					MMS	1223.6
Biology	103.2	40.8	49.9			18	5.8	8.9	35.1	1.9		2				MMC	263.2
	28	30	30		30	20	25									DOE	163
		23.3	27.5	<u>28</u>	<u>189.8</u>	200	470	<u>403.9</u>	<u>196.8</u>	<u>190.7</u>	<u>399.9</u>	775.5	258.5	470	395.3	FWS	4026.2
										149.5		44	44	44		NSF	281.5
											2		4			NPS	6
		59					124		463.2				90.7	<u>18</u>	83.9	MMS	836.8

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

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

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

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

Table 7 is a list of annual funding authorized under the various sections of the Act, the amounts requested by agencies pursuant to the Act, and amounts appropriated by Congress. Additional Federal funds have been spent in activities related to marine mammals; the additional sources and amounts of research funding are shown in Table 8 and Figure 2. The number of personnel assigned to marine mammal research versus administrative responsibilities within the National Marine Fisheries Service and the Fish and Wildlife Service from FY74 through FY90 are listed in Table 9.

RESEARCH RESPONSIBILITIES OF FEDERAL AGENCIES UNDER THE MARINE MAMMAL PROTECTION ACT

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

With the establishment of the Act, the Secretary of Commerce was directed to undertake, in consultation with the Marine Mammal Commission, a study of North Pacific fur seals to determine whether herds of such seals, subject to the jurisdiction of the United States, were at their optimum sustainable population and what population trends were evident. The Secretary was also to undertake a comprehensive study, in consultation with the Secretary of State, to determine what modifications, if any, should be made to the provisions of the North Pacific Fur Seal Convention, or to the Marine Mammal Protection Act, or both, to make the Convention and the Act consistent with one another [Sec. 108].

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

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

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

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

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

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

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

TABLE 7

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

Department of Commerce (NMFS)	AUTHORIZED	REQUESTED	APPROPRIATED
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
Department of the Interior (FWS)			
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

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

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

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

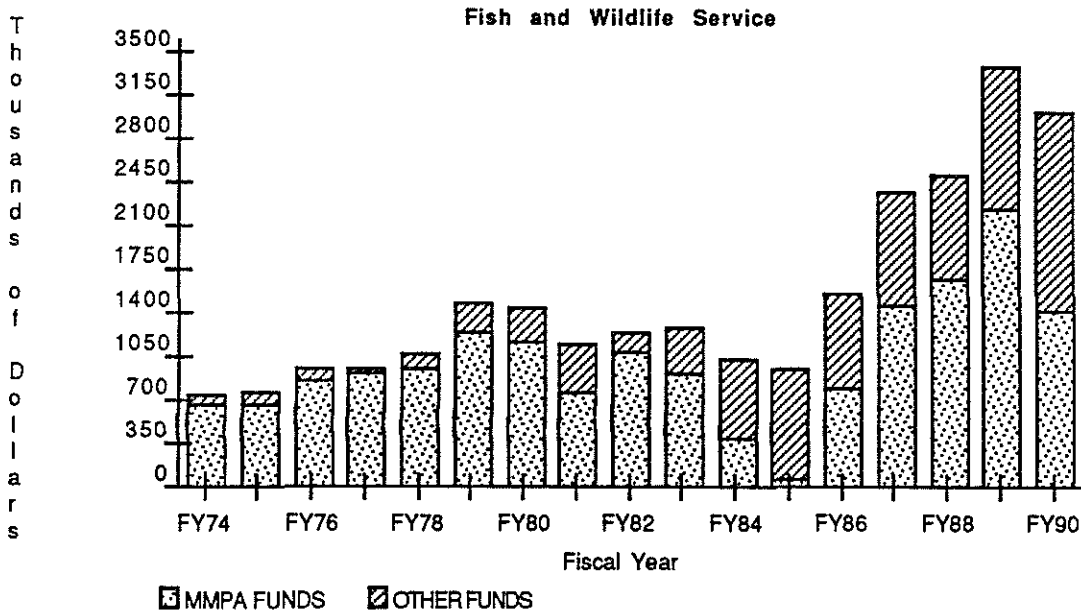
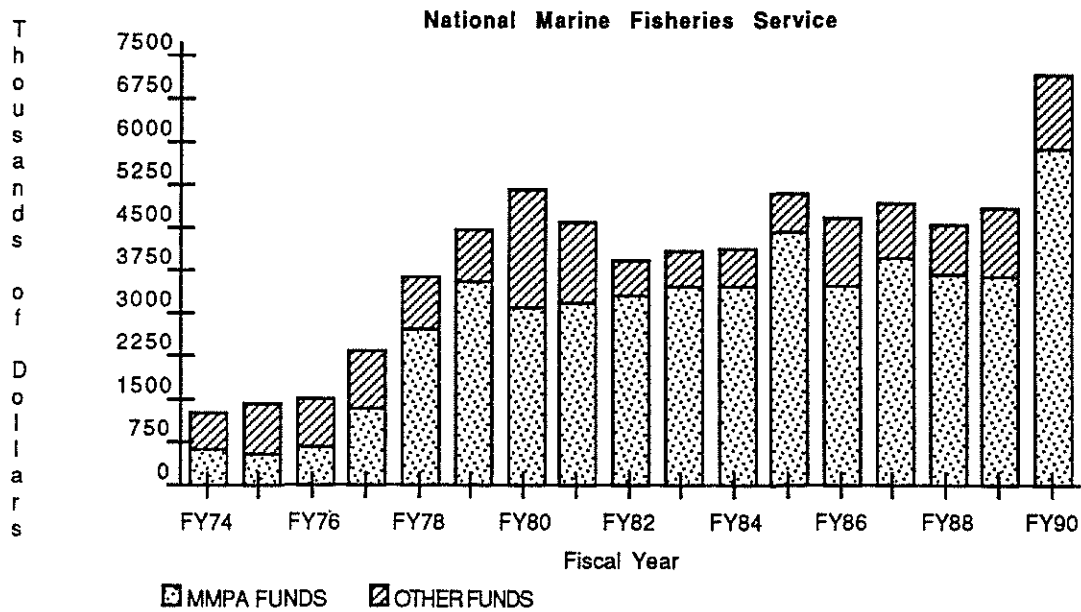
TABLE 8

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

	FY74	FY75	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90
Department of Commerce, NOAA																	
National Marine Fisheries Service																	
			.														
Fur Seal Act Authorization	309	395	743	595	595	595	595	595	595	595	619	620	654	654	477	368	448
Reprogramming and Reserves	295	442	59	78													
Endangered Species Act Appropriation				294	294	294	1428.4	775					500	250	350	799	803
NMFS TOTAL	604	837	802	967	889	889	2023.4	1370	595	595	619	620	1154	904	827	1167	1251
Department of the Interior																	
Fish and Wildlife Service																	
			.														
FWS Appropriation	49	75	83.3	16			82.2										
Endangered Species Act Appropriation					93.7	213.1	162	362.9	123	348	614	879	736.3	891	825	1125	1170
National Wildlife Refuge System Administration Act Appropriation									11	5							
Oil Spill Damage Assessment																	414
FWS TOTAL	49	75	83.3	16	93.7	213.1	244.2	362.9	134	353	614	879	736.3	891	825	1125	1584

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

FIGURE 2
FUNDS EXPENDED ON MARINE MAMMAL RESEARCH
BY THE NATIONAL MARINE FISHERIES SERVICE AND THE
FISH AND WILDLIFE SERVICE, FY74-FY90*
 (Thousands of Dollars)



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

TABLE 9

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

<u>National Marine Fisheries Service**</u>																	
	FY74	FY75	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90
Administrative	28	28	42	7	8	86.5		33.5	27.1	16	19.9	23.2	21.8	11.8	22.3	23.1	38.3
Research	26	33	31	17	20	48.9		60.7	61.2	42.7	76.3	75.6	76.3	63.5	67.3	70.2	80.5
NMFS Total	54	61	73	24	28	135.4	166.1	94.2	88.3	58.7	96.2	98.8	98.1	75.3	89.6	93.3	118.8
<u>Fish and Wildlife Service***</u>																	
	FY74	FY75	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90
Administrative	12.1	14.1	15.2	16.6	17.1	20.3	24.6	23.3	21.5	6	18.1	21.1	19.8	1.5	5.5	5.4	4
Research	6	11	11.8	14.8	13.2	17.2	17.4	17.8	16.5	18	17.6	17.8	16.5	27.7	29.1	31.4	29.8
FWS Total	18.1	25.1	27	31.4	30.3	37.5	42	41.1	38	22	35.7	38.9	36.1	29.2	34.6	36.8	33.8

*Figures provided by the agencies.

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

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

APPENDIX A

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

Department of Commerce

National Marine Fisheries Service

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

National Sea Grant College Program

Marine Mammal Information

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

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

Department of Defense

Air Force

Headquarters Space Division Technical Reports
Space Shuttle Final Environmental Impact Statement

Navy

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

Department of Energy

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

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

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

Geological Survey

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

Minerals Management Service

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

National Park Service

Administrative reports

Department of State

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

Marine Mammal Commission

Project reports available through the National Technical
Information Service
Marine Mammal Commission Annual Report

National Science Foundation

Antarctic Bibliography
Antarctic Journal of the United States
Numerous scientific journals

Smithsonian Institution

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

APPENDIX B

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

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

* For a listing of projects for the period FY70-FY79, see Waring, G. H., 1981, Survey of Federally-Funded Marine Mammal Research and Studies, FY70-FY79, Publication PB81-174336, National Technical Information Service, Springfield, Virginia, 235 p.

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

Department of Agriculture

FY90

(No projects)

Department of Commerce

1. National Marine Fisheries Service

A. Alaska Fisheries Science Center

FY90

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

Matkin, C., D. McSweeney, J. Straley, and O. von Ziegesar Effects of the "Exxon Valdez" Oil Spill on the Distribution and Abundance of Humpback Whales in Prince William Sound, Southeast Alaska, and the Kodiak Archipelago	\$92K
---	-------

B. Alaska Regional Office

FY90

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

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

C. Northeast Fisheries Science Center

FY90

Brault, S. (National Research Council) Pilot Whale Population Dynamics (OP.4)	\$45K
--	-------

Finn, J. (Univ. Massachusetts) North American Right Whale Program: Population Dynamics (OP.1.4)	\$18K
---	-------

Katona, S. (College of the Atlantic) Humpback Whale Individual Identification (OP.3.2)	\$23K
---	-------

Kraus, S. (New England Aquarium) North American Right Whale Program: Individual Identification (OP.1.3)	\$79K
---	-------

Mayo, C. A. (Center for Coastal Studies) Distribution and Habitat Usage of Large Cetaceans (OP.3.1)	\$41K
--	-------

Mayo, S. (Center for Coastal Studies) North American Right Whale Program: Habitat Requirements (OP.1.2)	\$33K
---	-------

Nicolas, J. (NEFSC) Marine Mammal Biological Sampling (ER.2)	\$23K
---	-------

Payne, P. M. (Manomet Bird Observatory) Fishery Resource and Marine Mammal Sighting Surveys (ER.1.1)	\$46K
--	-------

Polacheck, T. (NEFSC) Harbor Porpoise Program: Sighting Survey (OP.2.2)	\$75K
--	-------

Polacheck, T. and D. Potter (NEFSC) Harbor Porpoise Program: Sighting Survey Methods (OP.2.2)	\$49K
--	-------

Smith, T. (NEFSC)	
Marine Mammal By-Catch Estimation (HI.2)	\$25K
North American Right Whale Program (OP.1)	\$12K
Harbor Porpoise Program OP.2)	\$25K
North Atlantic Humpback Whale Program (OP.3)	\$6K
Waring, G. (NEFSC)	
Predation and Spatial Co-Occurrence (ER.1)	\$49K
Cetacean Habitat Survey (ER.1.2)	\$19K
Winn, H. and R. Kenney (Univ. Rhode Island)	
North American Right Whale Program: Sighting Data and Habitat Use (OP.1.1)	\$93K
D. Northwest Fisheries Science Center	
<u>FY90</u>	
Varanasi, U. (NWFSC)	
Chemical and Biochemical Analyses of Marine Mammals	\$27.5K
E. Northwest Regional Office	
<u>FY90</u>	
Brown, R. (Oregon Dept. of Fish and Wildlife)	
Oregon Harbor Seal and Sea Lion Project (NA88-ABD-00103)	\$35.6K
F. Southeast Fisheries Science Center	
<u>FY90</u>	
McGowan (SEFSC)	
Image Archival and Processing for Right Whales, Humpback Whales, and Bottlenose Dolphins (FSN100-8L1C4T)	\$16K
Mullin, K. (SEFSC, Pascagoula Laboratory)	
Deep Water Cetaceans of the Gulf of Mexico	\$83.1K
Powers, J. (SEFSC, Miami Laboratory)	
Stock Structure Analysis of Bottlenose Dolphins (FSN100-8L1C4T)	\$12K
Low-Level Monitoring of Bottlenose Dolphin Stocks in the Coastal Waters of the Southeastern United States (FSN100-8L1C4T)	\$100K
Photogrammetric Analysis of Bottlenose Dolphin Populations (FSN100-8L1C4T)	\$10K

Regional Aerial Survey of the Gulf of Mexico (FSN100-8L1C4T)	\$50K
Emergency Investigation of Gulf Dolphin Dieoff	\$114K

G. Southwest Fisheries Science CenterFY90

Barlow, J. and D. P. DeMaster (SWFSC) Coastal Marine Mammals (540)	\$242.9K
Dizon, A. and D. P. DeMaster (SWFSC) Biological Assessment Program (520)	\$457.4K
Gerrodette, T. and D. P. DeMaster (SWFSC) Dolphin Stock Assessment Program (510)	\$583.6K
Gilmartin, W. G. (SWFSC, Honolulu Lab) Hawaiian Monk Seal Research and Recovery (FSR200/8L1A3VW0)	\$392.9K
Northwestern Hawaiian Islands Beach Debris Clean-up (FSR200/8L1A5B7F)	\$25K
Perrin, W. F. (SWFSC) Senior Scientist Unit (060)	\$135.3K
Reilly, S. and D. P. DeMaster (SWFSC) Fishery Dependent Assessment Program (530)	\$335.6K

H. Southwest Regional OfficeFY90

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

2. National Ocean Pollution Program OfficeFY90

(No projects)

3. National Sea Grant College ProgramFY90

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

4. North Pacific Fisheries Management Council

FY90

(No projects reported)

5. Office of Ocean and Coastal Resource Management

FY90

(No projects)

6. Office of Oceanography and Marine Assessment

FY90

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

\$25K

Department of Defense

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

FY90

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

\$173.9K

2. Army (Corps of Engineers)

FY90

(No projects)

3. Navy

A. Naval Ocean Systems Center

FY90

Au, W. W. L. (NOSC)
 Complex Echo Classification (Tursiops)
 (MMB2511B01)

\$117K

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

\$102K

Moore, P. W. B. (NOSC)
 Binaural Hearing (Tursiops) (MMB2511B02)

\$130K

Nachtigall, P. E. (NOSC) Risso's Visual Acuity (MMB2511B05)	\$108K
Nachtigall, P. E., P. W. B. Moore, and H. L. Roitblat (NOSC) Matching-to-Sample (<u>Tursiops</u>) (MMB2511A01)	\$113K
Ridgway, S. H. and D. A. Carder (NOSC) Marine Mammal Medical Research and Animal Health (MM40510N01)	\$354K
Sigurdson, J. E. (NOSC) Acoustic Communication (<u>Tursiops</u>) (MMB2511B04)	\$55K

B. Office of Naval ResearchFY90

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

Department of EnergyFY90

(No projects)

Department of Health and Human Services**National Institutes of Health**FY90

Bullock, T. H. (Univ. California, San Diego) Non-Standard Models for Study of Cognition ERPS (R01 NS25963-03)	\$92.1K
Castellini, M. A. (Univ. Alaska) Sleep Apnea in Seals: Metabolic Implications (R29 HL38675-04)	\$86.1K
Fathman, C. G. (Stanford Univ.) Study of a Ternary Complex That Drives T Cell Activation (R01 AI27989-02)	\$185.3K
Hodgson, E. (North Carolina State Univ.) Pesticides and Xenobiotic Metabolizing Enzymes (P01 ES00044-25)	\$132K

Kooyman, G. L. (Univ. California, San Diego) Exercise Physiology to Maximum Lung Volume in Aquatic Mammals (P01 HL17731-16)	\$122.5K
LaMar, G. N. (Univ. California, Davis) Structural and Dynamic Study of Model Heme Complexes (R37 HL16087-17)	\$187.8K
Ortiz, C. L. (Univ. California, Santa Cruz) Developmental Physiology of Elephant Seal Pups During Natural, Prolonged Fasts (S06 GM08132-16)	\$63.4K
Rowell, L. B. (Univ. Washington) Regulation of Blood Flow Distribution (P01 HL16910-17)	\$133.1K
Tyack, P. L. (Woods Hole Oceanographic Institution) Ontogeny of Signature Whistles and Mimicry (<u>Tursiops</u>) (R29 DC00429-04)	\$97.3K
Weiner, S. (Weizmann Institute, Israel) Structural Studies of Matrix Proteins in Teeth and Bone (R01 DE06954-06)	\$57.7K
Wichman, H. A. (Univ. Idaho) Mammalian Genomes: Stasis and Change (R29 GM38727-05)	\$90.8K
Wicham, G. M. (Northeastern State Univ., OK) Computer Based Image Analysis of Iris Sections (R15 EY085450-1)	\$95.4K
Witztum, J. L. (Univ. California, San Diego) Apolipoprotein E Deficiency and Atherosclerosis (R01 HL39608-04)	\$78K

Department of the Interior

1. Fish and Wildlife Service

FY90

Amstrup, S. (AFWRC) Distribution, Timing, and Importance of Polar Bear Denning in Northern Alaska (204.01)	\$45.4K
Population Definition and Dynamics of Polar Bears in the Beaufort Sea (204.02)	\$324K
Relationships Between Polar Bears, Sea Ice, and Pagophilic Seals (204.03)	\$47.8K

Brownell, R. (NERC)	
Ecological Studies of Sea Otters and Other Marine Mammals (880.11)	\$263.1K
Interactions Between Sea Otters and Nearshore Ecological Communities (880.12)	\$132.2K
Translocation of Sea Otters (880.13)	\$348.6K
DeGange, A. (AFWRC)	
Biological Information Necessary to Establish a Zonal Management Program for Sea Otters in Alaska (210.02)	\$212.3K
Interactions Between Sea Otters and Fisheries in Alaska (210.03)	\$36.9K
Basis for Estimating Sustained Yield, and Means for Regulating Sea Otter Populations in North America (210.04)	\$-0-
Assess the Fate of Sea Otters Oiled and Rehabilitated as a Result of the "Exxon Valdez" Oil Spill (210.06)	\$65K
Magnitude, Extent, and Duration of Impacts from the "Exxon Valdez" Oil Spill on Sea Otter Populations (210.05)	\$515K
Garner, G. (AFWRC)	
Population Definition and Dynamics of Polar Bears in Northwestern and Western Alaska (204.04)	\$349.8K
Inter-Relationships Between Sea Ice Habitats and Polar Bear Distribution in Northwestern Alaska (Bering and Chukchi Sea) (204.05)	33.6K
Hills, S. and L. F. Pank (AFWRC & Maine Cooperative Fish and Wildlife Research Unit)	
Techniques to Monitor Walrus Population Dynamics and Refine Estimates of Numbers (214.01)	\$195.4K
Kitchens, W. (Florida Cooperative Fish and Wildlife Research Unit)	
Manatee Protection Project: Survey of Boat Usage Patterns (540.05)	\$-0-
Evaluation of Manatee Distribution Patterns in Response to Public Use Activities, Crystal River, Florida (540.06)	\$-0-
Evaluation of Cumulative Impacts to the Habitat of the Manatee, Crystal River National Wildlife Refuge, Florida (540.07)	\$-0-
Manatee Movements and Foraging in Cumberland Sound and Adjacent Waters (FL 06)	\$25K

Klein, D. (Alaska Cooperative Fish and Wildlife Research Unit) Walrus Harvest Monitoring in Western Alaska (596.01)	\$-?
O'Shea, T. (NERC) Ecological Studies of Manatees and Dugongs (880.10)	\$340.2K
Hobe Sound Sea Grass Study (880.61)	\$54.6K
Schamberger, M. (NERC) Develop a Generalized Microcomputer Capability for Field Offices to Address Large-Scale Resource Assessment (640.17)	\$19K

2. Geological Survey

FY90

(No projects reported)

3. Minerals Management Service

FY90

Becker, P., S. Wise, and R. Zeisler (NOOA, National Inst. of Standards and Technology) Acquisition and Curation of Alaskan Marine Mammal Tissues for Determining Levels of Contaminants Associated with Offshore Oil and Gas Development (OCSEAP RU 692)	\$107K
Brueggeman, J. J. (Ebasco, Inc.) Oregon and Washington Marine Mammal and Seabird Surveys (14-35-0001-30426)	\$33K
Burns, J. (Living Resources, Inc.) Bowhead Whale Book -- Coeditor (PO 83381)	\$22.5K
Carvan, M. (Texas A&M Univ.) A Novel <u>In Vitro</u> System for Marine Toxicological Analysis (PO 13270)	\$15.4K
Davis, R. (Texas A&M Univ.) Production of Sea Otter Reserve Training Videos and Monograph (14-35-0001-30522)	\$83.9K
Geraci, J. and D. St. Aubin (Battelle) Synthesis of Effects of Oil on Marine Mammals (14-12-0001-30293)	\$25K
Goodyear, J. (Univ. Guelph) Application and Construction of Satellite Tags for Large Whales (PO 12886)	\$18.6K

Hain, J. (Woods Hole Oceanographic Institution) Publication of Scientific Results on Aspects of the CETAP Program (PO 11206)	\$-0-
Southeast Atlantic Right Whale/Boat Interactions Using Coordinated Airship Overflights (PO 13269)	\$19.6K
Johnson, S. (LGL Alaska Research Associates) Monitoring Beaufort Sea Waterfowl and Marine Birds; Determining Use of Kasegaluk Lagoon by Marine Birds and Mammals (14-35-0001-30491)	\$420K
Kraus, S. et al. (New England Aquarium) Endangered Right Whales of the South Atlantic (14-35-0001-30486)	\$241.8K
Lambertsen, R. (Univ. Pennsylvania) A Baseline Method to Evaluate Chemico-Biological Interactions Involving Cetacea (14-12-0001-30533)	\$56.6K
LeBoeuf, B. (Univ. California, Santa Cruz) Conference on Northern Elephant Seal (14-35-0001-30554)	\$30K
Diving Studies of Northern Elephant Seals (PO 12485) (co-funded with NSF)	\$27.5K
Mate, B. (Oregon State Univ.) Applications of Remote Methods of Large Cetacean Tracking (14-12-0001-30411)	\$329.3K
Mizrock, S. (NMFS) Workshop on the Estimation of Calf Mortality in the North Pacific Humpback Whale (PO 13184)	\$8K
Moore, S. (SEACO/SAIC) Monitoring the Distribution of Chukchi Whales (14-35-0001-30468)	\$252K
Mullin, K. (NMFS) Relationship Between Sea Turtles and Petroleum Platforms and Whale Species Diversity (14-12-0001-30398)	\$197.8K
Phillips, R. L. (NOAA &USGS) Delineation, Faunal Composition, and Repeated Use of Benthic Feeding Areas by Walrus and Endangered Gray Whales in the Northeastern Chukchi Sea (OCSEAP RU 722)	\$77.2K
Ragen, T. and P. Dayton (Scripps Institute) Migration of Northern Fur Seal Pups in the Bering Sea (PO 12523)	\$15K

Richardson, W. J. et al. (LGL Ecological Research Assoc.) Synthesis of Information on the Effects of Noise on Marine Mammals (14-12-0001-30362)	\$-0-
Normal Behavior of Davis Strait Bowheads: A Control Group for the Western Arctic Stock (14-12-0001-30390)	\$-0-
Effects of Production Activities on Arctic Whales (14-12-0001-30412)	\$715K
Schell, D. (Univ. Alaska) Stable Isotope Analysis of 1987 and 1988 Zooplankton and Bowhead Whale Tissues (14-12-0001-30472)	\$75.7K
Setzler-Hamilton, E. (Univ. Maryland, Eastern Shore) Development of Visual Matrix Charts Which Categorize Research Literature on Endangered Whales (14-12-0001-30208)	\$-0-
Treacy, S. D. (MMS, Alaska OCS Region) Bowhead Whale Aerial Survey Project	\$519.3K
Wartzok, D. (Society for Marine Mammalogy) Bowhead Whale Book (14-35-0004-60148)	\$-0-
Winn, H. E. (Univ. Rhode Island) South Channel Ocean Productivity Experiment (SCOPEX) (PO 14669) (co-funded with NSF)	\$-0-

4. National Park Service

FY90

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

Department of State

Bureau of Oceans and International Environmental and Scientific Affairs

FY90

Gambell, R. (International Whaling Commission) Research Fund of the International Whaling Commission	\$8.3K
---	--------

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

Environmental Protection Agency**FY90**

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

Marine Mammal Commission**FY90**

Buckland, S. (Scottish Agricultural Statistical Service, Aberdeen, Scotland) Review of Information Concerning Small Cetacean Populations in the Black Sea (T75133135)	\$1K
Domning, D. P. (Howard Univ.) Communication of Information Concerning Conservation of Manatees and Dugongs (T75132327)	\$0.8K
Fay, F. H. (Univ. Alaska) International Workshop on the Ecology and Management of Walrus Populations (T75132903)	\$2K
Haigh, J. C. et al. (Marine Mammal Commission) Training Course for APHIS Veterinary Inspectors	\$6.4K
Justman, R. A. and A. Nielsen (Marine Mammal Commission) Tern Island Site Survey (T75132669 & T75132709)	\$3.7K
Kellert, S. R. (Yale Univ.) Development of a Global Marine Environment Ethic (T75132932)	\$5K
Kraus, S. D. and R. D. Kenney (Univ. Rhode Island and New England Aquarium) Evaluation of Critical Right Whale Habitat (T75133753 & T75133740)	\$2K

LeBoeuf, B. J. (Univ. California, Santa Cruz) International Conference on Northern and Southern Elephant Seal (T75133724)	\$2K
National Marine Fisheries Service Workshop to Develop a Recommended Protocol for Evaluating Swim-With-A-Dolphin Programs	\$7.1K
Perrin, W. F. (Center for Marine Conservation) World Conservation Union: Species Survival Commission Cetacean Action Plan (T75133685)	\$6K
Pitcher, K. W. (Alaska Dept. of Fish and Game) Tugidak Island Harbor Seal Survey (T75133261)	\$5K
Reif, J. S. and R. S. Wells (Dept. Environmental Health, Ft. Collins, Colorado, and the Brookfield Zoo) Review of Gulf of Mexico Bottlenose Dolphin Die-off Investigation (T75132851 &T75132864)	\$1K
Scientific Committee on Antarctic Research (Scott Polar Research Institute, Cambridge, United Kingdom) Handbook on Antarctic Seal Research Methods and Techniques (T75133672)	\$2K
Swartzman, G. L., J. J. Brueggeman, and K. A. Green-Hammond (Marine Mammal Commission) Workshop on the Bering Sea and Southern Ocean Ecosystem (T75133193, T75133656, T75133669)	\$33.3K
Townsend, R. L. (Townsend Environmental) Review of Information Concerning Humpback Whales in Hawaii (T75132495)	\$7.4K
Waring, G. H. (Southern Illinois Univ., Carbondale) Survey of Federally-Funded Marine Mammal Research (T75133724)	\$3.5K
Watkins, W. A. (Woods Hole Oceanographic Institution) Development of a Computerized Cetacean Bibliography (T75133685)	\$1K
Würsig, Bernd (Texas A&M Univ., Galveston) Bottlenose Dolphins as Possible Environmental Indicators (T75133708)	\$3.5K

National Aeronautics and Space AdministrationFY90

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

National Science FoundationFY90

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

Tyack, P. and L. Sayigh (Woods Hole Oceanographic Institution) Development of Signature Whistles in Free-Ranging Bottlenose Dolphins (BNS-9014545)	\$9.1K
Winn, H. E. et al. (Univ. Rhode Island) South Channel Ocean Productivity Experiment (SCOPEX) OCE-8915844)	\$173K

Smithsonian Institution**FY90**

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