

Y4
C73/7
95-90

95 Y4
C73/7
95-90

GOVERNMENT DOCUMENTS

REAUTHORIZATION OF THE MARINE
MAMMAL PROTECTION ACT OF 1972

Storage

AUG 4 1978

FARRELL LIBRARY
KANSAS STATE UNIVERSITY

HEARING

BEFORE THE

COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

NINETY-FIFTH CONGRESS

SECOND SESSION

ON

S. 2831

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEARS 1979 AND
1980 TO CARRY OUT THE MARINE MAMMAL PROTECTION ACT
OF 1972

H.R. 10730

TO AUTHORIZE APPROPRIATIONS TO CARRY OUT THE MARINE
MAMMAL PROTECTION ACT OF 1972 DURING FISCAL YEARS
1979, 1980, AND 1981

MAY 3, 1978

Serial No. 95-90

Printed for the use of the
Committee on Commerce, Science, and Transportation



U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1978

29-270 O

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION



COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

HOWARD W. CANNON, Nevada, *Chairman*

WARREN G. MAGNUSON, Washington
RUSSELL B. LONG, Louisiana
ERNEST F. HOLLINGS, South Carolina
DANIEL K. INOUE, Hawaii
ADLAI E. STEVENSON, Illinois
WENDELL H. FORD, Kentucky
JOHN A. DURKIN, New Hampshire
EDWARD ZORINSKY, Nebraska
DONALD W. RIEGLE, Jr., Michigan

JAMES B. PEARSON, Kansas
ROBERT P. GRIFFIN, Michigan
TED STEVENS, Alaska
BARRY GOLDWATER, Arizona
BOB PACKWOOD, Oregon
HARRISON H. SCHMITT, New Mexico
JOHN C. DANFORTH, Missouri

AUBREY L. SARVIS, *Staff Director and Chief Counsel*
EDWIN K. HALL, *General Counsel*
DEBORAH STIRLING, *Staff Director, NOPS*
CHRISTOPHER KOCH, *Staff Counsel*
DOUGLAS ANDERSON, *Staff Counsel*
MALCOLM M. B. STERRETT, *Minority Staff Director*
GERALD J. KOVACH, *Minority Staff Counsel*

CONTENTS

Opening statement by Senator Packwood.....	Page 1
Test of S. 2831.....	2

LIST OF WITNESSES

Gehringer, Jack W., Deputy Director, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Department of Commerce; accompanied by W. P. Jensen; and Eric Erdheim, Office of the General Counsel	7
Prepared statement of Mr. Gehringer	8
Greenwalt, Lynn A., Director, U.S. Fish and Wildlife Service, Department of the Interior; accompanied by Dr. Robert Brownell, Marine Mammal Research Coordinator	15
Prepared statement of Mr. Greenwalt	15
Stevens, Christine, monitor, The Conservation, Environmental, and Animal Welfare Consortium; accompanied by Tom Garrett, Defenders of Wildlife	42
Prepared statement of Ms. Stevens	42
Prepared statement of Mr. Garrett	44
Twiss, John R., Jr., Executive Director, Marine Mammal Commission; accompanied by Robert Eisenbud, General Counsel; and Robert J. Hofman, Scientific Program Director	27
Prepared statement of Mr. Twiss.....	27

ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

Herbst, Bob, Assistant Secretary, Department of the Interior, letter of May 2, 1978	7
Marine Mammal Protection Act Report of the Department of the Interior, article	57
Twiss, John R., Jr., Executive Director, Marine Mammal Commission, letters of:	
May 23, 1978.....	32
May 5, 1978.....	41

CONTENTS

1. Introduction	1
2. Theoretical Framework	10
3. Methodology	25
4. Results	45
5. Discussion	65
6. Conclusion	85
7. References	95
8. Appendix	110
9. Glossary	125
10. Index	140

REAUTHORIZATION OF THE MARINE MAMMAL PROTECTION ACT OF 1972

WEDNESDAY, MAY 3, 1978

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, D.C.

The committee met at 10 a.m. in room 235, Russell Senate Office Building, Hon. Bob Packwood presiding.

OPENING STATEMENT BY SENATOR PACKWOOD

Senator PACKWOOD. The hearing will come to order.

The Marine Mammal Protection Act of 1972 resulted from growing concern about man's impact on marine mammals whose populations were rapidly being depleted. Since its passage, both the Departments of Commerce and Interior, which are charged with responsibility for administering the act, have initiated a wide variety of research and enforcement programs designed to conserve and protect marine mammals.

Great progress has been made in gathering data in regard to the thousands of porpoises killed each year during tuna fishing operations. When the act was passed over 300,000 porpoises were being killed each year. That number was reduced to 24,000 in 1977; we know that progress can be made.

The act has also provided a framework for research on the world's whale populations, in particular those which have been depleted by commercial whaling operations. The scientific data which has been gathered has enabled the United States to deal forcefully with the International Whaling Commission, by whose action many whale kill quotas have been sharply reduced.

Since it remains the goal of this Nation to see the slaughtering of whales further reduced I am anxious to hear from today's witnesses the details of how this is being accomplished.

Although the porpoise and whale issues have attracted the most publicity, there are many other species of marine mammal which we know too little about and which are not receiving adequate protection. Seals, particularly the dramatic case of the Harp Seal, sea otters, polar bears, and manatees all face dangers from man's incursion into their habitats and our exploitation of them. More research and enforcement effort needs to be spent on behalf of the lesser known species.

These hearings should provide an excellent opportunity to explore both the progress and the problems we face with enforcement of this act. Much has been accomplished, but it will be more beneficial if we examine the fiscal year 1979 authorization with an eye toward what specific conservation, research and enforcement programs we can expect in the future.

[The bills and agency comments follow:]

95TH CONGRESS
2D SESSION

S. 2831

IN THE SENATE OF THE UNITED STATES

APRIL 5 (legislative day, FEBRUARY 6), 1978

Mr. CANNON (for himself, Mr. MAGNUSON, and Mr. PEARSON) (by request) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

To authorize appropriations for fiscal years 1979 and 1980 to carry out the Marine Mammal Protection Act of 1972.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That section 114(a) of the Marine Mammal Protection
4 Act of 1972, as amended (16 U.S.C. 1384 (a)), is amended
5 by inserting immediately following the date "1978," the
6 following language: "\$6,517,000 for the fiscal year ending
7 September 30, 1979, and such sums as may be necessary
8 for the fiscal year ending September 30, 1980,".

95TH CONGRESS
2D SESSION

H. R. 10730

IN THE SENATE OF THE UNITED STATES

APRIL 11 (legislative day, FEBRUARY 6), 1978

Read twice and referred to the Committee on Commerce, Science, and
Transportation

AN ACT

To authorize appropriations to carry out the Marine Mammal Protection Act of 1972 during fiscal years 1979, 1980, and 1981.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That section 109 of the Marine Mammal Protection Act of
4 1972 (16 U.S.C. 1379) is amended by adding at the end
5 thereof the following new subsection:

6 “(d) (1) There are authorized to be appropriated to the
7 Department of the Interior, for the purposes of carrying out
8 this section, not to exceed the following sums for the follow-
9 ing fiscal years:

II

1 “(A) \$400,000 for each of the fiscal years
2 ending September 30, 1979, September 30, 1980, and
3 September 30, 1981.

4 “(2) There are authorized to be appropriated to the
5 Department of Commerce, for purposes of carrying out this
6 section, not to exceed the following sums for the following
7 fiscal years:

8 “(A) \$225,000 for each of the fiscal years ending
9 September 30, 1979, September 30, 1980, and Septem-
10 ber 30, 1981.”

11 SEC. 2. Section 110 (c) of the Marine Mammal Protec-
12 tion Act of 1972 (16 U.S.C. 1380 (c)) is amended by add-
13 ing at the end thereof the following new paragraphs:

14 “(4) (A) \$1,300,000 which shall be available to
15 the Secretary of the Interior for the fiscal year ending
16 September 30, 1979.

17 “(B) \$1,600,000 which shall be available to the Sec-
18 retary of Commerce for the fiscal year ending Septem-
19 ber 30, 1979.

20 “(5) (A) \$1,500,000 which shall be available to
21 the Secretary of the Interior for the fiscal year ending
22 September 30, 1980.

23 “(B) \$2,000,000 which shall be available to the
24 Secretary of Commerce for the fiscal year ending Sep-
25 tember 30, 1980.

1 “(6) (A) \$2,100,000 which shall be available to
2 the Secretary of the Interior for the fiscal year ending
3 September 30, 1981.

4 “(B) \$2,500,000 which shall be available to the
5 Secretary of Commerce for the fiscal year ending
6 September 30, 1981.”

7 SEC. 3. Section 114 of the Marine Mammal Protection
8 Act of 1972 (16 U.S.C. 1384) is amended—

9 (1) by amending subsection (a) —

10 (A) by striking out “title.” and inserting in
11 lieu thereof “title (other than sections 109 and
12 110).”.

13 (B) by striking out “and” immediately after
14 “fiscal years,” and

15 (C) by inserting immediately after “Septem-
16 ber 30, 1978,” the following: “not to exceed
17 \$8,500,000 for the fiscal year ending September 30,
18 1979, not to exceed \$9,000,000 for the fiscal year
19 ending September 30, 1980, and not to exceed
20 \$9,500,000 for the fiscal year ending September 30,
21 1981,”; and

22 (2) by amending subsection (b) —

23 (A) by striking out “title.” and inserting in
24 lieu thereof “title (other than sections 109 and
25 110).”,

1 (B) by striking out "and" immediately after
2 "thereafter," and

3 (C) by inserting immediately after "Septem-
4 ber 30, 1978" the following: " , not to exceed
5 \$650,000 for the fiscal year ending September 30,
6 1979, not to exceed \$760,000 for the fiscal year
7 ending September 30, 1980, and not to exceed
8 \$876,000 for the fiscal year ending September 30,
9 1981".

10 SEC. 4. Section 207 of the Marine Mammal Protection
11 Act of 1972 (16 U.S.C. 1407) is amended—

12 (1) by striking out "and" immediately after
13 "\$1,000,000"; and

14 (2) by striking out "\$2,000,000." and inserting in
15 lieu thereof the following: "\$2,000,000, the sum appro-
16 priated for the fiscal year ending September 30, 1979,
17 shall not exceed \$1,000,000, the sum appropriated for

1 the fiscal year ending September 30, 1980, shall not
 2 exceed \$1,000,000, and the sum appropriated for the
 3 fiscal year ending September 30, 1981, shall not exceed
 4 \$1,000,000.”.

U.S. DEPARTMENT OF THE INTERIOR,
 Washington, D.C., May 2, 1978.

Hon. HOWARD W. CANNON,
 Chairman, Committee on Commerce, Science, and Transportation,
 U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: Your Committee has requested the views of this Department on H.R. 10730, as passed, a bill “To authorize appropriations to carry out the Marine Mammal Protection Act of 1972 during fiscal years 1979, 1980, and 1981.”

We recommend against enactment of this legislation as it would not provide a sufficient level of authorizations to cover the appropriations contained in the Administration’s fiscal year 1979 budget for Marine Mammal Protection Act purposes. In the alternative, we recommend amending H.R. 10730 to conform to the Administration’s proposed Marine Mammal Protection Act Authorization.

H.R. 10730 would extend the authorizations under the Marine Mammal Protection Act of 1972 (86 Stat. 1027; 16 U.S.C. §§ 1361, 1362, 1371-1384, 1401-1407) (MMPA) for fiscal years 1979, 1980, and 1981. Specifically, it would provide for \$933,000 for each fiscal year to 1981 for research pursuant to § 110(c), and a general authorization under § 114(b) of \$425,000 for each fiscal year to 1981.

On February 13, 1978, this Department submitted to the Congress draft legislation to authorize appropriations under the MMPA for fiscal years 1979 and 1980. The draft legislation would extend the § 110(c) authorization at a level of \$1,000,000 for fiscal year 1979, and such sums as may be necessary for fiscal year 1980, and the § 114(b) authorization at a level of \$600,000 for fiscal year 1979, and such sums as may be necessary for fiscal year 1980. These amounts correspond to those contained in the Administration’s budget request and would provide sufficient funding to carry out the purposes of the Act.

The Office of Management and Budget has advised that this legislative proposal is in accord with the program of the President.

Sincerely,

BOB HERBST,
 Assistant Secretary.

Senator PACKWOOD. We will call the witnesses as they are listed on the sheet, starting with Mr. Gehringer.

If you would start, now—Mr. Gehringer, are you ready?

STATEMENT OF JACK W. GEHRINGER, DEPUTY DIRECTOR, NATIONAL MARINE FISHERIES SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE, ACCOMPANIED BY W. P. JENSEN; AND ERIC ERDHEIM, OFFICE OF THE GENERAL COUNSEL

Mr. GEHRINGER. Mr. Chairman, my name is Jack Gehringer, Deputy Director of the National Marine Fisheries Service. I have with me this morning on my right, Mr. William Jensen of the marine mammal program; and on my left, Mr. Eric Erdheim of the Office of General Counsel.

You have the statement that we prepared, and with your permission I will enter it into the record and will be available for questions you may have.

Senator PACKWOOD. It will all be in the record.

Are you making a statement at all? Or are you just putting it in the record and waiting for questions?

Mr. GEHRINGER. I just put the statement in the record, and I am now available to answer any questions you may have.

Senator PACKWOOD. That's a good example for other witnesses to follow.

[The statement follows:]

STATEMENT OF JACK W. GEHRINGER, DEPUTY DIRECTOR, NATIONAL MARINE FISHERIES SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE

Mr. Chairman and Members of the Subcommittee: I am pleased to be here today to testify regarding the need to extend the authorization for appropriations under section 114 of the Marine Mammal Protection Act of 1972.

All Department of Commerce activities under the Act are funded under section 114, including our tuna-porpoise research and observer programs, permit and regulatory administration, law enforcement contracts, and whale and seal research.

Because marine mammals are a unique part of the marine ecosystem, their conservation and management can be expected to be an important objective in our future marine resource management decisions.

We are attempting to gain greater insight into the problem of competition between marine mammals and fishermen for fishery resources in areas where there are significant expansions in mammal populations. Similarly, we are attempting to obtain better and more refined data concerning the incidental catch of marine mammals in fisheries other than the yellowfin tuna fishery. We are initiating efforts with the Marine Mammal Commission in both of these areas.

We are currently working with the Fish and Wildlife Service and the Marine Mammal Commission to meet the objectives of this Act. For example, we are combining our efforts to establish a joint Marine Mammal Marking Center and to streamline and insure compatibility of our respective approaches to enforcement and permit review and approval. In the enforcement area, we are planning to broaden our at-sea and port of entry enforcement capabilities.

We cannot overlook our international responsibilities under the Act. We have commitments to such bodies as the International Whaling Commission, in support of the International Decade of Cetacean Research, and to the Inter-American Tropical Tuna Commission for improving efforts to reduce porpoise mortality by member nations. Also, with the 1976 amendment to the Act, we now have the responsibility to protect marine mammals from foreign-flag vessels out to 200 miles from our shores.

The bowhead whale problem has become prominent during the past year and we are planning to direct our research efforts accordingly over the next five years to provide needed information about this endangered great whale. There are serious conflicting interests and strong international pressures on the U.S. to assure that this population is not driven to extinction, while allowing for a native subsistence harvest which is so important to our citizens who live on the North Slope of Alaska. This year we are initiating a research program at a level of approximately \$780,000 to address these issues.

Funding for the tuna-porpoise program is expected to increase to approximately \$3.4 million for fiscal year 1979. As you may know, during calendar year 1978, we will be utilizing a commercial fishing vessel dedicated specially by the industry to carry out certain tuna-porpoise research, with the cooperation of the industry, the Marine Mammal Commission, and other agencies. All of our efforts on tuna-porpoise research during the past five years have been concentrated in the eastern tropical Pacific Ocean. We are reviewing the possible need to investigate the relationships that might exist in other tuna fishing areas in the Atlantic, Indian, and western Pacific Oceans so that we might consider appropriate protective measures for porpoises and the issuance of permits for U.S. fishermen who participate in those fisheries, if necessary.

Mr. Chairman, I have limited my statement to highlights of the more pressing problems we face in the future. I believe we have a strong case for a continuation of authorizations under the Act. The President has asked Congress for \$7.6 million for marine mammal conservation programs for the Department of Commerce for fiscal year 1979, an increase of \$1.5 million (25 percent) over the fiscal year 1978 appropriation. This level of funding will make it possible to carry out programs and seek solutions to the more vexing problems, and to accumulate the basic information which will be needed for future decisions. For fiscal year 1980, the Administration is requesting that Congress authorize such sums as may be necessary for this program.

This concludes my prepared statement. I would be pleased to answer any questions you may have.

Senator PACKWOOD. In your statement, and some others that follow, there is a great deal of comment about research. While I realize that is important, I am curious: in light of the diminished population of some species, shouldn't the emphasis be as much on enforcement? That's part of your task, is it not, to try and upgrade the strength of enforcement?

Mr. GEHRINGER. We're not asking for an increase in the 1979 budget for enforcement, but we do anticipate an increase in enforcement effort as we use enforcement officers for a wide variety of enforcement activities.

The Fishery Conservation and Management Act of 1976 provides for management of the resources off the coast up to 200 miles. We have a number of enforcement officers assigned to enforcement activities of the service.

We have received ceilings and dollars under the Marine Mammal Protection Act that we can identify specifically for this activity. However, all of our enforcement officers, at one time or another throughout the service, are engaged in all enforcement activities.

We recognize that we don't have enough enforcement officers to do all we would like. We think we have a sufficient number of officers—operating in coordination with the Fish and Wildlife Service and Customs—to do the job for the next fiscal year.

Senator PACKWOOD. Specifically in the area of enforcement, you've got the Pelly amendment; yet, for over a year Commerce has been studying its possible use against Peru and South Korea because of their activities outside the International Whaling Commission's regulations.

There is nothing, at the moment, that I know of that's been done. What is the status?

Mr. GEHRINGER. Our recommendation is within NOAA; it has not gone to the Secretary. If the recommendation goes forward, then the Secretary would make the decision and certify that the potential damage has occurred. Then it would go to the White House as a recommendation.

Senator PACKWOOD. But it's been a year now that this has been under investigation. Is there some problem?

Mr. GEHRINGER. It's a very complex issue, and it has taken longer to get a resolution of the questions we want answered.

Senator PACKWOOD. What are the questions you're asking?

Mr. GEHRINGER. There are wide varieties of specific legal issues, economics—

Senator PACKWOOD. Let me ask you about the legal issues. You've got the power to impose the Pelly amendment?

Mr. GEHRINGER. Yes.

Senator PACKWOOD. What other legal issues are there?

Mr. GEHRINGER. Do you have the specifics, Mr. Erdheim? If I may apologize, Mr. Erdheim has just recently been assigned to our staff as legal counsel and he doesn't have those specific issues.

I would be pleased to have that addressed to the committee.

[The following information was subsequently received for the record:]

PELLEY AMENDMENT FACT SHEET

BACKGROUND

The Pelly Amendment to the Fisherman's Protective Act of 1967, 22 U.S.C. § 1978 (1971), states that when the Secretary of Commerce determines that the nationals of a foreign country are conducting fishing operations which diminish the effectiveness of a conservation program of an international fishery convention to which the United States is a party, she shall so certify to the President, and the President may then direct the Secretary of the Treasury to prohibit the importation of fish products of the offending country. Within 60 days following certification, the President is requested to notify the Congress of any action taken pursuant to such certification. If the President takes no action, or if he imposes an import prohibition which does not cover all fish products of the offending country, he is required to inform Congress of his reasons for following these courses.

INTERNATIONAL WHALING COMMISSION

In recent years, the only objections to conservation measures of the International Whaling Commission (IWC) where by both the Soviet Union and Japan in 1973 with respect to IWC conservation measures for the 1973/74 season. The fishing activities of both countries for minke whales resulted in the take of almost 8,000 whales instead of the Commission recommendation of 5,000. The Secretary of Commerce, therefore, certified under the Pelly Amendment that their actions had diminished the effectiveness of the IWC. The President, upon recommendation of the Secretary of Commerce, did not invoke the embargo provisions of the Pelly Amendments at that time because the two countries showed a more progressive attitude during the 1974 meeting of the IWC. Since then, Japan and the Soviet Union have consistently abided by the quota recommendations of the IWC.

An effort to collect information on whaling operations of non-IWC nations resulted in the discovery of situations where IWC quotas for the 1975-76 season in the Antarctic and the 1976 season in other parts of the world have been exceeded.

1. Nationals of the Republic of Korea took 43 fin whales in the North Pacific Ocean during the season ending in September 1976 (Table 1). The IWC considers fin whales in the North Pacific a Protection Stock or one which is below the level determined to be safe for harvesting. Fin whale stocks in the North Pacific were estimated to be at only 43 percent of their initial stock, and 31 percent below the maximum sustainable yield (MSY) level in 1976. As a result, all commercial whaling of this stock by IWC member countries was prohibited in 1976. The Koreans have thus taken fin whales from a stock from which the IWC recommends that no whales should be harvested.

2. The Peruvian catch of sei and Bryde's whales was 213 during January-June 1976, according to information presented to the Scientific Consultation on Marine Mammals in Bergen, Norway. The Schedule of the IWC established a quota for sei and Bryde's whales of 193 to be taken during the 1975-76 season in waters off Peru and Chile, and this amount was harvested by Japanese and Soviet vessels. Sei whale stocks in this areas were estimated to be at 60 percent of initial stock levels, the bottom range of the level at which scientists estimate whales can be safely harvested. Peru thus caught 213 whales from this stock in excess of the quota which was filled by IWC nations.

3. The sperm whale quota for the 1975-76 season for the areas off Peru and Chile was 4016 whales, and the IWC nations took 3151, leaving the quota unfilled by 865 whales. Peru caught 1500 sperm whales in this area and Chile took 61, and thus caused the quota to be exceeded. It should be noted that this quota was established for three of the nine IWC divisions of the Southern Hemisphere, which were combined in 1976 at the request of the whaling nations. In 1977, quotas were assigned for each of the divisions, and the sperm whale stock in the division in which Peru and Chile take whales was declared a Protection Stock, and no whaling was permitted in 1977 or 1978. Figures received from Chile through the U.S. Embassy show a catch of 76 sperm whales by Chilean nationals in 1977. The IWC Scientific Committee estimated in 1976 that male sperm whale stocks in this division were 16 percent below their MSY level and females were 28 percent below. Thus the combined Peruvian and Chilean catch of sperm whales in 1976 and the Chilean catch of sperm whales in 1977 exceeded IWC quotas.

Although the Chilean take of sperm whales in 1976 was a small percentage of the total quota of 4016 whales, it should be noted that the Chilean take of 76 sperm whales in 1977 was from a ocean area to which IWC had established a zero quota for both 1977 and 1978. Also, in late 1977, Chile acquired additional whaling equipment and established a unilateral quota of 500 whales (all species) to apply to Chilean whalers in 1978, 1979 and 1980.

TABLE 1.—WORLD CATCH OF WHALES, 1976 ¹

Country	Species						Total
	Fin	Sei	Bryde's	Sperm	Minke	Others	
Australia				995			995
Brazil		3		9	776		788
Chile ²		1		61			62
Denmark (Greenland) ³							
Iceland	275	3		111	197		586
Japan	118	1,316	578	1,645	3,377		7,034
Republic of Korea	443				443		486
Norway					2,146		2,146
Peru		⁴ 213		1,500			1,713
Portugal ⁵							
Somalia Rep ⁶		23					23
Spain	138			127			265
U.S.S.R.	88	505	679	10,125	3,017	⁷ 163	14,577
United States						⁸ 48	48
Total	662	2,064	1,257	14,573	9,956	211	28,723

¹ Includes December 1975–April 1976 Antarctic season and 1976 coastal seasons.

² January–April 1976.

³ No information.

⁴ January–September 1976.

⁵ Sei and Bryde's whales combined, January–June 1976.

⁶ January–February 16, 1976.

⁷ Gray whales, aboriginal catch.

⁸ Bowhead whales, aboriginal catch.

IMPORTANT EVENTS

1975

On October 25, the Marine Mammal Commission sent a letter to the National Oceanic and Atmospheric Administration suggesting that the Pelly Amendment be applied to non-member nations of the IWC whose vessels conduct whaling operations which diminished the effectiveness of the IWC conservation program.

1976

A response from National Oceanic and Atmospheric Administration to Marine Mammal Commission of January 8 discussed appropriate circumstances for invoking the Pelly Amendment against foreign countries which were not members of an international fishery conservation program whose nationals were conducting fishing activities which diminished the effectiveness of such a program. The appropriate circumstances where stated to be where the actions of the offending country are clearly in violation of and are detrimental to the conservations regulations and when such actions cannot be attributed to honest differences of scientific opinion. Five criteria were specified to determine if the appropriate circumstances were present:

1. An international organization has been established to deal with the conservation and allocation of the species.
2. Membership in the organization is available to the concerned countries on reasonable terms and efforts have been made to encourage membership.
3. The quota or conservation measure for the species or stock in question is generally accepted scientifically to be appropriate to maintain the species of stock at, or restore it to, an agreed level and that any other take would therefore be detrimental.

4. A quota or other conservation measure(s) has been set for the species or stock in question and has been established for a given area or has been allocated among the member nations, either by terms of a convention or voluntarily.

5. A non-member country conducts a commercial fishery which takes a substantial catch of a regulated or protected species or stock and the total catch by all countries exceeds the quota.

Finally, NOAA stated that it would inform the nations concerned of the possible application of the Pelly Amendment with the hope that they would become parties to the conservation measures adopted by the IWC.

In early 1976, the Department of State contacted non-member whaling nations, and suggested that they join the IWC, referring to the possible applications of the provisions of the Pelly Amendment. Further actions by the IWC are discussed below.

It was also decided internally not to apply the Pelly Amendment retroactively to nations outside the IWC. This would give countries a reasonable time in which to join the IWC.

1977

Evidence gathered concerning the 1976 fishing season indicated that the whaling activities of Peru and the Republic of Korea may have diminished the effectiveness of the IWC.

In addition, nationals of both countries continued to conduct whaling operations after repeated attempts to encourage these countries' membership in the IWC. At the 28th and 29th meetings of the IWC in 1976 and 1977, it was agreed to send resolutions to non-member countries which take significant numbers of whales, inviting them to join. The resolutions informed them of the quotas the IWC had established and requested that they refrain from or reduce their harvesting of whales in areas where the IWC has set quotas. In addition, the Department of State contacted the Governments of Chile, Peru and the Republic of Korea stressing continuing U.S. concern for their whaling operations and again urging that they join the IWC. Both Peru and the Republic of Korea had made statements that they are seriously considering joining the IWC and both sent observer delegations to IWC in June and December, 1977. In June, the Peruvian observer indicated the intention of his government to better regulate whaling activities. In December, the Peruvians reported that they had established quotas which will reduce the number of whales which will be taken. However, these quotas will cause the Peruvian catch to exceed the IWC limits.

In his Environmental Message of May 23rd, the President requested a report on any actions that diminish the effectiveness of the program of the IWC.

Secretary Juanita Kreps provided the President with the requested report on November 18th. In it she described the whaling activities of Peru and South Korea and other non-member nations and stated that documentation of whaling activities of these countries was in preparation and that possible actions were being considered.

1978

An effort to collect information on catches by non-member nations during the 1976/1977 season in the Antarctic has resulted in the knowledge that nationals of Chile took 76 sperm whales off their coast in 1977 where the IWC quota was zero sperm whales.

As stated by Acting Deputy Director Jack Gehringer at the May 3, 1978 hearing before the Senate Committee on Commerce, Science and Transportation, the National Marine Fisheries Service has recommended that the National Oceanic and Atmospheric Administration recommend to the Secretary of Commerce that she certify that the whaling activities of Chile, South Korea and Peru diminished the effectiveness of the conservation program of the IWC because the five appropriate criteria were met.

If NOAA concurs the following actions are expected:

(1) The Secretary must decide whether or not to certify that the whaling activities of the three nations meet the criteria.

(2) If she decides not to certify, no further action will be taken.

(3) If she decides to certify she will then send letters to Secretaries of State and Treasury, the Special Trade Representative and the Marine Mammal Commission to obtain their views on a draft letter to the President. The draft letter includes (a) her certification and (b) a recommendation that the President implement the embargo on fishery products unless these countries join the IWC.

- (4) The final letter going to the President will make a recommendation.
 (5) The President then has 60 days in which to make a decision on whether or not to implement the embargo.

Senator PACKWOOD. Let me ask you some further questions: Do you have any doubt that what South Korea and Peru are doing is outside the International Whaling Commission's regulations?

Mr. GEHRINGER. I have no doubt of that. This is in a program sense.

Senator PACKWOOD. That what they're doing violates regulations?

Mr. GEHRINGER. Yes, sir.

Senator PACKWOOD. Second, I think there's no doubt that we have veto power to impose the Pelly amendment, if we wish. Now what other additional problems can there be?

Mr. GEHRINGER. I am reminded by Mr. Jensen here. These are non-IWC members.

Senator PACKWOOD. I understand that.

Mr. GEHRINGER. We have concluded, however, that nonmember countries are liable, as member countries are. We have been attempting to set up a series of criteria that should be met for making this very serious determination. If I may, I'd like to comment on a few of these.

There must be an established conservation program—which there is. Membership in the organization is available to the concerned countries on reasonable terms. And this, we believe, is proper.

A quota of conservation measures for the species or stock in question is generally accepted, scientifically, to be appropriate to maintain, and this we're satisfied with.

A quota, or other conservation measure, has been set for the species in question and has been established for the given area, either by terms of a convention or voluntarily.

A nonmember country conducts commercial fishery which takes a substantial catch of a regulated or protected species or stock, and the total catch by which the country exceeds the quota.

Although the Pelly amendment is applicable to nations which are not members of the international organization, we decided it should not be applied retroactively to the nations outside IWC. This would give the countries involved reasonable time in which to take corrective action.

Senator PACKWOOD. How long ago was it we decided that we would apply the Pelly amendment to countries that are not members of the IWC?

Mr. GEHRINGER. Within the last 4 months, sir.

Senator PACKWOOD. And to the best of your knowledge, Peru and South Korea are still violating the IWC regulations?

Mr. GEHRINGER. Mr. Jensen reminds me, we do not have the information for what is happening, currently, in 1978.

Senator PACKWOOD. Excuse me? With what?

Mr. GEHRINGER. With the fishing activities, or the whaling activities.

Senator PACKWOOD. Of Korea and Peru?

Mr. GEHRINGER. Correct, at the present time.

Senator PACKWOOD. Are you getting it?

Mr. GEHRINGER. Yes.

Senator PACKWOOD. How soon will you expect to have it?

Mr. GEHRINGER. I'm looking to see whether I have a specific comment.

Senator PACKWOOD. Let me phrase it this way: You indicate that you have no doubt in your mind that in the past Peru and South Korea were violating the regulations. However, it wasn't until 4 months ago you decided to apply the Pelly amendment to countries that are not members, and you're not going to apply it retroactively.

So despite the fact that South Korea and Peru violated in the past, that will not be sufficient justification for applying it. So the question is: What are they doing, now? And the question I'm curious about is: How soon will we know what they're doing now?

Mr. GEHRINGER. The nationals of Chile, Peru, and the Republic of Korea have continued their whaling activities after repeated comments—and you're well aware of that background. Peru has made statements that they're seriously considering joining the IWC and sent observer delegations to the meetings in June and December of 1977.

And here's where we run into what I think is a diplomatic issue. In December, the Peruvians reported that they have established quotas and they will reduce the number of whales that will be taken. The issue of membership in the IWC is at question. We would not like to jeopardize their interest in joining IWC.

Senator PACKWOOD. I understand that, but would it make any difference in their actions? That would be determinative of whether they're members of the IWC or not?

Mr. GEHRINGER. Yes.

Senator PACKWOOD. How long do you think you will give them to come into conformance with the IWC regulations before you apply the Pelly amendment?

Mr. GEHRINGER. I am unable to tell you what would be a reasonable period of time for them to come into compliance.

Senator PACKWOOD. Who can?

Mr. GEHRINGER. My personal understanding is that we're talking about a whaling season, and evidence that they have—

Senator PACKWOOD. How long is the whaling season?

Mr. GEHRINGER. From the spring, into the late summer/early fall.

Senator PACKWOOD. So we're in the whaling season, now.

Mr. GEHRINGER. Yes.

Senator PACKWOOD. And you have a reasonably quick and accurate count, so you'll know by September or October whether or not this season they have or have not observed the regulations.

Mr. GEHRINGER. My understanding is that that information can be obtained at that time, and we could take action.

Senator PACKWOOD. At the end of that time, if they have not observed the regulations, would your recommendation be to apply the Pelly amendment?

Mr. GEHRINGER. The NOAA recommendation would go to the Secretary of Commerce. She would make the certification, and then it would go to the White House.

Senator PACKWOOD. Your recommendation would be to apply it?

Mr. GEHRINGER. Our recommendation? Yes, sir.

Senator PACKWOOD. The International Whaling Commission has just raised the quota on sperm whales to be killed, although the policy of this country has been to try to lower that. Do you know what data that is based on?

There's been criticism that this decision was based on a faulty study. Do you know what data they used, and whether or not in your estimation that criticism is justified?

Mr. GEHRINGER. I do know that there's criticism of that particular action. I do not personally have with me the data that would support that.

Senator PACKWOOD. Do you know what it is they relied on?

Mr. GEHRINGER. Excuse me?

Senator PACKWOOD. Do you know what it is they relied on? Who did the investigation? Whose data is it? Who did the study?

Mr. GEHRINGER. These were scientific studies by specific individuals of the countries involved which were considered by the scientific committee of IWC, but the specific individuals, I don't have those.

Senator PACKWOOD. Thank you.

I have no other questions. I appreciate it.

Next, we'll take Mr. Greenwalt.

STATEMENT OF LYNN A. GREENWALT, DIRECTOR, U.S. FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR, ACCOMPANIED BY DR. ROBERT BROWNELL, MARINE MAMMAL RESEARCH COORDINATOR

Mr. GREENWALT. Good morning, Mr. Chairman.

Senator PACKWOOD. Good morning.

Mr. GREENWALT. I am Lynn Greenwalt, Director of the U.S. Fish and Wildlife Service. I have with me this morning Dr. Robert Brownell, who is a research specialist in the Fish and Wildlife Service, specializing in the area of marine mammals.

Senator PACKWOOD. Dr. Brownell.

Dr. BROWNELL. Yes.

Mr. GREENWALT. Mr. Chairman, if I might, I'd like to follow the lead of my predecessor in the National Marine Fisheries Service and submit my testimony for the record.

Mr. GREENWALT. And with the permission of the Chairman, I would like to include, as I suggested in the formal testimony, a copy of the most recent annual report on the Marine Mammal Protection Act, for the use and consideration of the committee.

I will be pleased to answer whatever questions the Chairman may have.

Senator PACKWOOD. Your statement and the report¹ will be made part of the record.

[The statement follows:]

STATEMENT OF LYNN A. GREENWALT, DIRECTOR, U.S. FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR

Good morning, Mr. Chairman. I am Lynn Greenwalt, and as Director of the Fish and Wildlife Service, I appreciate the opportunity to appear before you today to discuss extending the authorization of the Marine Mammal Protection Act.

¹ See p. 57.

The Act provides for a Federal research and management responsibility over all marine mammals. The Secretary of Commerce has authority over all whales and porpoises and all pinnipeds except the walrus. The Secretary of the Interior has jurisdiction over all other ocean mammals, a list which includes polar bears, sea otters, marine otters, manatees and dugongs as well as walruses. I will address only the extension of the authorization for appropriations necessary for the Secretary of the Interior to carry out his responsibilities under the Act.

H.R. 10730 as it has been referred to this Committee, would extend the Department's authorization for research activities provided for in section 110(c) as follows: \$1.3 million for fiscal year 1979; \$1.5 million for fiscal year 1980; and \$2.1 million for fiscal year 1981. The authorization for our administrative functions, covered by section 114(b), would rise from \$650,000 in fiscal year 1979, to \$760,000 in fiscal year 1980, to \$876,000 in fiscal year 1981. The bill would also establish a line item authorization under section 109 to provide grant-in-aid to States with approved marine mammal management plans, and would authorize the Department \$400,000 for each of the three fiscal years for this purpose. S. 2831 does not include an authorization for the Department of the Interior.

The Administration requests that this legislation be amended to authorize the Secretary of the Interior, in fiscal year 1979, \$1 million for section 110(c) research activities and \$600,000 for administrative purposes, for total funding under the Act of \$1.6 million. This authorization level is consistent with the Administration's budget request for fiscal year 1979. We further recommend that the Secretary be authorized such sums as may be necessary for fiscal year 1980. This will give us the flexibility to expand the marine mammal protection program where necessary and appropriate within the constraints of the national budget.

Section 114(b) authorizes a general appropriation to the Secretary of the Interior to carry out his functions and responsibilities under the Marine Mammal Protection Act other than research. Funding under this section is used by the Service for administration, permit processing and law enforcement.

In the Fish and Wildlife Service, the Office of Wildlife Assistance is basically responsible for interagency coordination, public relations, program planning and budget preparation, and processing State requests to waive the moratorium and return management to the States.

As you know, Mr. Chairman, the Marine Mammal Protection Act provided a broad moratorium on the taking of marine mammals. The moratorium must be lifted if the taking of any marine mammal—other than for display, scientific research, or for native Alaskan handicraft, clothing and subsistence purposes—is contemplated. The waiver process requires certain specific procedures to be followed, among them the conduct of a hearing "on the record".

In 1976, the Service waived the moratorium for the Pacific walrus in Alaskan waters and returned its management to the State. Alaska had previously requested the waiver and return of management for nine species of marine mammals, including the polar bear, sea otter and walrus. The Fish and Wildlife Service and the National Marine Fisheries Service jointly prepared a draft environmental impact statement for all nine species, which was completed in February, 1976. Later that year public hearings on the waiver action were held in Alaska and Washington, D.C. under the direction of an administrative law judge. The final environmental impact statement is finished and has been filed with the Environmental Protection Agency. The Service anticipates an additional waiver request from California.

Even when the moratorium is waived and management of certain marine mammals is returned to a State, the Federal government retains responsibility to assure protection of the animals involved. State management programs must be reviewed each year, and the number of animals that may be taken is strictly controlled by conditions of the waiver. The States must prepare an annual population status report, and if a marine mammal species or population appears to be declining in numbers, the moratorium may be reimposed.

The Act requires that the Service submit an annual report to the Congress and to the public on the status of the population stocks of all species under Interior's jurisdiction. This report, prepared in the Office of Wildlife Assistance, describes the actions taken by the Service to protect marine mammals. I have a copy of our most recent report for submission to the record.

Under the act, permits may be issued for "scientific research and public display" of marine mammals. The Service has processed such permit applications since 1974. Of the 66 formal applications received to date, 4 were abandoned, 8 denied, 11 withdrawn, and 42 issued. Only one application is now pending.

Permit issuance is assigned to the Service's Wildlife Permit Office. This Office acts in a coordinating capacity, transmitting applications, comments, and copies of permit applications to appropriate agencies and the Federal Register. The Office

conducts a final review of an application in conjunction with other Service offices and also assesses the logic and value of the biological determinations. If a permit is to be issued, special conditions may be added as necessary to provide maximum protection for the marine mammal involved.

The Division of Law Enforcement is responsible for all Department of the Interior enforcement activities under the Marine Mammal Protection Act. At the beginning of fiscal year 1977, the Service had 91 pending investigations relating to marine mammals. In the rest of the fiscal year, an additional 300 investigations were opened and 292 closed, the majority of which were referred to the National Marine Fisheries Service.

In the lower 48 States, marine mammal enforcement activities mainly involve investigations of illegal importations of marine mammal parts. This requires monitoring importation activities at the eight designated ports-of-entry and at special ports-of-entry. Where suspected violations are found, more extensive investigations are conducted. Priority is given to commercial or large-scale violations that have the greatest impact on the resource.

Enforcement activities in Alaska include patrols to protect walruses and polar bears, inspections of taxidermy and shipments that deal in ivory or other marine mammal parts, and liaison with other Federal and State agencies. This effort is primarily intended to curb the illegal take of marine mammals and subsequent commercialization of such parts as hides and ivory.

Effective protection and management of marine mammals cannot be achieved without the knowledge attainable only through the research efforts addressed in section 110 of the act.

Since 1972, the Fish and Wildlife Service has concentrated its research on the marine mammals that occur off the coasts of the United States, although some work has been done with foreign populations. Projects have focused on the assessment of population levels and the examination of certain basic biological characteristics of the species under our jurisdiction.

We are expanding these research efforts, particularly to determine the relationship of marine mammals to their ecosystems and to explore the interaction between these animals and other communities of marine species. Continued research along these lines will permit a sound understanding of the optimum sustainable population for each species. These studies will also produce modeling approaches that will enable us to predict the consequences of habitat changes on ocean mammals.

The Fish and Wildlife Service's marine mammal research activity is administered through the National Fish and Wildlife Laboratory located in Washington, D.C. In addition to the research coordination and administration provided by the National Fish and Wildlife Laboratory, we have field research stations located in Anchorage, Alaska, Gainesville, Florida, and Piedras Blancas, California.

Most of our research efforts are currently done within the Service. However, we also utilize contracts and cooperative agreements with other agencies and organizations. Such agreements or contracts are designed to enhance research activities and to help meet information needs.

Our polar bear research activities are quite extensive. Present research is on bear distribution and general movements as well as den location and ecology. If the satellite tracking technology now being tested to monitor the location and movement of a polar bear proves successful, it will greatly reduce the need for costly aerial surveys of tagged animals in vast Arctic regions. We are also working to determine the reproductive biology of the polar bear to measure the effects of hunting, threats to habitat and proposed management plans.

In the future, there will be a continuing need to maintain current population estimates of these bears. We will also need to study environmental contaminants to monitor the health of the ecosystems in which polar bears exist. If management of this species is returned to Alaska, Fish and Wildlife Service involvement in status surveys and other studies will continue at a somewhat lower level. The Service will also remain active in the international arena, conducting cooperative polar bear studies with the Soviet Union and implementing U.S. responsibilities under the five-nation Agreement on the Conservation of Polar Bears.

With regard to sea otters, the Service has been studying two distinct populations, those in California and those in Alaska. We are increasing our research effort in California to determine community relationships in this near-shore ecosystem that involve the shellfish/sea otter dynamics. The California studies are concentrating on food habits and studies of the mother-pup relationship with regard to pup development and dispersal. Continuing community studies on the Alaskan animals will help determine major food species, birth and mortality rates and causes of death.

The Sea Otter Working Group, composed of representatives of the Fish and Wildlife Service, the Bureau of Land Management and the States of California and Alaska, has been established. Their first responsibility is the coordination of studies on the recovery and rehabilitation of sea otters injured in oil spills.

The endangered marine otter of Chile and Peru, a relative of the river otter, has recently been designated as a marine mammal in order to afford the species additional protection under the Marine Mammal Protection Act. Survey work to determine the population status of this animal is planned.

The Marine Mammal Protection Act assigned responsibility for the Hawaiian monk seal, another endangered species, to the National Marine Fisheries Service. The Fish and Wildlife Service has become involved, however, because these animals occur mainly on the islands of the Hawaiian Islands National Wildlife Refuge and because our biologists had amassed considerable management and research experience with monk seals before the Act was passed. Joint studies with the National Marine Fisheries Service are aimed at determining daily and seasonal seal activity and at estimating numbers of pups produced and the age of maturity, as well as the abundance, distribution, and trends in the population.

Walrus studies involve determining populations status, analyzing community interactions, and assessing the damage caused by environmental pollutants to the species' habitat. When management of the Pacific walrus was returned to Alaska, plans for future Service research were reduced accordingly. However, we are working very closely with the Alaska Department of Fish and Game on their research program. We will continue to be responsible for some aspects of walrus research, particularly with regard to complex community interactions. We will continue studies to determine daily and seasonal movements of the walrus which are needed to assess population status.

The dugong occurs in the Pacific and Indian Oceans. The Service had been increasingly involved with delineating its distribution and determining its population status. Further work is needed to refine and supplement the limited data now available and to identify factors related to population trends. Additional studies have begun in areas where development might lead to adverse impact on dugongs, particularly in the Pacific Trust Territories.

Research on manatees has been largely confined to the West Indian manatee in Florida. Reporting procedures have been developed to determine the distribution of these animals and to monitor their population status. This system has alerted us to an abnormally high mortality rate among these animals since 1976. We believe that unusually cold winters, collisions with boats and habitat destruction have all contributed to this situation. I would like to take a moment to describe our manatee protection initiatives, as well as the manatee research program.

Whenever possible, the Service salvages dead manatees in Florida to determine the cause of death and to obtain biological information such as reproductive condition, parasites, diseases, and environmental pollutant residues. We are refining techniques to tag manatees to facilitate studies of movement and distribution. Other studies will help determine the role of the manatee in the aquatic ecosystem, as well as certain basic sensory and physiological aspects of manatees which may clarify the environmental requirements of the species. Research is also underway, assisted by the Florida Power and Light Company, on the influence of warm water effluents from powerplants on these animals.

The Service's National Fish and Wildlife Laboratory, in cosponsorship, with Sea World of Florida, the Florida Department of Natural Resources and the Florida Audubon Society, conducted a workshop in March 1978, to review our entire West Indian manatee research program. The workshop proceedings and recommendations will be issued early this summer.

In addition to research personnel, nineteen Fish and Wildlife Service employees, including law enforcement agents and endangered species specialists, are now directly involved in Florida manatee protection and conservation. Working closely with other Federal agencies, Florida State officials and private conservation organizations, they are using the protective provisions of the Endangered Species Act and the Marine Mammal Protection Act to develop a coordinated approach to the manatee recovery program.

The manatee is designated as an endangered species and all violations of section 9 of the Endangered Species Act or section 102 of the Marine Mammal Protection Act that are detected by Service agents or Federally-deputized State officers are being fully investigated. Furthermore, the State of Florida has authority, on the basis of an endangered species cooperative agreement with the Fish and Wildlife Service, to issue regulations to protect the manatee. We are presently exploring with them the possibility of measures to close or limit human access to manatee winter congregating sites.

Critical habitat for Florida manatees, determined pursuant to section 7 of the Endangered Species Act, mandates the areas in which any proposed Federal action must be reviewed in terms of its possible impact on these animals. Section 7 consultations have accordingly been conducted with various Federal agencies, including the Army Corps of Engineers.

Manatees are frequently the victims of motorboat propellers. The Service has prepared proposed regulations for the Merritt Island Refuge in Florida to restrict boat speeds in areas where manatees are known to concentrate. These regulations are currently being reviewed within the Department and will serve as a prototype for regulations in other areas. Warning signs have been posted at the entrances to additional refuges and a cooperative public education drive to increase boater awareness and to slow boat speeds in all manatee-inhabited regions is being implemented.

The international marine mammal program is an integral part of the Service's overall effort to achieve the objectives of the Marine Mammal Protection Act. For example, staff members of the National Fish and Wildlife Laboratory have worked with their counterparts in Mexico to institute programs examining manatee status, distribution, conditions of habitat and behavior. Similar cooperative research plans are being developed with Brazil and Venezuela.

Mr. Chairman, as you can see, our activities under the act are varied and intensive. However, the present authorization expires at the end of the 1978 fiscal year. I urge the Committee to give timely consideration to our proposal.

This concludes my prepared statement, Mr. Chairman. I will be pleased to answer any questions you may have.

Senator PACKWOOD. You may be aware that I was hoping to question the State Department today—they've indicated they did not receive notice in time to come here—regarding the Canadian harp seal. Can you comment on what, if anything, has been done since the congressional passage over a year ago of a resolution calling the hunt a "barbarous practice"?

Mr. GREENWALT. Mr. Chairman, my own understanding of the events and occurrences is very limited. As I'm sure you understand, the Fish and Wildlife Service is not administratively involved because the Marine Mammal Protection Act placed harp seals under the jurisdiction of the Department of Commerce.

Senator PACKWOOD. I realize that. That's why I'm not trying to hold you responsible, because I'd rather have the State Department here.

Mr. GREENWALT. I cannot speak with any authority beyond what I have read in publications and the newspapers, and I'm sorry I can't offer anything more definitive than that.

Senator PACKWOOD. It's not your fault.

Mr. GREENWALT. Thank you, sir.

Senator PACKWOOD. Tell me about the manatee. In your statement, you indicate that you're proposing to restrict the boat speeds around Merritt Island, and I'm curious. As I understand it, the manatees may be down to around 1,000. Is your action going to be enough to protect them?

Mr. GREENWALT. I might say, Mr. Chairman, that the fundamental problem, biologically, is that the manatees—particularly in recent years—have been attracted to the warmer water especially associated with powerplants north of the area in which they ordinarily spend the winter. Then when there is a significant or sizable drop in temperature as has been the case in the last couple of years, or when the powerplant is shutdown for some reason the manatees suffer.

One of the things that we are attempting to do—and it's fairly formidable undertaking—is a general control of boating traffic and

speeds throughout the areas where these creatures congregate. This is a break with tradition, in the sense that controlling boats speeds—particularly commercial boat traffic—is a thing that's never before been contemplated with an real seriousness.

However, it is now. We are working not only with the State of Florida, but with the Corps of Engineers and the Coast Guard, to develop regulations that can be enforced on the provisions of the Endangered Species Act in particular, to reduce the boat-speed problem.

We have also established critical habitat designations under the Endangered Species Act for the manatee in Florida which will be useful in alerting the people to the most crucial areas of the manatee's range.

In brief, Mr. Chairman, I think that our approach to this problem will be very useful in protecting the manatee from at least one threat; that is, the contact with boats.

The related difficulty of habitat destruction is a thing that we have to attack in another fashion. The unusual occurrence of manatees concentrating in areas where they did not, in former times, congregate is another problem.

Senator PACKWOOD. What can you do about that?

Mr. GREENWALT. I think there are two things that can be done about the situation.

One, of course, is to protect the manatees while they are there, as I've described.

Other alternatives are limited in a practical sense because we cannot in fact simply shut off the powerplant to prevent the manatee from remaining outside their seasonal range. That lacks some pragmatic realism, I think, although it may be possible—and I'll say this in a conjectural sense—to work with the power companies to develop regimes that may diminish the attraction of these warm-water pools at a time when they might be most seductive to the manatee. We are already working very closely with the Florida Power and Light Co. on preliminary research to see what might be done in this connection.

It is a curious set of circumstances in which the manatee finds precisely what it wants, and at the same time it is provided by an activity of man that is absolutely necessary to man's well-being—the production of power. It's a contretemps that is difficult to resolve, I think.

Senator PACKWOOD. Are you optimistic?

Mr. GREENWALT. I am optimistic that we can secure the fullest possible cooperation from the power companies, and that we can protect manatees from man's activities in those areas. I am not optimistic about being able absolutely to protect the manatee from a sudden drop in temperature in those areas, and that's a very troublesome thing.

Senator PACKWOOD. That's beyond your power.

Mr. GREENWALT. Basically, yes.

Senator PACKWOOD. Ted?

Senator STEVENS. Thank you, Mr. Chairman.

Mr. GREENWALT. I've read your statement. Can you tell us how many people do you have in Alaska that are assigned to your Fish and Wildlife Service?

Mr. GREENWALT. To the service as a whole, Mr. Stevens, I think there are somewhere on the order of 175 people.

Senator STEVENS. How many of them are assigned to marine mammal enforcement or protection activities?

Mr. GREENWALT. I think it's proper to point out, Mr. Stevens, that no one person is assigned exclusively to this, to the exclusion of all other activities, as I am sure you understand. Fish and Wildlife personnel in Alaska, and particularly the law enforcement people, do a variety of things, including marine mammal protection activities.

Senator STEVENS. How many people do you have—field people—that could be involved, as opposed to secretaries and office policy people, et cetera?

Mr. GREENWALT. Senator Stevens, I'm not sure, specifically. I would be glad to break this down for the record if you would like, but if I offer a statistic at this time it would be largely a guess and I would rather not do that.

Senator STEVENS. Well, I would like to have it for the record, if I could.

Mr. GREENWALT. We will provide it, sir.

[The following information was subsequently received for the record:]

There are currently seven Fish and Wildlife Service employees assigned to marine mammal enforcement and protection activities in Alaska.

Senator STEVENS. I am under the impression that the Marine Mammal Protection Act gave your agency jurisdiction over a great many activities in Alaska. And as a consequence, our State legislature has said: Since you've got the responsibility, you—the Federal Government—can put up the money to carry out that responsibility. And as a matter of fact, you haven't requested funds for increased personnel.

So that the net effect of the Marine Mammal Protection Act is that the marine mammals have less protection in Alaska now than before we passed it. That's my impression.

Mr. GREENWALT. I think, Mr. Stevens, that that's a perfectly logical one. Further, based on my understanding of the history of this situation, it is not necessarily in error.

Senator STEVENS. You have completed the efforts, now, to return to Alaska the jurisdiction over walruses?

Mr. GREENWALT. Yes, sir. Alaska does have jurisdiction over walruses.

Senator STEVENS. Was that challenged in court?

Mr. GREENWALT. Yes, sir.

Senator STEVENS. What is the status of that?

Mr. GREENWALT. I'm not sure where that challenge presently stands. My recollection is that it was a challenge pressed by the Natives because of the State's decision that the State regulations, applicable generally, would also apply to the Natives.

I'm not sure what the status of that litigation is.

Senator STEVENS. Could you also give us a short report of that for the record?

Mr. GREENWALT. Certainly, sir.

[The following information was subsequently received for the record:]

PEOPLE OF TOGIAK, ET AL., V. U.S., CIVIL NO. 77-0246 (D.D.C., FILED FEBRUARY 11, 1977)

This lawsuit challenges the Director's authority to return management of walrus to the State of Alaska with respect to Native taking. The plaintiffs allege that the native exemption in section 101(b) of the Marine Mammal Protection Act exempts Native subsistence and handicraft taking from any and all regulation by either the State or the Federal government.

The government has filed a motion to dismiss and we are presently awaiting the scheduling of oral argument by the court. Our defense is based on the theory that Native subsistence and handicraft taking has always been, and still is, subject to State regulation, notwithstanding the Marine Mammal Protection Act. Our brief in support of the motion to dismiss contains a copy of an eleven page February 15, 1973, letter to Philip M. Roedel, Director, National Marine Fisheries Service, from Senator Stevens which states that section 101(b) of the Marine Mammal Protection Act "is not intended to mean that present regulations of the State of Alaska * * * may not be continued. The legislative history is clear that Congress intended the present level of native taking to continue. All controls were not to be lifted."

Senator STEVENS. Are you in the process of turning over to Alaska, or any other State, jurisdiction over any other ocean mammal?

Mr. GREENWALT. We are in the process of making determinations about waiving the moratorium and return to State management for all mammals in Alaska covered by the Marine Mammal Protection Act. This process is well underway, and the Director of the National Marine Fisheries Service and I will be making the final decisions within the next several months on this very complicated issue.

Senator STEVENS. The net result of that would be to return to my State the jurisdiction over marine mammals, but the regulations would be subject to annual review by your agency. Is that right?

Mr. GREENWALT. That is correct, sir. This is required by section 109 of the act.

Senator STEVENS. Will there be any Federal funding for any of the activities to be conducted by my State?

Mr. GREENWALT. As a result of the return of management? This depends entirely, Senator Stevens, on whether or not there is an authorization to allow for this sort of thing, plus whether or not the administration will propose in its future budgets funding for this purpose.

Senator STEVENS. It appears to me that the net result of this will be that the Federal Government will have usurped some State powers by passing a moratorium act and then turning back to the State the jurisdiction over the mammals, and we will have Federal control over the activities of the State as a result of this.

I think we're getting into a very complicated area of Federal-State relationships. As you recall, at the time we passed the Marine Mammal Act, we tried to preserve the jurisdiction of the State. That was defeated.

Now it appears that the Federal Government wants to turn back to the State the jurisdiction, the high-cost, day-to-day routine of enforcement, control, and protection activities, primarily for budget reasons, but also for policy reasons to retain the right to direct the State and tell the State what it must do in this area.

There seems to be not only a basic unfairness but also a basic constitutional question of whether that can be done.

Mr. GREENWALT. I agree, Senator Stevens, that this is a very complex and controversial issue.

Senator STEVENS. I would hope we would be able to go into that in depth sometime. I still believe that the net result will protect ocean mammals off the coast of Alaska better than the Federal Government will, because you'll never be able to get the support or the financial commitments that are necessary to really provide the protection, and our people will put up the money to do it. We'll put up the money to do it because our long-term history and future history will be associated with the oceans, and we have more at stake than anyone else to ensuring the continued viability of those ocean mammal species, to protect the total food chain of the area.

Is there any opposition that you know of to what you propose to do? I'm not opposed to it; I just think it's going to be a strange Federal-State relationship we're going to have to monitor very closely.

Mr. GREENWALT. In terms of the waiver of the moratorium? I'm unaware, at present, of any real opposition, Mr. Chairman I have not read the record of the hearings before the administrative law judge—although as I say, I'm unaware of any overt or obvious opposition to the proposal.

Senator STEVENS. This is a reauthorization. Does this bill extend the moratorium period?

Mr. GREENWALT. No, sir, it does not affect the moratorium period at all.

Senator STEVENS. Is the level of appropriations that you've requested in this bill the same as the existing level of appropriations?

Mr. GREENWALT. It's essentially the same, yes, sir. This administration recommends—as my statement indicated—an amendment to the bill referred from the House to limit the total authorization to the Secretary of the Interior to \$1.6 million for the fiscal year 1979.

Senator STEVENS. What's the current level?

Mr. GREENWALT. The authorization for fiscal year 1978 for the Department of the Interior is \$1.2 million for research and \$850,000 for administrative costs.

Senator STEVENS. What's been the appropriations under that authorization?

Mr. GREENWALT. I think the appropriations were as authorized, in the sense that they were as much as authorized through fiscal year 1977. In fiscal year 1978, Congress appropriated a total of \$1.5 million for our activities under the act.

Senator STEVENS. The effect of the administration's recommendation is to reduce that level of authorization?

Mr. GREENWALT. The administration's recommendation is for an authorization level of \$1.6 million in total for the Fish and Wildlife Service.

Senator STEVENS. Do you know what the original authorization total level was?

Mr. GREENWALT. No, sir, I don't recall what the original bill's total authorization was.

Senator STEVENS. That was 1972?

Mr. GREENWALT. That's right, sir.

Senator STEVENS. We're now talking about authorizations for 1979 through 1981?

Mr. GREENWALT. That's right. The administration, as I say, recommends \$1.6 million total for 1979, and an authorization of such sums as may be necessary in fiscal year 1980.

Senator STEVENS. That's the same thing they did to the other bill—the FCMA—the 200-mile conservation zone bill. I don't understand why they want to limit it in 1979 and have it unlimited 1980. Can you tell me why that would be the situation?

Mr. GREENWALT. I believe the administration would like to provide as much flexibility in 1980 as possible. I am unfamiliar with what the future in fiscal year 1980 may be for the Federal budget generally, let alone for the Fish and Wildlife Service. I suggest it may not be an absolutely optimistic one, however.

Senator STEVENS. If we just compound an inflation factor of 5 percent since 1972, the authorization ought to be doubled.

Mr. GREENWALT. Rather close to that, yes, sir; the mathematics indicate that.

Senator STEVENS. Mr. Chairman, I really cannot support any reduction. As a matter of fact, I think the House has been very much conservative in its approach as far as this is concerned, and I really feel that if the Federal Government is going to take over the State jurisdiction of these mammals—not only for my State but for the rest of the States—that the Federal Government is going to have to face up to the fact that it costs money to provide protection, and provide scientific research to monitor the status of these species.

We're just going to have to call the hand of the Federal Government in this regard, and insist that they at least equal what the States would put up in this area.

So I intend to offer some amendments when the time comes, Mr. Chairman, to raise these amounts. I'm not critical of Mr. Greenwalt at all; I'm sure that if they had the money they would be doing a better job, but there has not been sufficient emphasis in terms of financial support for the activities since the Federal Government took over the Marine Mammal Protection Act.

I compliment you on what you are doing in the polar bear area; your statement mentioned that. My understanding is that most of the funding for the polar bear is coming from my State. Is that right?

Mr. GREENWALT. The State is uninvolved in some activities concerning the polar bear.

Senator STEVENS. It leaves the State in the position of putting up the money to actually conduct Federal activities, because no one else is doing it.

Mr. CHAIRMAN, I don't have any other questions. I do commend Mr. Greenwalt. I think that the Fish and Wildlife Service has done an excellent job, under the circumstances of the confused jurisdictional pattern as far as these marine mammals are concerned. I'm particularly concerned that we continue the Federal activity, particularly with regard—I do have one other question: I was informed last night—as a matter of fact, my wife is on her way up there now—that the Eskimos have gotten their third whale at Barrow, and that's the limit.

Senator PACKWOOD. Their third what?

Senator STEVENS. Whale. They were limited to three whales at Point Barrow this year.

And I've been asked whether or not you have people that are going to continue to count and monitor the bowhead to find out how many bowheads there are there, and what the total situation is.

I know the State is, but are you monitoring that with your people?

Mr. GREENWALT. The Fish and Wildlife Service is not directly involved in this. I am informed by Dr. Brownell, who is very close to the situation, that the National Marine Fishery Service will retain people there for that purpose.

Senator STEVENS. I thought you were involved in it, too. You're not involved with it?

Mr. GREENWALT. We have been involved in certain technical aspects—Dr. Brownell in particular. However, the Marine Mammal Protection Act assigned responsibility for whales to the Department of Commerce.

I understand the National Marine Fisheries Service will monitor the situation.

Senator STEVENS. I'm sorry, I went to the other room, Mr. Chairman. I thought the hearing was in 114. I guess I missed the National Marine Fishery Service people.

Senator PACKWOOD. They were here. They put their statement in the record. I asked them a few questions, and they were gone.

Mr. Jensen is still here, however.

Senator STEVENS. Could I ask that the staff inquire and put in the record whether they intend to continue to monitor the situation as far as the numbers of the bowheads that are going through that Bering Sea and into the Arctic Ocean this year, when we'll get a report on what the status of that species is, as far as this year is concerned?

It's very important, if the IWC goes back into a meeting this June, and we have a commitment, I understand, that accurate counting would take place. There's some indication from Barrow that now that the whales have been taken, that they were just monitoring to make certain that the Eskimos didn't take more than the whales that the limitation provided.

I think the commitment we had understood was that we would continue after the hunt was over to monitor the status of that species and give us a report on their count of how many bowheads there were in the migration this year.

Could I ask that that be done?

Senator PACKWOOD. I'm sure they'll cooperate.

Senator STEVENS. Thank you, Mr. Chairman.

Thank you, Mr. Greenwalt.

[The following information was subsequently received for the record:]

Question 1. Research is authorized under both section 110 and 114. Section 110 allows research to be contracted out, while section 114 involves primarily in-house research. Why is it that NOAA does most of its research under section 114? Is the agency planning to continue to do so, or will section 110 be utilized?

Answer. Since passage of the Act, NMFS has utilized the appropriations under section 114 of the Act, since by experience, we found we could adequately fund for

all needed research under this section. Additional funding under section 110 was at the time unnecessary. Research contracts granted under section 114 were components of a larger research program goal and by funding under section 114 we believe that greater control over program objectives is possible than would be possible if separate contracts were granted under section 110. Research that was not a part of specific program was at the time being adequately handled under Title III appropriations (the Marine Mammal Commission authorization), NMFS is currently evaluating program funding under section 110 and may find it necessary to request funding under this section in future budget requests.

Question 2. The National Marine Fisheries Service is currently monitoring the numbers of bowhead whales passing through the Bering Sea off the coast of Alaska, as well as carrying out enforcement duties with regard to the Eskimo subsistence hunt. Once the hunt has taken the quota permitted under the IWC determination, will the National Marine Fisheries Service continue to carry on research in the area to determine the level of the Bowhead whale population, or will the Service be in place only for the purpose of enforcement?

Answer. Yes. The National Marine Fisheries Service research program in bowhead whales will continue through June and July of this year and then recommence in the fall. The bowhead whale research program will continue at least through fiscal year 1980.

Senator PACKWOOD. Mr. Greenwalt, I'm curious on reading the Marine Mammal Protection Act there's a duty on the administrative agency to see that the native take is not accomplished in a wasteful manner.

You're aware of the complaints that we've had about the handling of the walruses. Apparently, even the Soviet Union objected to headless walruses being washed up on their shores.

Mr. GREENWALT. Yes.

Senator PACKWOOD. Do you regard this as a taking that is done in a wasteful manner?

Mr. GREENWALT. Yes I do. Obviously, it's designed to take for the walrus tusks and has been alleged to have occurred for a very long time. Certainly it is a wasteful use of these resources.

I think the fundamental problem is trying to ascertain who is in fact doing this.

Senator PACKWOOD. You've been unable to determine who has been doing the taking?

Mr. GREENWALT. So far as I know, there has been great difficulty in determining the culprits. It's not an impossible task but it's very difficult.

Senator PACKWOOD. Why?

Mr. GREENWALT. One of the problems, as I'm sure you understand, is that one must, in order to prosecute, find somebody actually doing it and be able to prove their involvement in this.

I am rather confident that our people have pretty good ideas of who is doing the taking, or what groups of people are doing it. Whether or not it can be demonstrated to the degree that we could prosecute, I'm not sure.

Senator STEVENS. Let me assure the chairman that now that the State has taken back jurisdiction—that's one of the reasons we wanted jurisdiction back. We have reason to believe that they weren't all American nationals who were involved in that hunt.

Mr. GREENWALT. I suspect that that's quite true.

Senator STEVENS. And we have the people in these areas who are—numbers of people who are involved in enforcement on the Alaska scene, a great many more than are involved in the enforcement on the Federal level. I think that practice will come to halt and we will have some proveable cases if it doesn't.

Mr. GREENWALT. I agree. And I echo Mr. Stevens' comment, that so far as I know there is no absolute certainty that the practice is limited to U.S. citizens.

Senator PACKWOOD. I have no other questions.

Ted?

Senator STEVENS. Thank you. I have no further questions.

Mr. GREENWALT. Thank you, sir, very much.

Senator PACKWOOD. Next we'll take Mr. Twiss.

Go right ahead.

STATEMENT OF JOHN R. TWISS, JR., EXECUTIVE DIRECTOR, MARINE MAMMAL COMMISSION, ACCOMPANIED BY ROBERT EISENBUD, GENERAL COUNSEL; AND ROBERT J. HOFMAN, SCIENTIFIC PROGRAM DIRECTOR

Mr. TWISS. Good morning, Mr. Chairman. My name is John Twiss. On my right is Robert Eisenbud, General Counsel. On my left is Robert Hofman, Scientific Program Director for the Commission.

With your permission, I would like to insert my statement in the record and answer questions that you and Mr. Stevens may have. [The statement follows:]

STATEMENT OF JOHN P. TWISS, JR., EXECUTIVE DIRECTOR, MARINE MAMMAL COMMISSION

Good afternoon, Mr. Chairman and members of the committee. My name is John Twiss. Accompanying me are Mr. Robert Eisenbud, General Counsel, and Dr. Robert J. Hofman, Scientific Program Director.

To provide you a general overview of Commission activities, I would like to briefly summarize recent accomplishments.

BACKGROUND

In fulfilling its responsibilities under the Marine Mammal Protection Act, the Commission has, in 1977:

- Made recommendations, participated in meetings, and contributed to domestic and international research and protection efforts to resolve the bowhead whale problem;

- Participated in administrative and congressional hearings on the tuna-porpoise problem;

- Recommended that the National Marine Fisheries Service and National Science Foundation develop alternatives to fishing on porpoise;

- Helped to develop and entered into an agreement with the National Marine Fisheries Service and the U.S. Tuna Foundation for utilization of a dedicated research vessel, to be provided by the tuna industry, for research on the tuna-porpoise problem;

- Supported more than \$500,000 in research and studies to provide information needed to protect and conserve marine mammals;

- Conducted and/or supported workshops on tuna-porpoise research and on design and analysis of the aerial survey of porpoise populations, on humpback whales in Hawaii, on marine mammal strandings, historical whaling records, and on marine mammal-fishery interactions;

- Reviewed marine mammal research activities of Federal agencies as a step in developing a five-year national marine mammal research plan;

- Recommended the designation of the bowhead whale as "depleted", the Caribbean monk seal as "endangered", the West African manatee as "depleted", and made various recommendations to protect the endangered Hawaiian monk seal and West Indian manatee;

- Recommended actions concerning cooperative marine mammal research and conservation agreements with Mexico;

- Commented on actions taken or proposed relative to Alaska's request to waive the moratorium on nine marine mammal species, Alaska's first annual report on walrus management, and California's proposed program of sea otter research;

Recommended that certain actions be taken by Federal agencies to develop an effective enforcement system under the Marine Mammal Protection Act;

Commented on coastal zone management plans for California and the Virgin Islands; and commented on proposals to lease and extract oil from areas of the outer continental shelf;

Made recommendations and commented on standards for marine mammal maintenance and handling proposed by the Department of Agriculture; Recommended actions to the Secretaries of Commerce and Interior on 54 permit applications to take marine mammals for scientific research and/or public display; and

Recommended actions on permit applications by foreign fishermen to take marine mammals incidentally during commercial fishing within 200 miles of U.S. coasts.

These and other activities are described in the Commission's annual report for 1977.

THE OBJECTIVES FOR FISCAL YEAR 1979

Certain of our objectives for fiscal year 1979, 1980, and 1981 reflect continuing responsibilities. These are:

To continue to support and make known the results of the research and studies program in which problems relevant to marine mammal conservation and protection are addressed;

To coordinate national marine mammal research and study efforts to ensure high yields and prevent wasteful, duplicative research;

To make recommendations to the Secretaries of Commerce and the Interior regarding the issuance of permits for the taking of marine mammals;

To make recommendations to the Secretaries of Commerce and the Interior regarding waivers of the moratorium, the resumption of state management, and other matters; and

To continue to participate in and make recommendations on the role of the United States in international negotiations affecting the welfare of marine mammals.

We are now beginning to see the fruits of our labors of the last several years in the international area. Two cases in point are worth mentioning as examples of the type of agreement that we shall strive for in other areas of marine mammal conservation in the future.

The first of these relates to Antarctica. Since 1975, the Commission has viewed the negotiation of a conservation convention for marine life in the ocean surrounding Antarctica to be of great importance. I am pleased to say that we believe that a convention may be concluded in fiscal year 1979. To this end, the Commission, its committee, the staff, and Commission contractors will continue to devote substantial effort to this problem.

We also hope to see another international matter of importance, a bilateral agreement with Mexico, concluded. As part of the agreement, the protection of gray whales, porpoises associated with the yellowfin tuna fishery, manatees, and other species will be of primary importance and addressed in detail. The Commission will continue to work to ensure that a good agreement is concluded. In the future, such an agreement could well be the model for other bilateral and multilateral agreements on marine mammal conservation. For example, these might cover Canada or, on a wider basis, cover the North Atlantic and/or North Pacific.

The decision of the Directors of the National Marine Fisheries Service and the Fish and Wildlife Service, with reference to the return of management of certain marine mammals to the State of Alaska, will be made in the near future. In hopes of constructively contributing to sound State management practices, the Commission and its committee of scientific advisors will join with the State and the services to foster and conduct a careful review of data and research needs related to marine mammal management in the State. As part of this plan, we met with State representatives in December 1977 to plan a State/Commission workshop to provide methodology and review data on the species for which management has been sought. The workshop will take place in the fall of 1978. In future years, we expect that similar demands will be placed upon the Commission as other States seek and receive return of management.

With reference to the tuna-porpoise problem, the Commission will continue to provide support for the program manager directing activities of the dedicated vessel, and will also continue its involvement with aerial censusing activities and the analysis of all data relating to the status of affected porpoise populations. The Commission is pleased with recent progress including the availability of an inquiry sponsored dedicated vessel, the active interest and high level of support of the

National Science Foundation, and a continued strong program within the National Marine Fisheries Service.

While the tuna-porpoise problem appears to be moving towards resolution, we are concerned about bowhead whale problems. Further critical work must also be done on the other great whales. We are, for example, funding an analysis of the North Pacific sperm whale data that caused such concern at the IWC meetings in June and December 1977. Intensive critical scientific studies of this sort are urgently needed to support whale protection efforts. In fiscal year 1979 and probably fiscal year 1980, the Commission will continue to use its resources to coordinate a strong attack on these problems.

Another emerging problem is that which relates to the interactions between marine mammals and certain fisheries. The Commission will continue to devote substantial effort to the development of workshops to evaluate and assess marine mammal-fisheries interactions. The Commission has already held a workshop on this subject with reference to problems in Oregon, Washington, and Alaska. This is expected to lead to recommendations to the agencies to carry out studies with the States on critical local problems. Further regional workshops are planned.

The Commission will continue to support urgently needed studies—for which no prediction can be made—such as the review and analysis of the proposed Bering Sea clam fishery this past year, the *Argo Merchant* oil spill in late 1976 and early 1977, and various mass strandings.

The strength of the Commission has come, in no small measure, from its Committee of Scientific Advisors on Marine Mammals. The committee will continue to play a critical role in the planning and implementation of special studies for the Commission. The Commission will ask the committee to place special emphasis upon the Antarctica ecosystem, the bowhead whale problem, reviews of certain scientific aspects of the tuna-porpoise problem, long-range research planning, analysis of certain data related to Alaskan marine mammal populations, and the preparation of supportive scientific material for international negotiations.

No attempt will be made to support all appropriate marine mammal research with Commission funds. Instead, the Commission will continue to emphasize its coordinating role by fostering the development of needed domestic and international marine mammal research programs.

CONCLUSION

The Commission has been instrumental in: Developing marine mammal management policies; developing biologically and legally constructive approaches to requests for waivers of the moratorium; carefully directing support of research to further conserve marine mammals; developing strategies and a body of information on which to base international negotiations related to marine mammal conservation; guiding agencies in addressing critical issues; attempting to insure that agencies effectively enforce the provisions of the act; and providing an overview of activities being conducted pursuant to the act. As marine mammal issues become more complex and the pressures upon marine mammal populations become more intense, the Marine Mammal Commission's advice will continue to be important.

In addition to the \$800,000 herein requested for fiscal year 1979 for the Commission to fulfill its obligations under the Marine Mammal Protection Act of 1972, the administration also requests that such sums as may be necessary be authorized for fiscal year 1980.

Senator PACKWOOD. We've started a good trend this morning.

We talked earlier this morning about some countries that are not now members of the International Whaling Commission becoming certified. Which countries do you think those are going to be, and what benefits do you hope will be derived from the additional membership.

Mr. TWISS. If I could, in answering that, revert to some of the earlier questions, I think I may be able to shed some additional light on those, also.

I think that Mr. Gehringer understandably, since he was not involved in International Whaling Commission activities, was mistaken in citing the date of the determination made by Dr. White on the applicability of the Pelly amendment to nonmembers. The determination was made in 1976, based on the recommendation

from the Commission that nonmember countries be considered as subject to the Pelly amendment. So the history is actually quite long in that regard.

Senator PACKWOOD. Say that again.

Mr. TWISS. If I understood the question that was raised earlier, it was: When was a determination made that nonmember countries might be subject to provisions of the Pelly amendment, and the determination was originally made—Mr. Gehringer was not involved with the IWC activities at that time—by Dr. White in 1976. The chairman of the Commission wrote him in 1975 suggesting that the activities of certain countries be examined in light of their whaling activities.

I'd be very happy to provide that letter for the record.

Senator PACKWOOD. Let me pursue that for just a moment.

Are you saying we made the decision several years ago to apply the Pelly amendment to nonmember countries?

Mr. TWISS. In 1976, in response to our original letter in 1975, Dr. White offered the opinion that the provisions of the Pelly amendment of the Fishermen's Protective Act could in fact be applied to nonmember countries.

Senator PACKWOOD. OK, could be applied—because Mr. Gehringer said it was only 4 months they made a decision to apply it.

Mr. TWISS. Yes; the decision was made that it was—that it could, in fact, be applied to nonmember countries in 1976.

Senator PACKWOOD. But we have not applied it.

Mr. TWISS. No.

Senator PACKWOOD. Until this decision a few months ago.

The testimony was, we'll have to wait until the end of this whaling season to see whether or not the nonmember countries were in conformance.

Mr. TWISS. Yes.

Senator PACKWOOD. Is there any difference between what you're saying—that we decided 2 years ago that we could apply the Pelly amendment and what Mr. Gehringer said—that it was about 4 months ago we decided we would apply it.

Mr. TWISS. I think there is, and I think that probably what I'm saying is not entirely clear. Since the Pelly amendment is in no small measure a matter of legal interpretation of the Fishermen's Protective Act and the Convention proper, I'd like to ask Bob Eisenbud, our lawyer, who has participated on all of the IWC delegations and is thoroughly conversant with the Fishermen's Protective Act, to address that idea.

Senator PACKWOOD. Go ahead.

Mr. EISENBUD. Thank you, Mr. Chairman.

I think the point that I would like to make is that a decision was made in January of 1976 that it was applicable under appropriate circumstances. The effort then shifted to evaluating the activities of the various nonmember countries to see if they fit the criteria that Mr. Gehringer described. And as I understand it, at least some nonmember countries were advised of the fact that their whaling activities were going to be subject to this kind of consideration.

It's my understanding—but I stand to be corrected—that Peru and South Korea definitely were advised of this review process.

Senator PACKWOOD. When?

Mr. EISENBUD. Certainly more than 4 months ago.

Senator PACKWOOD. In other words, you're saying what Mr. Gehringer said that it was only 4 months ago that we decided to apply this prospectively, is not the case.

Mr. EISENBUD. It's my understanding that the decision to apply them prospectively was reached in January 1976. The details of to whom it would be applied was not reached until just recently with respect to Peru and South Korea and perhaps others.

I guess what I'm saying, Mr. Chairman, is that it doesn't seem to me that it's necessary to evaluate their whaling activities this season.

Senator PACKWOOD. We gave them notice 2 years ago that based upon the last two seasons' catches, we would determine whether or not we wanted to apply it, and now we give them one more year of grace. But we have evidence now for a decision.

Mr. EISENBUD. Yes, that's correct.

And there is a rather fundamental distinction to make between certifying that whaling activities have been diminishing the effectiveness of the conservation programs of the IWC and deciding to invoke sanctions, such as embargoes.

Senator PACKWOOD. Such as what?

Mr. EISENBUD. Such as embargoes on fish products, which is what the Pelly amendment authorizes the President to do as a discretionary act, essentially. If he decides not to, he advises the Congress why he doesn't. That is a discretionary provision.

But the first threshold is to decide yes or no on the question of diminishing the effectiveness of the conservation regime. And a great deal of the sanction and value of the process comes from certifying, I suspect. That certification, it seems to us, anyway, could have been reached last year.

Senator STEVENS. Could I interrupt there?

Senator PACKWOOD. Yes, please.

Senator STEVENS. I was informed the other day of something I haven't really been able to check out yet. Maybe you know and could tell me what the impact would be on this discussion.

I was told that the margarine that's sold in Europe is 50 percent made from whale products. Now, if that is the case, I'd like to know if any of that margarine is coming into this country. It certainly would be triggered under this amendment, wouldn't it, as a fisheries product?

Mr. EISENBUD. Well, sir, I do not have any personal knowledge as to whether or not the margarine contains whale products, but let's assume that it does. For purposes of embargoes, the Marine Mammal Protection Act, and the Endangered Species Act, without any need to go through the Pelly amendment, would effectively ban the margarine from coming into this country if it contained whale products.

The Endangered Species Act would ban it to the extent that those whale products were from endangered species of whales. Most of the great whales are endangered. And the Marine Mammal Protection Act would also ban it, even if they're not endangered, unless there were a formal waiver saying its OK to bring that in, which hasn't occurred.

So, in effect, you've got at least two statutory bans already without even going to the Pelly amendment to keep that margarine out.

I suspect it will be a question of finding out factually from an enforcement standpoint if that margarine does contain whale products.

Senator STEVENS. Would your commission be the one to find out if that's so, whether the Europeans are using whale oil for the purpose of making margarine?

Is that within your jurisdiction?

Mr. EISENBUD. Senator, I could respond only by saying that as far as I know, we don't have the ability to do that kind of investigation.

Perhaps Mr. Twiss can respond to your question.

The National Marine Fisheries Service does conduct the enforcement and investigation functions under the statute with respect to whale products.

Senator STEVENS. I understand that you're supposed to be doing some research, as I understand it, in terms of the compliance and international activities, particularly with regard to the Whaling Commission; isn't that right, Mr. Twiss?

Mr. TWISS. We do, Senator Stevens, maintain an overview. In this particular situation I think what we might do would be analogous to what we've done on the Pelly amendment. That would be to make it clear that we understand that this may be the case, and recommend to the U.S. Commissioner to the IWC, who has the resources of NOAA and the National Marine Fisheries Service at his disposal, that he carry out an actual investigation of this matter.

Senator STEVENS. I would like to know that before June. I hope to go to that meeting this year. I don't see any reason why my Eskimos that have no alternative source of protein are being limited in the number of whales that they can take for their own consumption if European margarine industry is using whale oil for margarine when everybody knows that there are alternative sources of that product. They can make them from pure agricultural vegetable products. They don't need to use whale oil for that. And it just seems to me that we've been awfully myopic about this whale problem.

I'd like to get that statistic, too, if I could. If your Commission can't get it, would you kindly let the committee know. And I'd ask the committee to let me and my staff know what the response is.

Mr. TWISS. I certainly shall, Mr. Stevens.

Senator STEVENS. Thank you.

[The following information was subsequently received for the record:]

MARINE MAMMAL COMMISSION,
Washington, D.C., May 23, 1978.

Hon. TED STEVENS,
U.S. Senate,
Washington, D.C.

DEAR SENATOR STEVENS: To gather information on the use and possible importation of margarine containing whale oil, I was in touch with persons in Italy, England, and the United States during the week of 1 May. I have also asked the National Marine Fisheries Service to look into the matter.

As soon as all the material has arrived from abroad, I shall organize it and forward it to you in time for the June meeting of the International Whaling Commission.

Sincerely,

JOHN R. TWISS, Jr.,
Executive Director.

Senator PACKWOOD. My information would indicate that on February 11, 1977, Dr. Chapman, the Chairman of the Commission under Secretary Kreps, noted the violations of South Korea and Peru in relation to a variety of whales; is that true?

Mr. TWISS. That is true.

Senator PACKWOOD. On April 18, 1977, Secretary Kreps responded that the National Marine Fisheries Service was examining the information and would take further action.

Nothing, apparently, happened, and that's a little over a year ago now.

Again, on February 22 of this year, Dr. Chapman wrote to Secretary Kreps on the same subject. She responded on March 13, saying that the investigation of Peruvian and Korean whaling operations was now complete and would be sent to the Secretary for her review.

This is Richard Frank, the NOAA Administrator, responding March 13, that the studies would be completed and sent to the Secretary for review in about 2 weeks, which would be about the 1st of April. Still, we had previous testimony that they only decided to do this 4 months ago. It doesn't square with the exchange of correspondence.

I'm not blaming you. This is evidence that I didn't have at the time we were listening to Mr. Gehringer. It was very clear that at least there was an exchange of letters that I will put in the record.

[The letters follow:]

MARINE MAMMAL COMMISSION,
Washington, D.C. October 20, 1975.

Dr. ROBERT M. WHITE,
U.S. Commissioner, International Whaling Commission,
U.S. Department of Commerce/NOAA, Rockville, Md.

DEAR DR. WHITE: The Commission has been pleased to contribute to United States efforts to increase the effectiveness of the International Whaling Commission to better insure the conservation of the great whales. Under your leadership, the United States delegation has been successful in developing a consensus among member nations which is now reflected in the New Management Procedure contained in the Schedule to the Convention.

Although all issues relevant to the protection of the great whales are by no means resolved, the quotas established by the IWC were based upon the advice of the Scientific Committee and constitute significant progress. The fact that no member nation has filed objections to the quotas provides further evidence of the viability of the cooperative conservation arrangements now in force, and provides an indication of good faith on the part of member nations to comply with these arrangements.

An extremely difficult and challenging issue facing the United States and other IWC member nations is that of enlisting nonmember whaling nations in the IWC so as to prevent the circumvention or thwarting by nonmember nations of the cooperative efforts undertaken by member nations. In the past, nonmember nations have taken whales in a manner which would be a violation of the protective regulations of the IWC were the countries signatory. Continued whaling by nonmember nations threatens to render the cooperative efforts and sacrifices of member nations futile.

We believe that nonmember nations that permit their flag vessels to conduct whaling operations which cause the total take of whales to exceed IWC quotas or otherwise frustrate the protective efforts of the IWC, in terms of the Pelly amendment, 22 U.S.C. 1978, conducting fishing operations in a manner or under circum-

stances which diminish the effectiveness of the international fishery conservation program of the IWC.

We suggest that the threat of invoking or the imposition of the sanctions of the Pelly amendment, so as to prohibit the importation of fishery products, might serve as an incentive to encourage nonmember nations to join the IWC and conduct whaling operations in accordance with its conservation program. The Commission therefore recommends that efforts be undertaken to assess the extent to which the whaling operations of such nonmember nations as Peru, Chile, South Korea, Spain, Portugal, and Somali diminish the effectiveness of the IWC program, and to advise those nations, as appropriate, that their activities are being reviewed in light of the provisions of the Pelly amendment.

We are, of course, anxious to cooperate with you in these efforts.

Sincerely,

VICTOR B. SCHEFFER,
Chairman.

DEPARTMENT OF COMMERCE,
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,
Rockville, Md., January 8, 1976.

Dr. VICTOR B. SCHEFFER,
*Chairman, Marine Mammal Commission,
Washington, D.C.*

DEAR VIC: I agree that we face an extremely difficult and challenging issue in terms of persuading whaling nations which are not members of the International Whaling Commission (IWC) to become members, and to comply with international conservation measures established by the IWC. Efforts by the IWC to encourage these nations to join have been largely unsuccessful. We, therefore, welcome the suggestion in your letter of October 20, 1975, that the applicability of the Pelly Amendment (Pub. L. 92-219, December 23, 1971, 85 Stat. 786, 22 U.S.C. 1978) of the Fishermen's Protective Act of 1967 to the taking of whales in excess of IWC quotas by nations which are not members of the Commission be considered. The sanctions of the amendment which are triggered by nationals of a foreign country conducting fishing operations " * * * which diminish the effectiveness of an international fishery conservation program," could well aid in bringing these nations into the IWC.

There is no specific requirement in the Pelly Amendment that the foreign country whose nationals are conducting such fishing operations be a member of the organization which has established the international fishery conservation program. In fact, in testifying for the Department of State on October 16, 1973, Ambassador McKernan stated that, once an international organization sets quotas for fish, then such quotas are considered as having been accepted internationally, and that it was the intent of the Administration to permit an embargo to be imposed against nonmember, as well as member nations. Testimony to the same effect was given by the Associate Administrator for Marine Resources of NOAA. However, Ambassador McKernan also stated that the Administration would expect to use great discretion in the application of the amendment and would avoid using it " * * * as a punitive measure against countries whose assessment of a particular conservation problem may be different from that of the United States."

It would appear, therefore, that application of the Pelly Amendment against nonmember countries was foreseen but that it should occur only in aggravated circumstances, where the actions of the offending country are clearly in violation of and are a detriment to the conservation regulations; and when such actions cannot be attributed to honest differences of scientific opinion.

The two questions which must be asked are how do we determine when the offending country has met these two qualifications, and is it a practical possibility to make these determinations? To meet the first question, we would propose that the following criteria would have to be met:

1. An international organization has been established to deal with the conservation and allocation of the species.

2. Membership in the organization is available to the concerned countries on reasonable terms and efforts have been made to encourage membership.

3. The quota or conservation measure for the species or stock in question is generally accepted scientifically to be appropriate to maintain the species or stock at, or restore it to, an agreed level and that any other take would therefore be detrimental.

4. A quota or other conservation measure(s) has been set for the species or stock in question and has been established for a given area or has been allocated among the member nations, either by terms of a convention or voluntarily.

5. A nonmember country conducts a commercial fishery which takes a substantial catch of a regulated or protected species or stock and the total catch by all countries exceeds the quota.

If all of the above conditions are met, it is our view that the action of the nonmember country has diminished the effectiveness of the international agreement and that the Secretary of Commerce must so inform the President.

Since the above criteria are applicable to all international fisheries conservation conventions, they have been written to apply to all types of conservation measures. However, your letter dealt only with the IWC. We have therefore examined the practical possibilities for applying the above criteria to whaling countries not members of the IWC. We have concluded that the possibilities for meeting the criteria would be best in the instances of a nonmember nation taking: (1) A significant number of fin whales since this species is almost totally protected by the IWC; or (2) a significant number of sei whales either in areas where they are totally protected or where quotas are set by the IWC and divided by agreement among the member countries. On the other hand, we have concluded that conservation arrangements established by the IWC for sperm whales in the areas in which nonmember whaling nations take this species would make application of the above criteria difficult.

We, therefore, are investigating the possibilities of making findings under the terms of the Pelly Amendment in regard to the whaling operations of those countries not members of the IWC. We will inform the nations concerned of these possibilities with the hope that they will become parties to the conservation measures adopted by the IWC.

I appreciate your interest and concern in this matter and you can be sure that NOAA will pursue this thoroughly and will inform you of our actions at the appropriate time.

Sincerely,

ROBERT M. WHITE, *Administrator.*

MARINE MAMMAL COMMISSION,
Washington, D.C., February 11, 1977.

HON. JUANITA M. KREPS,
Secretary, U.S. Department of Commerce,
Washington, D.C.

DEAR MADAM SECRETARY: Continued whaling operations by vessels of nations which are not members of the International Whaling Commission (IWC) thwart the cooperative efforts and sacrifices of member nations and threaten to render them futile. Our letter to Dr. Robert M. White of October 20, 1975 suggested that the provisions of the Pelly Amendment (22 U.S.C. 1978) to the Fishermen's Protective Act of 1967 should be applicable to such operations by nonmember nations, and recommended that efforts be undertaken to assess the extent to which the whaling operations of non-member nations diminish the effectiveness of the IWC conservation program. We further recommended that those nations be advised that their activities were being reviewed in light of the provisions of Pelly Amendment. We were pleased to receive his letter of January 8, 1976 expressing agreement with our judgment that the provisions of the Pelly Amendment would apply, in appropriate circumstances, to whaling activities of nonmember nations and suggesting certain criteria by which such activities might be evaluated. Inasmuch as any certification of findings to the President is to be made by you, I now write to inform you of our reviews of the activities of two nations.

The Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the recent whaling activities of Peru and the Republic of Korea with reference to the provisions of the Pelly amendment and the criteria suggested by Dr. White. We conclude, for the reasons set forth below, that the whaling activities of these two nations, neither of which has responded to repeated efforts to enlist their membership in the IWC, have diminished the effectiveness of the IWC conservation program so as to warrant application of the embargo sanctions of the Pelly amendment to all their fish products.

I. THE SEI AND BRYDE'S WHALE HARVEST BY PERU

Based upon information presented to the Scientific Consultation on Marine Mammals in Bergen, Norway, the combined Peruvian harvest of sei (*Balaenoptera borea-*

lis) and Bryde's (*Balaenoptera edeni*) whales was 545 in 1975 and 213 for the period between January and May 1976. Information on the catch of sei and Bryde's whales between June and December 1976 is not yet available.

The Schedule of the IWC, as amended by the Whaling Commission at its 27th Meeting in June 1975, established a quota of 198 sei and Bryde's whales as the maximum number which may be taken during the 1975-76 pelagic season and the 1976 coastal season in Area I. That quota was based upon the advice of the Whaling Commission's Scientific Committee and constitutes the accepted scientific determination of the maximum permissible catch within the waters of the southern hemisphere between Ice Edge and the Equator and between 120° W and 60° W longitude. Clearly, any take in excess of 198 whales was deemed to be detrimental to the population. Had this not been the case, a larger quota would have been set to allow a greater number of whales to be taken by Japanese and Soviet vessels.

The October 13, 1978 report of the International Whaling Statistics indicate that the total quota of 198 sei and Bryde's whales for Area I was taken by Japanese and Soviet vessels in the 1975-76 pelagic whaling season pursuant to the terms of the Schedule. Thus, the harvest of 213 sei and Bryde's whales between January and May 1976 by vessels operating from the land station in Peru exceeded the generally accepted quota and resulted in a total harvest of 411 animals, more than twice the level established by the quota. The Peruvian harvest of 213 whales is a substantial catch frustrates the conservation program of the IWC. The additional whales which may have been taken in the remaining months of 1976 only add to the damage and exacerbate the problem.

II. THE FIN WHALE HARVEST BY THE REPUBLIC OF KOREA

Recent information provided to the Department of State in response to inquiries concerning the harvest of whales by vessels of the Republic of Korea indicate that Korean vessels killed 43 fin (*Balaenoptera physalus*) whales in the North Pacific during the season ending in September 1976.

The Schedule of the IWC, as amended by the Whaling Commission at its 27th Meeting in June 1975, classified fin whales in the North Pacific Ocean as a Protection Stock and prohibited all commercial whaling of this population during the 1976 season. That classification and the prohibition were based upon the advice of the Whaling Commission's Scientific Committee and constitutes the accepted scientific determination of the protective measures necessary to conserve fin whales in the North Pacific Ocean. Any take of fin whales in the North Pacific was deemed to be detrimental to their conservation.

No member nations filed objections to the classification or prohibition and it appears that all member whaling nations have refrained from taking fin whales in the North Pacific. The harvest of 43 fin whales by Korean vessels is therefore a substantial catch which exceeds the total permissible catch and frustrates the conservation program of the IWC.

The Pelly amendment applies when "nationals of a foreign country, directly or indirectly, are conducting fishing operations in a manner or under circumstance which diminish the effectiveness of an international fishery conservation program" (22 U.S.C. 1978 (a)). The Marine Mammal Commission concludes that the Peruvian and Korean whaling operations discussed above are being conducted in a manner which diminishes the effectiveness of the IWC conservation program and that both Peru and Korea are "offending" nations under the provisions of the Pelly amendment. We, therefore, recommend that you certify these findings to the President for his consideration and potential prohibition of importation of Peruvian and Korean fish products pursuant to 22 U.S.C. 1978.

Sincerely,

DOUGLAS G. CHAPMAN, *Chairman.*

MARINE MAMMAL COMMISSION,
Washington, D.C., February 22, 1978.

Hon. JUANITA M. KREPS,
Secretary, U.S. Department of Commerce,
Washington, D.C.

DEAR MADAM SECRETARY: On 11 February 1977 I wrote to you setting forth certain findings with respect to Peruvian and South Korean whaling operations and recommending that you certify these findings to the President for his consideration and potential prohibition of importation of Peruvian and South Korean fish prod-

ucts pursuant to the provisions of the Pelly Amendment to the Fishermen's Protective Act of 1967.

Your letter of April 18, 1977 indicated that you were considering our recommendations and related aspects of the matter. Please advise me of our action in response to our recommendations.

Sincerely,

DOUGLAS G. CHAPMAN, *Chairman.*

U.S. DEPARTMENT OF COMMERCE,
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,
Rockville, Md., March 13, 1978.

Dr. DOUGLAS G. CHAPMAN
*Chairman, Marine Mammal Commission,
Washington, D.C.*

DEAR DOUG: Thank you for your letter of February 22, 1978, requesting information on action taken by the Department of Commerce in response to your recommendations on Peruvian and South Korean whaling operations for certification under the Pelly amendment to the Fishermen's Protective Act of 1967.

Certification under the Pelly Amendment can lead to an embargo on fishery products from the countries concerned. Thorough documentation and substantiation must therefore be made of each action which may diminish the effectiveness of the International Whaling Commission. The investigation is now complete and will be sent to the Secretary for her review in about two weeks.

After the Secretary has received and reviewed the documentation necessary to make a determination to certify under the Pelly amendment, she will consult with the Secretaries of State and Treasury, with the Special Trade Representative of the President and with the Marine Mammal Commission. In these consultations, the Secretary will seek concurrence for recommendations to the President on whether or not to apply the embargo provisions of the Pelly amendment.

I will keep you informed on progress in the Pelly amendment considerations.

Sincerely yours,

RICHARD A. FRANK.

THE SECRETARY OF COMMERCE,
Washington, D.C., April 18, 1977.

Dr. DOUGLAS G. CHAPMAN,
*Chairman, Marine Mammal Commission,
Washington, D.C.*

DEAR DR. CHAPMAN: Thank you for your letter of February 11, 1977, recommending that I certify to the President that the whaling operations being conducted by nationals of Peru and the Republic of Korea are diminishing the effectiveness of the international conservation program of the International Whaling Commission, and that, therefore, the provisions of the Pelly Amendment to the Fishermen's Protective Act of 1967 are applicable.

The National Marine Fisheries Service of the National Oceanic and Atmospheric Administration has prepared background information to assist me in determining whether it is appropriate to make such certification to the President. The supplementary data which you have provided will be most useful. In addition to an analysis of whaling statistics, NMFS is also examining the possible impact of a trade embargo on the countries concerned and on U.S. industries which import from these nations. The effect such an import prohibition would have on encouraging Peru and the Republic of Korea to bring their whaling operations into consistency with the recommendations of the IWC is also being considered.

The National Marine Fisheries Service will maintain close contact with the Marine Mammal Commission as they are preparing this background information, and will keep you informed of all pertinent developments.

Sincerely,

JUANITA M. KREPS.

Senator PACKWOOD. Congress has been on notice for a good period of time on this problem and has taken no action.

Mr. TWISS. I believe it does go back to 1975, when we originally brought the matter up, and specifically on these two countries in 1977.

Senator PACKWOOD. The Marine Mammal Commission has done an excellent job, and yet, I see that you are asking for a substantial decrease in your budget next year. Why is that? Maybe it's because you've done such an excellent job, and I shouldn't criticize a Federal agency that does so well that they can ask for less money. Have your problems diminished as such, or are you so well-organized that you're able to get along with 20 percent less?

Mr. TWISS. I'm afraid that our problems have not diminished. I think that we have, in fact, made very substantial inroads in dealing with some specific problems, such as the tuna-porpoise problem, where great strides have been realized.

Senator PACKWOOD. Have you been directed to submit this reduced budget?

Mr. TWISS. The \$702,000 appropriation request and the \$800,000 authorization request are the administration's view of appropriate levels for the program.

Senator PACKWOOD. How much more money did you request than the administration requested?

Mr. TWISS. For purposes of authorization, \$1 million.

Senator PACKWOOD. \$1 million?

Mr. TWISS. Yes.

Senator PACKWOOD. Up \$100,000 from your \$900,000 budget last year?

Mr. TWISS. Yes. For purposes of allowance for fiscal year 1979, an appropriation allowance, we requested \$840,000.

Senator PACKWOOD. So, the administration, in the face of obviously increasing problems, in the face of the fact that the Department of Commerce has apparently paid no attention to the letters and the exchanges we've had with them, has directed you to come back with a substantial budget cut, to carry on what are obviously increased activities?

Mr. TWISS. We are doing, I believe—we are attempting to do as responsible a job as we can with the resources we have.

Senator PACKWOOD. I understand the position you're in. All agencies are responsible, with few exceptions, to the OMB. You've been directed to come in here, request, and attempt to justify a sharply reduced budget, despite the fact that the allowance you asked for already represents a \$60,000 decrease. Instead of that, you're going to be reduced about 25 to 30 percent, if, indeed, we comply with the administration's request.

I won't ask you to comment any further, but I understand what you have to say. What you're saying is that if you have to get along with \$702,000, you will get along with \$702,000, but you won't be able to do the job that you hope that you can do.

Mr. TWISS. That's precisely it.

Senator PACKWOOD. Ted?

Senator STEVENS. I would certainly concur with you, Mr. Chairman.

With the responsibilities that you've listed, your objectives for 1979, through 1981, I just don't see how we're going to get the information we need to determine the future of the whole marine

mammal Federal activity, unless you get the research to carry on your duties.

One of the things you said to us last year was a comment on actions taken relative to Alaska's request to waive the moratorium on the nonmarine mammal species. Has that comment been filed?

Mr. TWISS. Yes. We have commented on that request, and recommended return of management to the State of Alaska.

Senator STEVENS. That was my understanding. You would have a continued role of review of actions taken by my State under that recommendation; would you not?

Mr. TWISS. I think that the regulations proposed by the agencies would be that agencies, in consultation with the Marine Mammal Commission, would make an annual review. Yes, sir.

Senator STEVENS. My experience has been that if Federal agencies don't have enough money to review State activities in depth, that it's too easy to say no. I just don't see, if you're going to have the duty to review my State's activities—and our State is putting up a substantial amount of money in this activity—how you can possibly review their activities with a reduced budget.

Senator PACKWOOD. I agree with you perfectly, Ted. This Commission has done an extraordinary job. They've got an immense amount to do, geographically and otherwise; and if the administration's proposal is successful, they will have a budget that wouldn't be fit for a mediocre White House conference on an insignificant subject.

Senator STEVENS. I'm hopeful that the Congress will listen to us about this. You have also the duty to review the actions of both the Secretaries of Commerce and Interior on applications to take marine mammals; don't you?

Mr. TWISS. Yes, sir, we do.

Senator STEVENS. You indicate you reviewed 54 of those last year. Those were things like Marine World and scientific activities, the University of Michigan and others, I understand. Is that right?

Mr. TWISS. Yes, Senator Stevens.

Senator STEVENS. Does that include—do you include living coral as a marine mammal?

Mr. TWISS. No, sir.

Senator STEVENS. It's not in that category?

Mr. TWISS. No, sir.

Senator STEVENS. Do you review all of the permit applications by foreign fishermen to take marine mammals incident to commercial fishing within the 200-mile limit?

Mr. TWISS. We do, Mr. Stevens.

Senator STEVENS. Again, I don't know how you can do that with less money.

I don't know if you realize it, Mr. Chairman, those foreign fishermen take, incidental to the catch of Alaska pollock, more marine mammals than the Alaska Natives are allowed to take intentionally.

Senator PACKWOOD. I was unaware of that.

Senator STEVENS. I think that's a very significant thing, and all you have to do is to make them use different gear, and they wouldn't catch those marine mammals. As a matter of fact, I wonder how we're going to get the figure of what you actually

need. You said \$100,000. Does someone else review your budget before you go to OMB?

Mr. TWISS. I'm not sure precisely what you mean, Mr. Stevens.

Senator STEVENS. Well, the National Marine Fisheries Service is reviewed by an assistant secretary, then a deputy secretary, and then a secretary, and then goes to OMB, and it gets sliced at each level. Now, who cuts your pie before you get to the OMB?

Mr. TWISS. OMB.

Senator STEVENS. You're sitting up to the table directly and you asked for \$100,000 more?

Mr. TWISS. For fiscal year 1979.

Senator STEVENS. What about 1980? This covers 1980 and 1981, too.

Mr. TWISS. Our original request was for authorization level of \$1 million per year. We have been trying to make a sincere effort to diminish some of the Commission research responsibilities, as they're assumed by the line agencies. This is an exceedingly difficult thing to do. We thought that, by paring our activities to the absolute bone, we could go to \$480,000 in fiscal year 1979. And that was what we requested.

Senator STEVENS. You asked for \$850,000 on an authorization of \$1 million?

Mr. TWISS. Yes, sir.

Senator STEVENS. For 1979?

Mr. TWISS. Yes, sir.

Senator STEVENS. And what was your authorization, then, for 1980?

Mr. TWISS. The authorization——

Senator STEVENS. I mean your request.

Mr. TWISS. We have consistently requested authorization levels of \$1 million.

Senator STEVENS. Aren't your costs going up like everyone else's? You had a 5.5 percent pay increase, for instance, last year; and the year before, you had a 7.5 percent pay increase. How can you continue to function if you have to eat those pay increases every year?

Mr. TWISS. Perhaps I could best answer your question by saying that I personally feel, regardless of any budget considerations or requirements that may be upon us or anything else, I feel that good use could be made of well over \$1 million a year—I don't quite know how else to put it—there are serious problems and good use of money can be made to solve them. I could, in a trice, justify the useful and worthwhile application of \$1 million.

Senator STEVENS. My staff tells me under the FCMA coral is managed by the regional councils—I was concerned about some reports I had about people that were moving living coral for the purposes of marine gardens and that sort of thing. I wondered if you had jurisdiction. You're not involved in that?

Mr. TWISS. No, we are not.

Senator STEVENS. Thank you very much, Mr. Chairman. I think we're going to have to increase this authorization, and Senator Hollings and I are going to have to increase the appropriations for that.

Senator PACKWOOD. That's going to be this Friday, I believe, on the appropriations.

Thank you for your testimony. We appreciate your coming.

Mr. Twiss. Thank you, Mr. Chairman.

Thank you, Mr. Stevens.

[The following information was subsequently received for the record:]

MARINE MAMMAL COMMISSION,
Washington, D.C., May 5, 1978.

HON. HOWARD W. CANNON,
Chairman, Committee on Commerce, Science, and Transportation,
U.S. Senate, Washington, D.C.

DEAR SENATOR CANNON: I am pleased to respond to your question: "Does the Marine Mammal Commission support or propose to support research that is duplicative of that supported by either the Department of Commerce or the Department of the Interior?"

The Marine Mammal Protection Act mandates that the Commission "shall take every feasible step to avoid duplication of research." We responsibly meet that obligation through reviews of marine mammal research programs. In the reviews, we look not only at research being conducted by the National Marine Fisheries Service, the Fish and Wildlife Service, and the Commission, but also the marine mammal research activities of other relevant Federal agencies such as the National Science Foundation and the National Institutes of Health. Our most recent review was completed in September 1977, and I enclose a copy of it for you. Although gaps have been identified in overall research efforts during the course of these reviews, no duplicative research has been identified.

The Commission views its research responsibilities to include: the undertaking of policy-oriented research efforts; studies specifically called for by the Act; studies to clearly define the parameters of given problems and outline appropriate research activities for line agencies; and, when the nature of a problem is so critical that we feel the agencies cannot get the problem under control without our help, studies to promptly fill those perceived gaps to better the situation as quickly as possible.

This is particularly true in the case of certain major problem areas such as the tuna-porpoise problem. The decision to invest heavily in this area was based upon our determination in 1974 that a part of the solution to the problem might very well depend upon understanding the behavior of the affected porpoise stocks and a number of other factors. Our preliminary findings were fully supported in subsequent Commission-sponsored workshop in which participants identified: new research that might contribute to the solution of the tuna-porpoise problem; cited the importance of behavioral work, gear studies, etc.; and recommended that the Service organize a research cruise to take place as soon as possible.

As a result of our findings and recommendations, the Commission, the National Marine Fisheries Service, and the tuna industry entered into a cooperative agreement designed to coordinate and intensify research efforts. Although the additional funds made available by the industry and NOAA were sufficient to initiate certain kinds of sorely needed gear research, they were not adequate to initiate the basic behavioral research activities recommended by the Commission and by the workshop participants. Therefore, the Commission funded the behavioral research carried out in the fall of 1977 aboard the tuna-purse seiner, *Elizabeth C.J.*

The cruise of the *Elizabeth C.J.* was a landmark in cooperative efforts by the industry, the Service, and the Commission to come to grips with the problem. Much was learned that has contributed significantly to reducing incidental porpoise mortality and to suggesting equipment and/or techniques to separate tuna from porpoise prior to encirclement in the net. In fact, as a logical outgrowth of what was learned on that cruise, the industry has made a vessel available for one year for further research. That vessel is at sea now. Critical to all this progress have been Commission-supported research activities and the guidance provided in our recommendations.

In summary, this is an instance in which one could say that theoretically all the research should have all been supported by the National Marine Fisheries Service. Had it not been however, for sustained Marine Mammal Commission contributions, we would never have succeeded in dealing with the problem as well as has been done. The work supported by the Commission was clearly not duplicative, but complementary.

The Commission has taken a similar approach to the sea otter problem in California. We convened a workshop in February 1976 to determine, among other things, the kinds of information that will be needed to make ecologically sound decisions concerning management of the sea otter population in California. Workshop participants agreed upon the urgent need for studies to determine how sea otters affect and are affected by the environment in which they live. The State subsequently approached the Fish and Wildlife Service for funds to begin the necessary research, but the Fish and Wildlife Service was unable to provide funds. In July of that year, we met with representatives of the State and the Fish and Wildlife Service and agreed to provide funds to assist in beginning the necessary research. In fiscal year 1976 and 1977, the Commission invested approximately \$120,000 in studies, none of which were duplicative, to assess the interrelationships between sea otters and their habitats in California. The State has recently indicated that it will be able to assume responsibility for part of this program beginning in 1978, and we have every hope that the Fish and Wildlife Service will be able to assume the remaining share of responsibility shortly. Accordingly, we reduced our fiscal year 1978 contribution to this effort, and assuming the State and/or the Fish and Wildlife Service assume full responsibility beginning in fiscal year 1979, our only sea otter research in fiscal year 1979 will be for a workshop to do an overview analysis of research carried out to date. I feel that our efforts in this area underscore, once again, the importance of the Commission's being able to undertake complementary, not duplicative, studies, that can assist all of the involved agencies in coming to grips with the problem.

I have only briefly touched on a couple of problem areas where duplicative research might have been a possibility had we not carefully analyzed the situation. I have no doubt that our complementary research efforts have paid great dividends in these and other instances. A far better understanding of all that we have done can be gained from a review of our Annual Reports in which we present our research programs in details, as well as a review of the inclosed analysis of marine mammal research activities. We have responsibly met our charge to avoid duplication of research.

Sincerely,

JOHN R. TWISS, Jr.,
Executive Director.

Senator PACKWOOD. We'll conclude with Christine Stevens.

STATEMENT OF CHRISTINE STEVENS, MONITOR, THE CONSERVATION, ENVIRONMENTAL, AND ANIMAL WELFARE CONSORTIUM, ACCOMPANIED BY TOM GARRETT, DEFENDERS OF WILDLIFE

Ms. STEVENS. Good morning.

I'm accompanied by Tom Garrett, representing Defenders of Wildlife, which is also one of the Monitor organizations.

Senator PACKWOOD. I know Tom well.

Ms. STEVENS. I'd like to submit my statement for the record, Mr. Chairman, if I may.

[The statements follow:]

STATEMENT OF CHRISTINE STEVENS, MONITOR, THE CONSERVATION, ENVIRONMENTAL AND ANIMAL WELFARE CONSORTIUM

The following Monitor groups endorse this statement: the Humane Society of the United States, the International Primate Protection League, the Fund for Animals, the Rare Animal Relief Effort, the Washington Humane Society, Let Live, and the Society for Animal Protective Legislation.

I wish to emphasize certain parts of the work of the Departments of Commerce and Interior and the Marine Mammal Commission which we regard as most important to the highly valuable Marine Mammal Protection Act.

Enforcement.—Central to the protection of marine mammals is conscientious enforcement of the act. We are glad to see that there has been some noteworthy progress on the part of the Department of Commerce in this area.

In the July 22, 1975 Federal Register (page 30683) law enforcement by the National Marine Fisheries Service showed 153 investigations into alleged violations of the Act resulting in documentation of 98 violations, and 106 seizures. No information on the amounts of fines was offered. This was hardly surprising since the breakdown we

finally obtained showed that a total of \$50 was all the agency collected in fines for violation of the Marine Mammal Protection Act in that fiscal year. These were two \$25 fines for possession of sealskin on July 22 and August 7. The precise information of 15 cases of importation or possession of sealskin items or baleen showed simple forfeiture in the other thirteen cases.

A decided change took place in 1976, and major enforcement actions are shown in the following chart:

SUMMARY OF MAJOR ENFORCEMENT ACTIONS UNDER THE MARINE MAMMAL PROTECTION ACT AND ENDANGERED SPECIES ACT DURING 1976 THROUGH MAY 1977

Persons charged	Summary of violation	Date closed	Penalty
Japanese M/V DAIRYO MARU #11385.	Importation of whale meat	Mar. 25, 1976	\$5,000.
Jerry D. Mitchell, Chula Vista, Calif ...	Capture, possession and sale of 21 dolphins (24 counts); conspiracy (1 count).	June 17, 1976	90 d for conspiracy, 1 yr probation for the other 24 counts. ¹
Herbert Hope, Florida City, Fla	Possession of illegally taken dolphins (1 count).	July 7, 1976	30 d plus 1 yr probation.
Delbay Pharmaceuticals, Inc., Kenilworth, N.J.	Interstate sale of products containing spermaceti.	Aug. 10, 1976	\$10,000.
Dome Laboratories, West Haven, Conn.	Interstate commerce in products containing spermaceti.	Oct. 13, 1976	\$5,000.
Richardson-Merrell, Inc., Wilton, Conn	do	Nov. 1, 1976	\$7,500.
Almay, Inc., Apex, N.C	do	Dec. 6, 1976	\$2,500.
Chic-In Leather Corp., New York, N.Y.	Importation of sealskins	Dec. 9, 1976	\$100 plus forfeiture of 420 sealskins valued at \$11,000.
Sea World, Inc., Orlando, Fla	do	Dec. 15, 1976	\$7,000 plus forfeiture of 33 scrimshaw items.
Walt Disney World, Orlando, Fla	Receiving whale tooth scrimshaw in interstate commerce.	Feb. 28, 1977	\$3,500 plus forfeiture of 21 scrimshaw items.
Werner G. Smith, Inc. Cleveland, Ohio	Interstate sale and exportation of sperm whale oil and spermaceti (430 counts).	Mar. 25, 1977	\$32,500.
Scrimshaw Handcrafts, Inc., Los Angeles, Calif.	Interstate sale of whale tooth scrimshaw.	May 6, 1977	\$6,000 plus forfeiture of 80 scrimshaw items.
Other major enforcement in 1977 includes:			
James C. Smith, Seminole, Fla	Taking porpoise by shooting	Oct. 6, 1977	2 yr probation. \$5,000 fine. Forfeited boat and trailer and agreed to undergo psychiatric treatment.
Francis L. Vincent, Westwood, Mass.	Selling whale teeth, scrimshaw in interstate commerce.	Dec. 8, 1977	6 m probation.

¹ On June 13, 1977, the 5th U.S. Circuit Court of Appeals reversed this conviction on grounds that the Marine Mammal Protection Act does not control the conduct of American citizens in the territorial waters of a foreign country.

SOURCE: U.S. Department of Commerce.

Clearly, the Commerce Department is able to enforce the Act, and it is essential that the Congress provide it with the wherewithal to do so effectively.

Increases in the 1979 Budget for the National Oceanic and Atmospheric Administration (NOAA) activities under the Marine Mammal Protection Act total \$1,490,000. Of this amount \$200,000 is intended for grants to states, \$502,000 for porpoise status assessment, \$683,000 for study of coastal pinniped and cetacean stocks as they relate to fish population and \$105,000 for administration. Of this substantial increase in administration nothing is allocated for enforcement. Yet there are indications that smuggling may be occurring at many ports of entry. Because of lack of enforcement capability, illegal imports are reportedly being allowed through customs without action.

It appears to us that the budget proposals are not clearly aimed at the best interests of the marine mammals. The research is geared to data collection rather than to efforts to protect marine mammals, and it takes the lion's share of the proposed increase. We suggest a reordering of priorities in the Marine Mammal section of NOAA so that the intent of the act is unmistakably complied with.

Although we understand that proposals have been prepared, to date, no action has been taken by the Department of Commerce on the Pelly amendment with regard to nations that diminish the effectiveness of the International Whaling Commission (IWC) by killing whales outside its jurisdiction. I would submit a copy

of a letter from Monitor organizations on this subject for the use of the subcommittee.

Actions on whales continue to be badly needed. Sufficient funds to insure compliance with the decisions reached on bowhead whales in the Bering Sea at last December's IWC meeting must be included. Yet, as already noted, no request for increased enforcement expense is now contained in the fiscal year 1979 budget for NOAA.

Oversight is needed on the entire situation with respect to whales.

The Department of the Interior budget for marine mammals for fiscal year 1979 would provide \$1,358,000 of which \$425,000 is for administration and \$933,000 for research. No increase has been requested. Again, enforcement of the law is bound to suffer as increased costs mean even less enforcement than formerly.

Marine Mammal Commission. The budget request by the Marine Mammal Commission is lower than last year, and even lower than the year before—a remarkable phenomenon as prices rise on every side. The Commission is a sober, useful body whose advice is worth heeding with care and attention. The lowered budget reflects a cut in research funds. Yet it is the Marine Mammal Commission that has demonstrated clearly that it is more able than either the Departments of Commerce or Interior to move quickly into serious situations with qualified scientists to assess a given problem so that needed action can be taken. For example it was the Commission that on learning of the plight of the Gulf of California harbor porpoise being taken in the net fishery promptly put a scientist into the field. The Commission contracted with a leading Mexican scientist to make the needed studies. As a result, recommendations were made to the International Union for the Conservation of Nature (IUCN) for declaring this species (*Phocena Sinus*) Vulnerable.

Other examples of action taken by the commission in an expeditious manner, which contrasts with the deliberation of the established bureaucracies in such matters, are described in the Commission's annual report. To cite two additional examples, on the day of the Argo Merchant oil spill, the Commission was in touch with Dr. Howard Winn who immediately instituted reconnaissance flights. With respect to planned hydraulic dredging for clams in the Bering Sea, the Commission, acting on alarm expressed by Alaskan scientists, instituted an intensive review of the potential damage and its impact on the walrus wintering area. As a result an EIS will be done.

The Marine Mammal Commission was intended by the Congress to take an objective, informed view of matters relating to ocean mammals. This it is doing. It must not be reduced in its capabilities as the fiscal year 1979 budget would do, reducing the authorization to a mere \$702,000.

We would urge that the subcommittee restore to the \$1 million level of 1877 at least, or preferably raise the authorization for the Marine Mammal Commission for the next 3 years. It should be remembered that \$1 million was the level called for under the act as originally passed. Surely 6 years into inflation this level must not be lowered.

We note that S.2831 makes no provision for extending the authorization for the Marine Mammal Commission. I trust this was an oversight which will be rectified in markup, and that \$1 million will be provided for each of the coming fiscal years.

We recommend that a total of \$13,700,000 be authorized for fiscal year 1979; \$14,885,000 for fiscal year 1980; and \$16,600,000 for fiscal year 1981. These are the amounts included in the bill H.R. 10730, passed by the House of Representatives on April tenth after thorough consideration of the program needs.

Mr. CHAIRMAN, The organizations for which I am speaking have presented a great deal of testimony in a series of oversight and authorization hearings before the House Subcommittee which made these recommendations, and we believe they are sound.

Thank you for the opportunity to testify.

STATEMENT OF TOM GARRETT, DEFENDERS OF WILDLIFE

Mr. CHAIRMAN, I am Tom Garrett, Legislative Coordinator for Defenders of Wildlife. Defenders is a national organization committed to the protection of wildlife, and wildlife habitat, with headquarters at 1244 Nineteenth Street NW., Washington, D.C. We appreciate this opportunity to appear. My statement will be brief.

It has been 6 years since the passage of the Marine Mammal Protection Act. Some domestic populations of marine mammals have clearly benefited from the passage of the act. Others may or may not have benefited. Some, such as the manatee and Laysan monk seal, are probably worse off than they were in 1972. All

in all the Marine Mammal Act has been a disappointment to most of those who worked for its passage.

1. The act has been sporadically and weakly enforced. Field enforcement remains nonexistent for many species. Left to their own devices the agencies would relegate enforcement to the shuffling of papers, and nothing more.

NMFS took the tuna-porpoise situation seriously enough to act only after intervention by the courts and Congress. It took the Bowhead situation seriously enough to act only after it had become an international disgrace, and after intervention by an international commission. There are, beyond doubt, more time bombs ticking which might be defused by timely action. The best way to encourage such timely action is to provide a considerable additional amount for enforcement, to make it clear that such monies are to be put to good use, and to conduct oversight hearings where necessary.

If NMFS has compiled a dolorous record, one can nonetheless extract great comfort from its performance by comparing it with Interior's. In the case of the manatee, to cite an example, Interior has conducted some excellent research, but has failed to take the slightest action to protect this critically endangered species from the major known source of human-inflicted mortality. Manatee mortality from human factors is probably higher today than it was at the time of the Act's passage. It is far higher than the population can sustain. If action is not taken, the animal clearly faces extinction within one or two decades.

Interior, in its rush to waive management of the walrus to the State of Alaska, accepted a management scheme by the state which is probably not legal under the act. The state evidently made Interior an offer which it could not refuse, since it had no funds for enforcement: "Our way or no way." Under state management, appalling waste, which characterizes U.S. Eskimo taking of walrus appears to be worsening.

We recommend at least \$500,000 per year under this authorization for Interior, earmarked for enforcement under the Marine Mammal Act, given along with the promise of rigorous future oversight hearings to see that the funds are effectively used.

2. The creative and useful research which we had expected the act to spawn has not materialized. Timely research, aimed at defining problems and achieving solutions, might have prevented last year's fleet strike and other grim events in the tuna fishery, as well as the current crisis over Bowheads. Examining the budget requests before you, we derive the impression that these experiences have been ignored by agency and OMB planners. Much of the research being planned, even that mounted as a belated reaction to crises which have already germinated, has the look of more sterile and unfocused data gathering.

The fact is, with the exception of certain projects undertaken by the Bird and Mammal lab, most of the research which has proven genuinely cost effective has been that designed by the Marine Mammal Commission. If it had not been for the Commission, for example, which provided the initial grant for the research, the behavioral research on porpoise by Dr. Norris and associates which led to dramatic reductions in porpoise mortality, would not have been accomplished.

We would prefer to see much more of the research conducted under the act administered by the MMC. The Commission was, after all, designed as an interface between government and the scientific community. We are extremely distressed to note the drastic cuts in its budget which leave—under the OMB imposed version—only about \$200,000 for contract research. In our view, what you are liable to be buying with these cuts, if you allow them, are more preventable crises, more lawsuits, more howling clagues before this committee, more battles on the House and Senate floors.

The Marine Mammal Commission is, in our view, more cost effective, more creative, more responsive to the conservation and academic communities, and generally more competent and willing to see that the intent of Congress in passing the Act is met than are the line agencies. We urge you not to permit the Commission's budget to be slashed, but to restore it to at least the \$1 million level specified by the act.

In concluding, Mr. Chairman, I would like to compliment you for your staunch support of this Act. It is a pity that Congress should have to do much of the planning for line agencies in order to have laws administered. The alternative in the present case is evidently no administration at all, or at best, maladministration. We therefore suggest that a full fledged oversight hearing on the Marine Mammal Act is in order. It might provide the ounce of prevention that will absolve you of, again, supplying a pound of cure.

Ms. STEVENS. And in addition to answering any question you may have, I would like to comment on some of the questions that you've already raised.

Senator PACKWOOD. Go right ahead. Your entire statement will be in the record. You can make whatever statement you want now, comment on any questions, and then we'll ask you some questions.

Ms. STEVENS. Thank you.

I think you asked who had made the study on sperm whales. That was Dr. Ohsumi. And it was the only study that was submitted to the scientific committee on this subject.

Senator PACKWOOD. Dr. Ohsumi is from where?

Ms. STEVENS. From Japan. He often attends—in fact, I think, regularly attends—the International Whaling Commission meetings, where, as you know, Japan is extremely aggressive in keeping the quotas as high as they possibly can.

Senator PACKWOOD. Do you have any information that faulty data was used to justify the whaling commission's increased quota?

Ms. STEVENS. We don't have information that is faulty in the sense of numerical—I mean that there was any falsification, no. But there is very strong scientific evidence that the decisions on the amount of improvement or lack of improvement that comes with using ASDIC to locate whales is erroneous; and therefore, as you know, when you start to use a computer and you get anything in there that isn't right, it can throw everything off. That is one factor.

I would like to send you a copy of the statement by Dr. Sidney Holt, who is a leading whale scientist, which comments extensively on this.

Senator PACKWOOD. I'm very familiar with Dr. Holt's work.

Ms. STEVENS. Well, he submitted his statement at the International Whaling Commission meeting, just before the commissioners voted. Unfortunately, they didn't have an opportunity to study it, and I believe that the Commission should look into that extremely carefully before the next meeting, because sperm whales appear to be in a great deal more trouble than this last vote would indicate.

Senator PACKWOOD. I will get that. If you wouldn't mind, I'd like to insert it in the record.

Ms. STEVENS. Certainly. I'll get that to you this afternoon.

[The statement referred to follows:]

SPECIAL MEETING OF THE INTERNATIONAL WHALING COMMISSION, TOKYO,
DECEMBER 6-7, 1977

(Statement by Dr. Sidney J. Holt, Observer representing Food and Agriculture Organization)

It was with great regret that the Food and Agriculture Organization (FAO) found that, due to unforeseen circumstances, it was not possible for a representative to attend the Special Scientific Committee meeting in Cronulla. This means that my comments must be based on study of the report of the Committee and of the background papers, instead of on an intimate knowledge of, and participation in the Committee's discussions, as is usual. I have however, consulted some of the participants in the meeting and thereby assured myself that there are no fundamental misunderstandings involved in the following remarks. It is important, in such matters, to try "to see the wood for the trees" and this is perhaps more easy than if we had been involved in the very complex and difficult discussions of the meanings of the data and the properties of the assessment models used. In this position one may try to assess the overall credibility of the advice the Committee has now

presented to the Commission. I hope my friends in the Scientific Committee will forgive me if I say that the results are not credible.

In recent years the advice of the Committee has on several occasions been that quotas should be drastically revised, usually downward. Such advice has been received with surprise and displeasure by some Commissioners. Such proposals for revision have been based on analyses taking into account more data, or using better analytical models, or both. In the present case the proposed stock classifications are dramatically changed and quotas revised upwards on the basis only of a re-application of the same model, using few new data. This calls for a more than usually close look at the way in which this has come about.

It is not easy to see by inspection how the "Allen model" works. For this reason FAO posed last July—that is, immediately after the decision to call a Special Meeting—a number of written questions to the Convener of the meeting, with copies to the Secretary of the Commission and to the Chairman of the Scientific Committee. Unfortunately these questions have not been answered, but we consider them still to be relevant. They concern the separate effects, on assessments, of changes in the assumptions concerning the efficiencies of recorded whaling effort, and in the assumed pregnancy rates and their dependence on density. It seems that:

(a) The reclassifications proposed are virtually entirely due to changes in assumed efficiency factors—including the effect of catcher size, but mainly the effects of ASDIC; and

(b) The suggested quotas for females derive essentially from an assumption that pregnancy rate increases by 25% (from 0.20 to 0.25) from one extreme of population density to another. Evidence has been presented concerning the average level of pregnancy rate, but none whatever for the range of density dependence, nor even that the pregnancy rate actually has increased with the decline in numbers of biomass, either of females, or of males plus females. In my opinion the range adopted and even the direction of change, are complete guesses. Thus, if the range were actually 0.210 to 0.235 the quotas would be about halved; if it were 0.19 to 0.29 they would be doubled; and so on. The actual range may well be outside such assumed values. The proposed quotas should be viewed in the light of such very considerable ignorance.

However, the biggest factor in the revised advice is the new position taken by the Committee with respect to the effectiveness of ASDIC, which is in some respects the opposite of what has been written and said in scientific discussions in recent years. It is now said not only that ASDIC is used by the Japanese catchers only in chasing, but also that the main effect of introducing ASDIC has been some reduction in the time spent chasing. Since that time is a rather small fraction of the catchers' day's work, this is held to justify the Committee's adoption of a very low value of the ASDIC efficiency factor as concluded in recent analyses by Japanese scientists. However, it is admitted that many chases were especially before ASDIC came into general use, unsuccessful, and it had been affirmed on earlier occasions that use of ASDIC greatly increases the likelihood that a chase will result in capture. If this is so the increase in efficiency could be great, and would not be measured as the inverse of chasing time. Unfortunately neither the report nor the background documents are informative on this crucial matter.

Then it is necessary to seek an explanation of why the ASDIC efficiency factor reported by Japanese scientists is low compared with all previously published studies, which range up to 100% and more. A possible explanation is to be found in the detailed account given of the Japanese operational method, in which it is emphasized that catchers attached to one expedition always work cooperatively, throughout the search and hunt. This means that the comparison of catches by ASDIC-fitted boats with those without ASDIC, in the same expedition and during the same season, is spurious as a measure of the efficiency factor. Further varying practices between expeditions from one year to another might account for the extreme variation in the estimates quoted. There is therefore no good reason to accept the low values in preference to the much higher values obtained in earlier critical studies.

There is an interesting consequence of the new theory that ASDIC is not very useful—and it has been said that it could even be a disadvantage—in sperm whale hunting, but that it has been installed at considerable expense primarily because of its value in baleen whaling. If this view were accepted, most assessments for baleen whales would need to be revised, because baleen whaling effort has not been corrected for ASDIC in the assessments on which present classifications and quotas are based. I suggest that such revision will lead at least to enhanced protection for sei whale stocks and to prolongation of the protection of fin whale stocks.

Another point that should be taken into consideration is the decision of the Scientific Committee to retain 1947 as the initial year on which to base classifica-

tion advice. The catch data presented show that, on the basis of the model adopted, the land-station catches of females from the Western Division for 20 years before 1947 would have been sufficient to hold the number of females down to between 90 and 95% of their initial number. Consideration of this fact would be enough to lead to classification of females as "protected" in the Western Division.

The last point I wish to make refers to the absurdity of continuing to equate one female with one male in calculating the appropriate quotas for sperm whales, ignoring the fact that each male yields two or three times as much oil, meat and meal as one female. Apart from the fact that it has not yet been shown convincingly that there is any sustainable numerical advantage in catching any females, there is clearly no advantage in catching females if account is taken of the great difference in size between the sexes. Among the unanswered questions posed by FAO to those responsible for the models adopted was the question of just how great the calculated marginal advantage, by weight or number is—if there is one—and how much, and in what ways, such a calculation depends on the assumed values of the parameters used in the model. It may be worth recalling also, that if a stock is classified as "initial management," as is now proposed for the Eastern Division, there is even more reason to take account of the size differences, while the stock is still well above the "optimal" levels.

In sum, to an "observer" it does not appear that the advice now presented is more reliable or more likely to be correct than the advice previously offered. The complex calculations that have been made are on the one hand incomplete in that the properties of the model and their dependence on precise parameter estimates and assumptions have not been revealed and, on the other hand, are such that they obscure the facts that the crucial parameters have been guessed rather than estimated, and that the calibration of crude effort data to take into account increasing efficiency is still very far from satisfactory.

Some breakdown of operational features has at last been provided for one part of one of the pelagic fleets, 15 years after the Scientific Committee first asked for such data; but the breakdown available still omits critical information—such as the change in the frequency of successful chase, and the time series of searching time per catcher day's work. Further, the analysis of such information as is given leaves a great deal of room for doubt as to what is actually being estimated, and whether the undoubted increases are yet adequately being taken into account.

Without departing from the principle that management must be based on the best scientific advice, it seems it would be wise for the Commission also to take into account:

- (a) The very great uncertainties in the assessment of sperm whales which persist, practically unchanged, despite the best efforts of the Scientific Committee;
- (b) The likely direction of biases in the data and in the assessments (including an arbitrary starting year of 1947, long after intensive sperm whaling started);
- (c) The fact that assessments are still based on data from only a relatively small part of the sperm-whaling fleet; and that those data are incomplete and have been presented selectively;
- (d) The consequences to the baleen whale assessments of the "new theory" concerning the technology of sperm whale hunting.

It would be appreciated if these observations could be included in the documentation of the present meeting.

Ms. STEVENS. Now, with respect to the Pelly amendment, there are, as the testimony from the Marine Mammal Commission indicates, other nations who should be considered for violation of the Pelly amendment, including, of course, Japan, because Japan buys the whale products from these nations. Chile is now planning to kill 500 whales, where the whaling business had been just sort of petering out. And the reason is that they now have a vessel, a Japanese fishing vessel, which was transferred to Panama, and, I believe, it was in Tahiti that it was changed into a whale catcher, so that that is really the motivation for Chile to be killing more whales outside of the IWC.

In Peru, of course, the name of the company is KinKai. It is Japanese-controlled, and Felipe Benavides, who received the highest wildlife medal, the Getty prize, was extremely critical of operations there. He finally got an inspector to go, who found a great

many undersized whales on the one occasion that he was able to get in. There were indications of very, very serious violations, even of the rather weak—do you remember the name of that, Tom? I just don't recall. They have a whaling commission, also, but—

Mr. GARRETT. The International Commission for the South Pacific—Ecuador, Peru, and Chile.

Ms. STEVENS. Now, I'd also like to say that I agree very strongly with what Senator Stevens has said about increasing the authorization and the appropriation for the Marine Mammal Commission. I think that's a very important move, and we would be delighted to see substantially higher authorization and appropriation than even is in our written testimony. We made a modest request, but we would be delighted to have something higher. I know that all the Monitor groups feel the same way.

I would also like to comment on the idea that foreign fishing is harmful to marine mammals and could be changed with the change of gear. I think that that definitely ought to be done. I know of one instance that is going to come before the Senate very soon, regarding the Dall porpoise which is caught in gill nets.

An agreement which the Senate will have to ratify is coming up relating to the salmon fishery by Japan. It isn't as strong as it ought to be, and I hope that it can be strengthened before ratification. Certainly, any foreign fisherman should have to have at least as good gear as our American fishermen are required to have. The American tuna industry has at last—under great pressure of lawsuits against the Commerce Department—finally made some real improvements.

I understand that this year the kill of dolphins to date is 3,000, and that's quite a change from 350,000 only about 5 years ago. So we need to push further, but certainly the foreign fishing fleets ought to be forced to do at least as well.

Thank you very much, Mr. Chairman.

Senator PACKWOOD. Thank you, very much.

Do you have any suggestions on what the United States should do in an effort to stop the harp seal hunt?

Ms. STEVENS. Possibly, working with the International Union for the Conservation of Nature, which made the statement that there should be a moratorium on it.

There has been considerable diversity among scientists which has made it difficult. As you know, Mr. Chairman, the Canadians were going to reduce the quota substantially 2 years ago, but the Norwegians were extremely adamant on the subject. And I think it's very important to deal with Norway, as well as Canada, because that is where the fur goes; it goes to Norway.

The Newfoundlanders have no way of dealing with the fur; they just sell the raw parts—and that is the main source of income. I would like to see an inquiry into just what happens with the fur: Who is getting it? How is the money being divided up?

There is a man named Carlson who had his picture in *Paris Match* about 4 or 5 years ago. It's said to be the only picture of him there is. Anyway, he's moving along rather rapidly. He buys pelts, and he's said to be associated also with potential whaling. We're very much concerned that Canada might go back into the whaling business.

So that if the Senate wanted to look into the question of whaling and sealing and the relationship between Canada and Norway on this, I think it would be extremely valuable.

Senator PACKWOOD. I have no other questions.

Ted?

Senator STEVENS. What do you know about the use of that whale oil for margarine?

Ms. STEVENS. I only know what I read. I believe it to be accurate, however. That is, I don't know about the 50 percent figure but I know that baleen whale oil is used to make margarine, definitely.

Senator STEVENS. I would note that it didn't indicate that 50 percent of all margarine was made from whale oil. It indicated as I understand, that European margarine is 50 percent whale oil.

If that is the case, they're consuming an awful lot of margarine over there. I think we ought to find out what the situation is.

Ms. STEVENS. We'd be certainly glad to do everything we could to look into it, Senator Stevens.

Mr. GARRETT. Mr. Chairman, there really isn't any possibility that 50 percent of the margarine consumed in Europe could have baleen whale oil in it.

Senator STEVENS. I didn't say that. I just want to make sure that you understand what I said: The margarine that is being sold in Europe proportionately, 50 percent of it is made from whale oil. Now, there's a lot of margarine imported into Europe. A lot of ours goes over there obviously.

Mr. GARRETT. Unilever still imports a little baleen whale oil. There are simply not that many baleen whales taken, or indeed that many baleen whales left. Before World War II, the Germans developed a process for using baleen whale oil to make margarine. At that time, the catch—the kill added up to about 2½ million barrels of baleen whale oil every year. At this time, the amount that would be available for Europe would be under 100,000 barrels—way under 100,000.

Senator PACKWOOD. At this time.

So what you're saying is, just by the arithmetic of it, it could not be that high a percentage.

Mr. GARRETT. I know that there are some imports of baleen whale oil—still small imports of baleen whale oil in Holland, through Unilever and on into the European Economic Community, but there just isn't enough baleen whale oil coming into Europe to make a great lot of margarine.

And really, there hasn't been—the last European factory ship—whaling factory ship, Norwegian factory ship, left Sognefjord in 1968, so there hasn't been really any large amount of baleen whale oil going into Europe since the end of European pelagic whaling. It started to end in the 1950's with the destruction of the Antarctic stocks, and terminated in 1968.

Senator STEVENS. We'll check out the source of the statement that was made to the Department of Agriculture.

Mr. Garrett, I find it very difficult—having read some of your articles about me—to be courteous, but I'm going to try and be courteous, anyway.

Your articles approach racism, as far as my Eskimos are concerned, in my opinion. And you have repeated that statement here.

I'm going to read: "Appalling waste which characterizes U.S. Eskimo taking of walrus appears to be worsening * * *"—where do you get the facts for that?

Mr. GARRETT. I have a figure here of a beach survey done from Nome to Cape Lisburne. Here's a beach count. Could I read these beach counts off?

Senator STEVENS. I know them, but how do you know that those are U.S. Eskimos that took that kill?

Mr. GARRETT. The Soviets complained, in late 1976, because so many headless walrus were coming washing onto Soviet beaches. They maintain they're not taking walrus, but I can't quite imagine that some number of times that same number of walrus would wash onto U.S. beaches being taken by Soviet Eskimos. Who else would be taking them?

They said, renegade whites are taking them, and I've heard no evidence to that effect. I have a lot of data here and I'll be glad to present it to the committee. In fact, with the Chairman's permission, I'd like to enter some of this into the record. Perhaps we can consult with staff to see what would be appropriate, but I've got a pile of data this thick [indicating].

Senator STEVENS. I'm going to object, if it's any more of your stuff that is tinged with racism, as far as the Eskimos are concerned.

We have had Eskimo people complain also about those headless walrus, and our State has been looking into it very deeply. But you say that under State management the situation appears to be worsening.

Now the State management just occurred last year. It was not 1976. It just occurred in 1977 that the State resumed jurisdiction over the walrus. What do you have to show that since the State took back the jurisdiction over walrus under the supervision of the Federal Government that the situation appears to be worsening?

Mr. GARRETT. First, it is my understanding that the State received jurisdiction in April 1976. Isn't that correct, sir?

Senator STEVENS. It's not my understanding that we got it in April. As a matter of fact, the matter is still being challenged, I think, in the courts.

Mr. GARRETT. It's being challenged in a case called *People of Togiak v. Andrus*, in which the Eskimo People maintained that the Department of Interior is not living up to its trust responsibility by waiving the enforcement of the act to the State of Alaska.

Senator STEVENS. Because the State is going to limit the take. Let's be honest about that, Mr. Garrett; you know that. You have a way of not being completely factual in your statements about my State.

The complaint of the people of Togiak was that the State would limit the taking of walrus. Isn't that correct?

Mr. GARRETT. Sure it is.

Senator STEVENS. So what do you have to justify your statement: "Under State management, the taking of walrus appears to be worsening."

Mr. GARRETT. The counts we have for 1977—and I'd like to enter those into the record, if I might, Mr. Chairman. I don't know if I have them with me, but I can certainly get them—that indicate

that as many if not more headless walrus washed up in 1977 as washed up in 1976.

Senator PACKWOOD. Whose counts are these?

Mr. GARRETT. These are counts taken—let's see here. Some of them are Fish and Wildlife Service counts; some of them are counts taken by the State officials.

Senator STEVENS. The State is very disturbed over this, and we are doing our best to prove some cases, as I understand it. And as I've said before, there is indication that they're not all American citizens involved in this.

Mr. GARRETT. Let me elaborate a little bit on saying the situation is worsening. The reason the situation is worsening—I'm going back to the 1960's here—the reason the situation is gradually worsening is that the Eskimo communities are getting more and more into the cash economy. And when you take a place like Big Diomedes or Little Diomedes Island, there really isn't any other source of cash but ivory from walrus.

Accordingly, there's an increasing demand for more ivory from more walrus in the State. The State this year is granting about—let's see—a quota of about 700 walrus.

Now the information we have is that those folks can eat about 5 percent of that amount of walrus. The rest of it goes into the cash economy when the tusks are removed and sold, and that's taken into account, and it's admitted by the State. Although I've talked with Mr. Skoog about it awhile back, he didn't admit that utilization was down to 5 percent as the State indicates.

He said that the State fully recognized that most of the walrus wouldn't be eaten that the natives had—they do, indeed. They're going to get into the cash economy. They've got to have some cash, and that's the only way there is for them to get the cash.

Another serious problem is, of course, the taking of the walrus is so wasteful. Some people like Dr. Durham, after spending 13 years up there, maintain that for every walrus retrieved about 5 are struck and lost. And I have here in this data one account—one statement that says that walrus that are taken from powerboats are practically never retrieved at all; just the tusks are taken out, and the wastage is really much worse when they're taken in the water.

Now if the State or the Federal Government—and the Federal Government did almost nothing, admittedly, and we hope the State eventually may do better than the Federal Government; it could hardly do worse in administering the act. But if you want to stop wastage of walrus, you're going to have to stop shooting them out of the water. They haven't done that yet that I know of.

Mr. Greenwalt expressly—he published in the Federal Register a statement in which he expressly rejected the recommendations of the administrative judge that killing of walrus in the water be terminated, and expressly rejected certain other recommendations of the administrative judge that were designed to reduce wastage.

I think that the actual kill of walrus is very high. I think that most of the Eskimo community—and particularly the traditional Eskimos—everyone says the same thing, are very disturbed about it. But Eskimo society is egalitarian, and it's very difficult for folks

in there to get after each other and discipline each other, and external discipline has been lacking.

I think it's a shame. I think it's to the long-term detriment of the Eskimo community not to work up some kind of arrangement to cut down this wastage. Now this is happening in the bowhead whale situation. After all this fuss, the Eskimo community is now cooperating, and doing it quietly. I haven't had any complaints from the Eskimo community about our activities in a good while. We've been cooperating with them now for the last several months—certainly, since the December meeting.

Senator STEVENS. You're not being sued for slander by one group of Eskimos because a former staff member of this committee, who is now their attorney, and I talked them out of it. They still have 2 years to file that grievance. I'd be happy to discuss it with you; I don't think we should do it now. I've got to go here in a couple of minutes. What's this "more howling clagues before this committee" in your statement? When have we had a howling clague before this committee.

Mr. GARRETT. Of course, you don't do the oversight in this committee that the Merchant Marine and Fisheries Committee does. From time to time you have lobbyists here. A good example of that is the tuna porpoise situation. Proper enforcement—more than that, proper research early on would have prevented all the fight.

Senator STEVENS. It's this committee that started that. I don't remember a howling clague before this committee. I've been on the committee for 7 years, and I think no one's paid more attention to the ocean's managment, with the possible exception of Senators Magnuson and Hollings and my chairman here today, than I have. I remember listening to very many. But I don't remember any howling clagues before this committee, dealing with the problems that you're talking about, with the Marine Mammal Commission.

I would hope that you'd cut down some of the intensity of your rhetoric, and recognize that a great many people are working on this besides you, Mr. Garrett. You were the deputy commissioner of the IWC, weren't you?

Mr. GARRETT. Still am, despite certain efforts.

Senator STEVENS. Did you vote to cut down, to terminate, the taking of whales by Alaska Eskimos?

Mr. GARRETT. The determination of the delegation was that there be a limited taking of whales, and we all conformed to that.

Senator STEVENS. In the first instance, though, you didn't protect them by vetoing the taking at all, did you?

Mr. GARRETT. I don't quite understand what you mean by vetoing the taking it up at all, Mr. Stevens.

Senator STEVENS. Many of us believe that the IWC doesn't have jurisdiction over subsistence taking of whales.

Mr. GARRETT. That could be determined in court. There's another case that might be filed. I don't know what you've told your friend, the attorney, about filing in that area.

Senator STEVENS. We're going to have to go into that. But did you vote for the increased quota for the foreign whaling fleets?

Mr. GARRETT. Mr. Frank went along with it. I don't vote, as the deputy commissioner. I have a voice.

Senator STEVENS. Did you participate in the formulation of that policy which led to an increased taking by foreign fleets of whales, and a decrease in the number of whales that the Eskimos could take?

Mr. GARRETT. As far as your Eskimos are concerned, if everyone on that delegation, including some folks who were supposed to be anti-Eskimo, hadn't worked very hard, there wouldn't have been any taking at all allowed. You see, we got a relaxation.

Senator STEVENS. If you had protected it in the first instance and vetoed the taking it up at all, there wouldn't have been the problem for the IWC, would there?

Mr. GARRETT. There's no way that the United States could have avoided this coming up before the IWC, no way in the world.

Senator STEVENS. It could have been vetoed in the first instance.

Mr. GARRETT. I don't know what you mean, vetoed, Mr. Stevens.

Senator STEVENS. An objection could have been filed for taking that up before that subcommittee of the IWC.

Mr. GARRETT. You're saying this last year after the IWC had determined there ought to be a zero quota, we could have taken and filed an objection?

Senator STEVENS. In the first instance, they had no jurisdiction if we had objected to that being on the agenda, is that correct?

Mr. GARRETT. Excuse me. Could you repeat that.

Senator STEVENS. In the first instance, that the IWC took it up, it could have been objected to. As a matter of fact, Senator Magnuson, Senator Hollings, and I personally asked the President to direct our members to object to that being on the agenda.

Mr. GARRETT. In the first place, the International Whaling Commission determined that it did have jurisdiction.

Senator STEVENS. Only after we failed to object to it.

Mr. GARRETT. They determined that they had jurisdiction in Canberra in June 1977.

Senator STEVENS. I understand that; after we failed to object.

Mr. GARRETT. I don't think we could have talked them out of taking it up. We tried our very hardest for years. The scientific committee of the IWC has drawn to our attention the fact that the bowhead stock of whales is seriously endangered. Taking is wasteful. The stock probably couldn't stand the attrition to which it was subjected. And they've asked our government time and again, and very specifically in a resolution in 1976, to do something about it, to bring the kill under control, to stop the wastage, to generally ameliorate the stress that the whales are under.

Now, the National Marine Fisheries Service did nothing at all about it. If you had gotten after the National Marine Fisheries, Mr. Stevens, early on——

Senator STEVENS. I did.

Mr. GARRETT [continuing]. To engage in research and to try to get the situation straightened out and cooperate with the Eskimos, all this wouldn't have happened.

Senator STEVENS. If you remember, I did. And as a matter of fact, we put in the protection for the Eskimos in the Marine Mammal Protection Act, to authorize the research, authorize the appropriations of money. The money has not been forthcoming. Again, my State spends more money on this than the Federal

Government has. And we want to protect the bowhead more than anyone, because we feel the Eskimos' culture is going to be dependent upon the survival of the bowhead, and so do the Eskimos.

But as a practical matter, the IWC had no business getting involved in the taking for subsistence purposes, and we could have prevented it by a protest. This committee asked that they protest and we were ignored. If you'd like to see some of the exchange of the correspondence, I'd be happy to give it to you. As a matter of fact, I think one of these days the Chairman, Senator Hollings, and I are going to have a little conversation with the people involved. I personally have already had a conversation with Mr. Frank about it.

But my point right now is, how was it that the IWC, of which you're deputy commissioner, and the American members thereof supported an increased taking by foreign commercial whalers and at the same time limited the taking by Eskimos of the whales that are essential to their culture?

Mr. GARRETT. I'll tell you one reason why we did, why we went along with it. They were tacitly trading off with the Japanese. The game was, you don't fuss about the increased take of sperm whales and we'll support you on some take of bowhead whales for Eskimos. Now, that was never explicit, but it was certainly tacit, and it certainly worked.

Senator STEVENS. Didn't all the scientists recommend the increase in the taking of sperm whales?

Mr. GARRETT. There was a minority report in the scientific committee report by Dr. Bertram Holt, who came up with a supplementary report, Dr. Holt, afterwards. Unfortunately, he was only at the scientific committee meeting for 1 day. He came up with the report afterwards, knocking the scientific committee's recommendations.

It was also based on data that hadn't been really carefully analyzed.

Senator STEVENS. Are you trying to tell me that you think that in the past the Eskimo taking of the bowhead has been traded off for sperm whales?

Mr. GARRETT. I'm saying that this happened in December 1977. I'm not saying that it was an actual tradeoff. This thing was certainly in the works.

Senator STEVENS. How come they end up with more sperm whales and we end up with less bowheads, if there was a trade? I think I could do a better negotiation than that, if someone was trading.

Mr. GARRETT. I don't think you're following what I'm trying to say. I'll try and be a little more explicit here. The meeting at Canberra had greatly reduced the sperm whale quota. It was restored partially in December at the meeting in Tokyo. Now, if we had objected strenuously to the partial restoration of the sperm whale quota, it's very probable that the Japanese would have retaliated by saying, we can't support you in asking for a limited take of bowhead whales, because at that time we had a zero take. The zero take was voted at the meeting in Canberra.

Senator STEVENS. That's exactly what we warned them of. If they fool around with the Eskimo thing, they'd have to give them some-

thing, and the net result would be that they would lose the international bargaining chips. And they did. That's the worst international representation of an American minority I've ever seen; and I'd be glad to send you the statements I made on the floor. But I hope, Mr. Garrett, that you, and particularly in your publication, will lower the rhetoric, and in particular, references to Members of the Senate—I'm not talking about me—with regard to the issues of protecting Eskimo culture. It seems to me that those statements were rather——

Mr. GARRETT. Mr. Chairman, could I point out, Senator Stevens, that I did not write the article that you're talking about, and saw it after it was published. It's a simple fact.

Senator STEVENS. That's news to me.

Mr. GARRETT. If you will re-examine the issue, you'll find that my name is not there as the author. It's Toby Copper on the staff who wrote the article.

Senator STEVENS. Are you the publisher?

Mr. GARRETT. The organization publishes it, sure.

Senator STEVENS. Do you edit it?

Mr. GARRETT. No, I don't. I have nothing to do with the magazine. You can ask the editor about that. He will confirm that. I have nothing whatever to do with it.

Senator STEVENS. I thank you for your patience, Mr. Chairman. I have to be on the floor at 11:30.

Senator PACKWOOD. We'll conclude the hearing, and then we will go on with another tranquil extension of it some time in the future.

[Whereupon, at 11:30 a.m., the hearing was adjourned.]

[The following information was referred to on p. 15:]

ADMINISTRATION AND STATUS REPORT OF THE MARINE MAMMAL PROTECTION ACT
OF 1972

June 22, 1976 to June 21, 1977

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

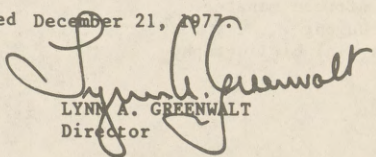
MARINE MAMMAL PROTECTION ACT

Report of the Department of the Interior

The Marine Mammal Protection Act of 1972 (16 U.S.C. 1361, 86 Stat. 1027 (1972)) stated in section 103(f) that "Within six months after the effective date of this Act [December 21, 1972] and every twelve months thereafter, the Secretary shall report to the public through publication in the Federal Register and to the Congress on the current status of all marine mammal species and population stocks subject to the provisions of this Act. His report shall describe those actions taken and those measures believed necessary, including where appropriate, the issuance of permits pursuant to this title to assure the well-being of such marine mammals."

The responsibility of the Department of the Interior is limited by section 3(12)(B) of the Act to those mammals that are members of the orders Carnivora (polar bear, sea otter, and marine otter), Pinnipedia (walrus), and Sirenia (manatees and dugong). Accordingly, published herewith is the report of the Department of the Interior for the period June 22, 1976, to June 21, 1977, on the administration of the Act with regard to those mammals.

Issued at Washington, D.C., and dated December 21, 1977.



LYNN A. GREENWALT
Director

ADMINISTRATION OF THE MARINE MAMMAL PROTECTION ACT OF 1972

June 22, 1976, to June 21, 1977

Report of the Department of the Interior

CONTENTS

	<u>Page</u>
Introduction	1
Authority	1
Marine Mammal Commission	1
Congressional hearing	2
Part I. Administrative actions	3
Marine Mammal Protection Act amended	3
Marine otter	3
Waiver of the moratorium for nine species of marine mammals	3
Walrus waiver	4
Legal actions against the Department of the Interior	4
Enforcement	5
Scientific research and public display permits	5
Scientific research permit applications	6
Public display and scientific research permit application	7
Certificates of registration	8
Research	9
In-house	10
Contracts	12
Grants-in-aid	12
Endangered species	13
Outer Continental Shelf baseline studies	14
International activities	16
Part II. Species status reports	20
Introduction	20
Species list	20
Status reports	21
Polar bear	21
Sea otter	26
Marine otter	28
Pacific walrus	30
Atlantic walrus	33
West Indian manatee	36
Amazonian manatee	45
African manatee	47
Dugong	51
Partial bibliography	54

ILLUSTRATIONS

	<u>Page</u>
Figure 1. Distribution of manatees in the Western Hemisphere	37
2. Seasonal distribution of the West Indian manatee in Florida	38
3. Present distribution of the African manatee and the dugong	48

APPENDIXES

- Appendix A. Proposed designation of marine otter
as a marine mammal
- B. Change in Alaska State walrus regulations--
Rifle caliber
- C. Change in Alaska State walrus regulations--
Seasons and bag limits
- D. Determination of critical habitat for
Florida manatee
- E. Determination that the southern sea otter
is a threatened species

Prepared by
U.S. Fish and Wildlife Service
Department of the Interior
Washington, D.C. 20240
1977

Administration of the Marine Mammal Protection Act of 1972

June 22, 1976, to June 21, 1977

INTRODUCTION

AUTHORITY

Pursuant to the requirements of section 103(f) of the Marine Mammal Protection Act of 1972 (86 Stat. 1027; hereinafter, the "Act"), this report describes administrative actions and the status of certain species of marine mammals. The report covers the period June 22, 1976, through June 21, 1977, and is presented in three parts: administrative actions, species status reports, and appendixes.

Under section 3(12)(B) of the Act, the Department of the Interior is responsible for the following marine mammals: polar bear, sea otter, marine otter, walrus, manatees, and dugong. On July 8, 1977, the Secretary of the Interior, through the Assistant Secretary for Fish and Wildlife and Parks, redelegated authority for the functions prescribed by the Act to the Director, U.S. Fish and Wildlife Service, as prescribed in 242.1.1 of the Departmental Manual.

MARINE MAMMAL COMMISSION

Title II of the Act established a Marine Mammal Commission and a nine-member Committee of Scientific Advisors. The Act prescribes extensive consultative roles for the Commission and the Committee with the Secretaries of the Interior and Commerce. Contact with the Commission, through its staff, is on an almost daily basis. The formal review of permit applications, section 110 grant proposals, and moratorium-waiver requests are accomplished through established procedures.

The Commissioners are:

Douglas G. Chapman, Chairman, Seattle, Wash. Dr. Chapman is Dean of the College of Fisheries, University of Washington, Seattle, Wash.

Richard A. Cooley, Santa Cruz, Calif. Dr. Cooley is the Academic Assistant to the Chancellor at the University of California, Santa Cruz, Calif.

Donald B. Siniff, St. Paul, Minn. Dr. Siniff is a Professor in the Department of Ecology and Behavioral Biology, University of Minnesota, St. Paul, Minn.

The Marine Mammal Commission is an independent body and reports to Congress annually.

CONGRESSIONAL HEARING

The Honorable Robert L. Leggett, Chairman of the House Subcommittee on Fisheries and Wildlife Conservation and the Environment, called a hearing on March 15, 1977, on H.R. 4740. This bill proposed extending the appropriation authorization of sections 110(c) (research) and 114(b) (administration) of the Marine Mammal Protection Act for fiscal year 1978. George W. Milias, Deputy Director of the Fish and Wildlife Service, testified before the subcommittee and answered questions on the Service's funding under the Act and on its enforcement and marine mammal research activities.

PART I--ADMINISTRATIVE ACTIONS

MARINE MAMMAL PROTECTION ACT AMENDED BY FISHERY CONSERVATION
AND MANAGEMENT ACT

On March 1, 1977, section 404 of the Fishery Conservation and Management Act of 1976 (16 U.S.C. 1362 note, 90 Stat. 360) took effect, changing the definition of "waters under the jurisdiction of the United States" in section 3(15)(B) of the Marine Mammal Protection Act (MMPA) to encompass the waters within the newly established U.S. fishery conservation zone. Thus, rather than applying to a 12-nautical-mile-wide offshore zone, the MMPA now applies to a 200-nautical-mile-wide zone.

Specifically, the amendment struck from the MMPA reference to "the fisheries zone established pursuant to the Act of October 14, 1966," and replaced it with

"the waters included within a zone, contiguous to the territorial sea of the United States, of which the inner boundary is a line coterminous with the seaward boundary of each coastal State, and the outer boundary is a line drawn in such a manner that each point on it is 200 nautical miles from the baseline from which the territorial sea is measured."

MARINE OTTER

On June 16, 1977, the Service proposed adding the marine otter of Chile and Peru (Lutra felina) to the list of species designated as marine mammals for purposes of the MMPA. The proposal was published in the Federal Register (42 F.R. 30659--see appendix A). Although the marine otter was already listed as an endangered species and therefore protected by the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the proposed listing would afford the species additional protection.

WAIVER OF THE MORATORIUM FOR NINE SPECIES
OF MARINE MAMMALS

In 1973, the State of Alaska applied to the Secretary of the Interior to waive the moratorium and return to the State management of Alaskan populations of polar bears, sea otters, and walrus. At the same time, the Secretary of Commerce received a similar request for northern sea lions, harbor and spotted seals, ringed seals, bearded seals, ribbon seals, and beluga whales. The Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) are cooperatively considering

the requests for their respective agencies, and in March 1976 they submitted a jointly prepared draft environmental impact statement and proposed regulations to the Council on Environmental Quality.

Public hearings on the proposed action and the State's regulations began on June 29-July 1, 1976, in Anchorage, Alaska, under the direction of Administrative Law Judge Malcolm P. Littlefield of the Department of the Interior's Office of Hearings and Appeals. To obtain the broadest possible testimony of all concerned parties, the hearings continued on July 6-9 in Nome and on July 12-13 in Bethel. On July 14-20 they reconvened in Anchorage, and on October 19-20 they concluded in Washington, D.C. On the basis of the recommendations of the administrative law judge and the hearing record, the FWS and NMFS Directors will make their decisions on this waiver action in early 1978.

WALRUS WAIVER

In 1975, the walrus part of Alaska's 1973 request to waive the moratorium and return management to the State was severed from the original petition, and appropriate procedures were developed to treat the walrus waiver as a separate action--although one still subject to review when the overall waiver request is acted on. After all prescribed steps had been completed and the requirements satisfied, the Service implemented the walrus waiver and returned management of the species to the State on April 5, 1976.

During the current report period, the Service received the first annual report on the State's walrus management program and approved two requested changes in the State's walrus hunting regulations. The annual report was received on June 6, 1977, and is being reviewed by the Service and the Marine Mammal Commission. On October 13, 1976, the Director approved a change in the minimum rifle caliber and cartridge-case characteristics permitted for hunting walrus (41 F.R. 44875--see appendix B). On May 20, 1977, he approved more restrictive walrus hunting seasons, bag limits, and maximum quotas by game management units and specific locations; these changes were requested to stabilize the walrus kill significantly below the levels of the annual take during the past few years (42 F.R. 25924--see appendix C).

LEGAL ACTIONS AGAINST THE DEPARTMENT OF THE INTERIOR

On February 11, 1977, residents of Togiak, Alaska, entered class civil action No. 77-0264 in the Federal District Court for the District of Columbia on behalf of themselves and other Alaska Natives living in the Bristol Bay area of southwest Alaska. The plaintiffs charged the defendants--the United States, Secretary of the Interior Cecil D. Andrus,

and the Director of the Fish and Wildlife Service--with violating their rights and failing to perform statutory responsibilities. Specifically, they requested declaratory relief to void the regulations that removed the exemption for Alaska Natives from the provisions of the MMPA--regulations that were promulgated relative to the walrus waiver mentioned earlier in this report. The Department of Justice answered the complaint on May 28 and will file a motion to dismiss later in 1977.

ENFORCEMENT

U.S. Fish and Wildlife Service special agents initiated 236 marine mammal cases during the report period. One hundred and twenty-seven of these cases, primarily sealskin importations, were referred to the National Marine Fisheries Service after FWS agents made initial investigations and seizures of illegal importations. A total of 231 cases were closed, while 98 are pending. Most of the pending cases involve routine checks of gift shops for intelligence purposes and to ascertain if MMPA violations are occurring.

A partial breakdown of investigations by animal type is as follows: Polar bear, 18; sea otter, 4; walrus, 10; manatee, 4; seal, 160; and whale, 13.

SCIENTIFIC RESEARCH AND PUBLIC DISPLAY PERMITS

The Act declared a moratorium on the taking or importing of marine mammals and marine mammal products, but it included exceptions that allow scientific research on these animals as well as taking them for public display. Such research and taking, however, may be conducted only if there are no adverse effects on the health and well-being of the involved marine mammal species and populations and the marine ecosystems of which they are a part.

Section 101(a)(1) of the Act and section 18.31 of the Code of Federal Regulations, which govern the taking and importing of marine mammals under Fish and Wildlife jurisdiction, authorize the Director (by delegation) to issue permits for scientific research and public display purposes--but only after the applications have been reviewed by the Marine Mammal Commission and its Committee of Scientific Advisors on Marine Mammals.

The Fish and Wildlife Service received eight permit applications during this report period. Seven new permits and five amendments to new or existing permits were issued; one application was denied; and seven applications are pending. The permits issued or amended are summarized below:

Scientific Research Permit Applications

To capture not more than 35 adult sea otters (*Enhydra lutris*) in Alaska for purposes of weighing and sexing, marking with human hair dye and (or) flipper tags, attaching telemetric radio devices, and taking blood samples; to capture not more than 20 adult sea otters in California for purposes of weighing and sexing, marking with human hair dye and (or) flipper tags, attaching telemetric radio devices of the type used on the otters captured in Alaska--but only after all transmitter problems on the Alaska animals have been solved, and taking blood samples. (Dr. Donald B. Siniff, University of Minnesota, St. Paul, Minn.) Permit No. 2-122-10 was issued on July 12, 1976; it expires on December 31, 1977. An amendment to this permit was issued on October 22, 1976, authorizing exposing no more than 10 of the otters taken in Alaska to applications of oil provided that the animals are maintained in a tank rather than the open water during experimentation, the tank contains a haul-out raft or platform, and these activities are coordinated with the Sea Otter Working Group.

To capture three Florida manatees (*Trichechus manatus*); to hold them for scientific research at its facilities; to release them at or near their capture site after completion of study or permitted activity; to salvage and care for any manatees found injured or dead and any injured or killed owing to the permitted activity, preserving dead specimens for scientific research; and to coordinate authorized activities with the Gainesville Field Station, National Fish and Wildlife Laboratory. (Aquatic Institute of Research, Inc., Cape Coral, Fla.) Permit No. 2-87 was issued on September 8, 1976; it was scheduled to expire on December 31, 1977. An amendment to this permit was issued on October 22, 1976, extending its expiration date to December 31, 1980, and changing the type of permit to "Marine Mammal and Endangered Species."

To capture not more than 100 polar bears (*Ursus maritimus*) by means of culvert traps, footsnare, and dart gun drugging for purposes of marking with ear tags and lip tattoos, attaching radio-telemetry collar equipment, taking blood samples and one premolar from each animal, and keeping the animals in captivity at the Manitoba laboratory for observational behavior studies. (Dr. Charles J. Jonkel, School of Forestry, University of Montana, Missoula, Mont.) Permit No. 2-260-10 was issued on January 27, 1977; it expires on December 31, 1978.

An amendment to permit No. 9-25-C (issued on September 25, 1975, to Dr. Howard W. Campbell, National Fish and Wildlife Laboratory Field Station, Gainesville, Fla., to develop and implement tagging techniques for West Indian manatees--*Trichechus manatus*) was issued on March 23, 1977. The amendment authorized maintaining 1 or 2 of the tagged animals in captivity for as long as 1 year to evaluate tagging methods, after which they are

to be released and monitored in the wild; spaghetti or paint tagging up to 25 wild manatees; attaching sonic tags to as many as 10 wild manatees, provided that only 2 animals be so tagged at a time so that effects and results may be reported and evaluated before 2 more animals are tagged, and provided further that sonic tagging be suspended if a tagged animal dies and remain suspended until the Director determines that tagging should continue; and conducting nonharmful studies on respiratory water loss, total body water, metabolic rate, and milk production and content.

To capture, tag (with plastic flipper tags instead of aluminum tags), and release (at or near the capture site) up to 16 California sea otters (*Enhydra lutris*), as many as 8 of which may be fitted with radio-telemetry collars that will have corrosible attachment mechanisms to ensure that they fall off after a fixed period of time; collars will not be attached to large adult males. (University of California, Department of Biology, Los Angeles, Calif.) Permit No. 2-486-10,07 was issued on May 11, 1977; it expires on August 31, 1978.

To capture, transport, and sacrifice one polar bear cub for purposes of scientific research. (Jack W. Lentfer, National Fish and Wildlife Laboratory, Anchorage, Alaska) Permit No. 2-454-10 was issued on June 1, 1977; it expires on December 31, 1979.

To take 20 adult sea otters (*Enhydra lutris nereis*); to attach to them identifying flipper tags and, to their flippers, radio transmitters; and to sex and weigh them. (Dr. Donald B. Siniff, Ecology Department, University of Minnesota, Minneapolis, Minn.) Permit No. 2-650-10,26 was issued on June 2, 1977; it expires on June 30, 1978.

Public Display and Scientific Research Permit Application

To capture in California one male and four female subadult (1-1/2 to 3 years old) sea otters (*Enhydra lutris*) and to transport them to Seattle Aquarium. (The Seattle Aquarium, City of Seattle Department of Parks and Recreation, Seattle, Wash., H. Doug Kemper, Jr., Director) Permit No. 2-90-10,11 was issued on August 10, 1976; it was scheduled to expire on February 28, 1977.

An amendment to this permit was issued on August 18, 1976, changing the authorized capture site from California to Alaska, directing that the loss, death, or destruction of any otters due to these taking activities be reported within 24 hours to the Special Agent in Charge at Anchorage and in writing to the Director (FWS) in Washington, D.C., and advising that the Anchorage FWS office will provide instructions on the disposition of salvaged specimens. A second amendment, issued on May 4, 1977,

changed the expiration date of the permit to September 30, 1977, and added the word "approximately" before the ages of animals authorized to be captured.

Certificates of Registration

Section 18.23 of the regulations provides that marine mammals taken by an Indian, Aleut, or Eskimo for the purpose of creating and selling authentic native articles of handicraft and clothing may be transferred to a registered tannery, either directly by an Indian, Aleut, or Eskimo, or through a registered agent. Similarly, marine mammals taken by Alaskan Natives for subsistence may be sent to a registered tannery for processing and subsequent return to an Alaskan Native.

Any tannery or person who wishes to act as an agent may apply for registration. During the report period, the Service took the following actions on certificates of registration or applications for certificates.

Roy Hendricks (RA-1) P.O. Box 8122, Anchorage, Alaska 99508. Certificate was terminated on November 12, 1976.

Dennis R. Corrington (RA-3) Corrington's Alaskan Ivory Co., SRA Box 1466F, Anchorage, Alaska 99502. Certificate was terminated on November 12, 1976.

Martin James, Jr. (RA-6) Maruskiya's of Nome, P.O. Box 895, Nome, Alaska 99762. Amendment No. 2 to delete activities with walrus ivory was issued on November 12, 1976.

Howard and Mary Knodel (RA-13) Arctic Trading Post, Box 262, Nome, Alaska 99762. Certificate was terminated on November 12, 1976.

Alaska Unorganized Borough School District (RA-15) Bering Strait Region, Box 1088, Nome, Alaska 99762. Amendment No. 1 to delete activities with walrus ivory was issued on November 12, 1976.

Mr. Don Stand (RA-17) Kawerak, Inc., Box 505, Nome, Alaska 99762. Issued a permit on July 2, 1976, which expires on December 31, 1977, to receive or acquire polar bear hides and parts from Alaskan Natives or other marine mammal registered agents and to sell or transfer the polar bear hides and parts to Alaskan Natives or other marine mammal registered agents.

Rick Sylvester (RA-18) Box 42, Mercy Drive, Eagle River, Alaska 99577. Issued a permit on September 17, 1976, which expires on December 31, 1978, to receive or acquire polar bear hides from Alaskan Natives or other marine mammal registered agents and to sell or transfer the polar bear hides to Alaskan Natives or other marine mammal registered agents.

Walter Knopp, President (RA-20) American Fur Dressing Co., Inc., 10816 Newport Highway, Spokane, Wash. 99218. Permit issued on May 19, 1977, which expires on December 31, 1979, to receive or acquire polar bear hides from Alaskan Natives or other marine mammal registered agents and to sell or transfer the polar bear hides to Alaskan Natives or other marine mammal registered agents.

Bryan MacLean, Box 89, Wainwright, Alaska 99782. Applied for permit to handle polar bear skins. Would like to be a licensed receiving agent for skins taken only by Alaskan Eskimos from the villages of Point Lay, Wainwright, and Barrow; the skins would be shipped to and tanned at the New Method Fur Dressing Company. Application pending--INV.

RESEARCH

The marine-mammal research-related objectives of the Fish and Wildlife Service are to actively carry out the Service's mandates under the Marine Mammal Protection Act and to determine the ecological effects of energy-resource-development-related human activities on marine wildlife. In order to meet these objectives, considerable survey work, accumulation of information, and detailed analyses of population data remain to be accomplished. Review of worldwide marine mammal research literature and preparation of status reports continue to be important efforts in the overall research program.

In response to a Marine Mammal Commission-presented proposal to establish a national center for storage and recovery of marine mammal marking and tagging, the Service contracted with the American Institute of Biological Sciences to organize and conduct an evaluative workshop on December 8-9, 1976, in Laurel, Md. Participants included representatives of the National Marine Fisheries Service, Smithsonian Institution, U.S. Navy, universities, private industry, and the Service's Division of Wildlife Research and Office of Biological Services.

Because of the workshop-identified need and recommendation to gather, coordinate, and disperse information on marine mammal tagging and marking, the Service's Division of Wildlife Research established a Federal information clearinghouse on March 23, 1977, to be operated within its National Fish and Wildlife Laboratory. The activities and responsibilities of the clearinghouse are, however, less extensive than those in the commissioned proposal, in that it has no centralized data storage and retrieval system.

Responding to another workshop recommendation to assess the state-of-the-art of marine mammal tagging and marking techniques and materials, the Service, Marine Mammal Commission, and National Marine Fisheries Service

cooperatively sponsored a porpoise tagging workshop on May 4-5, 1977, in La Jolla, Calif., to review tagging and marking of small cetaceans, to assemble design criteria for improved tags and marks, and to identify specific areas of research needed for tag and mark evaluation and for experimental design. Participants included representatives of all major U.S. porpoise tagging and marking efforts, veterinarians familiar with marine mammals, tag specialists and manufacturers, marine mammal research managers, an invertebrate specialist familiar with naturally attaching organisms, and a biostatistician responsible for experimental tag design at the National Marine Fisheries Service Southwest Fisheries Center in La Jolla. In the workshop, they reviewed techniques, results, and problems encountered while tagging and marking different groups of marine mammals and recommended specifications for captive animal tests, tag evaluation criteria, and research experiments on branding, dorsal fin and body attachments, and assorted marking methods. These recommendations were submitted to the Marine Mammal Commission for its use in evaluating future tagging and marking proposals.

Service efforts to determine ecological effects of energy development on marine mammals included forming and leading the Sea Otter Working Group along lines suggested by the Marine Mammal Commission. The group's preliminary objectives and task were to see that independent studies on sea otter oiling are closely coordinated to maximize scientific return, minimize the number of animals sacrificed, and avoid costly duplication of effort. At the group's meeting in Monterey, Calif., on April 27, 1977, representatives of the Alaska and California Departments of Fish and Game, the Bureau of Land Management, and the Service's Division of Wildlife Research and National Wildlife Refuge system identified and discussed problems of recovering and cleaning oiled animals, manpower and specialties of personnel needed to implement an oil spill contingency plan, permits needed to expedite response to a spill and enhance scientific data collection and opportune animal tagging, and the role and future of the group itself.

Research conducted in-house, by contract, and by grants-in-aid is summarized below.

In-house

1. Polar bear investigations:

- a. Biology and ecology of Alaska coastal populations.
- b. Den ecology and distribution.
- c. Biological parameters of bears of Chukchi Sea.
- d. Biology and ecology of bears of Arctic Ocean.
- e. Summer distribution and ecology of bears.
- f. Discreteness of populations.
- g. Satellite tracking of bears.

- h. Parasites and environmental contaminants in bears.
 - i. Estimation of Alaska population size and productivity.
 - j. Impact of resource development on bears.
 - k. Annual status report.
2. Sea otter and marine otter investigations:
- a. Annual and seasonal distribution, abundance, and composition of populations of sea otters and other marine mammals in Prince William Sound, Alaska.
 - b. Distribution and abundance of recently established sea otter populations.
 - c. Biology and management needs for California sea otters.
 - d. Interactions between sea otters and the nearshore communities.
 - e. Annual status reports on the sea otter and marine otter.
3. Walrus investigations:
- a. Activity and behavior of Pacific walrus.
 - b. Annual status reports on Pacific walrus and Atlantic walrus.
4. Manatee and dugong investigations:
- a. Effects of vegetation control programs on Florida manatee.
 - b. Biological consequences of manatee uses of sanctuaries and unprotected environments.
 - c. Study and salvage stranded manatees and other marine mammals.
 - d. Development of manatee tagging and tracking technology.
 - e. Definition of manatee habitat requirements and assessment of habitat alterations.
 - f. Basic sensory and physiological parameters as related to technical needs.
 - g. Marine mammal compatibility with urbanization.
 - h. Distribution and status of all manatee taxa and populations; annual reports.
 - i. Survey of dugong distribution, status, and conservation problems; annual report.
5. Other marine mammals: Biological studies, in cooperation with NMFS, to determine status of Hawaiian monk seal population.
6. Marine mammal tagging Federal information clearinghouse procedures and practices.

Contracts

1. Survey populations of dugongs in the Philippine Islands. Investigator: Walter Auffenberg (\$650).
2. Nearshore fish communities of Attu Island. Investigator: Fisheries Research Institute, University of Washington (\$18,000).
3. Survey of monk seal. Ship charter: Gary Naftel ("Easy Rider") (\$40,440).
4. Development of telemetry system for long-range monitoring of movements and physiological parameters of polar bears. Investigator: Handar Corporation (\$29,000).
5. Research and investigations on California population of sea otters. Cooperative agreement, University of Minnesota (\$5,000).
6. Status of Atlantic walrus. Investigator: Randall R. Reeves (\$6,000).
7. Study of sea otter community interactions. Investigator: David Irons (\$5,325).
8. Manatee populations in selected areas of South America. Investigator: Nicolle Duplaix-Hall (RARE) (\$4,500).

Grants-In-Aid

Three proposals were received for research grants from researchers outside the Fish and Wildlife Service; none were distributed for formal review because of the lack of available funds. These proposals are summarized below:

1. The ecological energetics of the California sea otter, Enhydra lutris. (Kenneth S. Norris, University of California, Santa Cruz, Calif.) To measure directly free-ranging food consumption of 10 to 15 sea otters with tritiated water; complete the seasonal analysis of foraging efficiency; find a suitable immobilizing agent; and collect sufficient blood baseline parameters so as to establish the normal for healthy sea otters.
2. The helminth fauna of the Florida manatee. (Donald J. Forrester, College of Veterinary Medicine, University of Florida, Gainesville, Fla.) To determine the baseline parasite load of manatees in order to determine their role in debilitation and (or) death in wild animals.

3. California Department of Fish and Game (E. C. Fullerton, Director).
This request for funds to conduct research on sea otters in California was referred to the Division of Wildlife Research for comment.

ENDANGERED SPECIES

A Florida manatee recovery team was appointed on July 19, 1976, with A. Blair Irvine of the Gainesville Field Station of the FWS Division of Wildlife Research, National Fish and Wildlife Laboratory (NFWL), as team leader. Other members are: Howard W. Campbell (NFWL, Gainesville), Daniel F. Jackson (Florida International University), Louis Shelfer (Florida Department of Natural Resources), and Kenneth B. Stansell (South Carolina Wildlife and Marine Resources Department).

In the September 24, 1976, Federal Register (41 F.R. 41914), the Service designated critical habitat for the Florida manatee, pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543). This Federal Register notice is reproduced in appendix D. During and following the comment period on this rulemaking, the Service received recommendations for additional areas. Surveys by the Service's Division of Wildlife Research are also producing extensive new information regarding habitat distribution and manatee needs. The Service is now evaluating this information to determine the feasibility of revising the critical habitat designations.

The Service published a final rulemaking in the Federal Register on January 14, 1977, declaring the southern or California population of sea otters (Enhydra lutris nereis) to be threatened within the context of the Endangered Species Act (42 F.R. 2965--see appendix E). This determination was deemed necessary primarily because of the serious potential threat posed by a major oil spill in or near the population's range. Although the probability of a spill cannot now be accurately predicted, the possibility of such a disaster and its consequences to the population cannot be ignored, especially when oil tanker traffic in the area is increasing and other oil activities may also be increased there.

In the February 22, 1977, Federal Register (42 F.R. 10462-10488), the Service issued regulations to implement U.S. participation in the Convention on International Trade in Endangered Species of Wild Fauna and Flora; these regulations became fully effective on May 23, 1977. The convention was negotiated and signed in Washington, D.C., in 1973, after almost 10 years of efforts worldwide; the United States became a party to it on July 1, 1975; and Executive Order 11911 (41 F.R. 15683) established the independent Scientific Authority and also named the Department of the Interior as the Management Authority on April 13,

1976, following which the latter authority was delegated to the Service's Federal Wildlife Permit Office. Species covered by the convention are assigned to specific categories depending on the degree to which they are considered to be threatened: appendix I, those species threatened with extinction because of trade; appendix II, those not necessarily now threatened with extinction but which might become so threatened unless trade in them is strictly regulated, and other species that must be regulated because they very closely resemble or may be confused with truly or potentially threatened species; and appendix III, those conserved by some convention signatories within their legal jurisdictions and in need of the cooperation of other countries to control trade. All marine mammal species under Service jurisdiction are listed in these appendixes as follows: appendix I--southern or California sea otters, marine otters, non-Australian dugongs, West Indian or Florida manatees, and Amazonian manatees; appendix II--polar bears, non-California sea otters, Australian dugongs, and West African manatees; and appendix III--walrus (listed by Canada).

OUTER CONTINENTAL SHELF BASELINE STUDIES

The Interior Department's Outer Continental Shelf (OCS) baseline studies for offshore oil and gas development are funded through the Bureau of Land Management (BLM), and the Service has been designated to coordinate the marine mammal and sea bird parts of the studies. The two projects managed by the Service's Office of Biological Services during fiscal year 1977 specifically involved the BLM-NOAA Outer Continental Shelf Environmental Assessment Plan (OCSEAP) in Alaska.

The survey of cetaceans of Prince William Sound (PWS) and adjacent near-shore areas of the Gulf of Alaska is continuing and is being conducted jointly by Service and National Marine Fisheries Service investigators. Their objectives are to determine the seasonal distribution and abundance of the principal cetaceans using PWS and its vicinity, the major foraging areas and critical habitats for the principal species, and the food habits of selected species. Monthly and bimonthly aerial and surface censuses are used to determine abundance and habitat use; animals marked with static tags visible from a vessel are used to determine movements of individuals; Dall's porpoises are captured, tagged, and equipped with radio tags for short-term study of their behavior; and stomachs of captured Dall's and harbor porpoises are lavaged to identify their foods. Among the results to date, species sighted and identified include fin, humpback, sei, minke, and killer whales, as well as harbor and Dall's porpoises and Pacific white-sided dolphins. Although cetaceans appear to use PWS seasonally, such use is more extensive than was originally thought; for example, about 35 humpback whales inhabit PWS for at least 8 months of each year--April through November--but the largest numbers occur in the southwestern area from July through November. A total of 649 Dall's

porpoises have been sighted in PWS on 143 different occasions; these animals inhabit PWS year-round but are most numerous in August or September, and calves have been sighted swimming in echelon formation with their mothers. Killer whales have also been sighted year-round.

The studies on the pelagic distribution and abundance of marine birds in Alaskan waters have also produced, as incidental byproducts, substantial information on the seasonal distribution of marine mammals. Year-round ship and aerial marine-bird censuses are conducted in all waters adjoining Alaska, and observations of marine mammals are recorded on all censuses.

INTERNATIONAL ACTIVITIES

The international marine mammal program is an integral part of the Service's overall program. The Service continues its efforts to achieve the objectives of the Marine Mammal Protection Act through international cooperation. The following accounts detail the principal thrust of the international program during the report period.

Scientific Consultation on the Conservation and Management
of Marine Mammals and their Environment

At the consultation convened in Bergen, Norway, between August 31 and September 9, 1976, the Advisory Committee on Marine Resources Research (ACMRR) Working Party on Marine Mammals completed its task of objectively examining the status of all marine mammals and issued its reports for the Food and Agricultural Organization (FAO). These reports comprised the input of 23 working groups and considered the status of populations of large whales, small cetaceans and sirenians, and pinnipeds and sea otters, as well as the ecological relationships of marine mammals and prioritized research program needs. The full reports were released at the end of the meeting, and the major conclusions and recommendations were presented in subsequent summary reports. The United Nations Environmental Program (UNEP) provided major assistance.

Agreement on the Conservation of Polar Bears

This agreement--involving Canada, Denmark, Norway, the U.S.S.R., and the United States--was signed on behalf of the United States in Oslo, Norway, on November 15, 1973. The U.S. Senate recommended its ratification on September 15, 1976; President Ford ratified it on September 30, 1976; and it entered into force in the United States on November 1, 1976. The agreement commits the United States to protecting the ecosystems of which polar bears are a part, especially such habitat components as denning and feeding sites and migration patterns. Following the further commitment to manage polar bear populations in accordance with sound conservation practices based on the best available scientific data, hunting, killing, and capturing bears are prohibited, except for limited specific purposes and by limited methods.

Convention on International Trade in Endangered Species
of Wild Fauna and Flora

Thirty-seven nations were represented at the first conference on the convention in Berne, Switzerland, on November 2-6, 1976. These included 24 of the 34 countries that have already ratified the convention and

observers from organizations and 13 additional nations that have not yet ratified. The International Union for the Conservation of Nature and Natural Resources serves as the secretariat for the convention, and the Service's Federal Wildlife Permit Office serves as the U.S. Management Authority, as discussed earlier in this report under "Endangered species." Among the amendments approved at the meeting, non-California populations of sea otters were added--along with all other species in the subfamily Lutrinae--to the Convention's appendix II, effective on February 4, 1977.

Ad Hoc Interagency Committee on an International Marine Mammal Program

The committee held its final meeting on December 6-7, 1976, to make final decisions on the policy recommendations in the July 8, 1976, Fish and Wildlife Service-National Oceanic and Atmospheric Administration Task Force report on an international marine mammal program. Participants included representatives of the Service, National Marine Fisheries Service, Department of State, Marine Mammal Commission, Council on Environmental Quality, and House of Representatives Merchant Marine and Fisheries Committee; observers represented the environmental community and fisheries industry.

The participants agreed on the following task force objectives related to Northern Hemisphere pinnipeds: (1) negotiate a U.S.-U.S.S.R. agreement on the conservation and protection of ice seals and walrus and possibly other marine mammals (see discussion that follows on U.S.-U.S.S.R. Marine Mammal Project); (2) negotiate a U.S.-Mexico agreement on the conservation and protection of marine mammals in U.S. and Mexican waters; (3) establish U.S.-Canada negotiations on marine mammal issues of mutual concern; and (4) encourage establishing more effective measures to conserve harp and hooded seals in the North Atlantic.

Late in January 1977, all concerned Government agencies formally adopted the committee's report, with some modifications.

International Union for Conservation of Nature and Natural Resources, Survival Service Commission Polar Bear Specialist Group

The sixth working meeting of the group was held in Morges, Switzerland, on December 7-10, 1976. Representatives of Canada, Denmark, Norway, the United States, and the U.S.S.R. presented their countries' conservation and research progress reports and, together with invited participants, discussed their own, each other's, and multicountry projects, prospects, and problems. Future and proposed projects discussed included planning and coordinating management and research programs in 1977-79; U.S.

National-Science-Foundation-funded studies; national studies; modeling and population projection development; an international hide-marking system; bear studies in Manitoba, Canada; a drifting research station; deterrent and attractant studies of North American bears; and physiological studies at Barrow, Alaska. The next meeting of the group was tentatively scheduled for February 1979.

U.S.-U.S.S.R. Marine Mammal Project, Environmental Protection Agreement

The purpose of this project is to develop collaborative research on the biology, ecology, and population dynamics of marine mammals of mutual interest to both nations. This research is intended to contribute to sound management and conservation of these animals.

At the fourth meeting of the project, held in La Jolla, Calif., on January 18-24, 1977, the scientists agreed generally on the need for a convention or agreement on the protection and management of marine mammal resources--principally walrus and ice seals--in the Chukchi and Bering Seas and adjacent regions of the North Pacific Ocean. They developed a set of principles that could form the basis for a bilateral agreement. The principles included maintaining optimum abundance of all species to assure the continued existence of populations, determining acceptable harvest limits for each population, developing necessary regulatory measures, establishing a system of marine sanctuaries, and providing a scientific basis for protecting and managing marine mammals through coordinated scientific research on populations, distributions, and the role of species in the ecosystem.

The meeting also developed an agreement and preliminary plan to publish a compendium of papers on the results of cooperative research under the program since it began. A draft of the first volume, on pinnipeds, should be finished by the end of 1977 and is scheduled to be printed in the United States--to be followed shortly by a Russian translation.

International Meeting on Marine Mammals of Baja California

The second international meeting was held in La Paz, Baja California, Mexico, on February 2-3, 1977. Participants discussed marine mammal research problems of mutual interest.

International Bear Conference

The fourth international conference was held in Kalispell, Mont., on February 20-24, 1977. One session of the conference was devoted to the biology of polar bears.

International Union for Conservation of Nature and Natural Resources, Survival Service Commission Otter Specialist Group

The first working meeting of this group was held in Paramaribo, Surinam, on March 27-29, 1977. Its primary purpose was to examine the status of various South American and European otter species and to help set up programs designed to ward off their extinction. Participants represented 7 of the 11 nations that had planned to send delegates. Their recommendations generally urged specific governments to establish or enforce their legal protection and trade laws, to increase surveys of specific species or populations within their respective jurisdictions, to establish, improve, or expand animal reserves or parks, and, in a few cases, to control pollution in rivers where the decline in otters is clearly associated with specific or increased industrial development.

Excess Foreign Currency Programs--Dugong Studies in Egypt

In fiscal year 1977, the Service received Congressional authorization to use excess foreign currencies held by the U.S. Government in Egypt, India, and Pakistan. This authorization was requested under section 8 of the Endangered Species Act of 1973, which allows such funds to be expended on projects deemed by the Secretary of the Interior to be necessary or useful for the conservation of endangered or threatened species. During the report period, noteworthy results were achieved only in Egypt.

On April 17-29, 1977, a study mission visited Egypt where negotiations began for several excess-currency-funded contracts. A national conservation plan will be developed for Egypt, and marine and other areas will be identified for special management to conserve endangered and threatened species. Training will be provided to enable Egyptian officials to manage these living resources better. On the basis of an Egyptian National Academy of Science report that dugongs have been sighted in the Red Sea within the past 3 years, more information will be sought on these occurrences.

U.S.-Brazil Amazonian Manatee Project

During the report period, the Service's National Fish and Wildlife Laboratory worked with the staff of this project (Projeto Peixe-Boi) at the Instituto Nacional de Pesquisas da Amazonia (INPA) in Manaus, Brazil, to develop programs examining Amazonian manatees' nutrition, status and distribution, habitat, and movements and behavior.

PART II--SPECIES STATUS REPORTS

INTRODUCTION

Status reports have been prepared for the eight species over which the Secretary of the Interior has jurisdiction under the terms of the Act. Information about each species is summarized under seven major headings: distribution and migration, abundance and trends, general biology, ecological problems, allocation problems, regulations, and current research. A partial bibliography for each species is included at the end of this part.

The Act defines a marine mammal as "any mammal which (A) is morphologically adapted to the marine environment (including sea otters and members of the orders Sirenia, Pinnipedia and Cetacea), or (B) primarily inhabits the marine environment (such as polar bears); and for the purposes of this Act, includes any part of any such marine mammal, including its raw, dressed, or dyed fur or skin."

SPECIES LIST

Carnivora

Ursidae

Ursus maritimus (Polar bear)

Mustelidae

Enhydra lutris (Sea otter)

Lutra felina (Marine otter)

Pinnipedia

Odobenidae

Odobenus rosmarus divergens (Pacific walrus)

Odobenus rosmarus rosmarus (Atlantic walrus)

Sirenia

Trichechidae

Trichechus manatus (West Indian manatee)

Trichechus inunguis (Amazonian manatee)

Trichechus senegalensis (African manatee)

Dugong dugon (Dugong)

STATUS REPORTS

Polar bear
(*Ursus maritimus*)

Distribution and migration. Polar bears occur only in the Northern Hemisphere, nearly always in association with Arctic sea ice. Centers for six geographically isolated polar bear populations in the main Polar Basin are Wrangel Island-western Alaska, northern Alaska, northern Canada, Greenland, Spitsbergen-Franz Josef Land, and central Siberia. Separate populations also occur farther south in Hudson Bay, Canada.

Bears are most abundant near the southern edge of the sea ice, but they occur throughout most of the Polar Basin and have been recorded as far north as lat. 88° N. They make extensive north-south movements related to the seasonal position of the southern edge of the ice. In winter, bears off Alaska commonly occur as far south as Bering Strait and occasionally reach St. Lawrence Island and even St. Matthew Island in the Bering Sea. In summer, north of Alaska the edge of the ice pack and bears commonly occur between lat. 71° and 72° N. Pregnant females concentrate for winter denning and bearing young on large offshore Russian islands, northern Canadian islands, and certain Spitsbergen islands.

Abundance, trends, and harvest. Total world-population estimates, which range from a low of 10,000 by the Soviets to a high of 20,000 by the Norwegians, are based on broad assumptions and should be considered as very general. The abundance of bears off the Alaska coast and the magnitude of sustained long-term harvests suggest that the 20,000 figure may be low.

During the 1930's, 1940's, and 1950's, Alaska Natives harvested about 120 bears annually. Trophy hunting that utilized aircraft developed in the 1950's, and the average annual kill gradually increased to 250 during the period 1961-72. The number of bears reported per hour of flying by Alaska hunting guides did not show a trend during 1956-69, the period when guides provided reliable data. Sex composition for 1961-72, when 87 percent of the bears were taken with the use of aircraft, was 70-80 percent males. Selective hunting utilizing aircraft reduced the percentage of mature males in the population. A high percentage of females with young in the population, however, indicated a healthy rate of reproduction. Age composition of bears harvested west of Alaska during the aircraft hunting era did not show a trend. Age composition of bears harvested north of Alaska declined in 1970 and 1971 and then increased in 1972, reflecting high harvests in 1966 and 1967, followed by hunting restrictions and reductions in harvest after 1967. Approximate harvests after passage of the Marine Mammal Protection Act of 1972, which permits hunting only by Natives for subsistence or as a source of material for traditional articles of Native handicraft or clothing, were 7 in 1973, 50 in 1974, 60 in 1975, and 150-160 in 1976.

The higher harvest in 1976 is largely the result of heavy ice conditions, which made more bears available to Eskimos on St. Lawrence Island and in villages along the northwest coast.

Russians believe that polar bear populations in the Soviet Arctic declined during the first half of this century but have now stabilized since hunting was stopped in 1956 and harvests were limited to 10-15 cubs per year for zoos. In 1973, the Norwegian Government imposed a 5-year moratorium on the hunting of bears in Svalbard (Spitsbergen), where formerly about 300 were taken each year. The annual harvest in Canada is about 600; in Greenland, 125-150. Thus, the annual world harvest is now about 900.

General biology. Polar bears, other than family groups of females and young, are solitary most of the year. During the breeding season in late March, April, and May, males actively seek out females by following their tracks on the sea ice. Bears are polygamous, and a male remains with a female a relatively short time and then seeks another female. Delayed implantation probably occurs.

Pregnant females seek out denning areas in October and November. Known denning concentration areas occur on Russian, Canadian, and Svalbard (Spitsbergen) islands. Bears also den along sections of the Greenland coast and the north Alaska coast. Some denning occurs on heavy pack ice north of Alaska. Bears most commonly den under banks along the coast or rivers or on slopes where snow drifts. A denning female commonly forms a depression in the snow and then enlarges a denning chamber as snow drifts over her. Young, weighing less than 1 kilogram, are born in December. A litter of two is the most common; one, quite common; and three, rare. The female and cubs break out of the den in late March or early April, when cubs weigh about 7 kilograms. They make short trips to and from the opened den for several days as the cubs become acclimated to outside temperatures. If the den is on land, the family group then travels to the sea ice. In most sections of the Arctic, young remain with the mother for about 28 months.

The age at which a female produces her first litter ranges from 4 to 8 years. Some females breed again about the time they separate from their young and, therefore, can produce a litter every third year. Other females have longer intervals between litters. Males can first breed when 4 years old. Most bears do not live beyond 25 years. Mature females off the Alaskan coast weigh 200 to 300 kilograms; mature males, 300 to 600 kilograms. Animals west of Alaska are larger than those north of Alaska. Polar bears feed primarily on ringed seals and also on bearded, harp, and hooded seals. They occasionally eat carrion, including whale, walrus, and seal carcasses, and small mammals, birds, eggs, and vegetation when other food is not available. Approximately 60 percent of Alaskan bears harbor *Trichinella spiralis*, apparently obtained by eating seals and other marine mammals, garbage, and possibly carcasses of other bears. Polar bear liver is toxic if eaten because of high vitamin A content.

Ecological problems. Long-term climatic trends probably have a major impact on bear populations. Warming trends restrict areas that are suitable for denning and feeding, and cooling trends favor expansion of populations. Ice movement, especially in the fall when females are seeking maternal den sites, may also affect populations. Females may be forced to bear young in locations less favorable for denning when ice, which provides access to favorable denning sites, forms late in the season. Years of light snow, or wind conditions that prevent formation of deep snow drifts, may also affect denning success for both polar bears and ringed seals--one of their principal foods. Because of this dependency on ringed seals, any ecological change affecting seals could also affect bears.

Human development, especially that associated with oil and gas extraction, poses the greatest immediate threat to polar bears. Oil exploration and drilling in denning areas could cause bears to den in less suitable areas. Oil spills from offshore drilling or transporting of oil through ice-covered waters could reduce the insulating effectiveness of their fur and also adversely affect lower components in their food chain. Ice would hinder or prevent containment of a spill, and currents could distribute oil over large areas.

Recent studies indicate that significant numbers of bears have traditionally denned and produced young along Alaska's north coast. Increased human activity will perhaps cause fewer bears to come ashore to den, thereby forcing them to den in less favorable sea-ice sites, or may cause animals to desert land dens earlier than normal when cubs would be less able to survive. Areas where oil and gas development may be impacting now or could impact in the future include the Alaska Naval Petroleum Reserve, the Alcan Route, the Arctic National Wildlife Range, State coastal and nearshore oil- and gas-lease lands, Federal Outer Continental Shelf oil- and gas-lease lands, and lands eligible for selection under terms of the Alaska Native Claims Settlement Act. Thus, the potential for development exists along the entire north Alaska coast from Pt. Hope to the Canadian border.

Mercury and low levels of DDT and PCB's have been found in tissue samples of all Alaskan bears checked for these contaminants.

Allocation problems. In the United States, the polar bear evokes varied and often emotional feelings about its management and use, ranging from complete protection, to limited harvest for subsistence, to maximum sustained harvest primarily by trophy hunters. At present, non-Native residents of the Arctic coast believe they are being discriminated against because only Natives are allowed to hunt. New conflicts will arise as development proceeds in the Arctic and causes more direct encounters between bears and people and more disturbance to bears during critical stages in their life history.

The U.S.S.R. believes that bear stocks off the Siberian coast have been reduced, and it restricts taking to a few cubs for zoos. Until recent years, Norwegian sealers killed bears as predators; Svalbard (Spitsbergen) trappers used baited set guns to obtain hides to sell; and trophy hunters took bears from Norwegian boats in the summer. The present feeling in Norway is that these uses should no longer be permitted. In Greenland, the harvest is limited to Eskimos or long-term residents and is primarily for subsistence and personal use of skins. The Canadian harvest has traditionally been by Eskimos for subsistence and to obtain skins for sale.

Trophy hunting from the ground, although encouraged by managing agencies in part of Canada, has not developed to any great extent because Natives, whom trophy hunters must employ as guides, can realize more profit from selling skins than from guiding.

Regulations. Past management practices in Alaska have included seasons, bag limits, a permit system, limit on the number of hunts individual guides could participate in, and protection for the young and for females with young. Two management areas were established, one to the west of Alaska and one to the north of the State. Residents were allowed to hunt bears at any time for food, provided aircraft were not used. Hides and skulls of all bears taken had to be presented to the Alaska Department of Fish and Game within 30 days of taking for examination, sealing, and removal of a tooth for age determination. The State of Alaska banned the use of aircraft for hunting polar bears after July 1, 1972, and lengthened the season to encourage sport hunting from the ground.

The Marine Mammal Protection Act of 1972 transferred management authority for polar bears to the Federal Government and limited the harvest to Alaskan coastal Eskimos for subsistence or for manufacture of traditional Native articles of clothing or handicraft. This removed restrictions on the Natives' harvesting young bears and females with young. A request by the State of Alaska to waive the moratorium and return management of polar bears and certain other marine mammals, as provided for in the Act, is pending. The management plan proposed by the State would provide for both recreational and subsistence hunting, and total annual take would be restricted to no more than a yet to be determined but very conservative number of animals. The open season for both types of hunting would extend from January 1 through May 31. Hunting that utilizes aircraft would be specifically prohibited. The closed season during the summer would preclude use of boats. The bag limit for recreational hunting would be one bear every 4 years by permit only. Residents utilizing bears for food could take one bear each year without a permit. Young and females accompanied by young would be protected.

The U.S.S.R. has not allowed polar bear hunting since 1956. Norway stopped set-gun and trophy hunting in 1971 and enacted a 5-year moratorium in 1973 on all harvesting because of a change of attitude in Norway and

because studies indicated the bear population was smaller than previously believed. In Greenland, only Eskimos or long-term residents may take bears and must use traditional ground methods of hunting. In Canada, prior to 1968 Eskimos hunting from the ground took bears with few restrictions. Since then, harvests have been regulated by establishment of hunting districts with quotas. In certain districts, trophy hunters may purchase a permit to take a bear from a district's quota, provided a Native resident is used as a guide. In September 1976, the United States ratified the Agreement on Conservation of Polar Bears. Other member nations are Canada, Denmark, Norway, and the Soviet Union. The agreement allows bears to be taken only in areas where they have been taken by traditional means in the past and prohibits use of aircraft and large motorized vessels as an aid in taking. The agreement also calls for both national research and cooperative international research and management, especially on populations occurring on the high seas or within more than one national jurisdiction; provides protection for ecosystems of which polar bears are a part; by resolution seeks special protection from hunting for denning females, females with cubs, and cubs; and by resolution asks for an international system of hide identification to better control traffic in hides. The last-noted goal is now being achieved through the Convention on International Trade in Endangered Species of Wild Fauna and Flora, as discussed in part I of this report.

Current research effort. The governments of Canada, Denmark, Norway, Russia, and the United States are conducting intensive long-term investigations. In most countries, shorter term projects funded by universities and grants complement government programs. Research programs are coordinated internationally by the Polar Bear Specialist Group under the auspices of the International Union for the Conservation of Nature.

Sea otter
(Enhydra lutris)

Distribution and migration. Populations in waters of the United States are resident (the sea otter is not migratory) along the west coast of North America, from central California north to Prince William Sound, and westward along the Aleutian Islands to the Commander Islands, along the southern Kamchatka Peninsula, and among the Kurile Islands. The sea otter seldom ranges offshore beyond the 30-fathom (about 55-meters or 180-feet) depth curve.

Abundance and trends. Since sea otters were completely protected early in the 20th century, they have increased and become reestablished in a substantial portion of their historic range. In the late 19th century, sea otter populations had been reduced by the fur trade to a few hundred animals at widely scattered locations. In 1973, the Alaska Department of Fish and Game published estimates of sea otters in each game management unit; these estimates totaled between 101,050 and 121,050 animals. From recent surveys, the sea otter population in California was estimated to be about 1,800 animals and ranged from Año Nuevo Island north of Santa Cruz to beyond Point Buchon on the south.

During the period 1965-72, sea otters from Amchitka Island and Prince William Sound were translocated to southeastern Alaska, British Columbia, Washington, Oregon, and the Pribilof Islands. Among translocated otters, young have been observed in southeastern Alaska, British Columbia, Washington, and Oregon. Recent surveys of these areas indicate a thriving population of more than 500 animals north of Sitka in southeast Alaska, but the number at other sites remains low--from about 10 to 60 animals--and the success of translocation at these sites remains questionable.

General biology. The sea otter is the largest member of the family Mustelidae, reaching a length of 148 centimeters and a weight of 45.5 kilograms. It becomes sexually mature at about 4 years of age and bears a single young, weighing approximately 2.3 kilograms, about every 2 years. The pup nurses for 6 to 12 months but during this period often takes solid food gathered by the mother. The mother is very attentive to her young. Most of the young are born during the summer, but births and mating may occur in any season. Breeding behavior is promiscuous; the mating male and female remain together for as long as 3 days. The dense underfur is about 25 millimeters long; the guard hairs, about 6 millimeters longer. A healthy animal may accumulate body fat, but there is no layer of blubber. The sea otter is, therefore, dependent for insulation from cool (1.7° C to 10° C) marine waters on the air blanket retained among the dense underfur fibers.

Mortality at Amchitka Island (the only area studied intensively) is greatest in winter and early spring. A dense population there depleted food organisms, and starvation occurred during stormy weather. Young

animals accounted for 70 percent of the mortality. The remaining 30 percent were dominantly animals showing signs of old age. Most of the dead animals exhibited signs of starvation and enteritis. Internal parasites include Trematoda (4 spp.), Cestoda (2 spp.), Nematoda (1 sp.), and Acanthocephala (5 or possibly 6 spp.)

Ecological problems. Human activities that are changing the environment will no doubt affect sea otters. Oil pollution of waters occupied by sea otters probably would be fatal to them. Pesticide residues have been found in California sea otters, but the effect is unknown.

Allocation problems. Conflict exists over management of the sea otter population off the coast of California. Because sea otters reduce the abundance of prey species, some of which are desired by humans, commercial and sport users of these resources prefer that the abundance and range of sea otters be limited. Preservation groups would like sea otters reestablished throughout their historic range.

There is no commercial or subsistence harvest of sea otters at present.

Regulations. The sea otter is protected by the Marine Mammal Protection Act of 1972 (Public Law 92-522). In California, the sea otter population is listed as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205), and the State also lists it as a completely protected animal.

Current research and funding. The U.S. Fish and Wildlife Service employs three full-time biologists on sea otter studies. The States of Alaska and California no longer employ biologists full time on sea otter studies but do carry out censuses. The privately endowed Owings Foundation employs a full-time sea otter naturalist. Additional research is supported by the Marine Mammal Commission.

Marine otter
(Lutra felina)

Local common names. Gato marino, chungungo, hullaque, nutria de mar, and chinchimen.

Taxonomy. Two subspecies of marine otter have been described: L. f. felina from southern Chile has a slightly darker brown ventral surface than does L. f. peruviansis from northern Chile and Peru. Sufficient specimens are not currently available to permit detailed studies on the validity of these subspecies.

Distribution and migration. This species inhabits the coastal waters along the west coast of South America from central Peru (at least as far north as lat. 12° S.) south to Cape Horn, Chile. Nothing is known about its seasonal movements. It occurs mainly in the littoral region but is also known to ascend rivers to at least 650 meters above sea level.

Abundance and trends. Darwin found this otter to be abundant in the Chonos Archipelago and among the islands off the southwestern shores of Tierra del Fuego. It has diminished greatly in numbers since Darwin's time, but in 1923 the Chicago Field Museum Expedition found it to be common along the southern end of Chiloe Island, Chile. Nothing is known about the number of marine otters along the northern coast of Chile, but in Peruvian waters the population is estimated to be between 200 and 300. In the Cape Horn and southern Tierra del Fuego region, this species has been practically exterminated. One specimen was collected at Wollaston Islands, Tierra del Fuego, over 25 years ago.

General biology. The following external measurements have been recorded for the marine otter: head and body, 570 to 787 millimeters (mm); tail, 300 to 362 mm; and total length, 910 to 1,149 mm. An adult male taken at the southern end of Chiloe Island weighted 4.1 kilograms. Marine otters feed on the freshwater prawn, Criphiops caementarius; Darwin reported that they feed also on fish, "small red crab," "cuttle-fish," and the inhabitants of "volute shells." Sexual dimorphism was not detected in a small sample of marine otter specimens. All species of Lutra except L. provocax and L. felina are allopatric (occupying different geographic areas), and all except L. felina, a littoral marine species, are probably ecological equivalents. Lutra felina is the smallest and the most distinct species in the genus and, according to one investigator, "probably evolved from a stream-dwelling species that adapted to a marine environment after isolation in coastal habitats as a consequence of progressive aridity in middle latitudes of South America's west coast."

Parasites and diseases. Nothing is known about parasites or diseases in this species.

Allocation problems. In Peruvian waters, these otters are often shot by fishermen because of the alleged damage they do to the stocks of freshwater prawns. In Chile, especially south of Isla de Chiloe, these animals are hunted regularly by fishermen for their skins.

Ecological Problems. No specimens have been examined for pesticide residues or heavy metal contaminants.

Regulations. This species is listed as endangered in the Red Data Book of the International Union for the Conservation of Nature. On June 14, 1976, the marine otter was listed as an endangered species and, therefore, was afforded protection under the U.S. Endangered Species Act of 1973, which prohibits its importation into the United States for purposes other than scientific research and propagation. On July 1, 1975, it was listed also in appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, and on June 16, 1977, it was proposed to receive the additional protection as a marine mammal under the U.S. Marine Mammal Protection Act of 1972. In Peru, the marine otter has been found in three areas being considered as a coastal park, but it is not known if the species is local enough in habits to remain in any one of these areas throughout the year.

Current research and funding of marine otter studies. Contracts are being established by the U.S. Fish and Wildlife Service in Peru and Chile. Carlos Cabello of the Corporacion Nacional Forestal, Chile, is studying marine otters around Isla de Chiloe, Chile.

Pacific walrus
(*Odobenus rosmarus divergens*)

Distribution and migration. The entire population winters on the seasonal pack ice of the Bering Sea where animals are distributed from eastern Bristol Bay to the area southwest of St. Lawrence Island. The exact distribution varies with the extent and quality of sea ice. The majority of breeding females apparently occurs in the north-central Bering Sea.

The northward migration begins in April; the exact timing of migration probably is heavily dependent upon the pattern of sea ice recession, which may vary greatly from year to year. At least 15,000 males presently remain on or near Round Island in northern Bristol Bay. This number has probably increased by 2,000 to 3,000 over the past several decades.

Following the northward migration into the Arctic Ocean, walrus disperse along the ice edge from about Pt. Barrow west to the Kolyma River in the east Siberian Sea. Apparently the routes of migration and the summer distribution vary considerably among years, depending upon seasonal conditions.

During the southward migration, walrus frequently haul out to rest at Big Diomed and Punuk Islands and along the Soviet coastline until the pack ice becomes accessible. During the fall of 1975, biologists from the Soviet Union located nine such coastal haul-out areas between the north coast of Chukotka and Cape Olyutorski.

Abundance and trends. The Pacific walrus population has increased during the past several decades, following a decline in abundance caused by over-exploitation. The population may have numbered as few as 40,000 to 50,000 by about 1950. Aerial surveys of walrus were begun in 1960, the most recent survey being a coordinated effort between the United States and the Soviet Union. Over 96,000 walrus were counted at coastal hauling areas along the Soviet coastline, and another 30,000 to 40,000 were estimated to occur along the ice edge west of the international dateline. Another 75,000 were estimated to occur east of the dateline. However, these estimates are, at best, very crude.

The take of walrus by the Soviet Union in 1976 was 1,271 animals, not including those killed or wounded but lost; the harvest cannot exceed 2,000, the present annual quota. The comparable 1976 retrieved harvest in Alaska, conducted almost exclusively for subsistence purposes by Alaska Natives, comprised 2,989 animals--slightly below the annual quota of 3,000 permitted under the return of management to the State in 1976. Revised walrus hunting regulations approved in May 1977, however, are intended to reduce future annual harvests to less than the maximum of 2,300 that the State intends to be its upper retrieved-take limit.

General biology. Only one group of pinnipeds, the elephant seals, is larger than the walrus. Adult males weigh an average of about 1,160 kilograms, and their mean standard length is about 316 centimeters. Adult females weigh an average of about 900 kilograms and have a mean standard length of about 270 centimeters. In a sample of newborn young, the maximum weight was 77 kilograms; the maximum length, 137 centimeters.

The first ovulation of females usually occurs between 5 and 8 years of age. Males become fertile at an age of 7 to 8 years but are not physically mature until they are at least 10 years old. The walrus is polygamous. The gestation period is about 15 months, including an approximately 3-month-long period of delayed implantation. The young are usually born in May during the northward spring migration. The females and young are very gregarious; males are gregarious at times other than the breeding season. Walruses often attain ages of 30 or more years.

Walruses are not buoyant and must rest on ice or land at fairly frequent intervals. By means of pharyngeal pouches that may be inflated, however, they are able to sleep while floating upright at sea for short periods of time.

Clams are the most important food. The stomach of one adult male contained about 23 kilograms of Mya truncata siphons and 16 kilograms of Clinocardium nuttalli feet. Other food includes echinoderms, annelids, coelenterates, sipunculids, echiuroids, priapulids, arthropods, and tunicates. Occasionally, adult males may eat the flesh of other pinnipeds or cetaceans. The walrus diet appears to vary seasonally.

Internal parasites recorded from walruses include Trematoda (3 spp.), Cestoda (3 spp.), Nematoda (6 spp.), and Acanthocephala (4 spp.). All walruses are infested with external parasites. Small numbers of adult male walruses become carnivorous and feed on seal flesh. Probably it is this abnormal feeding behavior that accounts for trichinosis infection in from 1 to 10 percent of the more than 1,000 male walruses sampled from 4 Arctic regions. Incidence of uterine cysts and other disease conditions is low, as far as is known, and such diseases and abnormalities appear to be unimportant.

Ecological problems. Petroleum will undoubtedly be exploited from the Bering Sea and Arctic Ocean. The effect of this activity on walruses or the resources they require is unknown. Their extensive benthic food resources are also subject to human exploitation, which could compete with the needs of the walruses or disturb benthic communities within which they feed. Also of concern is the harassment of walruses when they haul out in summer on the Walrus Island State Game Sanctuary (Togiak Bay), Bristol Bay. During the summer of 1976, the Alaska Department of Fish and Game stationed two of its personnel at Round Island.

Allocation problems. Siberian and Alaskan natives kill 5,000 to 6,000 walrus annually for subsistence. None were taken during 1976 for display. Loss of walrus during hunting is about 40 to 50 percent.

Additional waste occurs in the utilization of the products of retrieved walrus. If ivory is the primary objective, actual use amounts to as little as 1 to 3 percent of full potential utilization. When meat and hides are used, utilization is as high as 90 percent of the carcasses. During recent years, ivory hunting has become an increasingly important problem.

Regulations. During 1976, management of Pacific walrus was returned to the State of Alaska. Current regulations restrict the take of females, although this restriction was not in affect during the prewaiver spring Native-subsistence hunting season of 1975. Revised State hunting regulations, approved by the U.S. Fish and Wildlife Service in May 1977, established still more restrictive quotas by specific geographic areas within the most heavily hunted game management units.

Current research. The U.S. Fish and Wildlife Service has an ongoing research program on Pacific walrus. Investigators from the University of Alaska and Johns Hopkins University are currently studying walrus under funded grants from several agencies. The Alaska Department of Fish and Game maintains observers during the hunting seasons at coastal villages of Alaska to monitor the kill and to collect information on the population.

Atlantic walrus
(Odobenus rosmarus rosmarus)

Distribution and migration. Walruses are circumpolar in distribution. In the North Atlantic, small numbers are found along the east coast of Greenland, at Svalbard (Spitsbergen) Franz Josef Land, and throughout the Barents and Kara Seas. A larger, geographically isolated population occurs in the eastern Canadian Arctic and western Greenland. Presently, walruses are rarely found along the coast of North America south of Labrador. Scattered groups are located in Hudson Strait and on the southeastern coast of Baffin Island. In Hudson Bay, the main population is found around Coats, Bencas, and Southampton Islands and in Fisher and Evans Straits. Another apparently larger population exists in northern Foxe Basin. Scattered concentrations occur in Lancaster and Jones Sounds and throughout the Canadian Archipelago as far west as Cornwallis Island. The Thule district of northwestern Greenland has large numbers of walruses year-round, and they occur at least seasonally along the western Greenland coast south to Sukkertoppen. Atlantic walruses in general seem to be less strongly migratory than the Pacific subspecies, with the possible exception of those along the coast of western Greenland.

Abundance and trends. Very few walruses remain in the eastern North Atlantic, where the total population numbered in at least the high tens of thousands in historic times. Less than 500 were counted at Novaya Zemlya in 1969-70, and this population continues to decline. The walrus may be nearing extinction around Franz Josef Land. The species was virtually exterminated in Svalbard; a group of about 10 animals has been seen regularly in recent years on northern Spitsbergen. A total population of about 200 walruses in northeastern Greenland may be stable.

Exploitation of walruses in Canada has diminished owing to cultural and technological changes within human communities. The northern Hudson Bay herds, estimated at approximately 3,000 in 1961, are probably stable. The population in Foxe Basin appears to be larger, although no reliable estimate is available. Little is known of the status of walruses in other areas of the eastern Canadian Arctic.

Although still hunted intensively by the Polar Eskimos, the walrus population in Greenland's Thule district remains substantial. South of Thule, however, the Greenland population appears to have declined considerably since the 1940's because of human encroachment and hunting. Western Greenland is probably the area most critically in need of assessment.

General biology. Most of what is known about the biology of the Atlantic walrus comes from studies at Southampton Island in the 1950's. Calves average 122 centimeters in length at birth and weigh about 67 kilograms.

Adult females have an average length of about 260 centimeters and an average weight of about 570 kilograms, whereas males attain an average length of 305 centimeters and an average weight of about 910 kilograms. Seldom do the tusk lengths exceed 36 centimeters for males, 25 centimeters for females. Adult males may be distinguished from females by cutaneous tubercles of the head and neck, a broader muzzle, and more powerful muscles of the neck and shoulders.

The reproductive biology of the Atlantic walrus is not well understood. During most of the year, herds of adult males are spatially segregated from the herds of adult females with calves and immatures. Females apparently reach sexual maturity at an age of about 4 years and males at about 6 years, although neither may become reproductively active until several years later. Implantation is delayed for approximately 3 months, and gestation lasts about 1 year.

Ecological problems. Disturbances associated with economic development of the Soviet Arctic may be inhibiting the recovery, or even the maintenance, of the badly depleted walrus resource there. The same may be true in the mineral-rich Svalbard area. Exploration for and exploitation of oil and gas have been contemplated in northern Hudson Bay, Baffin Bay, and Lancaster Sound. The effect of these activities on walruses or their requisite resources is unknown. Reduction of the benthic fauna in areas inhabited by walruses may have a negative impact on their population. Human population growth throughout much of the Atlantic walrus's present and past range probably continues to limit its recovery, although the exact mechanisms by which various human activities affect walruses remain obscure.

Allocation problems. No commercial harvest of Atlantic walruses takes place today. Only subsistence hunting continues. Nothing is known about continued use of Atlantic walruses by Siberian Eskimos. Insignificant catches are made by aboriginal inhabitants of eastern and western Greenland (south of Thule). The total aboriginal harvest in Canada has approximately halved in recent years, owing primarily to the replacement of dog teams with motorized toboggans. Other factors may include a decreased reliance on "country food" and opportunities for employment other than subsistence hunting. Ivory acquisition appears to be the primary incentive for native hunting of walrus in Canada today. Only in the Thule district of Greenland (and possibly the Igloolik district in northern Foxe Basin, Canada) is walrus hunting a major element of native subsistence. Dog teams there still require large amounts of walrus meat and skin, and human consumption of meat and stomach contents is significant. Some trade in ivory and skin continued in Greenland until at least 1971.

Regulations. Canada established regulations in 1928 which limited the killing of walruses to Eskimos for food and clothing. These regulations have since been amended several times, but their main intent has not been changed. Walrus hunting regulations were established in Greenland

in 1957. These limit hunting to Danish citizens who reside in Greenland. From June 1 to January 1, all hunting for males in the West Ice is forbidden, and from April 1 to January 1, no females and calves may be taken in the same area. Hunting on land is forbidden in certain areas at certain times. Greenland National Park in northeastern Greenland encompasses most of the walrus's range on that coast and provides some protection.

In the Soviet Arctic, walrus hunting has been forbidden, with some exceptions, since 1949. Aboriginal hunting is still allowed, but presumably under strict controls. The Soviet-Norwegian Sealing Agreement of 1958 forbade the hunting of walruses east of Cape Farewell by citizens of either country. Norway had instituted a Walrus Decree in 1952 which prohibited hunting by Norwegians. Nature reserves established by Norway in certain parts of Svalbard offer walruses some protection from human interference.

Current research. No field studies of the Atlantic walrus have been carried out since 1961. Modest, mainly opportunistic monitoring programs are conducted by the Soviet and Norwegian governments. The Gronlands Fiskeriundersogelser in Denmark collects catch statistics for all of Greenland. In Canada, the Fisheries and Marine Service reports estimated catches by settlement. In addition, Dr. Arthur Mansfield, Arctic Biological Station, is supervising behavioral and ecological studies of walruses, primarily in northern Hudson Bay. The U.S. Fish and Wildlife Service's Division of Wildlife Research--through its National Fish and Wildlife Laboratory--has compiled a report on the status, distribution, and natural history of the Atlantic walrus.

West Indian manatee
(Trichechus manatus)

Distribution and migration. Trichechus manatus inhabits rivers, estuaries, and coastal areas of the tropical and subtropical regions of the New World Atlantic (fig. 1). It is commonly found from northern Florida in the United States to the northern coast of Brazil. Manatees are seasonally present in Georgia and rarely in South Carolina and North Carolina, but occasional stragglers have been reported historically as far north as Old Orchard, N.J. (lat. 40° N.) (fig. 1) and as far south as Espirito Santo, Brazil (lat. 20° S.).

Within the United States, the year-round range of T. manatus is largely confined to peninsular Florida, but distribution varies seasonally (fig. 2), and most manatees are grouped near sources of warm water during the winter. Along the west coast, they congregate in a series of groups near Crystal River and adjacent rivers in Citrus County, in east Tampa Bay, in the Caloosahatchee River, and along the southwest coast from Naples to the Everglades National Park. On the east coast, large numbers of animals congregate at Merritt Island, in Lake Worth, and in Port Everglades; smaller groupings are found in the upper reaches and near the mouth of the St. Johns River and at several points along the coast. In a 1975-76 winter aerial survey conducted simultaneously Statewide, 38 percent of the manatees were observed in saltwater; 43 percent, in brackish water; and 19 percent, in freshwater.

Manatees in Florida apparently cannot withstand cold winter temperatures. Warm water springs or localities where factories and powerplants discharge heated water into the rivers are the focus of most winter congregations. Except in extreme southwest Florida, most manatees were within 5 kilometers of a warm water source during the 1976 cold weather aerial survey. More than 25 such warm water refugia are used by manatees on the Atlantic and Gulf coasts. Animals usually begin to arrive at these congregating sites in November; many remain nearby for the winter, but there is continuous movement and probably exchange of old and new members of the congregation during warm periods.

The winter of 1976-77 was the coldest on record in Florida. A record manatee mortality was apparently associated with the cold and may be attributable to recent changes in the animals' winter distribution.

Manatee mortality in southern Florida was roughly comparable to that in previous years, except in Lee County (where die offs have been reported previously) and in Monroe County on the southwest coast. Along the northeast coast, however, deaths increased markedly. Thirty-five dead manatees were recovered during the winter, whereas 6 had been collected the previous year. Twenty-one were collected near Merritt Island, Brevard County, from January 30 to February 17, 1977. During the same period in

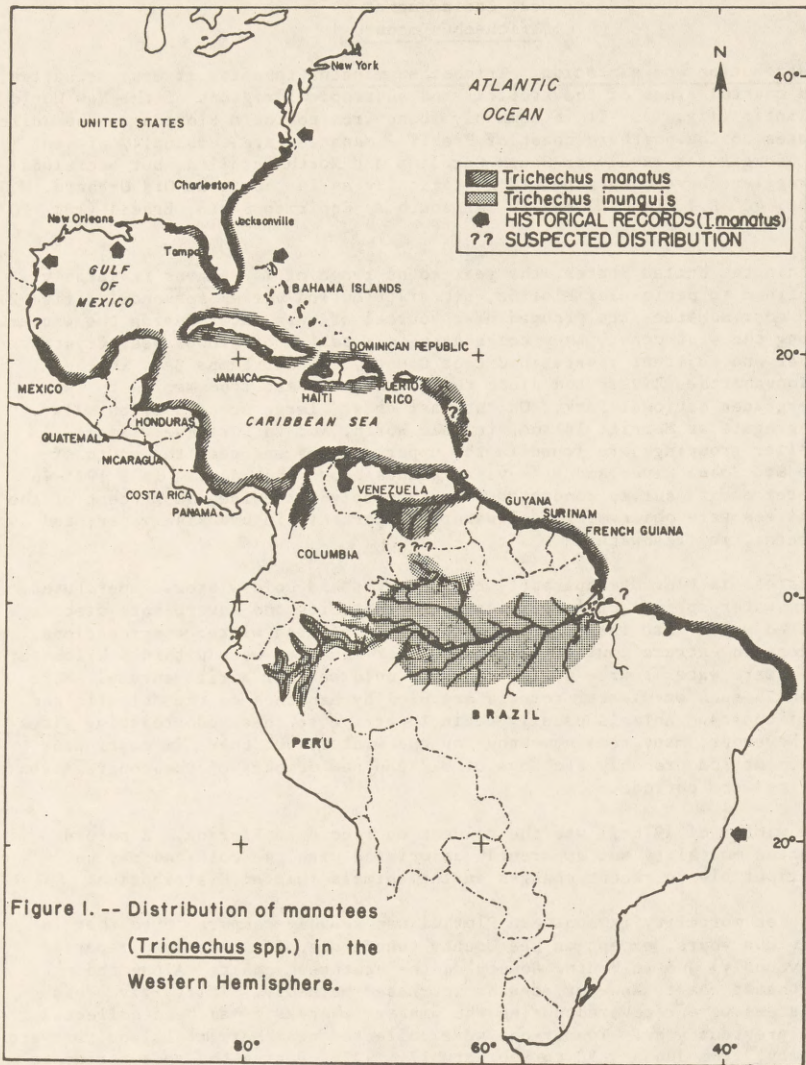
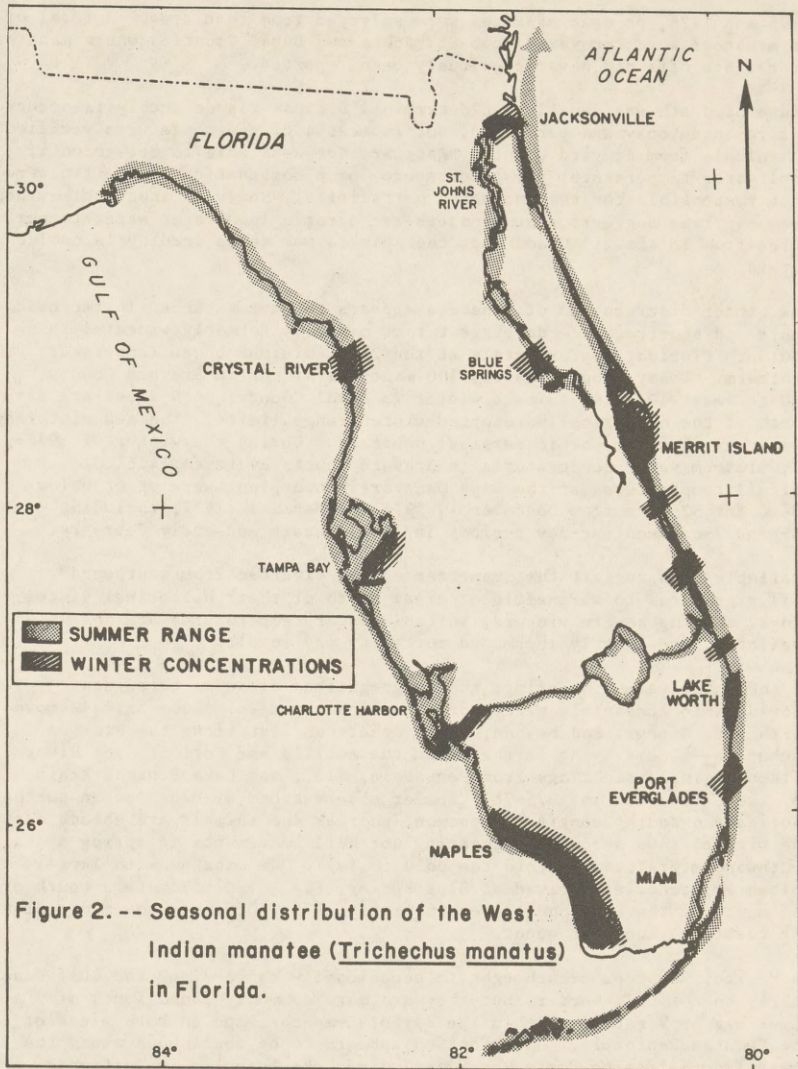


Figure 1. -- Distribution of manatees (*Trichechus* spp.) in the Western Hemisphere.



1975 and 1976, no dead manatees were salvaged from that area. A total of 11 manatees were recovered from St. Johns and Duval Counties where manatee winter die offs had never previously been reported.

Cause of death was usually not determined because tissue autolysis occurred before an autopsy was performed, but two cases of pneumonia were verified in animals from Brevard County. Data are not available to determine if cool water temperature, air temperature, or a combination of the two were most responsible for the increased mortalities. However, anecdotal evidence from captives suggests that manatees are erratic feeders at water temperatures from 18° to 21° C and that the animals may cease feeding in cooler waters.

The winter distribution of manatees appears to have expanded in recent years. Historical records suggest that manatees formerly wintered in southern Florida, approximately at the 21° C minimum ocean temperature isotherm. Today, approximately 100 manatees winter in Brevard County, and at least 10 other animals winter in Duval County; both areas are far north of the historically reported winter range limits. The new wintering areas may, however, be in marginal habitats. During the winter of 1976-77, minimum water temperatures in Brevard County averaged 14.6° C. Outfall temperatures at the Cape Canaveral powerplant were at or below 18° C for 32 days from December 1, 1976, to March 1, 1977, including 10- and 7-consecutive-day periods in late January and early February.

Available data suggest that manatees may be diverted from southward fall migrations to warm-effluent areas north of their historical winter range. During severe winters, suitable water temperatures are not available, and greatly increased mortality may result.

As the water warms in spring, the congregations disperse throughout Florida into accessible water more than 1 meter deep. Some animals move north into Georgia and beyond, while others go west along the Florida Panhandle--generally no farther than the Aucilla and Port St. Joe Rivers, although single sightings from Pensacola, Fla., and Lake Pontchartrain, La., were reported in 1975-76. Summer observations of manatees in northern Florida and south Georgia are common, whereas the animals are absent during the winter, thus strongly suggesting northerly movements in spring and a southward migration to avoid the cold in fall. One manatee with large saltwater barnacles arrived at Blue Spring, Fla., 170 kilometers south of the mouth of the St. Johns River in winter 1975. Offshore movements along the coast are known to occur.

In Mexico, manatees are thought to occasionally range along the Gulf Coast nearly to the U.S. border, but they are more commonly found south of Tamulipas or Veracruz, within the Bay of Campeche, and on both sides of the Yucatan Peninsula. Distribution appears to be continuous along the coast from Belize to Costa Rica, including Lake Isabella in Guatemala.

Only isolated populations are thought to remain in Panama, presumably in Chiriqui Bay, the Changuinola River, Gatun Lake, the Sicaola River, and possibly the Cocle River. Manatees may be found along the eastern coast of Colombia and in the Atrato, Leon, Suriqui, and Meta Rivers and the Magdalena River and its tributaries. *T. manatus* frequents the lower Orinoco drainage of Venezuela, including its tributaries, the Apure, Arauca, Payara, Capanaparo, and Claro Rivers, as well as Lake Maracaibo. In Guyana and Surinam, manatees are found primarily in the rivers of the coastal plain. In Brazil, manatees range along the coast as far south as Mangue Seca (lat. 12° S.), but they may not be continuous along the north coast, owing to unsuitable habitat.

Manatees are found throughout the Caribbean Sea, usually in small numbers, in coastal regions near rivers and away from population centers. They occur along both coasts of Cuba and are seen most frequently at the Hatiguanico River in the Zapata Swamp, and in the Ensenada de la Bara. In Jamaica, manatees are most frequently found in the Black River area in the southwest and in the Portland Point area of the south-central coast. The distribution in the Dominican Republic is nearly continuous along the north coast; concentrations occur around Monte Criste, on the north side of the Samana Peninsula, on the south and eastern shores of Bahia de Samana, around the Tres Hermanas Springs area near the southeast tip of the island, and in the southwest from Azua to the Perdenales Peninsula. Nothing is known of manatees in Haiti, but at least some animals probably interchange with those from the Dominican Republic. Little is known of manatees in Puerto Rico, but isolated groups have been located on the south coast near Guanica, Guayanilla, La Parguerra, and Jobas Bay; at Roosevelt Roads Naval Base on the east coast; and near Guanajibo on the west coast. One sighting was recently reported from Trinidad.

Abundance and trends. Aerial surveys of Florida coasts and rivers during the period 1972-76 and interview data in 1975-76 indicate that the manatee population perhaps numbers about 1,000 animals. Over 740 manatees were counted in a concentrated aerial survey in late January 1976, but the percentage of the population not observed is not known. Numbers may be stable in Florida, but relative abundance cannot be documented because substantive previous studies are lacking.

Manatee numbers in Mexico are markedly reduced and sighting reports are rare; however, their current local status appears to be stable. Likewise, populations in Belize seem to be decreased but stable. Manatees are reported to be fast decreasing in Guatemala but are still present at least in Lago Isabella. Their present status in Honduras is unknown, and estimates for Nicaragua range from a few score to several hundred. Numbers are believed to be low in Panama and Costa Rica.

Manatees are currently decreasing in many Colombian rivers and are extremely rare in the Santa Marta district and in the llanos of eastern Colombia. They have been extirpated from Taganga Bay, the Canal de Dique, and the Ciénaga de Guajaro. In Venezuela, manatees are considered to be neither abundant nor rare in the lower Orinoco Basin. Estimates of some thousands, but not tens of thousands, of manatees have been made for Guyana, but populations are reportedly reduced in both Guyana and Surinam.

In the Caribbean, manatees are uncommon to rare in most areas and are thought to be declining in many locales.

It can be generally concluded that hunting pressures in the Caribbean, Mexico, and Central and South America have caused the present diminished manatee populations. In most cases, hunting is now on a subsistence basis, and little commercial exploitation occurs. Hunting efforts have decreased somewhat in many areas, partially owing to the scarcity of manatees, which is permitting remaining populations to stabilize.

During the report year, the Division of Wildlife Research's National Fish and Wildlife Laboratory conducted two manatee surveys along the Caribbean coastline of Mexico. Interviews with local fishermen supplied most of the information, which indicated that the manatee, although present throughout most of its former range, has drastically declined from past population levels, owing apparently to past hunting pressures and habitat destruction. However, present-day laws forbidding the killing of manatees have so reduced hunting that this activity may no longer threaten the species. Twenty-three major central markets were visited, and only 1 sale of manatee meat was reported to have occurred within the last 10 years.

General biology. The West Indian manatee is large, fusiform, thick skinned, and almost hairless. The forelimbs are modified paddles with rudimentary nails, and the spatulate tail is horizontally flattened. Adults range in length from 2.5 to over 4.5 meters, and corresponding weights vary from 200 to 800 kilograms. However, average adults are between 3 and 4 meters long and weigh less than 500 kilograms. Sexual dimorphism in size has not been documented.

Breeding occurs throughout the year. The cow is polyandrous, allowing several bulls to copulate with her during her relatively short period of receptivity. Mating has been observed in water about 2.5 meters deep as well as in shallows less than 1 meter deep. Most calves are thought to be born in spring and summer. The gestation period is probably about 385 to 400 days, and parturition is thought to occur in secluded shallows. Successful breeding has occurred under captive conditions only once, but full documentation of the event is lacking. A cow usually bears only one calf at a time, but twins and a case of foster parenthood have been recorded. Newborn calves are usually over 1 meter long and weigh

between 11 and 27 kilograms. Suckling from the pectoral teats occurs underwater. Calves may begin grazing within weeks of birth, but nursing continues for 1 or 2 years. Therefore, breeding probably occurs every 2 to 3 years.

Manatees have been classified into the following age groups: calves, any young animal associating with a cow; juveniles, independent animals not yet sexually mature; and adults, animals taking part in reproduction. Transition to adulthood is gradual, and sexual maturity may not be attained until animals are 4 to 6 years old. Manatee longevity in the wild is unknown, but a captive has been successfully maintained in Florida for 29 years.

Preliminary studies of social behavior indicate that the most obvious close bond is between cow and calf. Estrus herds of bulls may last from 1 week to more than 1 month. Small herds of less than 5 animals are the most commonly encountered non-estrus groups, except during cold winter periods when groups of as many as 140 animals are found in warm water refugia in Florida. Reported intragroup social interactions include "play" and nonspecific sexual (including homosexual) behavior.

T. manatus is reported to be arrhythmic, with no specific daily patterns of behavior. Adults may spend from 6 to 8 hours per day feeding. Manatees are herbivorous, consuming a variety of food plants in the following order of preference: (1) submerged plants, (2) surface floating vegetation, and (3) emergents. Incidentally ingested insect larvae, amphipods, mollusks, shrimp, and other invertebrates probably provide necessary amounts of protein for the manatee. Captive adults consume from 30 to 50 kilograms of vegetation each day. It has been suggested that manatees must return to freshwater occasionally to drink.

Internal parasites of T. manatus include the trematodes Opiosthotrema and Chiorchis and the nematode Plicatolabia.

The copepod Harpacticus was also reported on the skin. Manatees in saltwater become covered with marine diatoms (Zygnema and Navicula) and barnacles, whereas animals in freshwater develop a coat of algae (Lyngbya and Compsopogon). Manatees appear to be susceptible to pneumonia and other bronchial disorders when exposed to unusually low temperatures. To date, there is no documentation of predation upon the manatee by animals other than man, but attacks by alligators and giant squid in Florida have been reported. Sharks have also been suggested as likely predators.

Ecological problems. In the United States, wounds inflicted by motorboat propellers and keels pose a major problem and are the prime known cause of manatee mortality. Water contamination by industrial effluents destroys proper manatee habitat and food supplies but does not appear

to directly affect the animals who often congregate near polluted outfalls in winter. In upper Tampa Bay, the natural submergent vegetation has been eradicated by industrial pollution, resulting in the absence of manatees in the upper bay. Dredging may also have detrimental effects, increasing the water turbidity to a point where submergent plants can no longer survive. Natant plants seem to thrive under these conditions, and in the absence of the preferred submergents manatees do consume these natants. However, the floating plants present a problem to boat traffic and (as in the St. Johns River) are sprayed with herbicides, such as 2-4-D, which then may be directly ingested by manatees. No direct effects of this or other herbicides have been documented. Oil spills from offshore drilling may also have detrimental effects on manatees' food supplies. Vandalism, poaching, accidental nettings, and flood control structures are additional causes of manatee mortality.

Blue Springs Park (a winter congregating site) has been designated a manatee sanctuary by the Florida Department of Natural Resources and is the only locality in Florida with lowered boat speed limits and human-swimming restrictions for manatee protection. As many as 27 manatees have taken refuge in this spring during cold periods. Manatees also inhabit the Everglades National Park and several national wildlife refuges, being especially abundant in the Merritt Island NWR. Reduced boat speed limits of 8 km/hr have been proposed to protect the animals in some rivers and canals on Florida's lower east coast and in parts of the intracoastal waterway in metropolitan areas. Outside Florida, manatees are protected within Colombia's Parque Nacional Isla de Salamanca and Costa Rica's Tortuguero National Park, but their occurrence in other foreign reserves or sanctuaries is unknown.

Allocation problems. Manatees have long been hunted for their meat, hides, oil, and ivory. Protective legislation is now nearly complete. The meat is still sold occasionally in local markets of Colombia, Brazil, and Venezuela, but kills are usually the result of fortuitous encounters by natives or fishermen. *T. manatus* has been used with success in small-scale aquatic weed clearance projects in Guyana, Mexico, and Panama, but at this time large-scale utilization of manatees for weed control does not seem feasible, owing to the large numbers of animals required. The manatee has also been suggested for domestication for meat in the distant future, but current decimated populations, plus a low reproductive rate, make this project unrealistic.

Regulations. Protective legislation for the manatee now exists in the following countries: United States, Brazil, British Honduras, Costa Rica, Panama, Colombia, Venezuela, Guyana, Cuba, Jamaica, Puerto Rico, Trinidad, Haiti, Mexico, and the Dominican Republic.

Current research. The U.S. Fish and Wildlife Service (FWS) has initiated a broad-scope research program on the ecology and physiology of T. manatus. Survey efforts are being expanded in Florida and the southeastern United States and are being initiated throughout the Caribbean, Central America, and Brazil. Tracking studies of movements and seasonal habitat utilization were initiated in fall 1975 in the southeastern United States. Suitable tagging techniques are also being developed. Detailed analysis of the environmental relationships of T. manatus in the Blue Springs Park has been initiated with the cooperation of the Florida Department of Natural Resources. Studies of basal metabolism and osmoregulation are underway, while programs to investigate sensory physiology are planned. Dr. Daniel K. Odell of the University of Miami's Rosenstiel School of Marine and Atmospheric Science is cooperating with the Service's Division of Wildlife Research in studies of mortality factors and is conducting a study to develop a methodology for aging dead manatees. Cooperative programs between the University of Florida's School of Veterinary Medicine and the Service are studying manatee parasites (Dr. Donald J. Forrester), hematology (Dr. John W. Harvey), and fungal skin infections (Dr. Fred Neal). Dr. Kermit C. Bachman of the Dairy Sciences Department is working with the FWS to study the components of manatee milk.

During fiscal year 1977, the Division of Wildlife Research conducted preliminary individual or cooperative studies on manatees in Brazil, Colombia, Mexico, Puerto Rico, and Surinam; in fiscal year 1978, additional studies are anticipated, and at least preliminary surveys are scheduled in Panama, Belize, Costa Rica, and northern South America. In 1977, the Service also published an extensive synthesis of the available information on this species, compiled by Sandra L. Husar.

E. Mondolfi of Venezuela is compiling records of this species in his country to determine its local range, and Peter van Bree of Amsterdam is supervising a taxonomic study comparing T. manatus to T. senegalensis. The U.S. National Academy of Sciences, the National Research Council of Canada, and the National Science Research Council of Guyana are considering the joint establishment of an international manatee research center in Guyana. They hope to direct their research toward reproduction, physiology, and nutrition of the West Indian manatee.

Amazonian manatee
(*Trichechus inunguis*)

Distribution and migration. Amazonian manatees are strictly fluvial, apparently being confined to the Amazon Basin and possibly the Orinoco drainage (fig. 1). In Brazil, they occur in the Amazon River and the following tributaries: Rio Tocantins, Rio Xingu, the Tapajós, the Nhamunca, Rio Madeira, and Rio Negro. They have also been reported in Rio Branco, which is almost continuous with the Essequibo and Rupununni Rivers of Guyana during flooding, thus allowing the animals access to these rivers. *T. inunguis* is also thought to inhabit the upper Orinoco and the Cano Casiquiare of Venezuela, but records are lacking. In Colombia, Amazonian manatees may be found in the Amazon and the Pupumayo River (west to the Araracuara rapids); they may also frequent the Apaporis River. Peruvian rivers supporting manatees are: Rio Napo, Rio Tigre, Rio Marañon (as far as its confluence with Rio Pastaza), Rio Samiria, and Rio Pacaya. These animals also inhabit the Ucayali and Huallago River drainages but are absent from both the Madre de Dios and the Purus systems. No information is available on migration of this species.

Abundance and trends. Amazonian manatees were formerly abundant in the Brazilian Amazon. Thousands of skins were brought yearly to Manaus for trade in the 1930's and 1940's. *T. inunguis* is consequently less abundant today in most of the Amazon and its tributaries. It is, however, still fairly common in some lakes on the lower Tapajós and in the Nhamunca River. In general, it is regarded as rare in Colombia. This species is nearer extinction in Peru than is any other mammal, although modest numbers do remain in Rio Samiria and Rio Pacaya. All reports indicate a dramatic decline in numbers of Amazonian manatees throughout their range. Population estimates are not available, but extinction has been predicted within the next few decades if local hunting pressures continue.

General biology. *T. inunguis* is a large, fusiform, and nearly hairless marine mammal with paddlelike flippers and a spatulate tail. It is distinct from other manatee species (*T. manatus* and *T. senegalensis*) in both appearance and habitat. Characteristically, it is more slender and has elongated flippers lacking nails, and it is marked by a unique white breast patch. This species is the only entirely fluvial manatee. Adults may reach lengths of 2.8 meters and estimated weights between 125 and 250 kilograms. Breeding apparently occurs throughout the year. The gestation period is thought to be about 1 year, and usually only one calf is born to a cow. Newborn calves are less than 1 meter long and weigh less than 20 kilograms. Further information on reproduction, ontogenetic variation, and population structure is lacking. Longevity in nature is unknown, but a captive pair survived 12-1/2 years before they died.

Amazonian manatees feed upon varied aquatic vegetation, including Statiotes, Potamogeton, Vallisneria, Ceratophyllum, Ulva, Myriophyllum, and Zostera. Daily consumption of food plants has not been measured under natural conditions, but captive adults generally require 9 to 15 kilograms of lettuce and vegetables daily. Natural predation on T. inunguis is not documented, but jaguars, sharks, piranhas, and caimans have been suggested to be likely predators. The trematode, Chiorchis fabaceus, occurring in the large intestine, is the only internal parasite reported for this species. Bronchial disorders, pneumonia, and skin problems have been noted in captives, and one captive developed osteomyelitis as a result of a harpoon wound.

Allocation problems. Many Indian tribes of Amazonia have hunted manatees in the past for both meat and the hides which were used to make shields. Animals were captured with harpoons and nets, but the final killing was done by driving wooden plugs into their nostrils, causing suffocation. In the 1930's and 1940's, the Amazonian manatee was commercially exploited for the skins, which were shipped to Portugal and Rio de Janeiro where they were used primarily to make machine belting and water hoses. A meat preparation called "mixira," consisting of meat boiled in its own fat, was canned and also shipped abroad. Thousands of manatees were slaughtered yearly. Protective legislation has since been enacted, and the present rate of exploitation is reportedly reduced. However, poaching continues at a reduced rate, and manatee meat is still occasionally available in Colombia and Brazil.

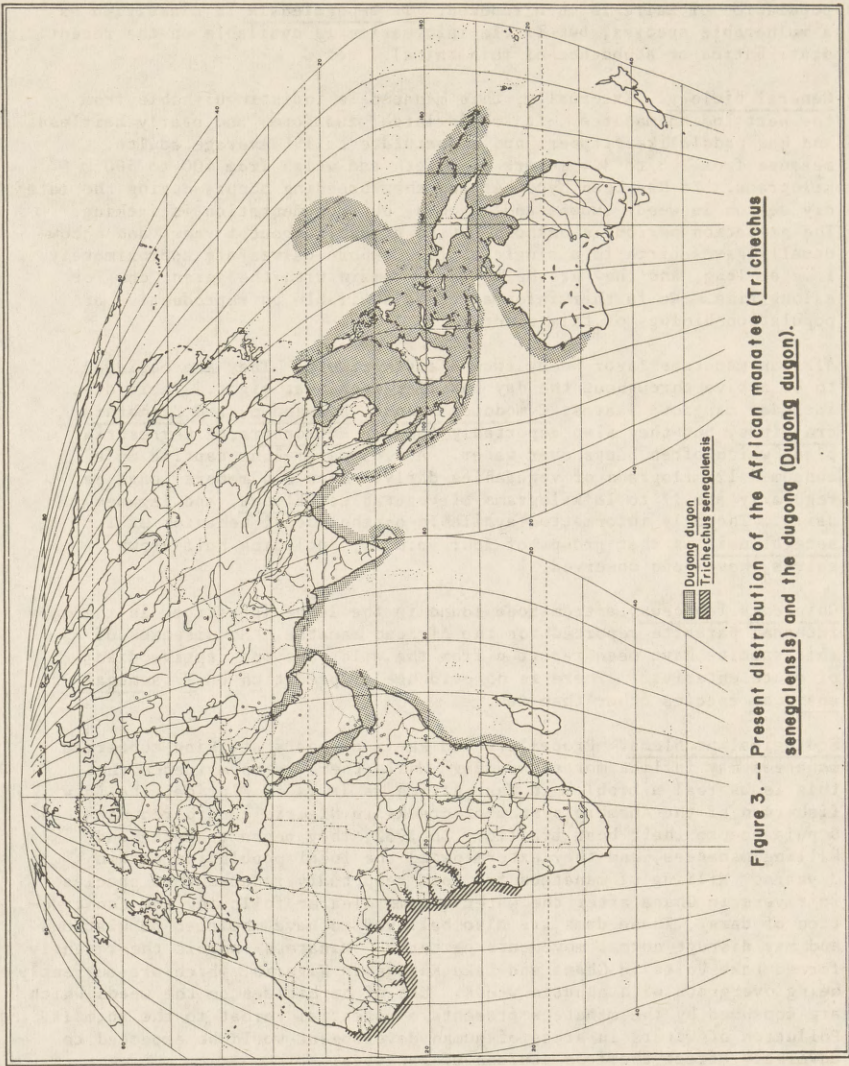
Regulations. T. inunguis is totally protected in Brazil (1968), Venezuela (1970), Colombia (1969), Peru (1973, and Guyana (1961).

Current research. In 1977, the American Society of Mammalogists published a synthesis of the available information on this species, compiled by Sandra L. Husar. Presently, Daryl P. Domning and Robin C. Best are studying the species at the Instituto Nacional de Pesquisas da Amazonia, Manaus, Brazil. These studies include data on the species' growth, anatomy, distribution, and natural history.

African manatee
(Trichechus senegalensis)

Distribution and migration. The African manatee occurs in coastal waters and adjacent rivers of West Africa--from the mouth of the Senegal River (lat. 16° N.), to the mouth of the Cuanza River, to Angola (fig. 3). Animals of this species have been reported from the Faleme, Gambia, and Casamance Rivers of Senegal and Gambia and from the coasts of Guinea. Other rivers known to support manatees are the Sierra Leone, the Missunado, the St. Paul's, and the Cavalla. In Ghana, the species is now apparently restricted to Lake Volta and the upper reaches of the Volta River. Manatees have been taken at Benin and Lagos, Nigeria, occur in the Doro River Forest Reserve, and are numerous in most of the larger rivers of southern Nigeria. They occur in the Niger River and are common as far upriver as Idah, on the western border; however, they travel even farther upriver and have been noted in Segou, Mali, approximately 200 miles southwest of Timbuktu. Manatees also ascend the Benue River, a large tributary of the Niger; they have been reported in this waterway as far east as Numan (lat. 9° N., long. 12° W.). Manatees are not thought to occur in Lake Chad, although specimens have been collected from its principal tributaries, the Banningi, the Bahr Keeta, and the River Shari. In Cameroon, they are found within the Korup and Campo Reserves and have been reported from the Mungo and Wouri Rivers; they also probably inhabit the Campo River in southern Cameroon. Specimens have been taken from the Rio Muni, Gabon, and Ogooue Rivers and may also be found in the Loeme River of Congo Brazzaville. In Zaire, T. senegalensis occurs in the lower Congo River and also in the upper drainage of the Uele River, east to Kibali. The Loge, Dnade, Bengo, and Cuanza Rivers of Angola all reportedly contain manatees. No data are available on migrational movements.

Abundance and trends. No population estimates are available for this species. The African manatee was reported to be rare in the Senegal, Faleme, and Casamance Rivers of Senegal as early as 1900. Recent reports of manatee abundance in Senegal, Guinea, and Portuguese Guinea are lacking. Manatees remain common enough in the Sierra Leone River estuaries today to be trapped for food, but no information is available on their current status along the coast from Liberia to Nigeria. Manatees have been extirpated from the Mekrou River of Dahomey and the portion of the Niger River on the Niger-Dahomey border, although they are thought to be still numerous in most of the larger rivers of southern Nigeria. Populations seem to be stable in the lower Niger, the Benue River, and the Anambra system of creeks, but manatees are rare in the Izichi River of Nigeria. T. senegalensis has apparently been extirpated in Lake Chad and is classified as rare in the Cameroons. The lower reaches of the Congo River reportedly support numerous animals, but populations have diminished in the upper rivers. In general, the manatee



population of Zaire is much reduced. T. senegalensis is classified as a vulnerable species, but little information is available on the recent distribution or abundance of this animal.

General biology. Externally, this manatee is indistinguishable from the West Indian manatee. It too is large, fusiform, and nearly hairless and has paddlelike flippers and a spatulate tail. Average adults measure from 2.5 to 3.4 meters in length and weigh from 400 to 500 kilograms. It has been hypothesized that breeding occurs during the late dry season in weedy swamps and lagoons, but documentation is lacking. The gestation period is unknown but is probably about 1 year, and a cow usually gives birth to a single calf. Newborn calves are approximately 1 meter long, and they are believed to remain with the parent cow for a long time. No further information is available on reproductive or population biology of this species.

African manatees favor weedy swamps and mirigots. They are believed to be active throughout the day but feed mostly at night. Their diet includes mangrove leaves, Cymodocea nodosa, Polygonum, and Eichornia crassipes, but they also reportedly feed on Rhizophora, a terrestrial plant which often hangs over water. A 1.85-meter-long captive male consumed 12 kilograms of vegetables daily. When 2.4 meters long, he regularly ate 17 to 18 kilograms of vegetables, Elodea, and legumes daily. The only information available on the social behavior of T. senegalensis is that groups of four animals, including half-grown calves, have been observed.

Chiorchis fabaceus, a trematode found in the large intestine, is the only internal parasite reported for the African manatee. No diseases of this species have been reported from the wild, but one captive died of acute enteritis. There is no evidence of predation on T. senegalensis by species other than man.

Ecological problems. Propellers and keels of boats striking submerged manatees may inflict mortal wounds. While there is no evidence that this is as real a problem in West Africa as it is in Florida, the Ijaw fishermen of the Anambra system of creeks in Nigeria considered manatees a nuisance to their boat traffic. In 1932, they began trapping and killing manatees, and they exterminated the local population within 3 years. Killing of manatees for food reportedly reduced this species in rivers in Ghana after the water became clearer following the construction of dams. These dams are also believed to have isolated populations and may disrupt normal movements patterns. Manatees inhabit the recently formed Lake Volta in Ghana and Lake Kainje in Nigeria, which are currently being overgrown with aquatic weeds. Use of herbicides on the weeds which are consumed by the manatees presents a potential threat to the animals. Pollution of waters in areas of human development would be expected to adversely affect the food sources of manatees.

Allocation problems. The African manatee has long been hunted throughout its range, largely for its meat. Hunting is done at night with nets, harpoons, and guns, and such hunting has been a regular occupation in the lower Congo, Angola, and in northern Nigeria. No estimates of current take are available. Manatees are also accidentally caught and die in shark nets, which are set along many coastal areas of West Africa. T. senegalensis has been considered to be a potential solution to the problem of aquatic weed control in manmade lakes and river systems. Experiments with the West Indian manatee indicate that that species can successfully control weeds under certain specialized circumstances and that manatees plus alternative mechanical weed removers may provide the best non-chemical means of control.

Regulations. The African manatee is currently protected in Senegal, Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Dahomey, Nigeria, Cameroon, Gabon, Congo Brazzaville, Zaire, and Angola.

Current research. No survey programs are currently underway to determine the status and distribution of this species, but the U.S. Fish and Wildlife Service's Division of Wildlife Research considers this to be a critical area for research. Peter van Bree of Amsterdam is supervising a taxonomic study comparing T. senegalensis to T. manatus. The FWS Division of Wildlife Research's National Fish and Wildlife Laboratory has compiled a report on the distribution, conservation, and natural history of T. senegalensis.

Dugong
(Dugong dugon)

Distribution and migration. Dugongs occur in tropical and subtropical Indo-Pacific waters (fig. 3). They are totally marine and are usually found in nearshore coastal waters from 3.7 to 5.5 meters (2 to 3 fathoms) deep. Along the east coast of Africa, they range from the Red Sea coast of Egypt south to Delagoa Bay (lat. 26° S.), Mozambique, but this distribution is discontinuous owing to local extirpation in certain areas. Dugongs have been reported from the Persian Gulf, and they also range along the west coast of India, south of the Gulf of Kutch. They occur in Sri Lankan waters and are present in the Andaman Islands, the Mergui Archipelago, Burma, Malaysia, the Moluccas, and Sumatra. They may still be found in the Ryukyu Archipelago, and specimens have been taken in Taiwan and Hong Kong. The present range extends south and east to include Guam, the Palau Islands (Caroline Islands), New Britain, Papua New Guinea, the Solomons, New Caledonia, and the New Hebrides. In Australia, dugongs occur all along the northern coast from Perth (lat. 32° S.) on the west coast to Brisbane in the east. They are absent from the Marshall, Gilbert, Ellice, and Fiji Islands.

Long-distance migrations of this species are unknown, but local, offshore movements are apparent. These may be correlated with the changing monsoon seasons and possibly with resulting shifts in abundance of food sources. During the season of rough seas and extremely strong winds, the animals move to shore, apparently seeking shelter. Such movements have been reported in east Africa, India, and the Philippines. Similar migrations have not been noted in Australia.

Abundance and trends. Populations are thought to be much reduced and still declining throughout much of the range, except in Australia and Papua New Guinea. No numerical estimates of dugongs are available, except for those in northeastern Australia where an estimated 1,000 to 2,000 animals dwell along the Queensland coast.

Dugongs are more abundant in Kenya and the Somali Republic than elsewhere along the coast of Africa; in Kenya, they presently occur only in Lamu Park. They are now extremely rare in the Red Sea and the Gulf of Aqaba. They were once abundant enough in the Gulf of Mannar (between Sri Lanka and India) to support a large commercial dugong fishery. The only remaining segments of this population are restricted to the region near the Mannar Peninsula of Sri Lanka, from Jaffna to Puttalam. Numbers have declined along the Sarawak coast of Malaysia, and few dugongs can be found today in the Ryukyu Archipelago. The only stable populations occur along the northern Australia coast--Shark Bay, Broome, the Gulf of Carpentaria, and the northern coast of Queensland--and along the coast of Papua New Guinea. These stocks appear to be maintaining themselves.

General biology. A dugong is a large fusiform marine mammal with flipper-like forelimbs and a broadly notched, horizontal tail fluke. Adults range in length from 2.4 to 2.7 meters, in weight from 230 to 360 kilograms. The thick, nearly hairless skin is deep slate gray to brown and is frequently marked with numerous scars and scratches. Dugongs were highly social in the past, forming large herds of several hundred animals. Today, groups usually include no more than 6 animals, although groups of up to 50 animals are still seen along the coast of Australia. Breeding apparently occurs throughout the year. The gestation period is thought to be about 1 year, and a cow usually bears only one calf at a time; twins have been reported rarely. Newborn calves are about 1.1 meter long. Calves begin grazing within 3 months of birth but continue to nurse for over 1 year, when they may have grown to a length of 1.8 meters. Animals reach sexual maturity at an approximate length of up to 2.4 meters, which corresponds to an estimated age of 5 to 10 years. Sexual dimorphism in size of adults is not evident. Longevity of the dugong in the wild is unknown, but analysis of tooth growth layers suggests a maximum of 30 to 60 years, depending on whether growth rings are annual or biannual. Two captives were successfully maintained for 10 years in India.

Dugongs are largely herbivorous and feed primarily on marine sea grasses of the families Potamogetonaceae and Hydrocharitaceae; these particular grasses occur in upper subtidal and lower intertidal waters with a year-round temperature range between 21° C and 28° C. Diplanthera and Cymodocea are most heavily utilized, but the brown algae, Sargassum, may also be consumed in significant amounts when sea grasses are locally scarce. Dugongs reportedly prefer to feed at night or with the rising tide.

There are few observations of predation upon the dugong by animals other than man. Fishermen have claimed that the shark is a predator, but of the more than 100 dugongs netted and drowned in Queensland, none showed any sign of attack by sharks or other predators. Large saltwater crocodiles are known to eat dugongs occasionally, but the extent of this predation is unknown.

Internal parasites include 10 species of trematodes and 2 species of nematodes. Barnacles and green filamentous algae have been observed on dugongs but do not appear to be harmful. No diseases have been reported.

Allocation problems. Man is the major threat to the dugong's existence. Boat traffic in offshore areas may inflict mortal wounds. Increased marine fishery activities in the India-Sri Lanka and Kenya areas have resulted in accidental dugong nettings, which have drowned substantial numbers of animals. Dynamiting for fish presumably also adversely affects dugongs. In Queensland, Australia, a shark-netting program has resulted in large dugong mortality; similar netting programs exist in Africa.

Dugongs have been hunted throughout their range. Their meat is similar to veal or pork and "keeps" for long periods of time. Adults of average size yield from 19 to 30 liters of oil similar to cod liver oil, and the hide makes excellent leather, which is especially suitable for sandalmaking. Tusks and bones are used as ivory, and several body parts were once thought to have medicinal or aphrodisiac properties. Today, hunting pressures are much reduced, owing partly to the decline of dugongs. In spite of legislative protection, however, poaching continues. In Australia, the aborigines and Torres Islanders may still legally hunt the animals. One village of 250 people caught an average of about 70 animals per year during the early 1960's. In Papua New Guinea, at least one animal is killed each week for local consumption along the southwestern coast.

Regulations. The dugong is totally protected in Egypt, Anglo-Egyptian Sudan, Ethiopia, Somalia, Kenya, Tanzania, Mozambique, Madagascar, South Africa, Natal, India, Sri Lanka, Sabah, Sarawak, the Philippines, Japan, Taiwan, and New Caledonia; in Australia and Papua New Guinea, only aborigines and natives may hunt the dugong for their own local consumption and use. Although protection is nearly complete, effective enforcement is virtually impossible in most areas.

Current research. George Heinshon and his associates at James Cook University, Townsville, are continuing their study of dugongs in Queensland, Australia. Animals accidentally drowned in shark nets provide population and reproduction data, as well as information on food habits. Studies of nutrition, general ecology and behavior, and histology are also being conducted. Brydget Hudson of the Wildlife Division, Department of Natural Resources, Papua New Guinea, is continuing her study of dugongs throughout the waters of that area. The National Fish and Wildlife Laboratory (NFWL) of the U.S. Fish and Wildlife Service's Division of Wildlife Research has assembled a report on the distribution, status, and natural history of this species, and NFWL personnel recently conducted surveys along the north Australia coast and in Kenya. Surveys are underway to determine dugong distribution in many areas of the Pacific where data are lacking.

PARTIAL BIBLIOGRAPHY

Polar bear

- Harington, C. R. 1968. Denning habits of the polar bear (Ursus maritimus Phipps). Can. Wildl. Ser. Rpt. Series 5. 33 pp.
- Harington, C. R. 1972. Proceedings of the third working meeting of polar bear specialists. I.U.C.N. Publ. New Series, Supp. Paper 35. 97 pp.
- Harington, C. R. Proceedings of the fourth working meeting of polar bear specialists. (In press).
- International Union for the Conservation of Nature. 1970. Proceedings of the second working meeting of polar bear specialists. I.U.C.N. Publ. New Series, Supp. Paper 29. 88 pp.
- Jonkel, C. J. 1970. Polar bear research in Canada. Proceedings Conference on Productivity and Conservation in Northern Circumpolar Lands. I.U.C.N. Publ. New Series 16:150-154.
- Jonkel, C. J., G. B. Kolenosky, R. J. Robertson, and R. H. Russell. 1972. Further notes on polar bear denning habits. In Bears-- Their biology and management. Proceedings Second International Conference on Bear Research and Management. I.U.C.N. Publ. New Series 23:142-158.
- Larsen, T. 1967. The trapping and study of polar bears, Spitsbergen, 1966. Polar Rec. 13(86):589-593.
- Larsen, T. 1971. Capturing, handling and marking polar bears in Norway. J. Wildl. Mgt. 35(1):27-36.
- Larsen, T. 1972. Air and ship census of polar bears in Svalbard (Spitsbergen). J. Wildl. Mgt. 36(2):562-570.
- Lentfer, J. W. 1968. A technique for immobilizing and marking polar bears. J. Wildl. Mgt. 32(2):317-321.
- Lentfer, J. W. 1969. Polar bear tagging in Alaska, 1968. Polar Rec. 14(91):459-462.
- Lentfer, J. W. 1972. Polar bear-sea ice relationships. In Bears-- Their biology and management. Proceedings Second International Conference of Bear Research and Management. I.U.C.N. Publ. New Series 23:165-171.

- Lentfer, J. W. 1974. Discreteness of Alaskan polar bear populations. Proceedings XIth International Congress of Game Biologists, Stockholm, Sweden, September 3-7, 1973:323-329.
- Lentfer, J. W. Polar bear management in Alaska. Proceedings Third International Conference on Bear Research and Management, State University of New York, Binghamton, May 31-June 1, 1974 (In press).
- Lentfer, J. W. 1975. Polar bear denning on drifting sea ice. J. Mamm. 56:716-718.
- Lentfer, J. W., and J. W. Brooks. 1970. Polar bear research in Alaska. Proceedings Conference on Productivity and Conservation in Northern Circumpolar Lands. I.U.C.N. Publ. New Series 16:143-149.
- Lentfer, J. W., S. M. Uspenski, and C. Vibe. 1975. Problems in the circumpolar study of polar bears (*Ursus maritimus* Phipps). Proc. Circumpolar Conf. on Northern Ecol., Ottawa (In press).
- Lønø, O. 1970. The polar bear in the Svalbard area. Norsk Polarinstitut Skrifter 149, Norway. 103 pp.
- Manning, T. H. 1964. Age determination in the polar bear. Can. Wildl. Ser. Occas. Papers 5. 12 pp.
- Manning, T. H. 1971. Geographical variation in the polar bear (*Ursus maritimus* Phipps). Can. Wildl. Ser. Rpt. Series 13. 27 pp.
- Ministry of Agriculture of the U.S.S.R., Central Laboratory for Nature Conservation. 1969. The polar bear and its conservation in the Soviet Arctic. Hydrometeorological Publishing House, Leningrad. 188 pp.
- Øritsland, N. A. 1970. Temperature regulation of the polar bear. Comp. Biochem. Physiol. 37:225-233.
- Pedersen, A. 1945. Der Eisbar. Verbreitung und Lebensweise. E. Bruun and Co., Copenhagen. 166 pp.
- Stirling, I. 1974. Midsummer observations on the behavior of wild polar bears (*Ursus maritimus*). Can. J. Zool. 52:1191-1198.
- Stirling, I. 1975. Polar bear research in the Beaufort Sea. In: W. W. Gunn (ed.) Coast and Shelf Research in the Beaufort Sea. Arctic Institute of North America:719-731.

- Stirling, I., D. Andviashek, P. Latour, and W. Calvert. 1975. Distribution and abundance of polar bears in the eastern Beaufort Sea. Beaufort Sea Technical Report No. 2, Beaufort Sea Project. Canad. Dept. of Environment. Victoria, B. C. 59 pp.
- Tovey, P. E., and Robert F. Scott. 1957. A preliminary report on the status of the polar bear in Alaska. Presented at Eighth Alaska Science Conference. 11 pp. Mimeo.
- U. S. Department of the Interior and University of Alaska. 1966. Proceedings of the first international meeting on the polar bear. 72 pp.
- Uspenski, S. M., and F. B. Chernyavski. 1965. "Maternity home" of polar bears. Priroda 4:81-86.
- Vibe, C. 1967. Arctic animals in relation to climatic fluctuations. Meddelelser om Gronland (Denmark). 170(5). 227 pp.

Sea otter

- Alaska Department of Fish and Game. 1973. Alaska's wildlife and habitat. Van Cleve Printing, Anchorage, Alaska. 144 pp., 155 maps.
- Bolin, R. L. 1938. Reappearance of the southern sea otter along the California coast. J. Mamm. 19(3):301-303.
- Boolootian, R. A. 1961. Distribution of the California sea otter. California. Fish Game 47(3):287-292.
- Dailey, M. D., and R. L. Brownell, Jr. 1972. A check list of marine mammal parasites. In S. H. Ridgeway (ed.) Mammals of the sea: Biology and medicine. Charles C Thomas Publ., Springfield, Ill.: 528-589.
- Jameson, R. J. 1973. An evaluation of attempts to re-establish the sea otter on the Oregon coast. Unpublished. Prog. Rept. Coop. Wildl. Res. Unit, Oregon State Univ., Corvallis. March 1973.
- Kenyon, K. W. 1969. The sea otter in the eastern Pacific Ocean. N. Amer. Fauna 68. 352 pp.
- Kenyon, K. W., C. E. Yunker, and I. M. Newell. 1965. Nasal mites (Halarachnidae) in the sea otter. J. Parasitology 51(6):29-37.
- Laughlin, W. S. 1970. Aleutian ecosystem, AAAS Symposium December 26-27, 1970, Chicago. Science 169:1107-1108.

- Laughlin, W. S., and W. G. Reeder. 1962. Revision of Aleutian prehistory. Science 137:856-857.
- Nikolaev, E. M. 1961. O rasprostraneni chislennosti i biologii kalanov [The biology and population spread of the sea otter]. Tr. Soveshch. Ikhtiol. Komm. Akad. Nauk SSR 12:214-271.
- Peterson, R. S., and M. W. Odemar. 1969. Population growth of the sea otter in California; results of aerial censuses and behavioral studies. A paper read to the 49th annual meeting of the Amer. Soc. Mammal. June 17, 1969, New York 7 pp. processed.
- Schneider, K. B. 1973. Sea otter distribution and abundance in Alaska. Unpublished report (processed). Alaska Dept. Fish Game files, 333 Raspberry Road, Anchorage, AK 99502. Dated January 7, 1973, 5 pp. and maps.
- Sinha, A. A., Ch. H. Conaway, and K. W. Kenyon. 1966. Reproduction in the female sea otter. J. Wildl. Mgt. 30(1):121-130.
- Vandever, J. E., and J. A. Mattison. 1970. Sea otters. Sierra Club Bull. 55(10):12-15.
- Wild, P. W. 1972. A summary of California Department of Fish and Game sea otter research activities. Unpublished report of Marine Resources Laboratory, 2201 Garden Road, Monterey, Ca 93940, Sept. 1972. 14 pp.

Marine otter

- Darwin, C. 1958. The voyage of the Beagle. Bantam Books, New York, 439 pp.
- Grimwood, I. R. 1969. Notes on the distribution and status of some Peruvian mammals 1968. Spec. Pub. 21 Am. Comm. Int. Wildlife Protec. and New York Zool. Soc. Bronx, New York.
- Harris, C. J. 1958. Otters--A study of the recent Lutrinae; Weidenfeld and Nicolson, London, 397 pp.
- Hernandez. 1960. Contribucion al conocimiento de camaron de Rio. Pesca y Caza. Ministerio de Agricultura, Lima, No. 10:84-106.
- IUCN. 1972. Red data book.
- Mann, G. 1945. Mamiferos de Tarapaca. Biologica Santiago, 2:23-134.

- Olrog, C. 1950. Acta Zool. Lilloana, 9:505-532.
- Osgood, W. H. 1943. The mammals of Chile. Field Mus. Nat. Hist. Zool. Ser. 30:1-268.
- Van Zyll de Jong, C. G. 1972. A systematic review of the Nearctic and Neotropical river otters (Genus *Lutra*, Mustelidae, Carnivora). Life Sci. Contr. R. Ont. Mus., 80:1-104.

Pacific walrus

- Allen, J. A. 1880. History of North American pinnipeds, a monograph of the walruses, sea lions, sea bears and seals of North America. U. S. Geol. Geogr. Surv. Terr. Misc. Publ. 12. 785 pp.
- Brooks, J. W. 1954. A contribution to the life history and ecology of the Pacific walrus. Alaska Coop. Wildl. Res. Unit. Spec. Rep. 1. 103 pp.
- Burns, J. J. 1967. Walrus biology and population. Marine Mammal Report, v.8, Annual Project Segment Report, Federal Aid in Wildlife Restoration Project W-14-R-1 and 2, Work Plan F. 44 pp.
- Burns, J. J. 1970. Remarks on the distribution and natural history of pagophilic pinnipeds in the Bering and Chukchi Seas. J. Mammal. 51:445-454.
- Bychkov, V. A. 1971. Review of the status of the pinniped fauna of the USSR. In Scientific elements of nature conservation. Ministry of Agriculture of the USSR (translated by J. J. Burns, 1972).
- Dailey, M. D., and R. L. Brownell, Jr. 1972. A checklist of marine mammal parasites. In S. H. Ridgeway (ed.) Mammals of the sea: Biology and medicine. Charles C Thomas Publ., Springfield, Ill.: 528-589.
- Fay, F. H. 1955. The Pacific walrus (*Odobenus rosmarus divergens*): Spatial ecology, life history, and populations. Univ. of British Columbia. Unpublished Ph.D. thesis.
- Fay, F. H. 1957. History and present status of the Pacific walrus population. Trans. 22d N. Amer. Wildlife Conf.:431-445.
- Fay, F. H. 1960a. Carnivorous walrus and some Arctic zoonoses. Arctic. 13(2):111-122.

- Fay, F. H. 1960b. Structure and function of the pharyngeal pouches of the walrus (Odobenus rosmarus L.). *Mammalia*. 24(3):361-371
- Fay, F. H. Distribution and biology of the Pacific walrus. (Typed manuscript in prep.).
- Harbo, S. J., Jr. 1960. Walrus harvest and utilization. Fed. Aid. Comp. Rept. Alaska Dept. Fish and Game. 16 pp. (mimeo).
- Kenyon, K. W. 1960. The Pacific walrus. *Oryx*. 5(6):332-340.
- Kenyon, K. W. 1960. Aerial surveys of marine mammals in the Bering Sea, Feb. 23-March 2, 1960 and April 25-28, 1960. Unpubl. report in U.S. Fish and Wildlife Service file, Seattle, WA.
- Kenyon, K. W., and J. G. King. 1965. Aerial survey of sea otters, other marine mammals and birds, Alaska Peninsula and Aleutian Islands, April 19-May 9, 1965. Unpubl. report in U.S. Fish and Wildlife Service file, Seattle, WA.
- Krylov, V. I. 1966. Age and sex structures of Pacific walrus herds on ice and shore rookeries. *Izv. TINRO*, 62:189-204. (Israel Prog. Sci. Transl., 1971), "Pinnipeds of the North Pacific": 185-200.
- Nikulin, P. B. 1947. Biological characteristics of the shore aggregations of the walrus in the Chukotka Peninsula. *Izv. Tikhookean. Nauchnoissled. Inst. Ryb. Khoz. Okeanogr.* 25: 226-228. (Preliminary transl. by W. E. Ricker.)
- Ricker, W. E. 1948. Methods of estimating vital statistics of fish populations. *Indiana Univ. Publ. Sci. Ser.* No. 15. 101 pp.

West Indian manatee

- Allsopp, W. H. L. 1960. The manatee: Ecology and use for weed control. *Nature* 188:762.
- Allsopp, W. H. L. 1969. Aquatic weed control by manatees--Its prospects and problems. In L.E. Obeng (ed.) *Man-made lakes*. Ghana University Press, Accra:344-351
- Bangs, O. 1895. The present standing of the Florida manatee, T. latirostris (Harlan) in the Indian River waters. *Amer. Nat.* 29:783-787.
- Barbour, T. 1937. Birth of a manatee. *J. Mamm.* 18(1):106-107.
- Baughman, J. L. 1946. Some early notices on American manatees and their mode of capture. *J. Mamm.* 27(3):234-239.

- Bertram, C. 1963. In search of mermaids: The manatees of Guyana. Peter Davies, London.
- Bertram, G. C. L., and C. K. R. Bertram. 1962. Manatees in the Guianas. *Zoologica* 49:115-120.
- Bertram, G. C. L., and C. K. R. Bertram. 1973. The modern Sirenia: Their distribution and status. *Biol. J. Linn. Soc.* 5(4):297-338.
- Brown, W. P. 1914. On the trail of the Florida manatee. *Forest and Stream* 82(21):689-690.
- Caldwell, M. C., and D. K. Caldwell. 1972. Behavior of marine mammals. In Ridgway, S. H. (ed.) *Mammals of the sea: Biology and medicine*. Charles C Thomas Publ., Springfield, Ill.:419-465.
- Charnock-Wilson, J. 1968. The manatee in British Honduras. *Oryx* 9(4):293-294.
- Conzemius, E. 1932. Ethnological survey of the Miskito and Sumu Indians of Honduras and Nicaragua. *Bull. U. S. Bur. Amer. Ethnol.* 106:67.
- Dailey, M. D., and R. L. Brownell, Jr. 1972. A checklist of marine mammal parasites. In Ridgway, S. H. (ed.) *Mammals of the sea: Biology and medicine*. Charles C Thomas Publ., Springfield, Ill.:528-589.
- Freund, L. 1950. A bibliography of the mammalian order Sirenia. *Vestn. Ceskol. zool. Spol.* XIV:161-181.
- Garrod, A. H. 1877. Notes on the manatee (*Manatus americanus*) recently living in the society's garden. *Trans. Zool. Soc. London* 10:137-145.
- Goodwin, G. G. 1946. Mammals of Costa Rica. *Bull. Am. Mus. Nat. Hist.* 87(5).
- Gunter, G. 1941. Occurrence of the manatee in the United States with records from Texas. *J. Mamm.* 22:60-64.
- Gunter, G. 1954. Mammals in the Gulf of Mexico. In *Gulf of Mexico, its origin, waters and marine life*. Fishery Bull. No. 89. Washington, D. C. (Sirenians pp. 543-545).
- Harrison, R. J., and J. E. King. 1965. Marine mammals. Hutchinson and Co., London. 192 pp.
- Hartman, D. S. 1968. The status of the Florida manatee in captivity. Dept. of Natural Resources, Tallahassee, Fla. MS 22 pp. suppl.

- Hartman, D. S. 1969. Florida's manatees, mermaids in peril. *Natl. Geogr.* 136(3):342-353.
- Hartman, D. S. 1970. Sea nymphs and elephants. Not man apart. *Special Wildlife Issue*. Published for F.O.E., League of Conservation Voters, 2(1).
- Hartman, D. S. 1971. Behavior and ecology of the Florida manatee. Ph.D. Thesis, Cornell University, June 1971.
- Hartman, D. S. 1974. Distribution, status and conservation of the manatee in the United States. Rept. for the National Fish and Wildlife Laboratory, Gainesville, Fla. 247 pp.
- Hartman, D. S., and J. A. Powell, Jr. 1973. Observations of manatees at Blue Springs Park, Volusia Co., Florida. MS, 16 pp.
- Husar, S. L. 1977. The West Indian manatee (*Trichechus manatus*). U.S. Fish and Wildlife Service, Wildlife Research Rept. 7. 22 pp.
- Krumholz, L. A. 1943. Notes on manatees in Florida waters. *J. Mamm.* 24(2):272-273.
- Lluch, B. D. 1965. Further notes on the biology of the manatee. *An. Inst. Nat. Inves. Biol.-Presq. Mexico* 1:405-419.
- MacLaren, J. P. 1967. Manatees as a naturalistic biological mosquito control method. *Mosquito News* 27(3):387-393.
- Mondolfi, E. 1974. Taxonomy, distribution and status of the manatee in Venezuela. *Memoria de la Sociedad de Ciencias Naturales la Salle*. No. 97, Tomo 34. Enero-Abril.
- Moore, J. C. 1951a. The status of the manatee in the Everglades National Park, with notes on its natural history. *J. Mamm.* 32(1):22-36.
- Moore, J. C. 1951b. The range of the Florida manatee. *Quart. J. Fla. Acad. Sci.* 14(1):1-19.
- Moore, J. C. 1953. Distribution of marine mammals in Florida waters. *Am. Midland Nat.* 49:117-158.
- Murie, J. 1872. On the form and structure of the manatee. *Trans. Zool. Soc. London* 8(3):127-202.
- National Science Research Council of Guyana and the National Academy of Sciences, USA. 1973. Some prospects for aquatic weed management in

- Guyana--Workshop on aquatic weed management and utilization.
Georgetown, Guyana, March 15-17, 1973. 39 pp.
- O'Keefe, M. T. 1973. Blue Springs--Haven for the manatees. Florida Sportsman 5(1):10-14.
- Petit, G. 1925. Remarques sur la distribution géographique des siriens. C. R. Ass. franc. Avance. Sci. Paris. v. 48.
- Quiring, D. P., and C. F. Harlan. 1953. On the anatomy of a manatee. J. Mamm. 34:192-203.
- Schevill, W. E., and W. A. Watkins. 1965. Underwater calls of Trichechus. Nature 205:373-374.
- Scholander, P. F., and L. Irving. 1941. Experimental investigations on the respiration and diving of the Florida manatee. J. Cell. and Comp. Physiol. 17:169-191.
- Tomkins, I. R. 1956. The manatee along the Georgia coast. J. Mamm. 37:288-289.
- Vieira, C. 1955. Arquivos de Zoologia (Sao Paulo) 8(11):341-474.
- Westermann, J. H. 1953. Nature preservation in the Caribbean. Publ. of the Found. for Scientific Res. in Surinam and the Netherlands, Antilles, Martinus, Nijhoff, the Hague.

Amazonian manatee

- Allen, G. M. 1942. Extinct and vanishing mammals of the Western Hemisphere. Amer. Comm. for Internat. Wildl. Protection Spec. Pub. No. 11. The Intelligence Printing Co., Lancaster, Pa. 620 pp.
- Allen, J. A. 1881. Preliminary list of works and papers relating to the mammalian orders Cete and Sirenia. Bull. U. S. Geol. and Geogr. Surv. of the Terr. 6(3):399-562.
- Baughman, J. L. 1946. Some early notices on American manatees and their mode of capture. J. Mamm. 27(3):234-239.
- Beddard, F. E. 1897. Notes on the anatomy of a manatee (T. inunguis) lately living in the society's gardens. Proc. Zool. Soc. London: 47-53.

- Bertram, G. C. L., and C. K. R. Bertram. 1973. The modern Sirenia: Their distribution and status. *Biol. J. Linn. Soc.* 5(4):297-338.
- Blessing, M. H. 1970. Studies on the concentration of myoglobin in the sea cow and porpoise. *Comp. Biochem. Physiol.* 41(3A):475-480.
- Brown, A. E. 1873. The Sirenia. *Amer. Nat.* 12:291-318.
- Cabrera, A. 1957-1961. Catalogo de los mamiferos de America del Sur. Imprenta y casa editora, Buenos Aires. Tomo IV (2):309-311.
- Carvalho, C. T., and A. J. Toccheton. 1969. Mamiferos do nordeste do Para, Brazil. *Rev. Biol. Trop.* 15(2):215-226. (English summary).
- Dailey, M. D., and R. L. Brownell, Jr. 1972. A checklist of marine mammal parasites. In Ridgway, S. H. (ed.) *Mammals of the sea: Biology and medicine*. Charles C Thomas, Publ. Springfield, Ill.:528-589.
- Davilliers, C. 1938. Sur la biologie du lamantin en captivite. *Mammalia* 2:84-88.
- Dilg, C. 1909. Beitrage zur Kenntniss der Morphologie und post-embryonalen Entwicklung des Schadels bei Manatus inunguis Natt. Morph. Jahrb.
- Duplaix-Hall, N. (ed.). 1973. Census of rare animals living in zoos and other institutions. *International Zoo Yearbook*, v. 13.
- Evans, W. E., and E. S. Herald. 1970. Underwater calls of a captive Amazon manatee, Trichechus inunguis. *J. Mamm.* 51(4):820-823.
- Freund, L. 1950. A bibliography of the mammalian order Sirenia. *Vestn. Ceskol. zool. Spol.* XIV:161-181.
- Friant, M. 1954. Le cerveau du lamantin (Manatus inunguis Natterer) Vierteljahrresschrift Naturf. Gesell. Zurich. 99(2):129-135.
- Frye, F., and E. S. Herald. 1969. Osteomyelitis in a manatee. *J. Amer. Vet. Med. Assoc.* 155(7):1073-1076.
- Grimwood, I. R. 1968. Endangered mammals in Peru. *Oryx* 9(6):411-421.
- Grimwood, I. R. 1969. Notes on the distribution and status of some Peruvian mammals - 1968. Spec. Pub. No. 21 of the Amer. Comm. for Internat. Wildl. Protection and the New York Zool. Soc. 81 pp. (Sirenia p. 61).

- Harrison, R. J., and J. E. King. 1965. Marine Mammals. Hutchinson and Co., London. 192 pp.
- Humboldt, A. V. 1838. Über den Manati des Orinoko. Archiv. für Naturgesch., Jahr. 4, 1:1-10.
- Husar, S. L. 1977. Trichechus inunguis. Mammalian Species No. 72. 4 pp.
- IUCN Bulletin. 1973. Main list of the world's rare and endangered mammals. Spec. Suppl. to Bull. 4(4), April 1973.
- Loughman, W. D., F. Frye, and E. S. Herald. 1970. The chromosomes of a male manatee. International Zoo Yearbook 11:151-152.
- Magor, D. 1973. Ecology, distribution and movements of the Amazonian manatee, Trichechus inunguis (Natterer, 1883) in South America. Proposal, M.S. 20 pp.
- Mohr, E. 1957. Sirenen oder Seekuhe - Wittenberg - Lutherstadt (Die neu Brehm-Bucherei, No. 197). 61 pp. Translated by J. M. Chaplin, 54 pp.
- Oldham, F. K., D. P. McCleery, and E. M. K. Geiling. 1938. A note on the histology and pharmacology of the hypophysis of the manatee (Trichechus inunguis). Anat. Rec. 71(1):27-32.
- Ridgway, S. H. (ed.) 1972. Mammals of the sea: Biology and medicine. Charles C Thomas Publ., Springfield, Ill. 812 pp.
- Simon, N. M. 1969. Proposals for field investigations of rare and endangered mammals. Biol. Conserv. 1(4):280-290.
- Vanzolini, P. E. 1973. In Bertram, G. C. L., and C. K. R. Bertram. The modern Sirenia: Their distribution and status. Biol. J. Linn. Soc. 5(4):318.
- Vosseler, J. 1924-1925. Pflege und Haltung der Seekuhe (Trichechus) nebst Beiträgen zu ihrer Biologie. Pallasia 2:58-67, 113-133, 167-180, 213-230.
- Wallace, A. R. 1890. Travels on the Amazon and Rio Negro (2nd ed.). Ward, Lock and Co., London.
- Wiegmann, A. F. A. 1838. Remarks on Humboldt's "Über den Manati des Orinoko." Arch. f. Naturgesch. Jahr. 4, 1:10-18.

African manatee

- Allen, G. M. 1942. Extinct and vanishing mammals of the Western Hemisphere. Amer. Comm. for Internat. Wildl. Protection Spec. Pub. No. 11. The Intelligence Printing Co., Lancaster, Pa. 620 pp.
- Allen, J. A. 1881. Preliminary list of works and papers relating to the mammalian orders Cete and Sirenia. Bull. U. S. Geol. and Geogr. Surv. of the Terr. 6(3):399-562.
- Baikie, B. 1857. On the skull of a Manatus from western Africa. Proc. Zool. Soc. London:29-33.
- Baylis, H. A. 1936. Some parasitic worms from the British Cameroons. Ann. and Mag. Nat. Hist. 17(ser. 10):257-272.
- Beal, W. P. 1939. The manatee as a food animal. Nigerian Field 8(3):124-126.
- Bertram, G. C. L., and C. K. R. Bertram. 1973. The modern Sirenia: Their distribution and status. Biol. J. Linn. Soc. 5(4):297-338.
- Blancou, L. 1960. Destruction and protection of the fauna of French Equatorial and of French West Africa. Part III. Carnivores and some others. Afr. Wild Life 14:241-245.
- Bouveignes, O. 1952. Ce que les modernes savent du lamantin. Zooleo 14(4):237-244.
- Cadenat, J. 1957. Observation de cetaces, sireniens, cheloniens et sauriens en 1955-1956. Bull. Inst. F. Afr. Noire. 19A(4):1358-1383.
- Cansdale, G. 1964. The Volta dam may help wildlife in Ghana. Oryx 7(4):168-171.
- Curry-Lindahl, K. 1969. The New African Conservation Convention. Oryx 10(2):6-126.
- Davilliers, C. 1938. Sur la biologie du lamantin en captivite. Mammalia 2:84-88.
- Dekeyser, P. L. 1952. Notre sommaire sur la temperature rectal du lamantin (T. senegalensis Link). Bull. Mus. Nat. Hist. Paris 2(24):243-246.
- Dekeyser, P. L. 1955. Notre sommaire sur la denture d'un jeune lamantin (T. senegalensis). Bull. Inst. franc. Afr. N. 17A(3):921-925.

- Derscheid, J. M. 1926. Les lamantins du Congo (*T. senegalensis* Desm.) avec notes sur la repartition geographique et l'extermination des Sireniens. Rev. Zool. Africaine Bull. Cercle Congo lais. 14(2):23-31.
- Dorst, J., and P. Dandelot. 1969. A field guide to larger mammals of Africa. Houghton-Mifflin, Boston. 287 pp.
- Flower, W. H. 1881. Notes on the habits of the manatee. Proc. Zool. Soc. London:453-456.
- Gijzen, A. 1963. Au cours de huit annees de sejour au Zoo Huka notre lamantin ne fait que croitre et properer. Zoo, Antwerp. 28:194.
- Hatt, R. T. 1934. The American Museum Congo Expedition manatee and other recent manatees. Bull. Amer. Mus. Nat. Hist. 66:533-566.
- Howell, J. H. 1968. The Borgu Game Reserve of northern Nigeria. Part 2. Nigerian Field 33(4):147-165.
- Kinzer, J. 1966. Beobachtungen uber das Verhalten des Lamantin *Trichechus senegalensis* (Link, 1795) in Gefangenschaft. Zeitschr. Säugetierk. 31(1):47-52.
- Perkins, G. A. 1848. Account of a manatus from West Africa. Proc. Boston Soc. Nat. Hist. 2:198-199.
- Poche, R. 1973. Niger's threatened Park W. Oryx 12(2):216-222.
- Robinson, P. T. 1971. Wildlife trends in Liberia and Sierra Leone. Oryx 11(2-3):117-121.
- Rochebrune, A. T. 1883. Faune de la Senegambie: Mammiferes. Act. Soc. Linn. Bordeaux 37(4):VII:49-203.
- Simon, N. M. 1969. Proposals for field investigations of rare and endangered mammals. Biol. Conserv. 1(4):280-290.
- Van Den Bergh, H. 1968. Animal diving champions. Animals 10(10):449-451.
- Wood, F. J. 1937. Manatee. Nigerian Field 6(1):23-38.

Dugong

- Anon. 1970. Programme de conservation du dugong en Ceylon. Biol. Conserv. 2:305-306.

- Allen, J. A. 1881. Preliminary list of works and papers relating to the mammalian orders Cete and Sirenia. Bull. U. S. Geol. and Geogr. Surv. of the Terr. 6(3):399-562.
- Allen, G. M. 1942. Extinct and vanishing mammals of the Western Hemisphere. Amer. Comm. for Internat. Wildl. Protection Spec. Pub. No. 11. The Intelligence Printing Co., Lancaster, PA. 620 pp.
- Andersen, H. T. 1969. The biology of marine mammals. Academic Press, New York. 511 pp.
- Annandale, N. 1905. Notes on the species and external characters of the dugong (Halicore dugong). Asiat. Soc. Bengal 1.
- Aragon, F. 1951. El dugong in Filipinas. Bol. Soc. esp. Hist. nat. Biol. 49:265-268.
- Barrett, O. W. 1935. Notes concerning manatees and dugongs. J. Mamm. 16:216-220.
- Bertram, C. K. R., and G. C. L. Bertram. 1966a. The Sirenia: A vanishing order of mammals. Animal Kingdom 69:180-184.
- Bertram, G. C. L. 1943. Note on the sea cow in the Gulf of Aqaba. Soc. for the Preservation of Fauna of the Empire 47:21-23.
- Bertram, G. C. L., and C. K. R. Bertram. 1966b. The dugong. Nature 209:938-939.
- Bertram, G. C. L., and C. K. R. Bertram. 1966c. Dugongs in Australian waters. Oryx (London) 8:221-222.
- Bertram, G. C. L., and C. K. R. Bertram. 1970. The dugongs of Ceylon. Loris 12(1):53-55.
- Bertram, G. C. L., and C. K. R. Bertram. 1973. The modern Sirenia: Their distribution and status. Biol. J. Linn. Soc. 5(4):297-338.
- Brown, A. E. 1878. The Sirenia. American Nat. 12:291-298.
- Dailey, M. D., and R. L. Brownell, Jr. 1972. A checklist of marine mammal parasites. In Ridgway, S. H. (ed.) Mammals of the sea: Biology and medicine. Charles C Thomas Publ., Springfield, Ill.: 528-589.
- Dexler, H., and L. Freund. 1906. External morphology of the dugong. American Nat. 40:567-581.

- Dollman, G. 1933. Dugongs from Mafia Island and a manatee from Nigeria. Nat. Hist. Mag., London (British Museum) 4:117-125.
- Elsner, R., D. D. Hammond, and D. H. LeMessurier. 1969. In Andersen, H. T. (ed.) The biology of marine mammals. Academic Press, New York: 140-141.
- Engel, S. 1959. The respiratory tissue of dugong Halicore dugong. Anat. Anz. 106:90-100.
- Fitter, R. 1968. Vanishing wild animals of the world. Franklin Watts, Inc., New York. 144 pp.
- Freund, L. 1950. A bibliography of the mammalian order Sirenia. Vestnik. Csl. Zool. Spolec. 14:161-181.
- Funaioli, V., and A. M. Simonetta. 1966. The mammalian fauna of the Somali Republic: Status and conservation problems. Monitore. Zool. Italy 74:285-347.
- Gohar, H. A. F. 1957. The Red Sea dugong. Pub. Marine Biol. Sta. Al Ghardaga (Red Sea) No. 9:3-49.
- Harrison, R. J., and J. E. King. 1965. Marine mammals. Hutchinson and Co., London. 192 pp.
- Harrisson, T. 1965. A future for Borneo's wildlife? Oryx (London) 8(2):99-104.
- Heinsohn, G. E. 1972. A study of dugongs (Dugong dugon) in northern Queensland, Australia. Biol. Conserv. 4(3):205-213.
- Heinsohn, G. E., and W. R. Birch. 1972. Foods and feeding habits of the dugong, Dugong dugon (Erxleben), in northern Queensland, Australia. Mammalia 36(3):414-422.
- Hill, W. C. O. 1945. Notes on the dissection of two dugongs. J. Mamm. 26:153-175.
- Hirasaka, K. 1939. Dugong dugon in Palau. Kagaku Nanyo (Science of the South Sea) 2(2):11-18.
- Hughes, G. R., and R. Oxley-Oxland. 1971. A survey of dugong (Dugong dugon) in and around Antonio Enes, Northern Mozambique. Biol. Conserv. 3(4):299-301.

- Husar, S. L. 1975 (1976). A review of the literature of the dugong (Dugong dugon). U.S. Fish and Wildlife Service, Wildlife Research Rept. 4. 30 pp.
- Jarman, P. J. 1966. The status of the dugong (Dugong dugon Muller); Kenya, 1961. East African Wildl. J. 4:82-88.
- Jones, S. 1960. On a pair of captive dugongs. J. Marine Biol. Assoc. India 1:198-202.
- Jones, S. 1967. The dugong--Its present status in the seas around India with observations on its behaviour in captivity. International Zoo Yearbook 7:215-220.
- Kenny, R. 1967. The breathing pattern of the dugong. Australian J. Sci. 29:372-373.
- Kingdon, J. 1971. East African mammals, an atlas of evolution in Africa. v. 1. Academic Press, London, New York. 446 pp.
- MacMillan, L. 1955. The dugong. Walkabout 21:17-20.
- Mitchell, J. 1973. Determination of relative age in the dugong Dugong dugon (Muller) from a study of skulls and teeth. Zool. J. Linn. Soc. 53:1-23.
- Norris, C. E. 1960. The distribution of the dugong in Ceylon. Loris 8(5):296-300.
- Owen, R. 1838. On the anatomy of the dugong. Proc. Zool. Soc. London 6:28-46.
- Philip, Prince (Duke of Edinburgh), and J. Fisher. 1970. Wildlife crisis. Cowles Book Co., Inc., New York. 256 pp.
- Prater, S. H. 1929. The dugong or sea cow (Halicore dugong). J. Bombay Nat. Hist. Soc. 33:84-99.
- Seale, A. 1915. Note regarding the dugong in the Philippine Islands. Phil. J. Sci. D. 10:215-217.
- Spittel, R. L. 1960. A sanctuary for dugongs. Loris 8(5):304-305.
- Troughton, E. L. 1928. The study of the dugong. Australian Mus. Mag. 3(7):220-228.
- Yin, T. 1970. The dugong, Dugong dugon (Muller) in Burmese waters. J. Bombay Nat. Hist. Soc. 67:326-327.

Appendix A

Proposed designation of marine otter
as a marine mammal

Federal Register, volume 42, number 116, pages 30659-30660,
Thursday, June 16, 1977 (42 F.R. 30659-30660)

PROPOSED RULES

30659

Director's judgment that it is appropriate to list the marine otter at this time is based on available biological data concerning the species. Although the marine otter is presently listed as an endangered species and is therefore protected by the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), this proposed listing would afford the species additional protection.

DATE: Interested persons are invited to participate in this rulemaking by submitting written comments on or before July 18, 1977.

ADDRESS: Comments should be addressed to the Director (FWS/LE), United States Fish and Wildlife Service, Post Office Box 19183, Washington, D.C. 20036, and should make reference to file number REG 18-02-09. All comments timely received will be available for public inspection between 7:45 a.m. and 4:15 p.m., Monday through Friday, in Suite 600 of the Service's office at 1612 K Street, NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT:

Rupert Bonner, Marine Mammal Coordinator, Division of Wildlife Assistance, United States Fish and Wildlife Service, Suite 1200, 1612 K Street, NW., Washington, D.C. 20006, 202-343-8961.

SUPPLEMENTARY INFORMATION: This proposed rule is issued under authority of section 112 of the Marine Mammal Protection Act of 1972 (16 U.S.C. 1362). The Fish and Wildlife Service has determined that (1) this proposed rule is not a major Federal action significantly affecting the human environment and requiring preparation of an environmental impact statement and (2) that this proposed rule does not contain a major proposal requiring preparation of an economic impact statement under Executive Order 11949 and OMB Circular A-107.

Section 3(5) of the Act (16 U.S.C. 1362(5)) defines the term "marine mammal" as "any mammal which (A) is morphologically adapted to the marine environment (including sea otters and members of the orders Sirenia, Pinnipedia, and Cetacea), or (B) primarily inhabits the marine environment (such as the polar bear); and, for the purposes of this chapter, includes any part of any such marine mammal, including its raw, dressed, or dyed fur or skin." A species which satisfies this definition and is formally listed as a marine mammal in § 18.3 of Title 50, Code of Federal Regulations, is subject to the restrictions and protective provisions of the Act. This rulemaking would add the marine otter to the list of marine mammals in § 18.3.

The species primarily inhabits the coastal waters of South America, from Central Peru to Cape Horn, Chile, but is also known to ascend rivers to at least 650 meters above sea level. Two subspecies of the marine otter are recognized: the first from southern Chile and the second from northern Chile and Peru.

Title 50—Wildlife and Fisheries
CHAPTER I—UNITED STATES FISH AND
WILDLIFE SERVICE, DEPARTMENT OF
THE INTERIOR

PART 18—MARINE MAMMALS

Proposed Designation of Marine Otter as
a Marine Mammal

AGENCY: Fish and Wildlife Service,
Interior.

ACTION: Proposed rule.

SUMMARY: The Director of the Service proposes to add the marine otter (*Lutra felina*) to the list of species formally designated as marine mammals for purposes of the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361-1407). The

PROPOSED RULES

Only very limited population data are available with regard to the marine otter found at the northern end of the Chilean range, but in Peruvian waters the population is estimated to be as small as 200 to 300 specimens. In the Cape Horn and southern Tierra del Fuego region, the species is nearly extinct. (See Administration and Status Report of the Marine Mammal Protection Act of 1972, United States Fish and Wildlife Service (1975); (1976)). Copies of these reports may be obtained by writing to the Director, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. For these reasons, the Marine Mammal Commission has independently recommended to the Director that the marine otter be formally listed in § 18.3.

DRAFTING INFORMATION

The principal author of this proposal is David R. Endres, a legal specialist for the Division of Law Enforcement, United States Fish and Wildlife Service.

PROPOSAL

It is proposed to amend the definition of "marine mammal" contained in § 18.3 of Part 18, Subchapter B, Chapter I of Title 50, Code of Federal Regulations, to read as follows:

§ 18.3 Definitions.

In addition to the definitions contained in section 3 of the Act (16 U.S.C. 1362) and in Part 10 of this subchapter, and unless the context requires otherwise, in this Part 18:

"Marine mammal" means any specimen of the following species, whether alive or dead, and any part thereof, including but not limited to, any raw, dressed, or dyed fur or skin:

Scientific name	Common name	Date listed
<i>Ursus maritimus</i>	Polar bear	Dec. 21, 1972
<i>Enhydra lutris</i>	Sea otter	Do.
<i>Odobenus rosmarus</i>	Walrus	Do.
<i>Dugong dugong</i>	Dugong	Do.
<i>Trichechus manatus</i>	West African manatee	Do.
<i>Trichechus inunguis</i>	West Indian manatee	Do.
<i>Trichechus senegalensis</i>	Amazonian manatee	Do.
<i>Lutra felina</i>	Marine otter	June 16, 1977

NOTE.—Common names given may be at variance with local usage.

Dated: June 6, 1977.

LYNN A. GREENWALT,
Director, Fish and
Wildlife Service.

[FEB Doc.77-17199 Filed 6-15-77; 9:45 am]

Appendix B

Change in Alaska State walrus regulations--
Rifle caliber

Federal Register, volume 41, number 199, page 44875,
Wednesday, October 13, 1976 (41 F.R. 44875)

NOTICES

44875

for inspection from 8:00 a.m. to 4:00 p.m.
at 1612 K Street, N.W., Washington, D.C.,
suite 1200.

LYNN A. GREENWALT,
Director,
U.S. Fish & Wildlife Service.
[FR Doc.76-29977 Filed 10-12-76; 8:45 am]

[Docket No. Wash. 75-1]

WALRUS

Change in Alaska State Walrus Regulations

Notice is hereby given of a change in the Alaska State walrus regulations originally approved by the Director, United States Fish and Wildlife Service, on April 5, 1976.

The Alaska Fish and Game Code, 5 AAC 81.100, as approved on April 5, 1976, provided that "walrus may be hunted only with a rifle having a caliber of .264 (6.5mm) or larger (except .30-30 caliber (6.5mm) or larger (except .30-30 caliber rifles may not be used to take walrus)."

The State has proposed to amend the above quoted phrase to read as follows: "walrus may be hunted only with a rifle having a caliber of .264 (6.5mm) or larger with a minimum length of the brass portion of the cartridge case of no less than 2 1/4 (2.125) inches or 53.5mm (except that rifles chambered for the .300 Savage, .308 Winchester or a .450 may be used)".

After consultation with the Marine Mammal Commission, I have determined that this change is insignificant and does not affect the scope of the waiver of the moratorium on the taking of Pacific walrus. I hereby approve the change, effective on October 13, 1976.

A complete set of the State of Alaska walrus hunting regulations is available

Appendix C

Change in Alaska State walrus regulations--
Seasons and bag limits

Federal Register, volume 42, number 98, pages 25924-25925,
Friday, May 20, 1977 (42 F.R. 25924-25925)

WALRUS

Change in Alaska State Regulations

Notice is hereby given of a change in the Alaska State walrus regulations originally approved by the Director, United States Fish and Wildlife Service, on April 5, 1976 (41 FR 14372), and amended on October 13, 1976 (41 FR 44875).

In order to stabilize the walrus kill significantly below the levels of the annual take during the past few years, the State has proposed, following approval of the Alaska Board of Game on April 5, 1977, that the Alaska Fish and Game Code, 5 AAC 81.350, be changed to include the seasons and bag limits noted below.

I have determined that these changes are more restrictive than the regulations now in force and have no effect on the extent of the waiver of the moratorium on the taking of Pacific walrus. Pursuant to 50 CFR 18.56(d), I have consulted with the Marine Mammal Commission on the proposed changes to determine whether the State regulations (with the proposed changes) continue to comply with the requirements of 50 CFR subpart F; the Commission supports the intent of the changes. I hereby approve the changes, effective May 20, 1977.

A complete set of the State of Alaska walrus hunting regulations is available for inspection from 8 a.m. to 4 p.m., Monday to Friday, at 1612 K Street, NW., Washington, D.C., suite 1200.

This notice was prepared by Rupert R. Bonner, Marine Mammal Coordinator, Office of Wildlife Assistance.

LYNN A. GREENWALT,
Director, U.S. Fish and
Wildlife Service.

5 AAC 81.350. Marine mammal hunting. (5) Walrus

Unit	Open season	Bag limits	Area	Maximum annual quota per regulatory year
Unit 9.....	No open season			
Unit 17, except for that portion in the Walrus Islands State Game Sanctuary (including all waters within 1/2 mile of Round Island).	Resident: Oct. 20-Dec. 1 Mar. 1-Apr. 30. Nonresident: No open season.	One walrus for food, by permit only. A total of 50 permits will be issued to applicants who appear in person at the villages of Upiak, Manokotak, Twin Hills, and Clarks Point, on a basis of first come, first served.		
Unit 18.....	Resident: No closed season. Nonresident: No closed season.	One adult bull per permit; provided, however, that residents of settlements on the Bering Sea coast of Unit 18 dependent upon and utilizing walrus for food may take up to 5 adult cows or subadults (either sex) and adult bulls without limit; and provided further that orphaned calves may be taken for food without contributing to the bag limit. One adult bull per permit.		

NOTICES

25925

Unit	Open season	Bag limits	Area	Maximum annual quota per regulatory year
Unit 22.....	Resident: No closed season.	One adult bull per permit; provided, however, that residents of settlements on the Bering and Chukchi Sea coasts of Unit 22 dependent upon and utilizing walrus for food may take up to 10 walrus, not more than 5 of which may be adult cows or subadults (either sex); that orphaned calves may be taken for food without contributing to the bag limit; and that certain specific area quotas apply, as listed in next column.	1. The waters of Bering Sea near the settlement of Gambell within the area bounded by lines connecting the following positions: 63°30' N., 171°22' W., 64°30' N., 171°00' W.; 63°00' N., 171°00' W.; 63°00' N., 174°59' W.; and the U.S.-Russia convention Line of 1981 between 63°00' N., 174°59' W. and 64°30' N., 171°22' W. 2. The waters of Bering Sea near the settlement of Savoonga within the area bounded by lines connecting the following positions: 64°30' N., 171°00' W.; 64°30' N., 168°00' W.; 63°00' N., 168°00' W.; 63°00' N., 171°00' W., 64°30' N., 171°00' W. 3. The waters of Norton Sound and Bering Sea near the settlements of Nome and King Island within the area bounded by lines connecting the following positions: 63°10' N., 168°50' W.; 63°10' N., 168°55' W.; 64°55' N., 163°20' W.; 63°20' N., 163°20' W.; 63°20' N., 168°50' W.; 63°10' N., 168°50' W. 4. The waters of the Bering and Chukchi Seas near the settlement of Wales within the area bounded by lines connecting the following positions: 66°00' N., 167°55' W.; 66°00' N., 167°20' W.; 63°10' N., 167°20' W.; 63°10' N., 167°50' W.; 63°25' N., 168°40' W.; 63°45' N., 168°40' W.; 66°00' N., 167°55' W. 5. Waters of the Bering and Chukchi Seas near the settlement of Dionede within the area bounded by lines connecting the following positions: 66°20' N., 168°59' W.; 66°20' N., 167°20' W.; 66°00' N., 167°50' W.; 66°00' N., 167°20' W.; 63°32' N., 168°20' W.; 63°10' N., 168°20' W.; 63°10' N., 169°45' W.; 63°30' N., 168°59' W.; 66°20' N., 168°59' W. 6. Waters of the Chukchi Sea near the settlements of Shishmarek within the area bounded by lines connecting the following positions: 67°00' N., 167°20' W.; 67°00' N., 164°00' W.; 66°30' N., 164°00' W.; 66°00' N., 167°00' W.; 66°00' N., 167°20' W.; 67°00' N., 167°20' W.	450 450 250 150 450 150
Units 23 and 26.....	Nonresident: No closed season. Resident: No closed season.	One adult bull per permit. One adult bull per permit; provided, however, that residents of settlements on the Chukchi and Beaufort Sea coasts of Units 23 and 26 dependent upon and utilizing walrus for food may take up to 5 walrus; that orphaned calves may be taken for food without contributing to the bag limit; and that certain specific area quotas apply, as listing in next column.	7. Waters of the Chukchi Sea near the settlement of Wainwright within the area bounded by lines connecting the following positions: 71°30' N., 161°30' W.; 158°30' W., 70°45' N., 158°30' W.; 70°15' N., 161°30' W.; 71°30' N., 161°30' W. 8. Waters of the Chukchi and Beaufort Seas near the settlement of Barrow within the area bounded by lines connecting the following positions: 72°10' N., 158°30' W.; 72°10' N., 154°00' W.; 70°20' N., 154°00' W.; 70°48' N., 158°30' W.; 72°10' N., 158°30' W.	180 180
	Nonresident: No closed season.	One adult bull per permit.		

[FR Doc.77-14343 Filed 5-19-77;8:45 am]

Appendix D

Determination of critical habitat
for...Florida manatee

Federal Register, volume 41, number 187, pages 41914-41916,
Friday, September 24, 1976 (41 F.R. 41914-41916)

RULES AND REGULATIONS

making determining Critical Habitat for the Snail Darter, but not the other five species. The present Rulemaking deals with four of those other species, but not the Whooping Crane. So much information on the Whooping Crane was received that more time will be required for evaluation and determination of additional measures on that species.

SUMMARY OF COMMENTS

Of the responses received to the Proposed Rulemaking of December 16, 1975, some dealing only with the Snail Darter were discussed in the Final Rulemaking of April 1, 1976, and 35 dealing only with the Whooping Crane will be discussed at a later time. Of the approximately 100 remaining comments, nine simply expressed general support for the Proposal and none indicated general opposition.

With regard to the American Crocodile, the National Park Service recommended that the Critical Habitat zone be expanded to include a portion of Everglades National Park to the west of that delineated in the original Proposal. Since the recommended area is within the Park, the Service considers it proper to include this area as part of the Critical Habitat designated below. The National Audubon Society suggested approximately the same addition as the Park Service, and also several other modifications which remain under consideration.

With regard to the California Condor, one person simply expressed approval of the Proposed Critical Habitat designation, and one expressed disapproval. The California Department of Fish and Game and the Director of the Santa Barbara Museum of Natural History suggested that small additional areas be designated as Critical Habitat, and these areas now are under consideration. Five major conservation organizations expressed concern that the western boundary of the Sespe-Piru Condor Area might have been drawn so as to deliberately exclude the land within a phosphate mining lease application from the Critical Habitat zone. In fact, however, the area of importance to the Condor long was recognized to have approximately the same boundary as that delineated in the Proposal, and there seems no biological justification to extend this boundary into the area of the phosphate lease application. Moreover, a letter from the United States Gypsum Company stated that although the Proposed Critical Habitat zone did not enter the phosphate lease application area, it did include most of an adjacent phosphate prospecting permit area. The Company recommended that the Critical Habitat zone be redrawn to exclude this permit area. The Service, however, considers the original boundary to be appropriate with respect to the biological situation, and no adjustment is being made.

The State of Illinois and two other parties expressed general approval of the Proposed Critical Habitat for the Indiana Bat. The States of Indiana, Kentucky, Missouri, and Tennessee; three university professors; and three other

parties all recommended the designation of additional Critical Habitat, either more caves or other components of the habitat of the species. These recommendations are now under consideration and may be expressed, at least in part, in a future proposal.

The State of Florida and approximately 64 other parties expressed approval of the Proposed Critical Habitat for the Florida Manatee. The Director of the Florida State Museum suggested adding an additional area in Florida; and the Georgia Conservancy and Mr. Jerry L. McCollum of the Georgia Department of Natural Resources suggested adding parts of Georgia. These suggested additions now are under consideration.

BASIS FOR DETERMINATION

All of the areas delineated below are considered Critical Habitat because they contain constituent elements necessary to the normal needs or survival of one of the species in question. Specifically for the American Crocodile the delineated area must be considered an absolute minimum amount of Critical Habitat in Florida. The current population of the State, with only 200 to 300 individuals, is concentrated in this area and is dependent upon the included habitat of Florida Bay and associated brackish marshes, swamps, creeks, and canals. All known breeding females, of which there are less than ten in Florida, inhabit and nest in the delineated area.

With regard to the California Condor, the Sespe-Piru, Matilija, Sisquoc-San Rafael, and El Mountain-Beartrap Condor areas, as described below, are considered critical for nesting and related year-long activity. The Mt. Pinos and Blue Ridge Condor areas, as described below, are considered critical for roosting. The Tejon Ranch, Kern County rangelands, and Tulare County rangelands, as described below, are considered critical for feeding and related activities. The Tejon Ranch is very important because it contains the only significant feeding habitat remaining in close proximity to the Sespe-Piru Condor nesting area. In most cases Condor feeding habitat is not so restricted as nesting and roosting sites, and only certain portions of the areas described below are needed at any one time. Because, however, the location of food is directly related to both Condor distribution and reproductive success, substantial areas of open range, with adequate food, and limited development and disturbance, would have to be preserved in each delineated area in order to maintain the species.

With regard to the Indiana Bat, approximately 75 percent of the known population hibernates at the sites designated below. The bats are entirely dependent on the shelter provided by these caves and mines during the winter. Their loss or subjection to excessive disturbance or modification would lead to the near or total extinction of the species.

With respect to the Florida Manatee, the areas delineated below contain the largest concentrations in the United States, and are the only areas that pres-

Title 50—Wildlife and Fisheries

CHAPTER I—UNITED STATES FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR

SUBCHAPTER B—TAKING, POSSESSION, TRANSPORTATION, SALE, PURCHASE, BARTER, EXPORTATION, AND IMPORTATION OF WILDLIFE

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

Determination of Critical Habitat for American Crocodile, California Condor, Indiana Bat, and Florida Manatee

The Director, U.S. Fish and Wildlife Service (hereinafter, the "Director" and the "Service," respectively) hereby issues a Rulemaking pursuant to Section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543; 87 Stat. 884; hereinafter, the "Act") which determines Critical Habitat for the American Crocodile (*Crocodylus acutus*), California Condor (*Gymnogyps californianus*), Indiana Bat (*Myotis sodalis*), and Florida Manatee (*Trichechus manatus*).

BACKGROUND

In the FEDERAL REGISTER of December 16, 1975 (40 FR 58308-58312) the Service proposed the determination of Critical Habitat for the California Condor, Indiana Bat, Florida Manatee, American Crocodile, Whooping Crane (*Grus americana*), and Snail Darter (*Percina tanasi*). On April 1, 1976 (41 FR 13926-13928) the Service issued a Final Rule-

RULES AND REGULATIONS

41915

ently can be defined as having major dependent populations. The Crystal River and its King's Bay headwaters form one of the largest natural warm water resources for Manatees. Up to 80 Manatees possibly representing six to ten percent of the total population of the species in the United States, utilize this refugium during cold weather periods. The Little Manatee, Manatee, Myakka, and Peace rivers, and Charlotte Harbor all support large Manatee concentrations. Manatees also utilize the Caloosahatchee River and associated coastal areas. The warm water discharge of the Florida Power and Light Company Ft. Meyers power plant into the Orange River, on the south bank of the Caloosahatchee River at Tice, is known to attract as many as 75 Manatees during cold periods. The area off the coast of Collier and Monroe Counties, southwestern Florida, is the center of a large, but uncounted Manatee population. This population is at least partially resident and is dependent on the extensive local growths of *Thalassia* and *Diplanthera* as a primary food resource. Concentrations of as many as 75 Manatees are observed in Whitewater Bay. The waterway formed by Card, Barnes, Blackwater, and Buttonwood sounds may constitute the Manatee's essential thoroughfare between Miami-Biscayne Bay and the lower Keys and Florida Bay. Seaward movement along the upper Keys is very rare. Biscayne Bay, with its adjoining waterways is of central importance to the large Manatee populations of southeastern Florida. Abundant food resources exist in the area, and the warm water flow from the Florida Power and Light Company Miami River plant provides an important refugium. Lake Worth supports a large Manatee population year-round, and also serves as a warm water refugium for additional wintering Manatees. The outfall from the Florida Power and Light Company River plant supports up to 75 Manatees during cold weather. The Indian and Banana rivers may contain the largest Manatee population in Florida. These areas provide warm, quiet waters and abundant food resources. The St. Johns River also provides ample food resources to a significant Manatee population, and several of its spring-fed tributaries provide warm water refugia during cold spells. In Lake Monroe, two power plants provide warm water outfalls which are used by Manatees during cold periods. The Intracoastal Waterway from the St. Marys River to Highway A1A is a major concentration area and thoroughfare for Manatees.

It is emphasized that the areas delineated below may not represent the entire Critical Habitat of the species named. This Rulemaking in no way precludes the Service from at any time proposing additions or modifications to the designated Critical Habitat. It now seems likely that more Critical Habitat will be proposed for at least the California Condor, Indiana Bat, and Florida Manatee in the near future.

EFFECTS OF THE RULEMAKING

The effects of this determination are involved primarily with Section 7 of the Act, which states:

The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act. All other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction or modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected States, to be critical.

An interpretation of the term "Critical Habitat" was published by the Fish and Wildlife Service and the National Marine Fisheries Service in the FEDERAL REGISTER of April 22, 1975 (40 FR 17764-17765). Some of the major points of that interpretation are: (1) Critical Habitat could be the entire habitat of a species, or any portion thereof, if any constituent element is necessary to the normal needs or survival of that species; (2) actions by a Federal agency affecting Critical Habitat of a species would not conform with Section 7 if such actions might be expected to result in a reduction in the numbers or distribution of that species of sufficient magnitude to place the species in further jeopardy, or restrict the potential and reasonable recovery of that species; and (3) there may be many kinds of actions which can be carried out within the Critical Habitat of a species which would not be expected to adversely affect that species.

This last point has not been well understood by some persons. There has been widespread and erroneous belief that a Critical Habitat designation is something akin to establishment of a wilderness area or wildlife refuge, and automatically closes an area to most human uses. Actually, a Critical Habitat designation applies only to Federal agencies, and is a notification to such agencies that their responsibilities pursuant to Section 7 of the Act are applicable in a certain area.

FINAL RULEMAKING

The Director has considered all comments and data submitted in response to the proposed determination of Critical Habitat for the American Crocodile, California Condor, Indiana Bat, and Florida Manatee. The Director also has considered other information received by the Service both prior to and subsequent to the publication of the Proposal in the FEDERAL REGISTER of December 16, 1975. Based on this review, the areas delineated below are determined to be Critical Habitat for the American Crocodile, California Condor, Indiana Bat, and Florida Manatee. (Since the time when

proposed Critical Habitat Regulations for these species were published in the FEDERAL REGISTER (December 16, 1975), additional Subparts have been proposed for Part 17. Accordingly, the Section numbers in the Final Regulations have been changed to those shown below.)

These Final Regulations will become effective on October 22, 1976.

Dated: September 14, 1976.

LYNN A. GREENWALT,
Director, Fish and
Wildlife Service.

Accordingly, 50 CFR Part 17 is hereby amended as set forth below:

1. The Table of Sections for Subpart F of Part 17 is amended to read as follows:

Subpart F—Critical Habitat	
Sec.	
17.60	[Reserved]
17.61	Snail Darter.
17.62	American Crocodile.
17.63	[Reserved]
17.64	California Condor.
17.65	Indiana Bat.
17.66	Florida Manatee.

2. A new § 17.62 is added reading as follows:

§ 17.62 American crocodile.

(a) The following area (exclusive of those existing man-made structures or settlements which are not necessary to the normal needs or survival of the species) is critical habitat for the American crocodile (*Crocodylus acutus*): All land and water within the following boundary in Florida: beginning at the easternmost tip of Turkey Point, Dade County, on the coast of Biscayne Bay; thence southeastward along a straight line to Christmas Point at the southernmost tip of Elliott Key; thence southward along a line following the shores of the Atlantic Ocean side of Old Rhodes Key, Palo Alto Key, Anglenish Key, Key Largo, Plantation Key, Windley Key, Upper Matecumbe Key, Lower Matecumbe Key, and Long Key, to the westernmost tip of Long Key; thence northwestward along a straight line to the westernmost tip of Middle Cape; thence northward along the shore of the Gulf of Mexico to the north side of the mouth of Little Sable Creek; thence eastward along a straight line to the northernmost point of Nine-Mile Pond; thence northeastward along a straight line to the point of beginning.

(b) Pursuant to section 7 of the act, all Federal agencies must take such action as is necessary to insure that actions authorized, funded, or carried out by them do not result in the destruction or modification of this critical habitat area.

3. A new § 17.63 is added and reserved as follows:

§ 17.63 [Reserved]

4. A new § 17.64 is added reading as follows:

§ 17.64 California condor.

(a) The following areas (exclusive of those existing man-made structures or

41916

RULES AND REGULATIONS

settlements which are not necessary to the normal needs or survival of the species) in California are critical habitat for the California condor (*Gymnogyps californianus*).

(1) *Sespe-Piru Condor Area*: an area of land, water, and airspace to an elevation of not less than 3,000 feet above the terrain, in Ventura and Los Angeles Counties, with the following components (San Bernardino Meridian): Sespe Condor Sanctuary, as delineated by Public Land Order 695 (January 1951); T4N R20W Sec. 2, 5-10, N½ Sec. 11; T4N R21W Sec. 1-3, 10-12, N¼ Sec. 13, N¼ Sec. 14, N¼ Sec. 15; T5N R18W Sec. 4-9, 18, 19, 30, 31, N¼ Sec. 3, N¼ Sec. 17; T5N R21W Sec. 1-4, 9-16, 21-28, 33-36; T6N R18W Sec. 7-11, 14-23, 26-35; T6N R19W Sec. 7-36; T6N R20W Sec. 8-36; T6N R21W Sec. 12-36; T6N R22W Sec. 3-26, 35, 36; T6N R23W Sec. 1-3, 10-14, 24, N¼ Sec. 23; T7N R22W Sec. 31; T7N R23W Sec. 34-36.

(2) *Matilija Condor Area*: an area of land, water, and airspace to an elevation of not less than 3,000 feet above the terrain, in Ventura and Santa Barbara Counties, with the following components (San Bernardino Meridian): T5N R24W W½ Sec. 3, Sec. 4-11, 14, 15, N½ Sec. 16, N¼ Sec. 17; T5N R25W E½ Sec. 1, NE¼ Sec. 12; T5¼N R24W Sec. 31-34; T6N R24W S½ Sec. 32, S½ Sec. 33, S½ Sec. 34.

(3) *Sisquoc-San Rafael Condor Area*: an area of land, water, and airspace to an elevation of not less than 3,000 feet above the terrain, Santa Barbara County, with the following components (San Bernardino Meridian): T6N R26W Sec. 5, 6; T6N R27W Sec. 1, 2; T7N R26W Sec. 5-8, 17-20, 29-32; T7N R27W Sec. 1-14, 25-26, 35, 36; T7N R28W Sec. 1, 2, 11, 12; T8N R26W Sec. 19-22, 27-34; T8N R27W Sec. 19-36.

(4) *Ht Mountain-Beartrap Condor Areas*: areas of land, water, and airspace to an elevation of not less than 3,000 feet above the terrain in San Luis Obispo County, with the following components (Mt. Diablo Meridian): T30S R18E Sec. 13, 14, 23-26, SE¼ Sec. 11, S½ Sec. 12; T30S R17E Sec. 17-20, 29, 30; T31S R14E Sec. 1, 2, 11, 12, E½ Sec. 3, E½ Sec. 10, N½ Sec. 14, N½ Sec. 13; T31S R15E W½ Sec. 6, W½ Sec. 7, NW¼ Sec. 18.

(5) *Mt. Pinos Condor Area*: An area of land, water, and airspace in Ventura and Kern Counties, with the following components (San Bernardino Meridian): T8N R21W W½ Sec. 5, Sec. 6 N½ Sec. 7, NW¼ Sec. 8; T8N R22W Sec. 1, 2, E½ Sec. 3, NE¼ Sec. 10, N½ Sec. 11, N½ Sec. 12; T9N R21W Sec. 31, 32, W¼ Sec. 33; T9N R22 W E½ Sec. 35, Sec. 36.

(6) *Blue Ridge Condor Area*: An area of land, water, and airspace in Tulare County, with the following components (Mt. Diablo Meridian): T19S R29E Sec. 5-9, 15-22, 27-30.

(7) *Tejon Ranch*: an area of land, water, and airspace in Kern County, with the following components (San Bernardino Meridian): R16W T10N, R17W T10N, R17W T11N, R18W T9N, R18W T10N, R19W T10N.

(8) *Kern County rangelands*: an area of land, water, and airspace in Kern County between California State Highway 65 and the western boundary of Sequoia National Forest, with the following components (Mt. Diablo Meridian): R29E T25S, R29E T26S, R30E T25S, R30E T26S.

(9) *Tulare County rangelands*: an area of land, water, and airspace in Tulare County between California State Highway 65, State Highway 198, and the western boundary of Sequoia National Forest, with the following components (Mt. Diablo Meridian): R28E T18S (all sections); R28E T19S (all sections); R28E T20S (all sections); R28E T21S Sec. 1-18; R29E T20S (all sections); R29E T21S Sec. 1-18.

(b) Pursuant to section 7 of the act, all Federal agencies must take such action as is necessary to insure that actions authorized, funded, or carried out by them do not result in the destruction or modification of these critical habitat areas.

5. A new § 17.65 is added reading as follows:

§ 17.65 Indiana bat.

(a) The following areas (exclusive of those existing man-made structures or settlements which are not necessary to the normal needs or survival of the species) are critical habitat for the Indiana bat (*Myotis sodalis*):

(1) Illinois. The Blackball Mine, La Salle County.

(2) Indiana. Big Wyandotte Cave, Crawford County; Ray's Cave, Greene County.

(3) Kentucky. Bat Cave, Carter County; Coach Cave, Edmonson County.

(4) Missouri. Cave 021, Crawford County; Cave 009, Franklin County; Cave 017, Franklin County; Pilot Knob Mine, Iron County; Bat Cave, Shannon County; Cave 029, Washington County (numbers assigned by Division of Ecological Services, U.S. Fish and Wildlife Service, Region 6).

(5) Tennessee. White Oak Blowhole Cave, Blount County.

(6) West Virginia. Hellhole Cave, Pendleton County.

(b) Pursuant to section 7 of the act, all Federal agencies must take such action as is necessary to insure that actions authorized, funded, or carried out by them do not result in the destruction or modification of these critical habitat areas.

6. A new § 17.66 is added reading as follows:

§ 17.66 Florida manatee.

(a) The following areas (exclusive of those existing man-made structures or settlements which are not necessary to the normal needs or survival of the species) in Florida are critical habitat for the Florida manatee (*Trichechus manatus*): Crystal River and its headwaters known as King's Bay, Citrus County; the Little Manatee River downstream from the U.S. Highway 301 bridge, Hillsborough County; the Manatee River

downstream from the Lake Manatee Dam, Manatee County; the Myakka River downstream from Myakka River State Park, Sarasota and Charlotte Counties; the Peace River downstream from the Florida State Highway 760 bridge, De Soto and Charlotte Counties; Charlotte Harbor north of the Charlotte-Lee county line, Charlotte County; Caloosahatchee River downstream from the Florida State Highway 31 bridge, Lee County; all U.S. territorial waters adjoining the coast and islands of Lee County; all U.S. territorial waters adjoining the coast and islands and all connected bays, estuaries, and rivers from Gordon's Pass, near Naples, Collier County, southward to and including White-water Bay, Monroe County; all waters of Card, Barnes, Blackwater, Little Blackwater, Manatee, and Buttonwood sounds between Key Largo, Monroe County, and the mainland of Dade County; Biscayne Bay, and all adjoining and connected lakes, rivers, canals, and waterways from the southern tip of Key Biscayne northward to and including Maule Lake, Dade County; all of Lake Worth, from its northernmost point immediately south of the intersection of U.S. Highway 1 and Florida State Highway A1A southward to its southernmost point immediately north of the town of Boynton Beach, Palm Beach County; the Loxahatchee River and its headwaters, Martin and West Palm Beach Counties; that section of the intra-coastal waterway from the town of Sewalls Point, Martin County to Jupiter Inlet, Palm Beach County; the entire inland section of water known as the Indian River, from its northernmost point immediately south of the intersection of U.S. Highway 1 and Florida State Highway 3, Volusia County, southward to its southernmost point near the town of Sewalls Point, Martin County, and the entire inland section of water known as the Banana River and all waterways between the Indian and Banana rivers, Brevard County; the St. Johns River, including Lake George, and including Blue Springs and Silver Glen Springs from their points of origin to their confluences with the St. Johns River; that section of the Intra-coastal Waterway from its confluence with the St. Marys River on the Georgia-Florida border to the Florida State Highway A1A bridge south of Coastal City, Nassau and Duval Counties.

(b) Pursuant to section 7 of the act, all Federal agencies must take such action as is necessary to insure that actions authorized, funded, or carried out by them do not result in the destruction or modification of the critical habitat areas.

[FR Doc.76-28606 Filed 9-23-76; 8:45 am]

Appendix E

Determination that the southern sea otter
is a threatened species

Federal Register, volume 42, number 10, pages 2965-2968,
Friday, January 14, 1977 (42 F.R. 2965-2968)

Southern Sea Otter (*Enhydra lutris nereis*). Acting on this request, the Service published in the FEDERAL REGISTER of September 26, 1975 (40 FR 44329) a Proposed Rulemaking that would propose all 216 taxa to be endangered species under the Act. In the FEDERAL REGISTER of June 14, 1976 (41 FR 24062-24067) the Service issued a Final Rulemaking determining 159 of the 216 taxa to be endangered species. One of the remaining taxa was determined to be neither endangered nor threatened, and reasons were given for delaying determinations on the other 56 taxa.

One of the species which was not acted upon in the June 14, 1976, Rulemaking was the Southern Sea Otter. It was stated at that time that a considerable amount of data had been received which was still being analyzed. Although most responses had favored listing the species as Endangered, the State of California opposed such a measure and submitted a large amount of supporting data. In contrast, several conservation groups submitted substantial evidence to support their contention that the Southern Sea Otter was Endangered and should be determined as such pursuant to the Act. In view of the quantity and complexity of the information received, the Service stated that a determination on the Southern Sea Otter would be delayed.

Another problem which arose in connection with the Southern Sea Otter concerned its proper taxonomic status. This Sea Otter was long treated as a subspecies, *Enhydra lutris nereis*, distinct from the Northern Sea Otter in Alaskan waters (*Enhydra lutris lutris*). Recently, some parties have argued that the Southern Sea Otter is not a separate subspecies, is only a population of *Enhydra lutris lutris*, and, since the Northern Sea Otter is relatively common, should not be considered as an endangered or threatened species. Other parties have presented evidence that the Southern Sea Otter is a distinct subspecies. This question actually is not relevant to the matter at hand, because sections 3 and 4 of the Act allows the listing of populations of species in portions of their range, as well as entire species and subspecies. Since the Southern Sea Otter does form a significant population, it can be treated independently under the Act, regardless of its taxonomic status. The Service decided, however, to utilize the subspecific designation *Enhydra lutris nereis* in this rulemaking, though this decision had no connection with the decision to list as threatened.

All pertinent data, comments, and recommendations now have been analyzed, and the Service is issuing this Final Rulemaking pertaining to the Southern Sea Otter.

SUMMARY OF COMMENTS AND RECOMMENDATIONS

Section 4(b)(1)(C) of the Act requires that a summary of all comments and recommendations received be published in the FEDERAL REGISTER prior to adding any species to the List of Endangered and Threatened Wildlife. In the September

Title 50—Wildlife and Fisheries CHAPTER I—UNITED STATES FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR

SUBCHAPTER B—TAKING, POSSESSION, TRANSPORTATION, SALE, PURCHASE, BAR- TER, EXPORTATION, AND IMPORTATION OF WILDLIFE

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS Determination That the Southern Sea Otter Is a Threatened Species

The Director, U.S. Fish and Wildlife Service (hereinafter the Director and the Service, respectively) hereby issues a Rulemaking pursuant to section 4 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543; 87 Stat. 884; hereinafter the act) which determines that the Southern Sea Otter (*Enhydra lutris nereis*) is a threatened species.

BACKGROUND

On May 22, 1975, the Fund for Animals, Inc. requested the Service to list as endangered species, pursuant to the Act, 216 taxa of plants and animals which appear on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora which were not already on the U.S. List of Endangered and Threatened Wildlife. One of these 216 taxa was the

26, 1975, Proposed Rulemaking (40 FR 44329) all interested persons were invited to submit written comments to the Service, which would be considered if received no later than October 28, 1975. This was a clerical error which was corrected on October 22, 1975 (40 FR 49347), when the comment period was extended to November 24, 1975.

As stated in the Final Rulemaking of June 14, 1976 (41 FR 24062), 291 responses were received during the comment period that dealt specifically with the Southern Sea Otter. Of these responses, 289 favored listing as Endangered. In addition, many hundreds of persons signed petitions supporting the Endangered classification. Only two parties opposed listing, one being the State of California, and the other being a university professor whose reasons largely paralleled those of the State.

The State of California's response, as provided by the Director of the Department of Fish and Game on November 21, 1975, consisted of a two-page letter and approximately 90 pages of excerpts from the two large volumes of data sent in support of the State's application for waiver of the moratorium of the Marine Mammal Protection Act. The letter specifically requested that the Southern Sea Otter not be declared Endangered or Threatened, because it met none of the five listing criteria in section 4(a) of the Act. The supporting data included some information on taxonomy and other subjects not directly relevant to the listing question. A history of the California Sea Otter population was provided, in which it was suggested that there may have been about 16,000 Sea Otters in California waters prior to 1914 when exploitation for the fur trade reduced the population to about 50 animals off Point Sur. With subsequent protection the population increased to an estimated 1,760 animals by 1975 when it occupied 161 linear miles of coastline from Sunset State Beach to Point Buchon. The population was considered to be at an optimum level, and continued expansion was thought probable. No major natural or man-caused threats to the overall population were recognized. Deaths because of shooting and collision with boats were said to occur, but not to be a significant problem. There was no evidence that pollution or oil spills had ever caused the death of a Sea Otter. The potential major effects of an oil spill were acknowledged, but it was held extremely unlikely that such a spill could wipe out the entire Sea Otter population.

The largest response favoring listing of the Southern Sea Otter as Endangered came from the Friends of the Sea Otter, a private organization in Big Sur, California. This response, dated November 20, 1975, included a 19-page letter and 16 supporting attachments. Again, some irrelevant information on taxonomy and other subjects was covered. Although it was recognized that the Southern Sea Otter population had increased since 1914, it was suggested that this population now had stabilized and that actual counts showed the presence of only about

1,000 Sea Otters in each year since 1969. Even if the higher estimates of the California Department of Fish and Game were accepted, the population still has to be considered small and vulnerable. Among the cited threats to the population was a possible loss of genetic diversity, caused by the former severe numerical reduction, which could adversely affect the adaptability of the existing animals. Chemical, bacteriological, and metal pollution was held to be increasing in the range of the Sea Otter. The possibility of a major oil spill that could destroy much of the population was considered a serious possibility. Direct killing by man was said to be occurring and to be a matter of growing concern as human population pressures increased.

Another response from the California Chapter of the Sierra Club gave many of the same arguments as the Friends of the Sea Otter, but also emphasized the issue of competition between man and the Sea Otter for food resources. Heavy sport and commercial pressures, in conjunction with rapid human population growth, were said to have depleted the shellfish resources upon which the Sea Otter depends, and to have contributed to the ill feeling that some persons have toward the Sea Otter.

Among the other responses supporting endangered status for the Southern Sea Otter were letters from nine professors or researchers, in biological science fields, at California universities or research stations, and the Director of the California Academy of Sciences. These letters expressed concern about such factors as potential oil spills, pollution, direct killing by man, and the loss of genetic diversity by the Southern Sea Otter population.

In a letter of June 1, 1976, the Marine Mammal Commission provided its recommendations on the matter to the Fish and Wildlife Service.

The Commission stated that while present population estimates were debatable, it was thought that the Sea Otter was increasing in range and numbers and would continue to do so, if permitted. The Sea Otter thus was not considered to be endangered, but several threats were held to be problems, the most serious being the potential impact of oil spills. It was suggested that a large number of animals could be jeopardized by a major oil spill. The Commission therefore recommended that the Southern Sea Otter be listed as threatened.

CONCLUSION

After a thorough review and consideration of all available information, the Director has determined that the Southern Sea Otter is not endangered, but is threatened as defined in Section 3 of the Act. Section 4(a) of the Act states that a species may be determined to be endangered or threatened because of any of five factors. These factors, and their applicability to the Southern Sea Otter are discussed below.

1. *The present or threatened destruction, modification, or curtailment of its*

habitat or range.—There seems no question that the range of the Southern Sea Otter is presently much reduced from what it was in historical time. The original range extended at least 1,500 miles from Morro Hermoso on the Pacific Coast of Baja California, to the Strait of Juan de Fuca, separating the Olympic Peninsula of Washington from Vancouver Island, British Columbia. The present range covers only about ten percent of this area. Recent information, supporting recognition of the Southern Sea Otter as a distinct subspecies, suggests that the subspecific line should have been drawn in the vicinity of Prince William Sound, Alaska, which would have given the subspecies a range of about 2,700 miles. Although small groups of Sea Otters derived from Alaska waters have been introduced at several points off the coast of southeastern Alaska, British Columbia, Washington, and Oregon, the original stock that once occupied the region from southeastern Alaska to Baja California now is represented only by the group off the central California coast. The remaining habitat and population is potentially jeopardized by oil spills, and possibly by pollution and competition with man. The fact that less than 2,000 (possibly as few as 1,000) otters occupy the present range, make the species particularly vulnerable to any sort of disruption.

Nonetheless, there also seems no doubt that the Southern Sea Otter has made a comeback from a formerly much more dangerous status. The population now seems to be relatively dense in the area that is occupied, and there is no known immediate problem that could result in extinction. An endangered classification, therefore, is not warranted at this time.

2. *Overutilization for commercial, sporting, scientific, or educational purposes.*—The original decline in Sea Otter populations was caused largely by commercial exploitation. Through State, Federal, and International protection this factor is not now a problem. Illegal killing does occur, but probably is not a threat to the overall population.

3. *Disease or predation.*—These factors cannot be shown to constitute a serious threat at present.

4. *The inadequacy of existing regulatory mechanisms.*—Existing Federal and State laws probably are adequate to protect the Sea Otter from direct taking. Habitat protection, however, is not adequate and would be improved through application of Section 7 of the Act.

5. *Other natural or manmade factors affecting its continued existence.*—It has been suggested, though not proven, that the former severely reduced state of the Southern Sea Otter may have greatly restricted the genetic diversity of the population, leaving it less adaptable in confronting potential problems.

A major spill of oil from a tanker in the waters in the vicinity of the range of the Southern Sea Otter is probably the most serious potential threat to the species. There seems little question that oil would be harmful to these animals,

RULES AND REGULATIONS

2967

and, indeed, they are more susceptible to this problem than most species. Unlike other marine mammals they lack an insulating layer of blubber and depend entirely on their thick air-filled fur for protection from chill waters. Should the fur become contaminated with oil and matted down it would lose its insulating properties, resulting in overexposure and death.

There are major oil unloading facilities at Moss Landing, near the present northern edge of the Sea Otter's range, and at Estero Bay, near the southern edge of this range. Currently, these terminals are used by tankers of 50,000 DWT. Proposals are pending for an additional 120,000 DWT tanker mooring terminal at Moss Landing, and a 70,000 DWT mooring, with provisional extension to moor 125,000 DWT tankers carrying light loads under optimum ocean conditions, at Estero Bay. Increasing shipments of foreign oil, and the expected large-scale movement of oil from the southern terminal of the Alaska Pipeline, probably will result in a considerable increase of oil tanker traffic in and near the range of the Sea Otter.

There is some question regarding the likelihood of a major oil spill and the extent to which it could affect the overall Sea Otter population. Although it does not appear probable that the entire population could be wiped out by a single spill, a significant portion thereof could be eliminated, especially under certain weather and sea conditions. Even though there may be surviving groups, these could be so reduced in number, disrupted, and vulnerable to further problems that they might justifiably be termed Endangered. Therefore, while the chances of an oil spill cannot be predicted, the possibility of such a disaster and its consequences to the Sea Otter population, coupled with the prospects for increasing oil activity in the area, contributes substantially to the decision to list the population as threatened.

EFFECTS OF THE RULEMAKING

The effects of this determination and this rulemaking include, but are not necessarily limited to those discussed below.

No special regulations, as provided for by section 4(d) of the Act in the case of threatened species, are deemed necessary or advisable for the protection of the Southern Sea Otter. The general prohibitions and exceptions concerning the Threatened Species are published in Title 50, § 17.31, of the Code of Federal Regulations as follows:

SUPPORT D—THREATENED WILDLIFE

§ 17.31 Prohibitions.

(a) Except as provided in Subpart A of this Part, or in a permit issued under this Subpart, all of the provisions in § 17.21 (a) through (c) (4) shall apply to threatened wildlife.

(b) In addition to any other provisions of this Part 17, any employee or agent of the Service, of the National Marine Fisheries Service, or of a State conservation

agency which is operating a conservation program pursuant to the terms of a Cooperative Agreement with the Service in accordance with section 6(c) of the Act, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take any threatened wildlife to carry out scientific research or conservation programs.

(c) Whenever a special rule in § 17.40 to 17.48 applies to a threatened species, none of the provisions of paragraphs (a) and (b) of this section will apply. The special rule will contain all the applicable prohibitions and exceptions.

The above regulations refer to § 17.21 of Title 50 which is reprinted below:

SUPPORT C—ENDANGERED WILDLIFE

§ 17.21 Prohibitions.

(a) Except as provided in Subpart A of this Part, or under permits issued pursuant to § 17.22 or § 17.23, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit or to cause to be committed, any of the acts described in paragraphs (b) through (f) of this section in regard to any endangered wildlife.

(b) Import or export. It is unlawful to import or to export any endangered wildlife. Any shipment in transit through the United States is an importation and an exportation, whether or not it has entered the country for customs purposes.

(c) Take. (1) It is unlawful to take endangered wildlife within the United States, within the territorial sea of the United States, or upon the high seas. The high seas shall be all waters seaward of the territorial sea of the United States, except waters officially recognized by the United States as the territorial sea of another country, under international law.

(2) Notwithstanding paragraph (c) (1) of this section, any person may take endangered wildlife in defense of his own life or the lives of others.

(3) Notwithstanding paragraph (c) (1) of this section, any employee or agent of the Service, any other Federal land management agency, the National Marine Fisheries Service, or a State conservation agency, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take endangered wildlife without a permit if such action is necessary to:

- (i) Aid a sick, injured or orphaned specimen; or
- (ii) Dispose of a dead specimen; or
- (iii) Salvage a dead specimen which may be useful for scientific study; or
- (iv) Remove specimens which constitute a demonstrable but nonimmediate threat to human safety, provided that the taking is done in a humane manner; the taking may involve killing or injuring only if it has not been reasonably possible to eliminate such threat by live-capturing and releasing the specimen unharmed, in a remote area.

(4) Any taking pursuant to paragraphs (c) (2) and (3) of this section must be reported in writing to the United States Fish and Wildlife Service, Division of Law Enforcement, P.O. Box 19183, Washington, D.C. 20068, within 5 days. The specimen may only be retained, disposed of, or salvaged in accordance with directions from the Service.

(5) Notwithstanding paragraph (c) (1) of this section, any qualified employee or agent of a State Conservation Agency which is a party to a Cooperative Agreement with the Service in accordance with section 6(c) of the Act who is designated by his agency for such purposes, may, when acting in the

course of his official duties take Endangered Species, for conservation programs in accordance with the Cooperative Agreement, provided that such taking is not reasonably anticipated to result in: (i) The death or permanent disabling of the specimen; (ii) the removal of the specimen from the State where the taking occurred; (iii) the introduction of the specimen so taken or of any progeny derived from such a specimen, into an area beyond the historical range of the species; or (iv) the holding of the specimen in captivity for a period of more than 46 consecutive days.

(d) Possession and other acts with unlawfully taken wildlife. (1) It is unlawful to possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any endangered wildlife which was taken in violation of paragraph (c) of this section.

Example: A person captures a whooping crane in Texas and gives it to a second person, who puts it in a closed van and drives thirty miles, to another location in Texas. The second person then gives the whooping crane to a third person, who is apprehended with the bird in his possession. All three have violated the law—the first by illegally taking the whooping crane; the second by transporting an illegally taken whooping crane; and the third by possessing an illegally taken whooping crane.

(2) Notwithstanding paragraph (d) (1) of this section, Federal and State law enforcement officers may possess, deliver, carry, transport or ship any endangered wildlife taken in violation of the Act as necessary in performing their official duties.

(e) Interstate or foreign commerce. It is unlawful to deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever, and in the course of a commercial activity, any endangered wildlife.

(f) Sale or offer for sale. (1) It is unlawful to sell or to offer for sale in interstate or foreign commerce any endangered wildlife.

(2) An advertisement for the sale of endangered wildlife which carries a warning to the effect that no sale may be consummated until a permit has been obtained from the U.S. Fish and Wildlife Service shall not be considered an offer for sale within the meaning of this subsection.

Section 17 of the Endangered Species Act provides that, except as otherwise provided in the Act, none of its provisions will take precedence over any more restrictive conflicting provision of the Marine Mammal Protection Act of 1972, 16 U.S.C. 1361 et seq.

The Marine Mammal Protection Act is more restrictive in circumstances where a "taking" requires a permit. Under the Endangered Species Act, all proposed takings of Threatened Species, except those by persons covered by 50 CFR 17.31(b), would have to satisfy the general permit requirements of 50 CFR 17.32, which lists several acceptable purposes. Permit takings under the Marine Mammal Protection Act are more restrictive because section 101(a) (3) (B) states that except for scientific research purposes, no permit may be issued during the moratorium (directed by section 101(a) of the Marine Mammal Protection Act) which would authorize the taking of a marine mammal listed under the Endangered Species Act. It must be noted, furthermore, that this restriction applies only when the taking must be done pursuant to a permit and only

2968

when the moratorium has not been waived.

In circumstances where a permit is not required for a taking, the Marine Mammal Protection Act is also more restrictive than the Endangered Species Act, and, therefore, the requirements under the Marine Mammal Protection Act would also prevail in that situation. Section 109(a)(4) of the Marine Mammal Protection Act provides that a State or local government official or employee may "in the course of his duties as an official or employee, (take) a marine mammal in a humane manner if such taking (A) is for the protection or welfare of such mammal or for the protection of the public health and welfare, and (B) includes steps designed to assure the return of such mammal to its natural habitat." Section 18.22 of 50 CFR makes express that no permit is required for such taking.

On the other hand 50 CFR 17.31(a) under the Endangered Species Act allows non-permit takings of listed Threatened species pursuant to the terms of § 17.21. Section 17.21(c)(3) provides that any employee or agent of the Fish and Wildlife Service, any other Federal land management agency, the National Marine Fisheries Service or of a State conservation agency, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take endangered wildlife without a permit if such action is necessary to: (i) Aid a sick, injured or orphaned specimen; or (ii) Dispose of a dead specimen; or (iii) Salvage a dead specimen which may be useful for scientific study.

50 CFR 17.31(b) provides:

(b) In addition to any other provisions of this Part 17, any employee or agent of the Service, of the National Marine Fisheries Service, or of a State conservation agency which is operating under a Cooperative Agreement with the Service or with the National Marine Fisheries Service, in accordance with section 6(c) of the Act, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take any threatened wildlife to carry out scientific research or conservation programs.

EFFECT ON FEDERAL AGENCIES

The determination set forth in this Rulemaking makes the Southern Sea Otter eligible for the provisions of section 7 of the Act which reads as follows:

The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act. All other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction or modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected States, to be critical.

RULES AND REGULATIONS

Although no Critical Habitat yet has been determined for the Southern Sea Otter, the other provisions of section 7 are applicable. The Service now is collecting data relative to preparing a proposed determination of Critical Habitat for the Southern Sea Otter, and all persons with pertinent information are invited to send the same to the Director.

EFFECTIVE DATE

This Rulemaking is issued under the authority contained in the Endangered Species Act of 1973 (16 U.S.C. 1531-1543;

87 Stat. 884). The amendments will become effective on February 11, 1977.

Dated: January 3, 1977.

LYNN A. GREENWALT,
Director,
Fish and Wildlife Service.

Accordingly, Part 17, Subpart B, § 17.11 Title 50 of the Code of Federal Regulations, is amended as set forth below:

In § 17.11 add the following:
§ 17.11 Endangered and threatened wildlife.

Species			Range			
Common name	Scientific name	Population	Known distribution	Portion of range where threatened or endangered	Status	When listed
Southern sea otter...	<i>Enhydra lutris neris</i> ...	NA	California.....	Entire.....	T	NA

[FR Doc. 77-1268 Filed 1-13-77; 8:45 am]

2. The second part outlines the various methods and techniques used to collect and analyze data. It includes a detailed description of the sampling process and the statistical tools employed.

3. The third part presents the results of the study, showing the distribution of data across different categories. It includes several tables and graphs to illustrate the findings.

4. The fourth part discusses the implications of the results and provides recommendations for future research. It highlights the areas where further investigation is needed to improve the understanding of the subject.

5. The final part of the document is a conclusion that summarizes the key points of the study and reiterates the importance of the findings.

