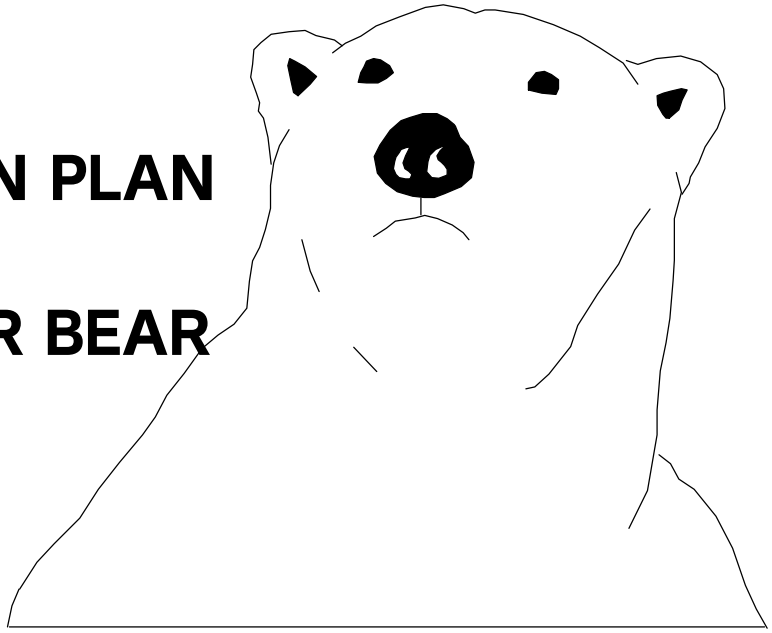
CONSERVATION PLAN

FOR THE POLAR BEAR

IN ALASKA



June 1994

U.S. FISH AND WILDLIFE SERVICE
Marine Mammals Management
Anchorage, Alaska

CONSERVATION PLAN FOR THE

POLAR BEAR IN ALASKA

U.S. Fish and Wildlife Service
Marine Mammals Management
1011 East Tudor Road
Anchorage, AK 99503
June 1994

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PREFACE

The conservation plan for polar bears in Alaska has been reviewed and approved by the Fish and Wildlife Service (FWS), Alaska Region. It was prepared by the staff of the Marine Mammals Management office of the FWS with the assistance of the Marine Mammal Commission and public input of the individuals previously acknowledged. The conservation plan's strength is in describing future research and conservation actions necessary to conserve and protect polar bears and their habitat. Public support for these efforts was notable.

The public availability of the plan was announced in early January in the Federal Register. A 45-day comment period from January 15, 1993, to February 28, 1993, followed. Numerous public comments on the draft and draft final versions of the plan were received and considered. The previous drafts of the conservation plan included, among other elements, a discussion of future tasks or management options which relied upon proposed amendments to the Marine Mammal Protection Act (MMPA). The most frequently noted areas of public concern about the MMPA amendment proposals involved regulatory authorities, sport hunting, compliance with the Agreement on the Conservation of Polar Bears, cooperative or co-management regimes, and uses of polar bears and parts. Differences in opinion existed between various publics on these areas. The plan remained in draft form during the intervening period pending consideration of public comment, and ultimately reauthorization of the MMPA. On April 30, 1994, the MMPA was reauthorized and amended. This plan reflects amendments relevant to polar bear, however, regulations implementing the amendments have not been developed at this time.

This plan is not presented as a consensus document and endorsement of any individual or organization is not implied. This plan is subject to change as a result of periodic review, new findings, changes in species status, completion of tasks, Congressional direction, policy changes, or legal interpretations. Completion of most tasks is dependent on obtaining additional funds. Future conservation efforts of many tasks will emphasize joint ventures between FWS and various partners, most notably co-management between Alaskan Native hunters and their organizations.

Literature Citation should read as follows:

U. S. Fish and Wildlife Service. 1994. Conservation Plan for the Polar Bear in Alaska. Unpubl. Rept. Marine Mammals Management, U.S. Fish and Wildlife Service, Anchorage, AK. 79 pp.

APPROVED:

_____ _____

Regional Director **Date**

LIST OF ACRONYMS

ACAD	Academia
ADFG	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ANWR	Arctic National Wildlife Refuge
BLM	Bureau of Land Management
CAN	Canada
CONS	Conservation organizations
CONT	Contractors
CWS	Canadian Wildlife Service
DOS	Department of State
EPA	Environmental Protection Agency
FWS	U.S. Fish and Wildlife Service
IND	Oil and gas industry
IUCN	International Union for Conservation of Nature and Natural Resources
K	Carrying capacity of the environment
LOA	Letter of Authorization
MMC	Marine Mammal Commission
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
NAT	Native Regional Organizations (includes the North Slope Borough, Bering Strait, Northwest Alaska Native Association and village representatives)
NBS	National Biological Survey
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NSB	North Slope Borough
OSP	Optimum Sustainable Population
RUS	Affiliates in Russia
TBD	To be determined
UAF	University of Alaska-Fairbanks
USCG	U.S. Coast Guard

I. INTRODUCTION

Polar bears (Ursus maritimus) are a species unique to the Arctic. Polar bears have co-existed through time with indigenous peoples of the Arctic. Polar bears are long-lived, late-maturing carnivores that have relatively low rates of reproduction and natural mortality. Their populations are susceptible to natural and human-caused disturbances or influences, including climatic change, habitat alteration, hunting, and incidental disturbance or harassment. They are the world's largest carnivore (non-aquatic). Their wandering lifestyle, the harsh Arctic environment, and legendary strength, combined with folklore and myths, have made them the most recognizable symbol of the Arctic (Luten 1986).

Polar bears have been, and continue to be, an important renewable resource available to coastal communities throughout northern Alaska where they are hunted by coastal dwelling Native people. Polar bears provide a source of meat and raw materials for the hand-crafting of functional clothing including: mittens, boots (mukluks), parka ruffs, and pants, as well as items of handicraft. Polar bears and polar bear hunting are important to the cultures of Inupiat and Yupik people. Polar bear hunting is a source of pride, prestige, and accomplishment. The polar bear was also an important part of earlier religions, myths, and legends, some of which continue today. Current and future hunting of polar bears by Natives for subsistence and handicraft purposes is recognized and supported in this plan.

Because polar bears are the embodiment of the Arctic, many people from different walks of life are concerned for their welfare. This public includes many people who personally will never see a polar bear in the wild, yet are strongly committed to their conservation. The general public recognition of their importance is evident from an international agreement and domestic legislation for their conservation. Government agencies have been assigned the responsibility for conducting studies on polar bears to increase our understanding of the animal and the requirements for its protection. This plan provides a means to strengthen the conservation of polar bears in Alaska for the benefit of the larger public. The Conservation Plan for the Polar Bear in Alaska (Plan) has been developed for a number of purposes including: to guide polar bear conservation and research programs during the next five years; to promote public interest and sense of ownership in polar bears and their conservation, to promote development of polar bear conservation agreements with organizations; to provide a basis for program planning, goal setting, budgeting, and evaluation of accomplishments; and to promote communication and coordination regarding polar bear conservation and research.

The Plan provides information on the historic and contemporary uses of polar bears, the legal framework which guides the actions of the Plan, polar bear biology, conservation issues and agreements, a step-down of the goals and objectives (tasks) of the conservation plan, and a schedule for implementation.

The Plan may be revised at any time as appropriate. The life of the Plan is anticipated to be five years. Modification may be required as a result of research findings, emerging resource

issues, or amendments to the MMPA. Questions or comments concerning this Plan should be directed to the Polar Bear Management Biologist, U.S. Fish and Wildlife Service, Marine Mammals Management, 1011 East Tudor Road, Anchorage, Alaska 99503.

II. GOALS OF THE CONSERVATION PLAN

The overriding goal of the Plan is to maintain populations of polar bears common to Alaska within their optimum sustainable range and to assure that they remain a healthy functioning component of the Bering-Chukchi and Beaufort sea ecosystems. Further, the Plan is designed to:

* Recognize that polar bears are a renewable resource of considerable historic and current importance and value to people throughout the world and of special importance to Alaska Natives.

* Support terms of the 1973 Agreement on the Conservation of Polar Bears, consistent with terms of the MMPA.

* Support provisions of the MMPA as amended, including maintaining populations within optimum sustainable ranges and protecting the environment of which polar bears are a part.

* Improve the abilities of the FWS to conserve and protect polar bear populations for the public benefit.

* Support subsistence use as the priority consumptive use for polar bears and to recognize cultural needs of Inupiat and Yupik people of Alaska.

* Support conservation programs based on sound, objective biological information.

* Encourage and support collaborative management and research programs at local Native, State, national, and international levels.

* Provide for public participation in planning to insure that conservation and research programs are responsive to public interest and need.

* Ensure that research programs are designed and prioritized to address management needs and have application to conservation programs.

III. BACKGROUND

A. Historical Perspective

Polar bears have always captured the attention of people starting from the encounters by indigenous hunters of the Arctic to the times of the earliest explorers until today. In more recent times, Yankee whalers and possibly subsistence hunters may have caused local reductions of polar bear within Alaska. Prior to 1900, for example, polar bears occupied St. Matthew Island in the northern Bering Sea. Unlike most of Alaska's polar bears, many of these individuals spent the summer on land instead of remaining with the sea ice as it retreated to the north. Polar bears in Hudson Bay and some parts of the Canadian arctic archipelago follow this pattern. Hanna (1920) described elimination of polar bears from St. Matthew Island by the late 1800s by commercial hunters in search of seal skins and whale oil. In addition, Leffingwell (1919) speculated that commercial whalers residing over winter, through the introduction of firearms to indigenous people, may have resulted in reduced numbers of bears denning in the Canning River region of northeast Alaska.

After commercial whaling ceased, polar bears were taken primarily by Natives hunting with dog teams through the 1940s for subsistence purposes. The sale of hides was permitted until 1972. Guided sport hunting using aircraft started in the late 1940s and continued until stopped in 1972. Between 1925 and 1953, the average reported number of polar bear hides shipped from Alaska was 117 per year. Reporting of kills was not mandatory and information was considered a best estimate of the minimum take. In 1954, 1955, and 1956 the estimated annual kill was 100, 128, and 135, respectively, and 128, 250, and 162 bears were reported killed in 1958, 1959, and 1960.

In 1961, the State of Alaska made it mandatory that hunters present polar bear skins for sealing and examination. The average annual take between 1960 and 1972 was 260 animals with a range from 148 to 405 bears per year (Figure 1). Between 1961 and 1972, the State regulations provided some preferences to subsistence hunters, although it is believed that use of aircraft by sport hunters may have reduced the availability of bears for subsistence hunters. By regulation, cubs and females with cubs were protected. During this period sport hunters were allowed to hunt only during late winter and spring. Although some undocumented kills occurred, information on the manner of take, area of take, age, and sex composition of the known take is documented for this period. Seventy-five percent of these animals were males. Alaskan residents were allowed to take bears for food at any time without a permit and without limit, provided aircraft were not used.

The average annual polar bear harvest in Alaska has declined since passage of the MMPA in 1972. The MMPA prohibited the hunting of polar bears except by Alaskan Natives for subsistence and handicraft purposes. Under the MMPA, the harvest of bears by Natives cannot be restricted if populations are healthy, above their maximum net productivity level, and the take is non-wasteful. Marking, tagging, and reporting regulations were implemented

in 1988. The Alaskan percentage of the harvest comprised of females with cubs has increased since passage of the MMPA, but the net effect appears to have been a reduction in harvest of all sex and age classes with the exception of yearlings and 2-year old animals. The sex is unreported for a portion of harvested bears.

Today, hunters located in 14 villages actively hunt polar bears (Figure 2). For the years from 1980 through 1992, the annual reported polar bear take ranged from 62 to 296 and averaged 117 (Figure 1). The level of hunting effort varies by village and year. The ratio of males to females was 65:35. Sex was unknown for approximately 30 percent of the total kill. An understanding of the sex unknown category is required since any bias in not reporting sex will shift the real kill sex ratio. If a bias exists, in the unknown sex category, for not reporting female bears then the effect of on-going harvests on populations could be underestimated. Annual harvests averaged 36 animals (31 percent) from the Beaufort Sea and 81 animals (69 percent) from the Chukchi and Bering seas. Older animals, in their late teens and twenties, were again present in the population after an approximate 10-year absence (Schliebe 1991).

Polar bears are generally taken when available throughout the fall, winter, and spring seasons. Utilization of meat from harvested polar bears by Natives is high with many parts retrieved. Hand-crafting of hides is common, time-consuming, and labor intensive. Some hunters and their families indicate a preference for the meat and hides from younger animals since the meat is more tender and the hides thinner and more easily worked into handicrafts. Some hides enter illegal markets. The magnitude of illegal trade is not known. An enforcement program has uncovered the illegal sale of polar bear gall bladders. The magnitude of this trade is not known, but is believed to be minimal.

Few individuals hunt specifically for polar bears and most animals are taken as the opportunity arises near villages during seal hunting, fishing, or other activities. This is not believed to be a departure from historic hunting effort. Snowmachines are the predominant mode of transportation used to hunt polar bears. Other forms of transportation include foot, pickup trucks, all-terrain vehicles, boats, dog teams, and aircraft. Observing with binoculars or from snowmachines, and encountering tracks and following them to the source are common hunting techniques. Weather and ice conditions largely determine chronology and location of polar bears coming to shore areas. Hunting opportunities and success are based primarily on the availability of bears near shore.

B. Legal Framework and Agreements

1. Marine Mammal Protection Act

The MMPA, as amended, made the FWS responsible for the conservation of polar bears in Alaska. Until 1972, the State of Alaska had conducted research and management programs and regulated the taking of polar bears by hunters. The MMPA, in addition to transferring management authority to the Federal government, implemented a general moratorium on all

takes of marine mammals. However, certain types of take are authorized under specific conditions. Alaska Natives could harvest for subsistence purposes and for purposes of creating and selling traditional handicrafts and clothing. Other types of allowable "take" include those for scientific research, public display, incidental (small) takes such as oil and gas exploration or development, and takes by Federal, State, or local officials in support of the welfare of the public or the animal. The MMPA also provided for return of management to States upon request and provided guidelines for petitioning States.

In 1973, the State of Alaska submitted a request for a waiver of the moratorium of the MMPA and return of management of 10 species, including the polar bear. A waiver for walrus was obtained in 1976 and the State resumed management responsibility for that species, but a waiver for polar bear was never achieved. A court case on behalf of Native hunters successfully challenged the authority of the State to regulate Native taking of walrus. As a result the State of Alaska returned management of walrus to the FWS in 1979 and discontinued efforts to resume management of other marine mammal species. Amendments to the MMPA in 1981 were intended to facilitate the return of management to the State. In 1983 and again in 1987, the Alaska Department of Fish and Game (ADFG) conducted numerous public hearings in towns and villages throughout Alaska to assess public opinion on State management. In 1988 the State informed the FWS it would no longer seek resumption of management due to unresolved subsistence issues, potential cost to the State, and other issues.

The MMPA provides both general and specific guidance to formulate a polar bear conservation program. Under provisions of the MMPA, the FWS is responsible for enforcing the moratorium on taking and importation of polar bears. The FWS also conducts research, publishes and enforces incidental take regulations, and enters into cooperative agreements with the State and Native user groups, participates in international activities, and consults with the Marine Mammal Commission on conservation of marine mammals.

Section 117, "Stock Assessment," requires the Secretary of Commerce to prepare draft stock assessments by August, 1, 1994, for each marine mammal stock in the waters of the United States. Formation of Regional Scientific Review Groups is specified and consultation with the Secretary of the Interior is required.

Section 119, "Marine Mammal Cooperative Agreement in Alaska," was added to allow the appropriate Secretary to "…enter into cooperative agreement with Alaska Native organizations to conserve marine mammals and provide co-management of subsistence use by Alaska Natives." To further clarify the language stipulated that "…nothing in this section is intended or shall be construed as authorizing any expansion or change in the respective jurisdiction of Federal, State, or tribal governments over fish and wildlife resources;". This also authorizes grants to be made to Native organizations in order to carry out agreements made under the section. In addition, it authorizes appropriations ($1.0 million annually through 1999) to the Secretary of the Interior to carry out the provisions of Section 119; these levels are in addition to those specified in Section 116.

Section 110, "Marine Mammal Research Grants," with respect to the Bering Sea ecosystem, requires the Secretary of Commerce, in consultation with the Secretary of the Interior, to begin a scientific research program by October 30, 1994, to monitor ecosystem health and stability.

2. Agreement on the Conservation of Polar Bears

During the 1950s and 1960s, there was a growing international concern for the welfare of polar bear populations. The primary concern was that the increased number of bears being killed, mainly for their hides, could lead to endangerment of populations. Harvests in Canada had increased to more than 700 bears per year; in Alaska, 300-400 bears were harvested in some years; in the Spitsbergen area (Norway), trappers and high seas expeditions by ship were taking more than 300 bears per year; and harvest by Greenland hunters was reported to have been consistently 100-200 bears per year. However, documented harvests are sketchy for certain areas. In Russia, harvests in the 1940s and early 1950s were much reduced to approximately 100 animals in the eastern regions and less than 100 animals in the remainder of their range. These estimates (approximately 50 percent decrease) are from hide shipment records.

Mutual concerns for the welfare of the population was the impetus for a group of scientists from the circumpolar Arctic nations to meet in Fairbanks, Alaska, in 1965 to discuss the status of the species and the need for conservation mechanisms. From this meeting, the Polar Bear Specialist Group, comprised of biologists from the five nations with jurisdiction over polar bears, was formed under the auspices of the International Union for Conservation of Nature and Natural Resources (IUCN). This group was in part responsible for the development and ratification of the Agreement on Conservation of Polar Bears (Agreement, see Appendix A). The Agreement was negotiated by Canada, Denmark (for Greenland), Norway, the Soviet Union, and the United States in 1973 and entered into force in 1976 for a five-year period. In 1981, it was unanimously reaffirmed for an indefinite period.

The Agreement is important politically because it unites nations with a vested interest in the Arctic ecosystem in supporting a biologically and scientifically sound conservation program for

polar bears. The Agreement is a conservation tool; it allows properly managed uses of polar bears and allows for hunting, scientific capture, and defense of life. The Agreement allows contracting parties to take polar bears for the following purposes: "…(a) for bona fide scientific purposes; or (b) by that Party for conservation purposes; or (c) to prevent serious disturbance of the management of other living resources, subject to forfeiture to that Party of the skins and other items of value resulting from such taking; or (d) by local people using traditional methods in the exercise of their traditional rights in accordance with the laws of that Party; or (e) wherever polar bears have or might have been subject to taking by traditional means by its nationals."

The Agreement prohibits the taking of polar bears with the use of aircraft or large motorized vessels or in areas where they have not been taken by traditional means in the past. This prohibition creates a de facto sanctuary in the high central arctic basin. The Agreement states that signatory nations shall protect the ecosystems of which polar bears are a part, and emphasizes the need for protection of habitat components such as denning and feeding areas and migration routes. A resolution appended to the Agreement requests governments to prohibit the taking of cubs, females with cubs, and hunting in denning areas when pregnant females are moving into them or are denning. Another resolution requests governments to establish an international system of identifying hides to effectively control the trafficking of illegal hides. Finally, the Agreement requires each of the signatory nations to conduct research and coordinate management and research activities for populations that overlap jurisdictional boundaries (information from Lentfer [1974b], and Stirling [1986], comprehensive reviews of the Agreement).

The Agreement is not self enacting and does not in itself provide for national conservation programs; each of the five signatory nations has implemented a conservation program to protect polar bears and their environment. The following summarizes conservation programs by country.

> **Russia**: Declining harvests were detected throughout the Arctic during the 1930-1950 period. In response to the population decline, the harvesting of bears from ships and at remote polar stations was prohibited in 1938. Starting in the 1940s, hunting was banned in separate districts; and since 1956, hunting has been banned throughout Russia. Today a limited number of animals, primarily cubs-of-the-year, are authorized for removal to zoos and circuses. Strict penalties are provided for unlawful killing of polar bears in Russia. The total capture in Russia (for public display) was 10 cubs in 1985, 3 cubs in 1986, and none in 1987. Two problem bears were killed in 1983, 6 in 1986, and 18 (including 8 in the Magadan region) in 1987. In 1985-87, four instances of illegal hunting of polar bears were reported (Uspenskii and Belikov 1991). Key denning areas on Wrangel and Herald islands received protective status as Nature Reserves in 1976. Managers of these State Reserves have the authority to restrict human uses, including research and tourism (Uspenskii et al. 1980). The joint United States/Russia international Beringia Park

proposal has potential to provide a level of protection to mainland denning areas in the Chukchi Sea region.

Norway: Polar bears occur on the Norwegian Arctic island possessions, collectively referred to as Svalbard. These islands are located between Greenland (Denmark) and Franz Josef Land (Russia). In 1973, Norway passed a 5-year moratorium on harvesting bears, except in defense of life or property in remote areas such as Svalbard. The ban on taking continues to date, although some individual trappers have renewed a claim to harvest bears under Article III of the International Agreement. Confrontations between polar bears and humans have resulted in less than five bears being killed per year (Gjertz and Persen 1987). Polar bear killings are treated as a police matter, and if violations occur, individuals are cited. More than 40 percent of the land mass of Svalbard is protected as park, nature reserves, or waterfowl refuge by the Royal Decree of 1973. Many of the important denning and summering areas are included in the protected areas. However, mining claims are situated within the South Spitsbergen National Park and the Southeast Svalbard Nature Reserve and are excluded from protection. Areas of concern, relative to Norway's continued ability to protect polar bears, are development of industry and tourism on Svalbard and petroleum development in the Barents Sea.

Denmark: Greenland established Home Rule on May 1, 1979, but is not an independent country. Denmark maintains responsibility for matters of foreign relations and management of natural resources which involve international treaties. The practice of hunting polar bears has not changed in Greenland and approximately 100-150 bears are harvested annually. In 1988, Greenland adopted regulations on polar bear hunting. Provisions of these regulations are: 1) only residents may hunt polar bears; 2) a license is required; 3) seasons are established which vary geographically; 4) single adult male polar bears may be hunted year-round; 5) polar bear cubs up to two years of age and accompanying female bears are protected year-round although exceptions allow for the harvest of cubs and females in specific villages during specific seasons; 6) it is illegal to disturb dens, or take bears with foothold traps, snares, poison, set guns, shotguns, gallery rifles, or semi- or fully automatic rifles; 7) bears cannot be taken by airplanes, helicopters, or motor driven ground transportation (including snowmachines), and vessels exceeding 40 Gross Registered Tonnage; 8) live bears may not be kept or transported from Greenland; 9) permission is required to conduct scientific investigations; and 10) penalties for violation of the regulations are provided.

Canada: In Canada the responsibility and authority for management of polar bears resides with the individual provinces and territories. In 1968, the Government of the Northwest Territories (NWT), where the majority of the harvest occurs, imposed harvest quotas. The quotas were temporary because supporting biological data were absent in many cases. In most areas of Canada, female bears and their young are protected now by specific statutes and by seasonal closures. Because of the seasonal

closures, denning bears are generally protected. Additional cooperative (or co-management) agreements are being developed for communities where harvests are not regulated. In the Northwest Territories, the harvest is regulated by a village quota system administered cooperatively through individual harvest allocation agreements proposed and ratified between the NWT Department of Renewable Resources and various hunting and trapping associations. Quotas are now based on scientific data that have been developed for individual stocks of bears. Harvest reporting and hide tagging is mandatory. Sale of raw hides is permitted. A limited sport hunt is allowed under Provincial or Territorial statutes as administered by regional and village hunting and trapping associations. Sport hunters must be guided by a Native hunter using dog teams for transportation (See Appendix B, Canadian Declaration on the Ratification of the Agreement on the Conservation of Polar Bears).

United States: The United States chose to implement the Agreement with the provisions of the MMPA of 1972. The MMPA implemented a moratorium on all takes of marine mammals. However, certain types of take are authorized under specific conditions. Alaska Natives dwelling along the coast are allowed to take polar bears and other marine mammals for subsistence purposes and for purposes of creating and selling traditional handicrafts and clothing. There are no restrictions on the numbers, sex, or age of animals harvested, or time of harvest provided the population is not depleted and the take is not wasteful. The Federal government is required to manage populations within optimal and sustainable population (OSP) levels. Although the MMPA does not have provisions that specifically protect polar bear females and cubs or polar bear habitats, take may be regulated if populations become depleted. Depleted status occurs when populations fall below OSP.

Other types of "takes" allowed under permit or regulation include those for scientific research, public display, incidental (small) takes such as oil and gas exploration or development, and takes by Federal, State, or local officials in the welfare of the public or the animal. Industrial development generally poses the greatest potential to take polar bears incidental to human activities. Industrial development also has the potential to affect habitats seasonally or locally.

Recognizing the absence of protection for female polar bears with cubs or bears inhabiting or constructing dens in Alaska, the Polar Bear Specialist Group passed a resolution in August 1985, calling for the users of polar bears in Alaska and Canada to establish voluntary restrictions that will protect female polar bears and their young. This group further called for voluntary measures to be followed as soon as possible by legislated protection.

1994 amendments to the MMPA on international polar bear conservation--Section 113 (16 U.S.C. 1383) accomplished the following, "…(b) not later than 1 year after the date of enactment of the MMPA Amendments of 1994, the Secretary of the Interior

shall, in consultation with the contracting parties, initiate a review of the effectiveness of the Agreement on the Conservation of Polar Bears, as provided for in Article IX of the Agreement, and establish a process by which future reviews shall be conducted. Further, "…the Secretary of the Interior, in consultation with the Secretary of State and the Marine Mammal Commission, shall review the effectiveness of United States implementation of the Agreement on the Conservation of Polar Bears, particularly with respect to the habitat protection mandates contained in Article II. The Secretary shall report the results of this review to the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than April 1, 1995. Not later than 6 months after the date of enactment of the Marine Mammal Protection Act Amendments of 1994, the Secretary of the Interior, acting through the Secretary of State and in consultation with the Marine Mammal Commission and the State of Alaska, shall consult with the appropriate officials of the Russian Federation on the development and implementation of enhanced cooperative research and management programs for the conservation of polar bears in Alaska and Russia. The Secretary shall report the results of this consultation and provide periodic progress reports on the research and management programs to the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Commerce, Science and Transportation of the Senate."

3. Inupiat and Inuvialuit Polar Bear Management Agreement

On April 4, 1986, the Fish and Game Management Committee of the North Slope Borough resolved that Alaskan hunters should not shoot polar bear cubs or females with young. This group further resolved to collaborate with the Inuit hunters of Canada to ensure that harvests of polar bears do not exceed the replacement rate of the southern Beaufort Sea stock. Passage of the resolution was followed in September 1986 by an agreement for cooperative management between the Inupiat of northern Alaska represented by entities affiliated with the local government and the Inuvialuit Game Council, Canada. The Agreement was ratified by members of the North Slope Borough Fish and Game Management Committee on behalf of the North Slope Inupiat, and the Inuvialuit Game Council (NSB/IGC) on January 29, 1988, and governs hunting of polar bears between the Baillie Islands, Canada, and Icy Cape, Alaska (Appendix C). Among other things, this cooperative management agreement calls for:

1. Establishing harvest limits based on the best available scientific evidence.
2. Prohibition on the use of large vessels or aircraft for hunting polar bears.
3. Protection of females and cubs.
4. Protection of pregnant females.
5. Protection of bears inhabiting or constructing dens.
6. A management system to regulate the number of polar bears harvested and to ensure compliance with harvest limit allocations.
7. A reporting system to collect critical information from harvested polar bears.

8. Protection of important polar bear habitat.

The Agreement is precedent setting and in the United States establishes conditions which are more stringent than Federal requirements under the MMPA. The long-range success of the Agreement will depend primarily upon the support and voluntary compliance of local hunters. Similar cooperative working agreements are contemplated for polar bears in the Chukchi/Bering seas area.

The initial annual harvest allocation under terms of the Agreement was 38 bears each in the Canadian and Alaskan sectors of the Beaufort Sea. The hunting season in Canada is December 1 to May 31, and in Alaska the season is September 1 to May 31. This protects pregnant females prior to denning in Canada, but not in Alaska.

Conformance to harvest guidelines has occurred during three of the last four years. During the initial harvest year, 1988-1989, Alaskan hunters in the area governed by the Agreement took 58 bears, exceeding harvest guidelines of the Agreement by 20. The Canadian harvest of 32 was below the allocation guideline. During 1989-1990, the Alaskan harvest of 24 and the Canadian harvest of 34 were both less than the allocation guideline of 38 bears per party (Nageak et al. 1991). It is believed that the reduced take in 1989-1990 resulted from recognition of terms of the Agreement through distribution of informational brochures and posters and an extensive communications effort (Nageak and Brower 1990). Harvest during the 1990-91 (21 from Alaska; 15 from Canada) and 1991-92 seasons (30 from Alaska; 32 from Canada) were also less than the allocation guidelines. In Alaska, a general trend of harvesting fewer family groups appears to have taken place since 1989. The analysis of age information from harvested bears lags behind the reported harvest year, confounding assessment of trend.

One condition of this Agreement related to the importation and export of marine mammal products was recently implemented by the 1994 amendments to the MMPA. These products may be imported if they were 1) legally possessed and exported by a citizen of the United States in conjunction with travel outside the United States, provided that the product is imported into the United States by the same person upon the termination of travel; 2) were acquired outside of the United States as part of a cultural exchange by an Indian, Aleut, or Eskimo residing in Alaska; or 3) is owned by a Native inhabitant of Russia, Canada, or Greenland and is imported for noncommercial purposes in conjunction with travel within the United States or as part of a cultural exchange with an Indian, Aleut, or Eskimo residing in Alaska.

4. Protocol between Russia and the United States

Russia and Alaska share the polar bear population occupying the Chukchi and Bering seas. A very high frequency of denning bears from this stock occurs in Russian territories; and polar bears spend a greater proportion of their time in Russian territories than in Alaska territories (Garner et al. 1990). All hunting of polar bears in the Russian Arctic was prohibited in 1956.

In 1988, polar bear management biologists within the former Soviet Union expressed a desire to renew hunting. The reason given was that the population had recovered, could sustain a harvest, and encounters between bears and residents of coastal settlements had increased to a point of becoming a problem during recent years.

In Alaska, Native subsistence hunters harvest approximately 90 bears annually from this population. Harvests at this level are presumed to be sustainable, although a precise estimate of population size and sustainable yield limits is not available. Recent information, April 1994, indicates that illegal and unregulated harvest of polar bears in the Chukotka district of Russia is occurring.

Additional demands on this stock of polar bears requires a unified management approach. Resource agency and Native representatives of both countries met in October 1992 and prepared a protocol of intention to develop a conservation plan which was signed by government representatives at the meeting (Appendix D). The protocol provides a framework for a future management agreement, it is also specific that each country establish a working group, and that the parties convene a meeting of the working groups during 1993 to begin development of the management agreement (postponed to 1994). The Protocol recognizes, "…the unique role in the lives of the indigenous Native peoples of Alaska and Chukotka, in the preservation and development of traditional ways of life…" and further states that "…indigenous Natives of communities located in north and northwest Alaska will combine efforts to develop a management agreement for the Bering and Chukchi seas polar bear population."

A U.S. Working Group was formed on November 9-10, 1993, at an Anchorage meeting of FWS and Native representatives. The Working Group will prepare proposals for the conservation agreement to be presented at the next governmental meeting of Working Groups from both countries.

Native representatives are envisioned to be co-signatory to any Conservation Agreement resulting from further negotiations with Russia however, the form and roles of respective parties to these agreements is not precisely known at this time. Alaska Natives of the Working Group have also begun discussions with their Russian counterparts as described in the following section. A multilayered set of agreements is being considered. These may include a Government to Government agreement which includes participation of Native representatives from each country; a Native to Native implementation agreement which includes participation by government representatives; and individual intra-national agreements between the government managing authority(ies) and the recognized Native organization. Among the key elements the framework for future agreements between the U.S. and Russia should include the following:

* The agreement should be a four-party agreement representing the governments of the US and Russia and representatives of Alaska Natives and their

counterparts among the indigenous peoples in northern Russia;

* The agreement should address habitat protection as a key component;

* The agreement should be founded on sound scientific information (including data on the range of the Chukchi-Bering seas population, population abundance, critical habitat relationships, harvest statistics, and contaminant baseline information); and

* The agreement should address sustainable harvest level considering the previous points, and describe a process for establishing harvest guidelines or limits if necessary.

The need to account for the total take of polar bears from the Bering/Chukchi seas population will be central to a conservation agreement. Support and endorsement by Alaska Native hunters is essential for the success of any future conservation agreement between the U.S. and Russia. Voluntary limits on harvesting polar bears may be possible as demonstrated by North Slope hunters conforming to terms of the Inupiat and Inuvialuit management agreement for polar bears of the Beaufort Sea (previous section). Formation of an Alaska Polar Bear Commission is contemplated by Native organizations. Formation of the Alaska Polar Bear Commission with a statewide scope is supported by the FWS and is viewed as central to future implementation of integrated cooperative conservation programs.

5. Chukotka/Alaska Native Polar Bear Protocol

During February 1994, Native leaders traveled to Chukotka and introduced the concept of cooperative polar bear management to their Chukotka Native counterparts. The effort, supported by the FWS, was aimed at unifying the management regime and providing for meaningful participation by Native peoples. Subsequently, Native representatives of the North Slope Borough, the Northwest Arctic Native Association, and the Bering Straits region returned to the Chukotka region, Anadyr, and on April 25, 1994, signed the "Protocol of Intentions between the Indigenous people of Chukotka and Alaska on the Conservation, Protection, Management, and Study of the Bering and Chukchi Seas Shared Polar Bear Population" (Appendix E). The Protocol provides a framework for a future management agreement and includes the following elements or principles: a preamble; a statement of intent of to review information and develop a management agreement; statement indicating the management agreement be consistent with the 5-party Agreement on the Conservation of Polar Bears; formation of working groups (Natives and agency personnel) to further discussions; support for unified management of populations and protection for habitat; management based on sound biological principles/information (local knowledge and western scientific knowledge); endorsement for principles of sustainable yield as a foundation for the agreement; recognition that the agreement must be consistent with appropriate Federal laws; meeting of the working groups to occur in 1994.

C. Species Description

The polar bear (Ursus maritimus) is one of three North American species of the Order Carnivora, Family Ursidae. The genus also includes the North American black bear (U. americanus) and the brown bear (U. arctos). No subspecies of U. maritimus has been identified (Kurten 1964; Manning 1971; Wilson 1976). Polar bears are believed to have evolved from the Siberian population of brown bears (U. arctos), which were isolated by glacial advances during the mid-Pleistocene (Kurten 1964).

The polar bear has an elongated neck and a comparatively smaller head than other ursids. The body is stocky and lacks a shoulder hump. Polar bear pelage consists of a thick layer of underfur and an abundance of guard hairs. The color varies seasonally from pure white after molt to a yellowish shade, that during the summer may be the result of solar oxidation or staining by oil from seal blubber. At other times the fur may be gray or brownish, depending on the time of year, location, and light conditions. The skin, nose, and lips are black.

Polar bears at birth weigh approximately 600 grams (1.3 pounds). Adult male polar bears weigh 250-800 kilograms (550-1700 pounds) and measure 250-300 centimeters (8-10 feet) from tip of nose to tail. Adult females weigh 100-300 kilograms (200-700 pounds) and have a body length of 180-250 centimeters (6-8 feet). Polar bears vary in size geographically with a gradient of increasing skull size from the Franz Josef Land-Spitsbergen area to the Chukchi Sea region where the largest bears are located (Manning 1971).

1. Distribution and Movements

Polar bears occur in most ice-covered seas of the Northern Hemisphere and are circumpolar in distribution, although not continuously. They are most abundant around the perimeter of the polar basin for 200-300 kilometers (120-180 miles) offshore from land masses (Lentfer 1982; Amstrup and DeMaster 1988). They do occur throughout most of the polar basin and have been recorded as far north as 88° North latitude (Stefansson 1921; Papanin 1939). Off the Alaskan coast, they normally occur as far south as the Bering Strait. In some years, bears range south of St. Lawrence Island in the northern Bering Sea and some may spend the summer on St. Lawrence Island. Occasionally they occur as far south as St. Matthew Island and the Yukon-Kuskokwim Delta (Figure 3).

The centers of six apparently distinct populations in the main polar basin are: Wrangel Island and western Alaska (the Chukchi Sea population), northern Alaska and northwestern Canada (the Beaufort Sea population), the Canadian arctic archipelago, Greenland, Spitsbergen-Franz Josef Land, and central Siberia (Parovschikov 1964, 1968; Uspenskii 1965; Vibe 1967; Lentfer 1974a, 1983; Stirling and Smith 1975). Discrete sub-populations exist within the Canadian Arctic archipelago and James and Hudson bays. Bears in the Beaufort Sea from Icy Cape, Alaska, eastward to the Baillie Islands in the Northwest Territories, Canada, are

considered to be a discrete sub-population for management purposes (Nageak et al. 1991).

In the Chukchi Sea, polar bears make extensive north-south migrations in United States and Russian territories. In the Beaufort Sea, they make extensive east-west movements between the United States and Canada. Movements are thought to be related to seasonal and annual changes in ice position and condition. The long-term distribution of polar bears depends on the extent of available habitat which is influenced by climatic changes.

In winter and spring, polar bears are commonly found in three distinct types of ice: shorefast ice with deep snowdrifts along pressure ridges, the floe edge, and areas of moving ice with 7/8 or more ice cover (Stirling and Smith 1975).

2. Reproduction

Males actively locate estrous females by scent and by following tracks (Lentfer 1982). Polar bears typically mate on sea ice from late March through May (Lono 1970), although implantation does not occur until September (Stirling et al. 1984). Pregnant females seek out denning areas in late October and November and form maternity dens, typically in drifted snow (Harington 1968; Jonkel et al. 1972; Lentfer and Hensel 1980).

Cubs are born in December and January (Lentfer 1982). Estimates of average litter size differ for different locations and vary between 1.52 and 2.0 (Lono 1970; Stirling and Smith 1975; Lentfer et al. 1980; Ramsay and Stirling 1982; Kolenosky and Prevett 1983). In most areas, females with cubs emerge from dens in late March and early April and stay near their den sites for several days or as long as a month (Harington 1968; Lono 1970; Uspenskii and Kistchinskii 1972; Hansson and Thomassen 1983; Kolenosky and Prevett 1983; Stirling et al. 1984), before moving off in search of food.

In most areas of the Arctic, female polar bears keep their cubs until they are about 2.5 years old (Stirling and Smith 1975; Lentfer et al. 1980; Stirling et al. 1980; Schweinsburg et al. 1981, 1982; Stirling 1984; Ramsay and Stirling 1982, 1988). For females that successfully wean litters, the average reproductive interval is about 4 years (Lentfer et al. 1980).

In most areas, females do not reach maturity until 4 or 5 years of age (Stirling and Smith 1975). In the Beaufort Sea, the age of first reproduction is typically 6 years (Stirling and Smith 1975; Lentfer et al. 1980). Although the maximum breeding age is unknown, females 21 years old have been reported with cubs (Stirling and Smith 1975; Lentfer et al. 1980). Males appear to be sexually mature at 3 years of age (Lono 1970). Lentfer et al. (1980) observed 3-year-old males paired with females during the breeding season; competition from older age males may have been lacking due to the reduction of this segment of the population by the sport harvest; however, it is unclear if younger males successfully mate at this age. DeMaster and Stirling (1981) suggested that males probably do not mate before 6 years of age because of inability to compete with larger males.

These reproductive parameters indicate that polar bears have a low reproductive rate requiring sound conservation practices.

3. Natural Mortality and Survival

Some intra-species mortality occurs among polar bears (Jonkel 1970, Russell 1975, Lunn and Stenhouse 1985, Taylor et al. 1985). There is also limited evidence that walruses occasionally kill polar bears (Kiliaan and Stirling 1978). However, it is unlikely that these two types of mortality are significant.

Meaningful estimates of age-specific survival of polar bears are not available. This is because: 1) estimates of survival are confounded by movements of bears; 2) sample sizes from mark-recapture studies are typically too small to provide sound estimates; 3) local densities of bears can fluctuate greatly from year to year, and therefore, it is not possible to assume a stable age distribution or a constant population rate of change; and 4) in Alaska, monitoring of the Native harvest and collection of specimens from bears taken by Natives have not been consistent since 1972 (Amstrup and DeMaster 1988).

Amstrup et al. (1986) reported a mean survival rate for Alaskan Beaufort Sea bears 1 year old and older of 0.88 (range = 0.87-0.89). This is close to estimates of the survival rate for bears in the western Canadian Arctic and central Canadian Arctic. The estimated mortality rate, 0.12, includes both natural and hunting-related mortality. Survival rates for polar bears of the Chukchi Sea region are not available.

Survival estimates for yearlings, based on the difference in litter size between yearlings and 2-year-olds, range between 0.70 and 0.75 (DeMaster and Stirling 1983). Data are from Alaska, the western Canadian Arctic, the central Canadian Arctic, and Baffin Island.

4. Feeding and Energetics

Polar bears in Alaska feed primarily on ringed seals (Phoca hispida) and, to a lesser extent, on bearded seals (Erignathus barbatus) (Stirling and McEwan 1975; Stirling and Archibald 1977; Stirling and Latour 1978) and spotted seals (Phoca largha) (M. Iya, pers. comm.). Bears may also prey on hooded seals (Cystophora cristata) (Stirling and Archibald 1977), walruses (Odobenus rosmarus) (Kiliaan and Stirling 1978), and beluga whales (Delphinapterus leucas) (Freeman 1973; Heyland and Hay 1976; Lowry et al. 1987). They scavenge on the carcasses of whales and walruses. They occasionally prey on other polar bears (Russell 1975; Lunn and Stenhouse 1985; Taylor et al. 1985). When other food is not available, polar bears may eat small mammals, birds, eggs, and vegetation, but these foods are not an important component of the diet.

Polar bears clearly prefer the blubber of ringed seals (Stirling and Archibald 1977). The high

energy demand of polar bears, associated with metabolic thermoregulation and the energy cost of walking and hunting, contributes to the selective use of seal blubber. Availability of seals varies seasonally and regionally; therefore, the replenishment of fat deposits is important to polar bears to maintain an insulating layer to reduce heat losses and provide a reserve source of energy when food is scarce. Pregnant females remain in their dens without feeding for approximately 3 months after giving birth and depend on pre-denning body condition to meet energy requirements during this period.

Polar bears hunt seals by stalking basking animals, by lying in wait at breathing holes, and by breaking into seal lairs (Stirling 1974; Stirling and Latour 1978).

Limited evidence suggests that scavenging for beach carrion by polar bears in the fall may be emphasized by pre-denning pregnant females and females accompanied by cubs. Family groups have higher net energy demands than single bears and beach scavenging is thought to be more productive than seal hunting for family groups at this time of year. Adult males, by their presence, may exclude other sex and age class animals (C. Gardner, pers. comm.). On St. Lawrence Island, carcasses of whales and walruses may be a significant part of the diet during the fall freeze-up period (M. Iya, pers. comm.).

5. Population Status and Trends

Today polar bears are believed to be distributed throughout their historical range and are present seasonally in Alaska territories. Amstrup et al.(in prep.) using mark-recapture and catch-per-unit-effort data, suggested that bear densities off the Alaskan coast have increased slowly since the early 1970's. They estimated that the Bering Sea, north of St. Lawrence Island, the Chukchi Sea, east of 170° West longitude and south of 72° North latitude, and a strip approximately 100 nautical miles wide along the north coast from Barrow to Canada, contained a minimum of 3,000 and a possible maximum of 5,000 bears.

Amstrup et al. (1986) suggested that the number of polar bears in Alaska in 1956 and 1984 were similar. However, the population likely declined in the late 1960s and early 1970s in response to hunting with the use of aircraft, recovered in the late 1970s, and has been stable since then. The current estimate for the Beaufort Sea stock from Icy Cape, Alaska, to Cape Bathurst, Canada, is approximately 2,000 animals.

IV. CONSERVATION ISSUES AND STRATEGIES

This section begins with a brief discussion of several conservation issues, such as population discreetness and size, habitat effects of industrial activities, harvest, and conformance to the Agreement on the Conservation of Polar Bears. The issues are addressed in the following outline of tasks necessary to conserve polar bears and protect their habitat and provide for their wise use. Discussion then shifts to conservation strategies to be based upon sound biological

information. These strategies include agreements, development of information, education, and outreach programs, and implementation of the 1994 amendments to the MMPA, particularly related to co-management endeavors with Native conservation organizations.

A. Population Discreteness

Knowledge of polar bear population discreetness and amount of interchange between adjacent populations is basic to estimating population size and sustainable yield, and consequently is basic to a meaningful conservation plan. Mark and recapture studies suggest that parts of two polar bear populations inhabit Alaska and adjacent ice-covered waters, one occupying the Bering and Chukchi seas to the west of Alaska, and one occupying the Beaufort Sea north of Alaska (Lentfer 1983). More recent radio-tracking studies have indicated the range of bears in the Beaufort Sea and movement of some animals between the Beaufort and Chukchi seas (Amstrup and Gardner 1991). These studies have tentatively established the eastern boundary of the Beaufort Sea population in Canada. Tracking of female bears fitted with satellite telemetry collars in the northern Bering and eastern Chukchi seas has indicated some movement into and back from the western Beaufort Sea. Data from these marked bears document that polar bears occurring in the Bering and Chukchi seas are shared internationally between the United States and the former Soviet Union (Garner et al. 1990). Satellite tracking has not yet revealed the western extent of the Chukchi population in the eastern East Siberian Sea. Cooperative satellite tracking studies with biologists of Russia are beginning to address this question.

Radio-tracking studies to date have been only of adult females and accompanying young. Males do not retain radio-collars well because the circumference of the head is not much greater than the circumference of the neck.

B. Optimum Sustainable Population (OSP)

As reported earlier, the primary goal of the MMPA is to maintain the health and stability of the marine ecosystem and, whenever consistent with this primary objective, to maintain marine mammal populations at optimum sustainable levels, keeping in mind the carrying capacity of their habitat.

The MMPA defines the term "Optimum Sustainable Population," with respect to any population stock, as "…the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element." Studies to date have focused on some of the parameters for determining OSP. Data have not been synthesized to determine upper and lower levels of the OSP range and maximum sustainable annual removal levels. Until OSP can be determined conservation strategies can be based on monitoring population status, trend, and harvest.

Population status and trend must be monitored, but techniques sensitive enough to detect other than very large changes in the size of the Alaskan populations have not been developed. Traditional survey approaches have proven unreliable and expensive because of the low density of bears on the sea ice. Mark-recapture programs are expensive and slow to provide information on changes in population size. Catch-per-unit-effort indices of abundance have lacked suitable precision to be reliable. Work should continue to develop a suitably precise monitoring technique. Before any type of population monitoring program is adopted, it should be evaluated in terms of what level of change could be detected, given a particular level of effort (Holt et al. 1986).

C. Habitat Protection

Article II of the Agreement on the Conservation of Polar Bears instructs nations party to the Agreement to protect the environment of which the polar bears are a part. The difficulties with protecting habitats, portion of which appear and disappear annually, are great. Unusual problems in identifying important polar bear habitat result from the polar bears' mobility and wide spread occurrence on sea ice. Maternity denning areas are especially important habitats because this is where reproductive success can most easily be altered. Open water or active ice areas which persist throughout winter and early spring are preferred hunting and feeding areas.

Disturbance related to human activity can adversely affect denning, which extends from late October or November through early April (Stirling and Smith 1975; Belikov 1976; Lentfer and Hensel 1980). The FWS is conducting denning studies in the Beaufort Sea, where most oil exploration and development activity has occurred to date, to determine relative importance of denning on land and landfast ice as compared to denning on drifting sea ice. The need to evaluate the effects of disturbance on denning is especially critical because of interest in opening the coastal plain of the Arctic National Wildlife Refuge (ANWR) to oil exploration and development activities. Between 1981 and 1991, polar bears radio-collared in the Beaufort Sea region were followed to 90 maternity den sites. Fifty-three percent of the den sites were on drifting ice, 4 percent were on shorefast ice, and 42 percent were on land. Of the dens on land, 43 percent were within the ANWR (Amstrup et al., in prep).

Less is known about habitat preferences for feeding than for denning. However, the importance of polynyas, areas where ice consistently breaks up and makes open water and newly-refrozen areas available for much of the winter, is well established (Stirling and Cleator 1981). Off the coast of Alaska, polar bears spend most of their time in a band extending from the shore leads that parallel the coast out to approximately 200 kilometers (120 miles) offshore. The ice in this zone is generally more active with more open water and refreezing areas than either shorefast ice or heavy pack ice to the north. The effect of human activities, such as shipping, seismic exploration, drilling, and transport of oil, in these areas on either polar bears or the food web that supports them is unknown. Also, contamination of ice, water, food species, and bears themselves by oil and other toxins may increase as human

activities increase in the Arctic (Stirling and Calvert 1983; Lentfer 1990). Acute exposure to oil and other chemicals can be fatal to polar bears (Oritsland et al. 1981; Amstrup et al. 1989). Long-term effects of lower levels of exposure to oil are not known.

Another concern is introduction of radioactive wastes into the Arctic marine ecosystem. Experimental nuclear testing and dumping of nuclear wastes into offshore waters by Russia has recently become common knowledge as reported in Science, July 27, 1992 (Steve Raymer, National Geographic News Service). Near Cape Thompson, Alaska, nuclear waste was buried at the completion of a test project. Distribution of radioactivity within the polar basin and its possible effects on the food web supporting polar bears have not yet been determined. Since polar bears are wide ranging, and many Chukchi Sea bears spend time on or near the coast of Russia, the possibility that they may be affected by radioactive contamination is serious and warrants investigation.

Amendments to the MMPA enacted in 1994, enhanced the Secretary's ability to develop and implement conservation or management measures to protect important marine mammal habitat if a determination is made that negative impacts to these "…areas of…ecological significance…may be causing the decline or impeding the recovery of a strategic stock…" Also, the amendments directed "…the Secretary of Commerce, in consultation with the Secretary of the Interior, the Marine Mammal Commission, the State of Alaska, and Alaska Native organizations, shall, not later than 180 days after the date of enactment of the Marine Mammal Protection Act Amendments of 1994, undertake a scientific research program to monitor the health and stability of the Bering Sea marine ecosystem and to resolve uncertainties concerning the causes of population declines of marine mammals, sea birds, and other living resources of that marine ecosystem. The program shall address the research recommendations developed by previous workshops on Bering Sea living marine resources, and shall include research on subsistence uses of such resources and ways to provide for the continued opportunity for such uses."

To the maximum extent practicable, the research program shall be conducted in Alaska, shall utilize, where appropriate, traditional local knowledge, and may contract with a qualified Alaska Native organization to conduct such research.

D. Effects of Industrial Activity

Human activities in the Arctic, particularly those related to oil and gas exploration and development, may pose risks to polar bears and other wildlife. The level of oil exploratory activity in Alaska's Arctic fluctuates, and has been low in recent years. However, there is considerable activity in the Beaufort Sea region, both onshore and offshore. Future oil discoveries, if determined to be economically viable, could change the level of activity. A workshop on measures to assess and mitigate the adverse effects of arctic oil and gas activities on polar bears (Lentfer 1990) noted the following ways by which polar bears and their habitat could be affected: 1) death, injury, or harassment resulting from interactions with humans; 2)

damage or destruction of essential habitat (the ANWR is the only known denning area for which FWS has direct control of the land base); 3) contact with and ingestion of oil from acute and chronic oil spills; 4) contact and ingestion of other contaminants; 5) attraction to or disturbance by industrial noise; 6) harassment (disturbance) by aircraft, ships, or other vehicles; 7) increased hunting pressures; 8) indirect food chain effects due to the impacts of oil and gas-related activities on the food web upon which polar bears depend and are a part; and 9) mortality, injury, and stress resulting from scientific research to determine possible effects of oil and gas activities on polar bears and other species. Available information is not sufficient in many cases to accurately assess and determine how to avoid or mitigate possible direct and indirect effects of industrial activities.

In the past two years the number of polar bear sightings near villages and oil and gas production and development areas have increased. Concentrations of large numbers of bears near whale carcasses, other localized food sources such as dumps, or attractants would be potentially threatened by a industrial accident.

Use of non-lethal deterrents and harassment of problem bears could reduce bear-human conflicts by aversive conditioning of bears. Such measures constitute a taking and require authorization under the MMPA. The 1994 amendments to the MMPA authorized private individuals to deter a marine mammal from damaging private property; from endangering personal safety; or by a government employee, to deter a marine mammal from damaging public property, provided these actions do not result in the death or serious injury of a marine mammal.

Also, the Secretary shall, through consultation with appropriate experts, and after notice and opportunity for public comment, publish in the Federal Register a list of guidelines for use in safely deterring marine mammals. Actions to deter marine mammals consistent with such guidelines or specific measures shall not be a violation of this Act. If the Secretary determines, using the best scientific information available, that certain forms of deterrence have a significant adverse effect on marine mammals, the Secretary may prohibit such deterrent methods, after notice and opportunity for public comment, through regulation under this Act.

Further, upon request by citizens of the United States engaged in a specified activity (other than commercial fishing) within a specific geographic region, the Secretary may conditionally authorize the incidental, but not intentional, taking by harassment of small numbers of marine mammals of a species or population stock. The permissible methods of taking by harassment should have the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for subsistence uses.
Monitoring and reporting of takings by harassment shall occur, including independent peer review of proposed monitoring plans or other research proposals.

Also, individuals taking a polar bear in self-defense or to save the life of another person is a form of take now recognized in the MMPA. The take must be reported and the hide and skull presented to the FWS.

E. Harvest Monitoring

Section 101 of the MMPA provides for taking of polar bears by Alaska Natives for subsistence use or for manufacture into traditional items of handicraft and clothing. Such items can then be sold to the general public. Sale of whole non-handcrafted, raw, or tanned hides or parts to non-Natives is prohibited. There is no restriction on the trade, sale, or exchange of raw polar bear parts between Natives. The Native take of polar bears is monitored primarily by means of a mandatory marking, tagging, and reporting program which requires that skins and skulls be presented to a representative of the FWS within 30 days after bears are killed. Kill information and specimens are then obtained and skins and skulls are tagged with interlocking nylon and plastic tags. Data gathering and tagging are done in the various villages by local residents under contract to the FWS. Frequent coordination between the taggers and the FWS representative occurs. It is vitally important that the harvest data be accurate. A review of the mandatory marking, tagging and reporting program has recently been completed (Stephensen et al., 1994). Additionally, a method to determine the sex of polar bears from genetic material found in tissue samples has been developed (Amstrup et al., 1993). A project to verify the accuracy of the reported sex information obtained from the harvest monitoring program is underway.

The 1994 amendments to the MMPA authorize the Secretary of the Interior to enter into cooperative agreements with Alaska Native organizations to conserve marine mammals and provide co-management of subsistence use by Alaska Natives.

> "Agreements entered into under Section 119(b) may include grants to Alaska Native organizations for, among other purposes: 1) collecting and analyzing data on marine mammal populations; 2) monitoring the harvest of marine mammals for subsistence use; 3) participating in marine mammal research conducted by the Federal Government, States, academic institutions, and private organizations; and 4) developing marine mammal co-management structures with Federal and State agencies."

In addition, the amendments go on to state that nothing in this section is intended or shall be construed as authorizing any expansion or change in the respective jurisdiction of Federal, State, or tribal governments over fish and wildlife resources; or as altering in any respect the existing political or legal status of Alaska Natives, or the governmental or jurisdictional status of Alaska Native communities or Alaska Native entities.

F. Conformance to the Agreement on the Conservation of Polar Bears

The international Agreement on the Conservation of Polar Bears became effective in 1976.

Article VI of the Agreement states that contracting parties shall enact and enforce such legislation and other measures as may be necessary to give effect to the Agreement. The United States has not specifically enacted implementing legislation or regulations. When the Agreement was provided to the Senate for advice and consent, the MMPA was generally considered to provide adequate authority to implement all provisions of the Agreement. This may not be the case, however, and specific implementing legislation or regulations may be necessary to allow the United States to more fully comply with all provisions of the Agreement. The MMPA's lack of authority to protect polar bear habitat, and regulate the harvest and methods and means of harvesting are topics of contention. Provisions of the NSB/IGC local user group agreement for management of polar bear of the Southern Beaufort Sea is parallel in content to the international Agreement and exemplifies the effort to assert self determination in conservation issues by Native peoples.

The 1994 MMPA amendments state, "…not later than 1 year following enactment of the MMPA Amendments of 1994, the Secretary of the Interior shall, in consultation with the contracting parties, initiate a review of the effectiveness of the Agreement on the Conservation of Polar Bears, as provided for in Article IX of the Agreement, and establish a process by which future reviews shall be conducted."

Also, "…the Secretary of the Interior, in consultation with the Secretary of State and the Marine Mammal Commission, shall review the effectiveness of United States implementation of the Agreement on the Conservation of Polar Bears, particularly with respect to the habitat protection mandates contained in Article II. The Secretary shall report the results of this review to the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than April 1, 1995."

Further, "…not later than 6 months after the date of enactment of the Marine Mammal Protection Act Amendments of 1994, the Secretary of the Interior, acting through the Secretary of State and in consultation with the Marine Mammal Commission and the State of Alaska, shall consult with the appropriate officials of the Russian Federation on the development and implementation of enhanced cooperative research and management programs for the conservation of polar bears in Alaska and Russia. The Secretary shall report the results of this consultation and provide periodic progress reports on the research and management programs to the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Commerce, Science and Transportation of the Senate."

G. Local User Group Agreements

The Inupiat-Inuvialuit Beaufort Sea Polar Bear Management Agreement incorporates many of the provisions of the international Agreement on the Conservation of Polar Bears. However, the Beaufort Sea Agreement does not apply to the Chukchi Sea polar bear stock.

Future polar bear conservation agreements should expand emphasis on cooperative programs with local users. Partnership agreements should be forged to describe the roles and responsibilities of the participants in using, protecting, and conserving polar bears.

The MMPA amendments specify that

> "…the Secretary may enter into cooperative agreements with Alaska Native organizations to conserve marine mammals and provide co-management of subsistence use by Alaska Natives. Agreements entered into under this section may include grants to Alaska Native organizations for, among other purposes:
>
> > 1) collecting and analyzing data on marine mammal populations;
> >
> > 2) monitoring the harvest of marine mammals for subsistence use;
> >
> > 3) participating in marine mammal research conducted by the Federal Government, States, academic institutions, and private organizations; and
> >
> > 4) developing marine mammal co-management structures with Federal and State agencies.
>
> Congress further directed that nothing in this section is intended or shall be construed as authorizing any expansion or change in the respective jurisdiction of Federal, State, or tribal governments over fish and wildlife resources; or as altering in any respect the existing political or legal status of Alaska Natives, or the governmental or jurisdictional status of Alaska Native communities or Alaska Native entities."

In order to clarify the Congressional intent concerning these amendments appropriate portions of the Congressional record (House of Representatives Congressional Report 103-439, March 21, 1994, P. 39) are provided and follow:

> "When using the term "co-management" the Committee does not intend to grant any new political or governmental jurisdiction or judicial authority to Alaska Native organizations. It is the intent of this section that the Secretary of Commerce and the Secretary of the Interior extend full cooperation as partners to Alaska Native organizations in the development and implementation of marine mammal conservation plans.
>
> Alaska Natives have a long history of self-regulation, based on their need to ensure a sustainable take of marine mammals for food and handicrafts. The Committee believes that the best way to conserve marine mammal populations in Alaska is to allow full and equal participation by Alaska Natives in decisions affecting the management of marine mammals taken for subsistence.

The Committee notes the success of the co-management agreement between the Secretary of Commerce and the Alaska Eskimo Whaling Commission, and it believes that this agreement is an excellent example of the sort of co-management structure envisioned by this section.

Finally, in authorizing grants under this section, the Committee intends that such grants be made to Alaska Native organizations that directly represent subsistence users of marine mammals. The Committee expects that the Secretary, in administering the grants, will provide an oversight role to ensure compliance with the law."

In a separate action, Congress directed the Secretary of Commerce, in consultation with the Secretary of the Interior, the Marine Mammal Commission, the State of Alaska, and Alaska Native organizations, to undertake a scientific research program to monitor the health and stability of the Bering Sea marine ecosystem and to resolve uncertainties concerning the causes of population declines of marine mammals, sea birds, and other living resources of that marine ecosystem. The program to be described within 180 days of passage of the MMPA should address the research recommendations developed by previous workshops on Bering Sea living marine resources, and should research subsistence uses of such resources and provide for continued opportunity for such uses.

The research program undertaken should be conducted in Alaska and should utilize traditional local knowledge to the extent possible. Contracts with a qualified Alaska Native organization may be sought to conduct such research.

H. Importation into the United States from Canada--Polar Bear Trophies

The Secretary may issue a permit for the importation of legally taken polar bear parts (other than internal organs) taken in sport hunts in Canada, including polar bears taken before the 1994 amendments. Such a permit shall be issued if the Secretary, in consultation with the Marine Mammal Commission and after notice and opportunity for public comment, finds the following:

1) Canada has monitored and enforced sport hunting program consistent with the purposes of the Agreement on the Conservation of Polar Bears;

2) Canada has a sport hunting program based on scientifically sound quotas ensuring the maintenance of the affected population stock at a sustainable level;

3) the export and subsequent import are consistent with the provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora and other international agreements and conventions; and

4) the export and subsequent import are not likely to contribute to illegal trade in

bear parts.

Section 102(b)(5)B states that "The Secretary shall establish and charge a reasonable fee for permits issued under this paragraph. All fees collected under this paragraph shall be available to the Secretary for use in developing and implementing cooperative research and management programs for the conservation of polar bears in Alaska and Russia pursuant to section 113(d)."

Section 102(b)(5)C goes on to direct that "The Secretary shall undertake a scientific review of the impact of permits issued under this paragraph on the polar bear population stocks in Canada within 2 years after the date of enactment of this paragraph. The Secretary shall provide an opportunity for public comment during the course of such review, and shall include a response to such public comment in the final report on such review.

The Secretary shall not issue permits under this paragraph after September 30, 1996, if the Secretary determines, based on the scientific review, that the issuance of permits under this paragraph is having a significant adverse impact on the polar bear population stocks in Canada. The Secretary may review such determination annually thereafter, in light of the best scientific information available, and shall complete the review not later than January 31 in any year a review is undertaken. The Secretary may issue permits under this paragraph whenever the Secretary determines, on the basis of such annual review, that the issuance of permits under this paragraph is not having a significant adverse impact on the polar bear population stocks in Canada."

I. Public Education and Outreach

Development and distribution of information on polar bears and their conservation needs must be stressed in the future and is crucial to cooperative conservation programs. These programs would initially focus on Native hunters. However, the programs could have bearing for the general public, industry, conservation organizations, and others interested in polar bears. Resource agencies generally focus their effort on biological programs. This emphasis is appropriate, although public interactive programs necessary to convey and gather support for effective conservation and research programs is also appropriate. Recent grant authorizations within the MMPA for cooperative agreements and grants to Native organizations may offer new opportunities for development of information and education materials.

J. Public Viewing of Polar Bears

A program that would provide for increased viewing and photographing of polar bears could increase public understanding of polar bear life history and habitat needs and thereby increase support for protection of habitat and populations. Some economic benefits could accrue to coastal residents who could provide guiding, transportation, lodging, and other services. A precedent for this has been established at Churchill on Hudson Bay in Canada, where viewing and photographing of polar bears that once were considered nuisance animals has developed

into a highly successful tourist industry. The possibility for viewing and photographing bears in Alaska in the fall occurs at carcasses of bowhead whales remaining on the beach after subsistence whaling. Other viewing possibilities occur in the spring in whaling camps visited by bears. Disruptions to hunters and villagers at whale butchering sites or subsistence whaling camps and the increased potential for bear human encounters should be considered in the development of bear viewing programs.

A new provision to the MMPA enacted through the 1994 amendments provides authority to the appropriate Secretary to permit photography for commercial or educational purposes.

K. Wasteful Take Regulations

The definition of "wasteful manner of taking" (50 CFR 18.3), as it relates to subsistence harvest, should be clarified. Prior to passage of the MMPA polar bears were classified as a furbearer similar to black and grizzly bears and Native subsistence hunters were not required to salvage meat from polar bears. Currently, hunters always salvage the hides of harvested bears for use in making handicrafts or clothing. Hunters exercise the discretion of salvaging meat, although a relatively high proportion of the meat from most animals is retrieved for consumption. The meat for some animals, such as older males, may not be as palatable or desirable as food and may be used for dog food or remain in the field to be scavenged by foxes, other fur bearers, ravens, or polar bears. Current harvests of polar bears by Natives appear to be within sustainable limits, and abusive harvests for commercial purposes are not occurring. The Service intends to address this issue through interaction and agreement with the Alaska Native community.

Regulations under the MMPA define wasteful manner as, "…any taking or method of taking which is likely to result in the killing or injuring of marine mammals (polar bears) beyond those needed for subsistence purposes or for the making of authentic native articles of handicrafts and clothing or which results in the waste of a substantial portion of the marine mammal and includes without limitation the employment of a method of taking which is not likely to assure the capture or killing of a marine mammal, or which is not immediately followed by a reasonable effort to retrieve the marine mammal." [39 FR 7262, Feb. 25, 1974, as amended at 43 FR 13066, Mar. 29, 1978]

L. Penalties for Illegal Take or Trade of Polar Bears or Products

Polar bear skins and gall bladders have substantial value on the world market. The potential exists for large-scale taking of polar bears off Alaska's coast with use of vessels and aircraft in order to sell skins and gall bladders. Making such activities a felony and making vehicles, vessels, and aircraft engaged in such activities subject to forfeiture would serve as deterrents.

V. CONSERVATION PLAN

A. Goal and Objectives

The goal of this plan is to maintain populations of polar bears in and adjacent to Alaska within their optimum sustainable range and to ensure that they remain a healthy functioning component of the Bering, Chukchi, and Beaufort seas ecosystem. In order to achieve this goal four primary objectives are developed: 1) conserve polar bears; 2) conserve polar bear habitat; 3) provide for beneficial human uses; and 4) coordinate the cooperative conservation effort at the international, national, and local levels, involving Natives and the various interested publics in future conservation of polar bears (see also VI, Implementation Plan).

The tasks presented in the step-down outline are developed further in Table 1--Polar Bear Conservation Plan Implementation Schedule. A listing of task, priority, duration, lead agency and cooperators, and an estimate of funding required is presented there.

B. Step Down Outline and Narrative

Objective 1: Conserve Alaska polar bear populations to prevent them from becoming depleted

11. Better define polar bear populations in and adjacent to Alaska

Knowledge of polar bear population bounds, discreteness, and degree of interchange between adjacent populations is basic to evaluating population status and trend.

111. Describe seasonal, annual, and multi-annual movements of polar bears in and adjacent to Alaska

Studies to follow movements of polar bears using radio- and satellite-linked telemetry should continue for both the Bering/Chukchi and Beaufort seas populations. Objectives of the Beaufort Sea study should be to better determine population boundaries and to determine seasonal interchange with the Chukchi Sea population. Seasonal movement data should be analyzed to evaluate what portion of the Beaufort Sea breeding population is intermingling with bears of the Chukchi Sea population during the breeding season, and, conversely, what portion of the Chukchi Sea breeding population is intermingling with the bears of the Beaufort population during the breeding season or what proportions of these populations are available to hunters seasonally. Additionally, continued satellite tracking of the Bering/Chukchi sea bears should be undertaken to better determine the degree of mixing with Beaufort Sea bears and genetic implications, and to define the western extent of range. This will require continued cooperative studies with biologists from Russia. Efforts should continue over a series of years until reliable patterns of movements can be described.

Telemetry studies to date have been only of females and accompanying young. Males do not retain radio collars well because the circumference of the head is not much greater than the circumference of the neck. A complete understanding of movements and degree of interchange and genetic mixing will require knowledge of movements of males as well as females. Development of a technique and implementation of a study designed to evaluate the movements of male bears should be conducted.

111a. Describe activity areas and characterize their relative level of importance

Understanding the location and timing of polar bear use of various ice habitats will enable resource managers to more effectively protect important areas. Polar bears concentrate in certain areas at certain times of the year. As examples; bears occur in ringed seal pupping areas when newborn seal pups are in lairs in the spring; bears den on the ANWR more than on other land areas in Alaska; and denning bears concentrate on Wrangel Island in Russia. Bears probably concentrate along the edge of the drifting ice during summer and early fall.

Information on denning areas should be obtained in conjunction with Task 22. Information on use of other important habitats should be obtained, possibly in conjunction with other studies, including telemetry necessary to accomplish Tasks 111 and 112. Any work proposed along the ice edge during summer would require a major new effort.

111b. Evaluate genetic and chemical indicators of movement

111b1. Examine genetic materials in blood for variation by geographic area

Blood samples presently collected from polar bears immobilized for attachment of radios and other studies are suitable for DNA analysis as an indicator of genetic variability and population discreteness. Analysis to date indicates essentially no genetic variation among eight bears sampled from near Prudhoe Bay, Kotzebue, and St. Lawrence Island (Garner and Knick 1991). Analysis by Cronin et al. (1991) suggests that mitochondrial DNA variation may occur in polar bears from more widely separated locations. Investigators should continue to collect and analyze the genetic material present in the more highly variable section of the genome to determine the usefulness of mitochondrial and other DNA analyses to assess population discreetness of bears from the Chukchi and Beaufort seas. As possible, analyses should also include bears from other circumpolar locations.

111b2. Examine isotope ratios of carbon and other stable chemical components of polar bear tissues

The Beaufort and Chukchi seas differ in the concentration of stable carbon isotopes detected in zooplankton, and as manifested in baleen of bowhead whales (Balaena mysticetus) (Schell et al. 1988). The keratinous tissue of polar bear claws also reflects the regional difference in carbon isotopic levels (Amstrup and Gardner 1991). Investigators should continue to obtain

shavings from claws of captured bears and to obtain shavings or claws from bears taken in the Native harvest. Isotope ratios of carbon should be determined. Studies should continue to determine growth rates of claws and to relate carbon ratios at different locations in the claw to feeding locations, principally the Chukchi Sea or Beaufort Sea. Validity of the technique may be tested by examining carbon isotope concentrations along longitudinal sections of claws from zoo bears. Results of these studies should augment other indicators of population discreteness.

111b3. Examine environmental contaminants such as heavy metals and chlorinated hydrocarbons

Lentfer and Galster (1987), from tissue samples collected in 1972, found a significant difference in mercury levels between bears from the Chukchi Sea and bears from the Beaufort Sea. This study should be repeated and other studies on organochlorines and other environmental contaminants should be conducted to determine if findings can be used to augment other indicators of population discreteness, to determine the effect of contaminants on physiology, or behavior of polar bears, and to determine if consumption of bear meat may be hazardous to humans. Tissue samples could be obtained as part of the harvest monitoring program (with Task 312).

112. Identify seasonal habitat use and rates of exchange of polar bears between populations

Lentfer (1974a) hypothesized that two discrete groups of polar bears are present in Alaska. The boundary between bears frequenting the Chukchi/Bering seas area and the Beaufort Sea area is a line extending northwest from Point Lay at an approximate 45° degree angle. The boundary was revised in 1988 and moved eastward to Icy Cape based upon interpretation of movements of polar bears obtained from telemetry studies (S. Amstrup, pers. comm.). This was the western boundary for the Inuvialuit Game Council and North Slope Borough local hunter agreement for the management of polar bears in the Beaufort Sea region. Analysis of recent movement information, including information concerning animals marked in the Chukchi Sea region, should be undertaken to determine inter-annual and long term rates of exchange between these populations.

12. Determine the size of Alaskan polar bear populations in the Bering/Chukchi and Beaufort seas

Knowledge of population size is fundamental to quantifying sustainable harvest levels and to evaluating or monitoring population status. The Beaufort Sea region is one of the two most thoroughly studied populations of polar bears in the circumpolar Arctic. Conventional mark and recapture information has been used periodically since 1968 to develop estimates of population size for this region. Other types of information to collaborate mark and recapture information can also be collected during capture operations. Other techniques may be developed in the future to augment or supplant marking and recapturing of polar bears in the

Beaufort Sea. No currently reliable information is available regarding population estimates for polar bears in western Alaska found in the Chukchi and Bering sea region. Due to the vastness of the theorized area, population estimates using mark and recapture techniques do not appear to be practical. Other techniques must be applied to estimate population size.

121. Identify preferred methodologies for censusing polar bear populations

Evaluate census techniques and determine which technique or combination of techniques is most suitable for the two polar bear management units of Alaska. Determine the repeatability, accuracy, and relative cost of the techniques evaluated.

122. Test the preferred census methodology if unproven

Conduct prototype testing of the preferred methodology or combination of methodologies to determine their practicality and effectiveness. Based upon test results, modify the methodology incorporating improvements.

123. Implement the preferred census methodology(ies) on a recurrent basis

Implement the preferred census methodology(ies) with particular emphasis on the Chukchi and Bering sea region. A Russian harvest, in addition to ongoing Alaska harvest, from this population is expected in the near future.

13. Define the OSP range and population trends for polar bears in and adjacent to Alaska

131. Use existing or revised population models as a predictive tool for estimating the bounds of OSP

Modeling efforts may be useful in identifying data gaps or if the data are adequate for developing estimates of the bounds of OSP. Incorporate information collected from preceding or following tasks into existing or new population models for Bering/Chukchi and Beaufort seas polar bear stocks. This information depends upon completion of many but not necessarily all of the complementary tasks in this plan. A workshop of invited experts should be convened to provide a useful review of the available information and possibly provide an estimate of the bounds of OSP and an assessment of current population level(s) in relationship to OSP.

132. Refine estimates of population parameters necessary for modeling populations

Precise information is needed on reproductive intervals, recruitment rates to age 6, and adult survival rates. This information has been obtained previously by mark-recapture studies. Present studies to obtain the same type of information rely mainly on telemetry studies and should be continued. Information on the sex, age, and reproductive status of harvested bears

should also be obtained (with Tasks 142c and 312).

133. Evaluate environmental/ecological factors influencing OSP (with components of Task 2)

Develop and integrate studies to assess and monitor the welfare and health of polar bear habitat into the OSP equation. Studies should include marine ecological food chain relationships and factors which potentially influence the food chain's ability to support polar bears. In conjunction with Task 24, conduct food habits studies on the abundance, productivity, availability, and use of ringed seals. Information should also be obtained on availability and use of bearded seals, walruses, and other prey. Availability, use, and importance of beach carrion as food for polar bears in fall and early winter should be evaluated. Polar bear energetics and food availability should be examined relative to environmental carrying capacity.

134. Develop a reliable index of population abundance

Periodic estimates of population size may provide information on population trend. Estimation techniques must be repeatable, must provide data with reasonable confidence intervals, and must be cost effective. Results should be incorporated into a population model (above Task 131) with information on population discreetness (Task 112) and OSP range to provide a comprehensive picture of status and trend.

The FWS has developed a draft methodology for censusing polar bears (Garner et al. 1992). Census methods under consideration include line transect, belt transect, area counts, and single season mark/recapture, and multiple year mark and recapture using biomarkers. Estimates of sightability may be evaluated for the various census methods. Census methodology testing will be timed to increase the chances of sighting bears (density function) and minimizing the survey coverage area.

Den surveys are possible indicators of trend. Den surveys would probably be a better trend indicator for the Chukchi Sea population than for the Beaufort Sea population because dens are highly concentrated on Wrangel Island in the Chukchi Sea as compared to the less dense distribution of dens of Beaufort Sea bears. A description of the relationship between the number of dens observed and the population size would be necessary. An understanding of the variables associated with den surveys and an understanding of the ecological factors influencing denning interval and frequencies would be required in order for denning data to be meaningful.

Population status and trend should be assessed annually during the developmental phase of any industrial activities undertaken within the range of the Beaufort or Chukchi sea stocks. Periodic assessments should be made thereafter at appropriate intervals.

14. Maintain Alaskan polar bear populations within OSP

141. Determine sex/age specific mortality factors and rates

Causes of natural mortality should be determined along with age-specific mortality rates. Hunting and other human-related mortality should be determined.

142. Monitor health, feeding ecology and vital parameters of polar bears

142a. Collect information on body condition of bears captured during research activities

Assess body condition of immobilized bears using various techniques to determine percentage body fat, evaluate milk fat of lactating females, evaluate blood parameters, determine incidence of parasites, and evaluate other indicators of condition. Other samples should then be collected and analyzed periodically to monitor general health and condition.

142b. Collect information on body condition from bears killed for subsistence purposes (with Tasks 11 and 312)

Tissue samples (soft tissue, reproductive tracts, teeth, claws) from bears killed by Native hunters should be collected as part of the harvest monitoring program. Contaminant levels in kidney, liver, and fat tissues should be determined every five years.

Archiving tissues for later analyses, among other things, allows comparisons with earlier contaminant levels as new contaminants are discovered, allows samples to be analyzed with new techniques as they are developed, and allows stockpiling of specimens for more efficient analysis. The Marine Mammal Tissue Bank (Becker et al. 1988) is a possible archiving center for polar bear tissue samples, but polar bear tissues have not yet been deposited there. The Tissue Bank was administered through 1991 within the National Oceanic and Atmospheric Administration with funding from the Minerals Management Service. Operation of the Bank now is funded by the National Marine Fisheries Service's Office of Protected Resources. Because polar bears are not a species for which the National Marine Fisheries Service has responsibility, special arrangements would have to be made to allow polar bear tissues to be included in the Bank. Another possibility for archiving polar bear tissues is with the archival system of the National Bureau of Standards.

142c. Evaluate polar bear food habits, prey availability, and energetics (see Task 24)

142d. Collect, examine, and archive specimens to determine the prevalence of disease in polar bear

Polar bears are exposed to a variety of diseases and pathological conditions due to viruses,

bacteria, parasites, and traumatic injuries. Some diseases such as distemper viruses have been demonstrated to dramatically affect marine mammal populations.

Polar bears taken by subsistence hunters or handled by researchers should be routinely examined for evidence of disease or injury. Where possible, apparently abnormal conditions should be documented and sampled. Samples should be sent to appropriate specialists for examination.

Serum should be routinely collected from polar bears and examined by researchers. Samples of serum should be analyzed for the presence of known pathogens (e.g., distemper viruses). Serum should be archived.

143. Identify actions to prevent polar bear populations from declining below OSP

If a polar bear population appears to be declining toward the lower range of OSP, the cause(s) of the problem should be identified and corrective actions taken. Actions taken prior to a population depletion finding would be voluntary restriction or modification of levels or methods of taking polar bears by Native subsistence hunters. In general, these actions should reduce mortality, particularly of females, and increase survival rates of all sex and age classes, and if possible, increase productivity. Examples of these actions include a reduction in hunting, seasonal or area closures, or changes in methods and means or other hunting practices. If population declines are related to industrial development, appropriate action relative to the development should be taken. If declines are attributed to illegal take or transport or trade in polar bear parts, enforcement actions designed to curb the activity would be recommended. Other areas of protection may include reduced mortality of nuisance bears near coastal villages. Declines attributed to long term environmental changes (i.e., global warming, ozone depletion, chemical contamination) in the quality of polar bear habitat are less likely to be reversible in the short term and may require creative and universal conservation approaches.

Objective 2: Identify, quantify, and protect habitats of polar bears

21. Determine relationships of polar bears and sea-ice habitat type

Distribution of polar bears is tied closely to the distribution and condition of sea ice. However, effects of ice drift patterns, topography, and lead development on polar bear movements and distribution are not clearly understood. To determine the carrying capacity of the sea ice environment, the relationships between polar bears and movements and conditions of sea ice must be better understood. Information on ice formation, movement, and distribution should be obtained, along with information on polar bear movements and activities. Correlations between polar bears and sea ice should then be developed. Polar bear-sea ice relationships must be studied on a long-term basis as ice conditions can vary

greatly from year to year. Data bases would be extensive and may require the application of super computers in evaluating movements of ice or bears. Knowledge of bear use and densities in different sea ice types would be useful to a stratified aerial survey technique.

One possible method of studying polar bear-sea ice relationships is to match movement data of bears with ice imagery data obtained from satellites and from synthetic aperture radar. Data can also be obtained in conjunction with other studies by recording occurrence of bears and tracks in different ice types.

Polar bears are affected by ice distribution and condition partly because ice condition affects distribution and availability of prey species. The study of polar bear-sea ice relationships should therefore be done in conjunction with food habits studies (see 112 and 142c). Develop and implement a protocol which incorporates the collection of local knowledge by coastal Natives into this task.

22. Quantify denning habitats, determine density and cub production, and assess annual variation in use patterns

Ongoing studies, including use of radio telemetry, are providing information on where bears den (Amstrup and Gardner 1991). Areas used for denning should be characterized and other areas examined for their denning potential. The goal should be to measure the density and production of denning bears and estimate the potential denning density and production in areas less intensively studied. Effects of annual climatic differences on polar bear density and cub production should be evaluated. Climatic variants considered in the evaluation include snowfall, prevailing wind, temperature, ice type, and ice movement. Develop and implement a protocol for collection of local knowledge by coastal Natives into this task.

221. Conduct studies to determine the importance of Alaska denning habitats including denning habitat in the Arctic National Wildlife Refuge

Recent studies by the FWS indicate that the ANWR is the most important polar bear terrestrial denning area in Alaska (Amstrup and Gardner 1991). Studies and monitoring programs should continue to quantify terrestrial habitat types in order to accurately predict the effects of oil development in the ANWR or elsewhere on denning, and ultimately, on the Beaufort Sea polar bear population.

Studies to determine importance of the ANWR for denning and maintaining the Beaufort Sea population within its OSP range should be conducted.

222. Conduct collaborative studies with Canada and Russia to identify and quantify denning areas (terrestrial and on sea ice) and their importance to Alaska polar bear populations. Implement 1994 amendments to the MMPA regarding cooperative U.S./Russia cooperative research and management programs (with Task 111a)

Before September 1994 consult the Russian Federation through the Secretary of State and with the Marine Mammal Commission and the State of Alaska, to develop and implement enhanced cooperative research and management programs for the conservation of polar bears in Alaska and Russia. Report the results through progress reports to the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Commerce, Science and Transportation of the Senate.

Continue studies with Russian scientists on Wrangel Island, the Chukotka Peninsula, and offshore pack ice areas (with Task 111). Expand denning studies in the eastern Beaufort Sea region with Canadian scientists. Information collected should include den locations, dates of denning, numbers of cubs produced, and relative importance of denning habitats as determined by results of long-term studies. Conventional aerial surveys for dens have been conducted effectively for certain geographic areas. Telemetry studies have also been conducted successfully. Both types of surveys should continue in order to quantify and characterize suitable denning habitats.

23. Evaluate presence, levels, sources, and trend of environmental contamination including chemical, radioactive, and trace elements

Develop a strategy to evaluate the relative quality of polar bear habitat as a function of the presence and level of key contaminants. Samples should be collected on a structured, routine, and repeated basis over time. Primary elements to be sampled include chlorinated hydrocarbons, heavy metals, and radioactive elements. Sampling protocols for each of these sets of elements should reflect state-of-the-art knowledge on acquisition, preparation, and storage or archival. Monitoring protocols should be designed to allow for direct comparisons of results between countries. These specimens are in addition to those collected from polar bears killed for subsistence purposes as described in Task 312. This strategy focuses on sampling lower level producers within the environment such as benthic, zooplankton, or fish communities. Sampling at this level is designed to more closely identify and monitor the contaminant at the source. Monitoring protocols could follow or build on those recently established by Nordstrom (1988) or through the Arctic Monitoring and Assessment Program.

24. Identify important feeding areas, migratory use areas, and areas of repeated and predictable use

Based on results of Tasks 21 and 22, describe the relationships between bear and seal distribution and sea ice habitat preferences. Important feeding areas should be defined. Additional studies may be necessary in order to integrate the results. The seasonal use of sea

ice by feeding polar bears should be described. The dynamic nature of the offshore ice habitats, where habitat areas undergo annual creation and disintegration, makes prediction of location and use difficult. Implement a plan of protection which accounts for the annual variability in amount and location of the mobile habitats. Develop and implement a protocol which incorporates local knowledge of coastal Natives into this task.

25. Identify, detect, mitigate, or prohibit possible adverse effects of various developments or activities on polar bears and their habitats

251. Identify, characterize, and protect important polar bear habitats in conjunction with Tasks 111, 112, and 142c

Identify, characterize, and protect habitats important to polar bears based on knowledge of existing and potential development and important denning and feeding habitat previously identified above in Tasks 21, 22, and 24.

252. Determine potential impact to bears from coastal and offshore oil, gas, and hard mineral development

252a. Identify data gaps and develop studies to resolve deficiencies

Evaluate existing studies describing effects of various intrusive development activities on polar bears and their habitat. Where data gaps exist, develop a study design or strategy to resolve these deficiencies. A specific example may be to attempt to quantitatively describe the effects of seismic activities, other human development activities, or settlement activities on denning polar bears . Insights may be gained by designing studies to compare denning activity at two sites that are similar except for the degree of human disturbance.

252b. Monitor polar bear behavioral responses to development activities with consideration for time of the year and location.

Polar bears that approach areas where development activity occurs should be monitored carefully for indications of stress, change in behavior, and change in movement pattern. As an example, systematic direct observation of polar bears and their activities near oil and gas facilities is part of ongoing polar bear monitoring programs for a number of operators. Activity patterns of radio-collared bears near drilling rigs or in dens near drilling or other development activities should be monitored for signs of stress, such as early den desertion, increased heart rate, or movement within the den, as has been detected for grizzly bears in northern Alaska (Reynolds et al. 1986). Specific activity or movement patterns for preselected time frames can be recorded with the use of specially programmed satellite transmitting data processors. Additionally, reproductive success of these bears should be monitored as a further indicator of stress. These data may provide some promise to answer questions concerning the effects of human activities on polar bears, yet they do not provide specific behavioral reaction

information which is only available through direct observation. Direct monitoring and observation should be a component of the polar bear studies.

253. Protect polar bears and mitigate the effects of development on polar bear habitats

253a. Review and if necessary, modify applicable assessment, licensing, regulatory, and other monitoring programs to ensure that they provide adequate protection for polar bears and their habitat

A number of different Federal, State, and local agencies are responsible for assessing, licensing, regulating, and monitoring activities that could affect polar bears and their habitat. A study should be done to identify and determine whether existing assessment, licensing, regulatory, and monitoring programs are adequate and thoroughly coordinated to identify and avoid potential problems.

253b. Monitor, regulate, and permit development activities in polar bear habitats

Section 101(a)(5) of the MMPA allows the Secretary to authorize the "…unintentional take of small numbers of marine mammals (including polar bears) incidental to activities, such as offshore oil and gas exploration and development, if, after notice and opportunity for public comment, the Secretary (i) finds that the total of such taking will have a negligible impact on the affected species or stock and will not have an unmitigable adverse impact on the availability of the species or stock for Native subsistence uses; and (ii) prescribes regulations setting forth (I) permissible methods of taking and means for affecting the least practicable adverse impact on the affected species or stock, and (II) requirements for monitoring and reporting and taking." Permits would be issued upon request, for the unintentional taking by harassment of small numbers of marine mammals as authorized by the 1994 amendments to the MMPA. Permit duration for the latter is one year.

Individual industry operators remain responsible for requesting Letters of Authorization (LOA) from the FWS. The FWS should take the initiative to inform the oil and gas industry of the need to request incidental small take regulations and LOAs in cases where there is a likelihood that the planned activities will result in a taking. In the absence of regulations and LOAs, industry is liable for unauthorized "takings."

Based on incidental take regulations that are developed, the FWS should review and respond consistently to requests for LOAs to take polar bears incidental to industrial activities. The potential effects of an authorized activity and cumulative effects of all authorized taking should be considered. FWS should identify monitoring requirements on a case-by-case basis and annually review the results of the required monitoring programs. Reviews should focus upon the knowledge learned from the monitoring program, possible changes and improvement in the monitoring plan, and an evaluation of the level of taking. The reviews should assess the overall adequacy of proposed monitoring plans and describe level of take relative to the level

authorized.

253c. Reduce the likelihood of bear/human encounters at industrial sites

Polar bear interaction plans should be developed for each industrial activity where a potential exists for bears to be affected by the activities. Conceptually, these plans should include the following: design facilities to minimize attractions to bears, prevent bears from approaching or entering facilities, and provide worker and bear escape routes; hire polar bear monitors and establish procedures for use in detecting, responding to, and deterring bears (authorization necessary) that approach either temporary or permanent facilities; and train workers about polar bear behavior and how to minimize contacts with bears. The FWS, in cooperation with the Alaska Department of Fish and Game, the Minerals Management Service, industry, and Native groups, should develop guidelines and procedures for preparation, review, and approval of polar bear interaction plans. Additional studies should evaluate the relative merits of various detection and deterrent systems. The 1994 amendments to the MMPA call for the development and publication in the Federal Register of a list of guidelines for use in safely deterring marine mammals. The effects of these guidelines should be evaluated and refined as necessary.

The number, composition, and behavior of bears that occur at development sites should be recorded along with effectiveness of interaction plan provisions to minimize adverse effects of development activities. Improvements in the monitoring program should be based upon first hand observation or experience.

253d. Develop an emergency oil spill response plan to protect polar bears and habitat

Early preparedness through development of a response plan is critical to protecting polar bears in case of an oil spill in polar bear habitat. Response plans would include provisions for rapidly drilling relief wells and oil pick-up in ice-covered seas. A team of research scientists would be mobilized to investigate the effects of the oil spill on bears and their habitat. Hazing and deterrence plans for bears should be developed and bears deterred from spill areas as possible. If practical and economically feasible, bears, especially adult females, which come into contact with oil, should be immobilized, cleaned, rehabilitated, and released into a non-contaminated area by trained professionals. The overall population risk should also be assessed in making decisions to rehabilitate.

253e. Implement specific amendments to the MMPA to strengthen habitat protection such as the Bering Sea Ecosystem initiative

The Secretary of Commerce, in consultation with the Secretary of the Interior, the Marine Mammal Commission, the State of Alaska, and Alaska Native organizations, shall, not later than 180 days after passage of the Amendments of 1994, undertake a scientific research program to monitor the health and stability of the Bering Sea marine ecosystem and to resolve

uncertainties concerning the causes of population declines of marine mammals, sea birds, and other living resources of that marine ecosystem. The program shall address the research recommendations developed by previous workshops on Bering Sea living marine resources, and shall include research on subsistence uses of such resources and ways to provide for the continued opportunity for such uses.

26. Develop a polar bear habitat conservation strategy

In conjunction with Tasks 21, 22, 23, 24, and 25 develop an integrated strategy to protect Alaska polar bear habitat. Involve the public and interested parties in the development of the strategy including the State of Alaska, the Native Community, oil and gas industry, conservation organizations, the Marine Mammal Commission, academic interests, and others. Develop and implement a methodology to collect traditional knowledge of Native residents concerning polar bear habitat use. LOAs may only be issued following Secretarial approval of the Habitat Conservation Strategy within an 18 month time frame, June 1995.

Objective 3: Continue to provide for beneficial human uses of polar bears and evaluate the effect of uses on the population(s)

31. Provide for a subsistence or handicraft and clothing use of polar bears as a priority

Native take of polar bears is monitored primarily by a mandatory tagging program which requires that skins and skulls of polar bears be presented to a representative of the FWS within 30 days after bears are killed. Kill information and specimens are then obtained and skins and skulls are identified with a nylon/plastic interlocking tag. Data gathering and tagging are done in the various villages by local residents under contract to the FWS.

311. Monitor the subsistence harvest and regulate harvests if necessary to maintain populations within OSP (with Task 14)

The present marking/tagging program should continue. Data should be compiled and analyzed on number and sex and age structure of bears taken by village and by population.

312. Collect biological specimens through the harvest monitoring program

Teeth, skull measurements, organs, and tissues should be examined to provide data on the status of harvested bears. Polar bears are top trophic level carnivores and, as such, may concentrate environmental contaminants. Polar bears in several areas in Canada experienced significant increases in organochlorine contaminant loads from 1969 to 1984 (Nordstrom et al. 1988). Tissues collected from Alaskan polar bears in 1967-72 provide baseline levels of contaminants before industrial development occurred on the North Slope (Lentfer 1976). Studies should be repeated to evaluate any changes in concentrations of organochlorine

contaminants loads which may have occurred during the last 20 years. Analyses of existing samples from a backlog of existing FWS tissue samples should be conducted. These samples should be supplemented by new collections as necessary. Tissues should then be collected and analyzed periodically for heavy metals and organochlorines. Resolution 3 of the 1988 meeting of the Polar Bear Specialist Group recommended that tissue samples be collected and analyzed every 5 years for organochlorine contaminants. Analyses will reveal presence and levels of contaminants in the environment, threats to bears, and assess possible danger to coastal residents who eat bears and other organisms in the arctic marine food web. It will be necessary to develop and standardize a protocol for collection and analyses. This should be done in conjunction with Task 111b3.

The former Soviet Union dumped radioactive wastes in its offshore arctic waters during previous years. The distribution and amount of radioactive material within the polar basin and its effect on polar bears and their food web has not been determined. The marine food web should be tested for radioactivity and polar bear tissues should be analyzed to determine possible effects of radioactivity on bears and on subsistence users. The task should be done in conjunction with Task 23.

313. Evaluate and verify results of the harvest monitoring program

With Task 432, develop a working arrangement with the Alaska Polar Bear Commission (Commission) to monitor the harvest of polar bears. Commission and FWS personnel should visit villages where bears are taken. Visits should include consultation with the local tagging officer and polar bear hunters to evaluate if improvement in the completeness and accuracy of tagging data are necessary. Visits should include spot checks of hides and skulls to determine if all bears are being tagged, to determine whether hides and skulls from different bears are getting mixed before tagging, and to determine accuracy of sex as reported by hunters and verified by local tagging officers.

314. Based on results of Task 313 above, determine and implement measures to improve the polar bear harvest monitoring program and acquisition of biological specimens

Actions to improve data and specimen gathering include village meetings and personal contact with hunters to explain the program, better training of tagging officers, and more frequent village visits. With Task 431, develop informational and educational materials to convey uses of and needs for improvement of harvest data.

32. Provide for uses and taking consistent with the MMPA

321. Scientific research

Continue to authorize taking of polar bears for scientific research and public display. Consistent with the terms of the MMPA, the Secretary may permit taking for purposes of bona

fide scientific research. The research must be necessary to further the understanding of the species and may not involve unnecessary duplication of effort. Lethal take for research purposes is not allowed unless nonlethal methods are not available and such research fulfills a critical need.

322. Public Display

Polar bears are occasionally contributed from the wild for public display purposes. In the past, the FWS has placed orphaned polar bear cubs-of-the-year in public zoos and aquaria. This effort recognizes that these animals cannot be rehabilitated and released into the wild and yet provide many educational benefits about wildlife which are otherwise unavailable to the vast majority of the public. Currently, there is a surplus of polar bears in zoos in the United States and the demand for bears from the wild is not great. A practice of implanting birth control devices into females or neutering males by zoos has increased recently and may ultimately affect the supply and consequently the demand for polar bears by public display facilities in the future. The supply of orphaned cubs from Alaska available to zoos is not expected to be great. Only three litters with two cubs per litter have become available in Alaska since 1980. Canada also supplies a small number of bears to zoos in the United States. All bears removed from the wild must be accounted for biologically in appropriate records, allocations, or quotas. New terms of the MMPA require rigorous accountability for marine mammals permited for public display.

323. Defense of Life

The 1994 amendments to the MMPA authorize as a last resort the taking of marine mammals for defense of life. Takes must be reported within 48 hours and hide and skull provided to the FWS.

324. Cultural Exchanges or Personal Effects

Polar bear and other legally possessed marine mammal products may now be exported by any person provided the article is imported by the same individual following travel. Also, Native inhabitants of Russia, Canada, Greenland, and Alaska may import or export items which are part of Native cultural exchange, or as non-commercial personal effects and clothing representing presents or gifts.

325. Importation of Polar Bear Trophies from Canada

Another 1994 amendment to the MMPA authorized the importation of polar bear parts (other than internal organs) taken in sport hunts in Canada, including polar bears taken but not imported prior to the amendments of 1994, to an applicant which submits with its permit application proof that the polar bear was legally harvested in Canada by the applicant.

The following determinations must occur first: that Canada has monitored and enforced sport hunting program consistent with the purposes of the Agreement on the Conservation of Polar Bears; that Canada has a sport hunting program based on scientifically sound quotas ensuring the maintenance of the affected population stock at a sustainable level; that the export and subsequent import are consistent with the provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora and other international agreements and conventions; and that the export and subsequent import are not likely to contribute to illegal trade in bear parts.

A reasonable fee may be collected for permits issued under this paragraph. All fees collected under this paragraph shall be available for use in developing and implementing cooperative research and management programs for the conservation of polar bears in Alaska and Russia.

A scientific review of the impact of permits issued under this paragraph on the polar bear population stocks in Canada will be conducted within 2 years. Public opportunity for comment will be provided.

326. Incidental Take

Authorize the accidental and unintentional taking of small numbers of polar bears by activities found to have a negligible impact on the species' rates of survival and recruitment and their availability for subsistence hunters (see Task 253b). A monitoring component of the incidental take LOA should be implemented to verify the level of take. A monitoring component may as appropriate include assessment of the effect of the activity on the habitat polar bears use.

327. Non-consumptive Uses, Viewing, and Photography

Polar bears may be available seasonally for public viewing and photography on or near shore. Polar bear viewing and photography could increase public awareness and understanding of polar bear ecology and habitat needs, thereby enhancing support for maintaining healthy populations. Economic benefits to coastal residents from a viewing program could accrue through guiding and other service related areas. A predictably consistent supply of polar bears for viewing is necessary in order for bear viewing to be organized as such a program. The most likely location for viewing bears is near villages or whaling camps in the North Slope region of Alaska. The best time is during the spring or fall whaling season.

Generally, local residents and Native hunters are not inclined to promote viewing and photography due to the sensitivity surrounding the issue of subsistence whaling and potential of increased bear human encounters. However, viewing programs which result in the direct disturbance, harassment, or alteration of natural behavior patterns of polar bears may require Federal incidental take Letters of Authorization. Harassment or other acts of negligence, intentional or accidental, which result in taking may result in prosecution.

Under the 1994 MMPA amendments a permit may be issued for photography for educational or commercial purposes involving marine mammals in the wild to an applicant which submits information indicating that the taking will be limited to Level B harassment, and the manner in which the products of such activities will be made available to the public.

Objective 4: Coordinate the cooperative conservation efforts for this plan at the international, national, and local levels and involve Natives and other interested publics

41. Maintain international involvement

411. Continue United States involvement in the Polar Bear Specialists Group

United States biologists contribute to and gain information from the Polar Bear Specialists Group and should continue their affiliation.

412. Implement the provisions of the 1973 Agreement on the Conservation of Polar Bears, consistent with terms of the MMPA (Appendix A)

The 1994 MMPA amendments require that not later than 1 year after the date of enactment, Secretary of the Interior shall, in consultation with the contracting parties, initiate a review of the effectiveness of the Agreement on the Conservation of Polar Bears, as provided for in Article IX of the Agreement, and establish a process by which future reviews shall be conducted.

Further, in consultation with the Secretary of State and the Marine Mammal Commission, shall conduct a review the effectiveness of United States implementation of the Agreement on the Conservation of Polar Bears, particularly with respect to the habitat protection mandates contained in Article II. A report of findings shall be provided to the appropriate Congressional committees not later than April 1, 1995.

412a. Provide permanent protection to important polar bear habitat areas

Article II of the Agreement on the Conservation of Polar Bears states that contracting parties shall take appropriate action to protect polar bear ecosystems, with emphasis on denning and feeding sites and migration routes. To implement this, consideration should be given to creation of seasonal restrictions, sanctuaries, or protective covenants to provide permanent protection to important polar bear habitat. This is especially important where human activities have the potential to disrupt polar bear denning. This task should be done in conjunction with Objective 2, with specific emphasis on task 26.

412b. Prohibit use of aircraft and large vessels for taking polar bears

Article IV of the Polar Bear Agreement states that the use of aircraft and large motorized vessels shall be prohibited in the hunting of polar bears. The United States has not specifically implemented this provision, although the Airborne Hunting Act might be considered to provide partial implementation. However, in instances where polar bears are legally hunted with the use of aircraft by Native subsistence hunters without harassment, the Airborne Hunting Act would not apply. This issue is relevant since polar bears have been taken by Native hunters in isolated instances off the northwest coast of Alaska with the aid of aircraft.

The Inupiat-Inuvialuit management agreement for polar bears of the Beaufort Sea is parallel in construction to the international Agreement and prohibits the use of aircraft or large motorized vessels in hunting polar bears. This is a valuable contribution to deterring abusive harvest practices detrimental to polar bear populations.

412c. Protect cubs, females with cubs, and denning females from hunting

By a resolution to the 1973 Polar Bear Agreement, the member nations advocated the protection of cubs, females with cubs, and the prohibition of hunting in denning areas when bears are moving into, or are already in dens. Regulations have not been enacted in the United States to implement this resolution. The Inupiat-Inuvialuit management agreement for polar bears of the Beaufort Sea states that denning bears and family groups with cubs are protected. However, the hunting season in Alaska, under provisions of the Agreement, is September 1 to May 31, which includes the October-November period when pregnant females are coming to coastal areas to den. Distinction of pregnant adult females from sub-adult males or females is difficult; therefore, restraint from killing single bears located inland is recommended. The Beaufort Sea Agreement does not have enforcement provisions and compliance is voluntary. Provisions of the Agreement do not extend to the Chukchi Sea. Arrangements should be made through user group agreements to provide for more comprehensive protection to females with cubs and denning females in this region.

413. Continue United States involvement with Canadian polar bear research and conservation programs

Alaskan polar bear biologists should continue to participate in meetings of the Canadian Polar Bear Technical Committee because of shared responsibility for bears in the Beaufort Sea. Likewise, North Slope Borough representatives and others involved with polar bears in the Beaufort Sea should continue their interactions with Canadians as part of the agreement between the Inuvialuit Game Council and the North Slope Borough. Cooperative research and conservation programs should continue. Task 325. identifies the managing agencies responsibilities to review and account for the effect of legalized importation of sport harvested polar bear hides from Canada, as implemented in the 1994 amendments.

414. Continue United States involvement with Russian polar bear research and conservation programs

Cooperative polar bear research programs with Russian biologists should continue (Tasks 11, 12, 222) and new cooperative programs should be started.

Polar bear specialists from Russia indicate that hunting of bears in Russia may start again. A United States/Russian conservation agreement should be in place before this occurs. The agreement should address the acquisition and sharing of information and scientific data on the range, size, sex and age composition, critical habitat relationships (i.e., concentrated denning areas, feeding areas, prey base, habitat health, contaminant levels, etc.), and harvest numbers of polar bears of the Chukchi-Bering seas region. The FWS and NBS should aggressively promote continued studies on polar bear population dynamics and habitat use of the area.

The 1994 amendments to the MMPA require the the Secretary of the Interior acting through the Secretary of State and in consultation with the Marine Mammal Commission and the State of Alaska, will consult with the appropriate officials of the Russian Federation on the development and implementation of enhanced cooperative research and management programs for the conservation of polar bears in Alaska and Russia. The Secretary shall report the results of this consultation and provide periodic progress reports on the research and management programs to the appropriate Congressional committees.

42. Maintain involvement on the national level

Communicate with national conservation organizations, advocacy groups, and the general public on polar bear issues. Coordinate the development of conservation legislation and regulatory proposals for polar bears or their habitat. Develop conservation and education materials for public distribution including general biological information, school curricula, material supporting public awareness as fostered in the national FWS event called Outdoor Week, professionals in the school, and other materials. Visits to schools or presentations to the public by professionals to explain research or conservation programs and polar bear ecology should be encouraged.

43. Maintain involvement on the State level through Native hunter advisory committees and other forums

431. Promote and support the creation of an Alaska Polar Bear Commission

Support the formation of an Alaska Polar Bear Commission which shall serve as the central contact point for the FWS on polar bear and Native user issues. Provide technical assistance and advice on biological issues, management planning, research findings and direction, and support for identifying sources of funding which may be use for the operation of the

Commission.

432. Develop a Memorandum of Agreement with the Alaska Polar Bear Commission and the Alaska Department of Fish and Game that defines cooperative responsibilities toward conservation and management of polar bears in Alaska

The FWS should actively work with the following hunter organizations: the NSB Fish and Game Advisory Committee; the Alaska Polar Bear Commission; the Eskimo Walrus Commission; and respective village organizations representing hunters from the community. FWS should develop, through a memorandum of agreement, a management agreement with the Alaska Polar Bear Commission and the Alaska Department of Fish and Game. This agreement should parallel existing agreements for walrus and sea otters.

The 1994 MMPA amendments provide the following direction on this issue and a discussion is included in Section VI. B., Conservation Partnership/Co-Management

433. Integrate knowledge of coastal residents into the conservation plan

Coastal residents of western and northern Alaska are often knowledgeable about local polar bear denning or other aspects of bear ecology in their area; their knowledge should be actively sought and made an integral part of research and conservation programs and other aspects of this Plan. Direct involvement of coastal residents in research and conservation programs is recommended.

434. Develop an public education and outreach program

An information and education program would enhance polar bear conservation in several ways. Target audiences would be identified. Communication among polar bear resource biologists and arctic coastal residents could be improved. Topics on which information could be exchanged include: provisions of the MMPA, the Agreement on the Conservation of Polar Bears, and the Inupiat-Inuvialuit Agreement; biology and life history of polar bears and conservation implications; harvest data; marking/tagging and reporting requirements; specimen needs and collection procedures; research activities and findings; and industrial activities and possible effects on polar bears.

An information and education program designed with industry as the audience could also provide information on topics such as polar bear conservation authorities, polar bear life history, and ways to minimize adverse effects of development activities. An information and education program designed for the general public could also provide information on population status, threats to populations and habitat, and Conservation Plan provisions.

The information and education program should focus on issues identified by the Alaska Polar

Bear Commission as requiring attention.

435. Coordinate and communicate with State of Alaska governmental and conservation organizations

Various State agencies including the Governor's Office, Alaska Departments of Fish and Game, Natural Resources and Environmental Conservation, and others play important roles in the conservation of polar bear. Efforts should continue to expand upon cooperative working relationships with State agencies in the interest of conserving polar bears.

436. Increase communications with local users through establishment of U.S. Fish and Wildlife Service field stations

The FWS polar bear management office is now in Anchorage, and the FWS law enforcement offices responsible for the Arctic coast are in Nome and Fairbanks. The Selawik National Wildlife Refuge is headquartered in Kotzebue and the ANWR maintains a temporary field office in Kaktovik. Interaction with polar bear user groups and efficiency of law enforcement, conservation, and research activities would be improved if permanent field stations on the Arctic coast were established. Barrow is the best location on the northern coast and Kotzebue or Nome are probably the best locations on the western coast.

44. Provide a central contact point for implementing and updating the conservation plan

441. Designate a polar bear conservation plan coordinator

The Marine Mammals Management polar bear program biologist of the FWS will be responsible for coordinating and overseeing implementation of this Plan.

442. Develop a system to better manage and use data relevant to polar bear conservation in Alaska

In cooperation with other agencies responsible for gathering and analyzing data on the arctic environment, a Geographical Information System (GIS) should be developed to store, manipulate, display, analyze, and retrieve data relevant to polar bear conservation. It might include information on polar bear sighting and tracking, den locations, industrial sites, proposed seismic lines and oil well sites, subsistence kills, ice topography and movements, leads and polynyas, ringed seal distribution, etc. Data requiring analysis and interpretation by investigators would not be placed in the data bank until analysis and interpretation were complete. Criteria for the appropriate uses and credit would be established.

443. Conduct periodic review, and revise and update this plan as necessary to reflect new activities, biological findings, and conservation agreements

This Polar Bear Conservation Plan should be reviewed, revised, and updated on a continuing basis. Meetings of interested publics will be scheduled as determined to be necessary by the FWS polar bear program biologist. A five year evaluation of the Plan should be conducted to determine the future plan needs relative to accomplishments.

VI. IMPLEMENTATION

The implementation schedule of the conservation tasks is described in the step-down outline (Table 1). This schedule describes the tasks necessary to accomplish the four primary objectives of this Plan: 1) conserve polar bears; 2) conserve polar bear habitat; 3) provide for beneficial human uses; and 4) coordinate the cooperative conservation efforts at the international, national, and local levels involving Natives and other interested publics. The schedule table lists the task, priority for completion, duration, lead agency and cooperators, estimate of funding required, and comments on the interrelationship of this task to other tasks.

A. Implementation Schedule

Tasks are presented with priority ratings of 1, 2, or 3, the expected duration, agencies with primary responsibility, and cooperators. Priorities likely will change over time and should be reviewed and updated regularly. Highest priority 1 is given to tasks aimed at significantly increasing knowledge of polar bears, their population dynamics, and our ability to determine OSP, and for tasks aimed at minimizing immediate threats to the population. Priority 2 is assigned to those tasks necessary to protect the population from threats that may become significant in the foreseeable future. Tasks that would enhance our understanding of the population and that pertain to lower level threats are designated as Priority 3.

Cost figures in 1993 dollars are approximate (e.g. $\pm$25%) and are only intended to illustrate the relative expense and relationship of costs associated with conducting the various research and conservation tasks. FWS support for the tasks described in the plan will be subject to future appropriations. These values are certain to change as more information becomes available and detailed budgets are prepared. The values do not reflect a commitment on the part of any agency or organization to fund these tasks.

The tasks reflect biological research or information needs which are under or awaiting study by the lead agency and cooperators (listed above). These tasks, with the notable exception of activities requiring amendment to the MMPA, such as implementing the international Agreement on the Conservation of Polar Bears, can be accomplished under existing authorities of the MMPA. Tasks requiring amendment to the MMPA are so identified in the comments

column of the table.

The recent formation of the National Biological Survey (NBS) in October 1993 should be noted when reviewing implementation tasks. Certain research programs previously associated with the following agencies were combined to form NBS: FWS, NPS, BLM, and MMS. The roles and responsibilities of this organization are evolving, although it is expected that NBS will continue many of the research functions for polar bears. Because of this recent change and the uncertainty of roles and responsibilities for the newly emerging NBS, research functions previously identified as a FWS responsibility have accordingly been assigned to NBS. Future clarification or revision of these roles may be necessary.

Table 1. Polar Bear Conservation and Implementation Schedule

POLAR BEAR CONSERVATION PLAN IMPLEMENTATION SCHEDULE						Est. Fiscal Year Costs					
	TASK			AGENCY		(thousands of dollars) * Cost estimates for sub-tasks are independent of other tasks, unless noted otherwise in comments					
Brief Description of Task	**#**	**Priority**	**Duration**	**Lead**	**Coop**	**Year 1 (FY94)**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Comments**
Describe seasonal, annual, and multi-annual movements	111	1	4	NBS	RUS CWS	200	200	100	50	----	telemetry
Describe activity areas and characterize their importance	111a	1	4	NBS	MMS IND	100	100	50	25	----	
Evaluate genetic and chemical indicators of movement	111b	2	5	NBS FWS	UAF CONT	50	50	50	50	50	DNA, blood, carbon isotope
Identify populations, seasonal use, and rates of exchange	112	1	4	NBS	FWS	----	75	50	50	30	telemetry w/111.
Determine size of both Alaska polar bear populations stocks	12	1	5	FWS NBS	CONT RUS	-----	200 B 400 C	200 B 50C	50B 50C	50B 50C	B=Beaufort Sea C=Chukchi Sea
Identify and test census methodologies appropriate for each management zone	121 122	1	3	NBS FWS	CONT RUS NBS	250	150	50	----	----	
Implement the preferred methodology	123	1	1	FWS	CONT RUS NBS	----	----	----	600	----	date to be determined

POLAR BEAR CONSERVATION PLAN IMPLEMENTATION SCHEDULE						Est. Fiscal Year Costs					
	TASK			AGENCY		(thousands of dollars) * Cost estimates for sub-tasks are independent of other tasks, unless noted otherwise in comments					
Brief Description of Task	**#**	**Priority**	**Duration**	**Lead**	**Coop**	**Year 1** (FY94)	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Comments**
Define OSP range and population trend	13	1	5	NBS	ACAD CONT MMC	500B 500C	500 B 500 C	500 B 500 C	500 B 500 C	500 B 500 C	B=Beaufort Sea C=Chukchi Sea relational data base
Evaluate and modify population models to estimate OSP	131	2	3	NBS FWS	ACAD CWS	----	175	75	75	----	
Refine population parameters	132	1	5	NBS FWS	CANR US	75	75	75	75	75	mark recapture
Evaluate environmental factors affecting OSP	133	2	5	NBS FWS	NMFS ADF& G	200	200	200	200	200	
Develop an index for the population	134	2	5	FWS NBS	MMS CANR US	50	50	50	50	50	
Maintain populations within OSP	14	1	5	FWS	NAT	TBD	----	----	----	----	
Determine sex/age specific mortality	141	1	5	FWS NBS	MMC ACAD	----	----	----	----	----	included in Task 13.,OSP
Collect information on condition-bears captured for research	142a	1	5	NBS	MMC ACAD	----	----	----	----	----	includes in Task 13., OSP
Collect information on condition-bears killed for subsistence	142b	2	5	NAT FWS	UAF CONT	20	20	20	20	20	

POLAR BEAR CONSERVATION PLAN IMPLEMENTATION SCHEDULE						Est. Fiscal Year Costs					
	TASK			AGENCY		(thousands of dollars) * Cost estimates for sub-tasks are independent of other tasks, unless noted otherwise in comments					
Brief Description of Task	**#**	**Priority**	**Duration**	**Lead**	**Coop**	**Year 1** (FY94)	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Comments**
Evaluate prey availability/food habits	142c	2	5	NBS	UAF ADF&G NMFS	300	300	300	300	300	
Evaluate disease factors	142d	3	5	NBS	ADF&G MMS	50	25	25	25	25	
Prevent populations from declining below OSP	143	1	5	FWS	NAT MMC	TBD	----	----	----	----	with Task 14.
Determine relationships of polar bears and sea-ice habitats	21	2	3	NBS	UAF CONT NOAA	100	100	100			when technology is developed
Quantify Alaska denning habitats	221	1	3	NBS	MMS MMC FWS	125	75	50			
Quantify Canadian and Russian denning habitats	222	1	TBD	NBS	CANR US NBS	TBD	----	----	----	----	
Evaluate environmental contaminants	23	1	4	FWS	NAT EPA	100	100	45	45	----	
Identify habitats essential to polar bears	24	2	5	FWS	NBS NAT MMC	TBD	----	----	----	----	contingent upon other tasks

POLAR BEAR CONSERVATION PLAN IMPLEMENTATION SCHEDULE						Est. Fiscal Year Costs					
	TASK			AGENCY		(thousands of dollars) * Cost estimates for sub-tasks are independent of other tasks, unless noted otherwise in comments					
Brief Description of Task	**#**	**Priority**	**Duration**	**Lead**	**Coop**	**Year 1** (FY94)	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Comments**
Identify effects of development on polar bear habitat	251	2	5	FWS ADF&G	MMS ADNR	200	200	200	200	200	coordinated with industry
Identify data gaps regarding effects of development on polar bears or habitat--design studies	252a	2	5	FWS ADF&G MMS	CONS NAT NBS	50	25	10	10	10	ongoing with other studies
Monitor behavioral responses of polar bears to development activities	252b	2	5	NBS FWS MMS	ADF&G IND NSB	300	300	300	100	50	
Review assessment, licensing, regulatory, and monitoring programs	253a	2	1	FWS ADF&G MMS	DNR NAT	TBD					
Monitor effects of ongoing development	253b	1	5	FWS ADF&G MMS	IND NSB	200	200	100	50	50	with incidental take program
Reduce bear/human encounters	253c	2	5	FWS ADF&G MMS	IND NSB	80	80	80	80	80	with incidental take program

POLAR BEAR CONSERVATION PLAN IMPLEMENTATION SCHEDULE						Est. Fiscal Year Costs					
	TASK			AGENCY		(thousands of dollars) * Cost estimates for sub-tasks are independent of other tasks, unless noted otherwise in comments					
Brief Description of Task	**#**	**Priority**	**Duration**	**Lead**	**Coop**	**Year 1** (FY94)	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Comments**
Develop/update emergency oil spill response plans	253d	2	2	FWS	USCG ADNR IND	20	10	----	----	----	
Implement MMPA amendments to increase habitat protection	253e	1	1	FWS	MMC ADF&G NMFS	25					implements the International Agreement
Develop an Alaska polar bear habitat conservation strategy	26	1	1.5	FWS	ADF&G NAT CONS IND	80	50				
Monitor subsistence harvests and maintain populations within OSP	311	1	5	NAT FWS		45	45	45	45	45	
Collect biological specimens from harvested bears	312	1	5	NAT FWS	CONT	30	30	30	30	30	
Evaluate and verify harvest monitoring results (MTRP)	313	1	3	FWS	MMS CONT	30	30	20	----	----	
Implement improvements in the harvest monitoring program (MTRP)	314	1	unk	NAT FWS	CONT	TBD	----	----	----	----	dependent on Task 313.
Provide for scientific research	321	2	5	FWS		5	5	5	5	5	annual need
Provide for Public Display	322	2	5	FWS	MMC	TBD					
Provide for Defense of Life	323	3	5	FWS							

POLAR BEAR CONSERVATION PLAN IMPLEMENTATION SCHEDULE						Est. Fiscal Year Costs					
	TASK			AGENCY		(thousands of dollars) * Cost estimates for sub-tasks are independent of other tasks, unless noted otherwise in comments					
Brief Description of Task	**#**	**Priority**	**Duration**	**Lead**	**Coop**	**Year 1** (FY94)	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Comments**
Provide for Cultural Exchanges	324	2	5	FWS							
Provide Importation of Polar Bear Trophy's from Canada	325	2	3	FWS	CONS	20	15	15			
Provide for regulated incidental take	326	1	5	FWS	ADF&G IND	55	55	55	55	55	contingent upon demand
Provide for non-consumptive uses (photography and viewing)	327	2	5	FWS	NAT	----	----	----	----	----	no cost estimate
Maintain international involvement, continuing participation in the Polar Bear Specialist Group	411	3	5	FWS NBS	NAT	15	15	15	15	15	
Implement provisions of the Agreement on the Conservation of Polar bears	412	1	5	FWS NBS	NAT MMC DOS ADF&G	35	35	20	20	20	dependent upon change of MMPA or dev. regs.
Continue involvement with Canadian research and management programs	413	1	5	FWS NBS NAT	CAN NSB	20	20	20	20	20	publications/ meetings
Continue involvement with Russian research and management programs	414	1	5	FWS NBS NAT	RUS	50	50	50	50	50	publications/ meetings/bilate-ral agreements

POLAR BEAR CONSERVATION PLAN IMPLEMENTATION SCHEDULE						Est. Fiscal Year Costs					
	TASK			AGENCY		(thousands of dollars) * Cost estimates for sub-tasks are independent of other tasks, unless noted otherwise in comments					
Brief Description of Task	**#**	**Priority**	**Duration**	**Lead**	**Coop**	**Year 1** (FY94)	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Comments**
Continue involvement at the national level	42	2	5	FWS NAT	CONS ADF&G	20	20	20	20	20	
Maintain involvement on the State level through Native advisory committees and other forums	43	1	5	FWS NAT	CONS	125	125	100	100	100	fund hunter committees
Support formation of an Alaska Polar Bear Commission	431	1	1	FWS NAT	ADF&G CONS						
Develop a MOA, define responsibilities	432	1	1	FWS NAT NAT ADF&G							
Integrate knowledge of coastal residents into elements of the conservation plan	433	1	5	FWS NAT		TBD	----	----	----	----	
Develop an information and education program	434	1	5	FWS NAT	CONS	95	95	75	25	25	
Coordinate with State of Alaska governmental and conservation organizations	435	2	5	FWS ADF&G CONS	NAT IND	TBD	----	----	----	----	

POLAR BEAR CONSERVATION PLAN IMPLEMENTATION SCHEDULE						Est. Fiscal Year Costs					
	TASK			AGENCY		(thousands of dollars) * Cost estimates for sub-tasks are independent of other tasks, unless noted otherwise in comments					
Brief Description of Task	**#**	**Priority**	**Duration**	**Lead**	**Coop**	**Year 1** (FY94)	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Comments**
Increase direct communication with local users--establish field stations in coastal villages	436	2	5	FWS		300	300	150	150	150	

POLAR BEAR CONSERVATION PLAN IMPLEMENTATION SCHEDULE						Est. Fiscal Year Costs					
	TASK			AGENCY		(thousands of dollars) * Cost estimates for sub-tasks are independent of other tasks, unless noted otherwise in comments					
Brief Description of Task	**#**	**Priority**	**Duration**	**Lead**	**Coop**	**Year 1** (FY94)	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Comments**
Provide a central contact point for implementing and updating the conservation plan	44	2	5	FWS		10	10	10	10	10	
Designate a polar bear conservation plan coordinator	441	2	5	FWS							preceding Task
Develop a central system to manage and use data relevant to polar bear conservation	442	2	5	FWS NBS MMS	ADF&G ACAD CONT	100	100	100	100	100	
Conduct periodic meetings to review the Plan	443	3	5	FWS MMC	ADF&G CONS NAT						

* Cost estimates for sub-tasks are independent of other tasks, unless noted otherwise in comments

B. Conservation Partnerships/Co-Management

Direction was provided in the 1994 MMPA amendments which specify that the Secretary may enter into cooperative agreements with Alaska Native organizations to conserve marine mammals and provide co-management of subsistence use by Alaska Natives.

Agreements entered into under this section may include grants to Alaska Native organizations for, among other purposes:

1) collecting and analyzing data on marine mammal populations;

2) monitoring the harvest of marine mammals for subsistence use;

3) participating in marine mammal research conducted by the Federal Government, States, academic institutions, and private organizations; and

4) developing marine mammal co-management structures with Federal and State agencies.

Nothing in this section is intended or shall be construed as authorizing any expansion or change in the respective jurisdiction of Federal, State, or tribal governments over fish and wildlife resources; or as altering in any respect the existing political or legal status of Alaska Natives, or the governmental or jurisdictional status of Alaska Native communities or Alaska Native entities.

Further, the Secretary of Commerce, in consultation with the Secretary of the Interior, the Marine Mammal Commission, the State of Alaska, and Alaska Native organizations, shall, undertake a scientific research program to monitor the health and stability of the Bering Sea marine ecosystem and to resolve uncertainties concerning the causes of population declines of marine mammals, sea birds, and other living resources by November 1994. The program shall address the research recommendations developed by previous workshops on Bering Sea living marine resources, and shall include research on subsistence uses of such resources and ways to provide for the continued opportunity for such uses.

The research program undertaken should, to the extent possible, be conducted in Alaska. The Secretary of Commerce shall utilize, where appropriate, traditional local knowledge and may contract with a qualified Alaska Native organization to conduct such research.

Future polar bear harvest conservation programs in Alaska will rely on development and implementation of cooperative agreements with Native hunting organizations similar to those discussed or identified in III.B.4, IV.G., and V.B.43. A primary intent is to develop partnerships with the end user group of polar bears, Native hunters or their organizations, in order to maintain healthy polar bear populations. Currently, the FWS provides technical

assistance to the NSB in implementation of the Polar Bear Management Agreement for the Southern Beaufort Sea. Hunters in western Alaska are not represented by a similar organization, although formation of an Alaska Native Polar Bear Commission (Commission) for the entire State is imminent. Similar successful working relationships have been fostered in Alaska for bowhead and beluga whales through the EWC and NSB, and for polar bears in many regions of Canada.

Cooperative conservation agreements could be developed between the FWS and the proposed Alaska Polar Bear Commission. The following are the general conservation objectives from the Management Agreement for the Southern Beaufort Sea which could be used as a model for the western region: 1) to maintain healthy, viable populations; 2) to provide the maximum amount of protection to female polar bears; 3) to minimize detrimental effects of human activities on polar bear habitat; 4) to manage polar bears on a sustained yield basis; 5) and to encourage the collection of adequate technical information on a timely basis to facilitate management decisions.

Sound biological data on population size and sustainable yield would be a cornerstone to future cooperative ventures. While the precise roles and responsibilities for this arrangement have not been formed the following is provided in a conceptual sense. Under such an arrangement the FWS would provide data on population status and trends, sustainable yield estimates, and a jointly conducted specimen acquisition program to evaluate health and life history parameters of harvested animals. FWS would provide additional technical assistance to the Alaska Polar Bear Commission and collaborate, develop and produce educational and outreach materials for the polar bear Commission. The FWS could provide technical assistance and advice to the Commission in identifying and obtaining funds through grant proposals or matching fund programs available through non-governmental organizations. Research and conservation tasks identified in the preceding implementation schedule would be conducted as identified by priority and within agency budget and personnel constraints. Knowledge of coastal Natives would be integrated into the implementation of biological tasks.

As a priority, the Alaska Polar Bear Commission would be responsible for working with their membership to apportion the sustainable harvest and assure compliance with harvest guidelines. Harvest guidelines would be based on the sex/age composition of ongoing or anticipated harvests and endorsement by Native hunters organizations. Hunter conformance to guidelines would be enhanced through informational and educational materials (e.g. advocate harvesting male polar bears and conserving adult females; provide examples of the effect of various harvest strategies on population growth or stability). A strength of cooperative management conservation agreements is that self regulation may be more acceptable to Native hunting communities than a system in which outside interests impose requirements or limits.

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VIII. APPENDICES

Appendix A. Agreement on the Conservation of Polar Bears

The Governments of Canada, Denmark, Norway, and the Union of Soviet Socialist republics, and the United States of America,

Recognizing the special responsibilities and special interests of the States of the Arctic Region in relation to the protection of the fauna and flora of the Arctic Region;

Recognizing that the polar bear is a significant resource of the Arctic Region which requires additional protection;

Having decided that such protection should be achieved through co-ordinated national measures taken by the States of the Arctic Region;

Desiring to take immediate action to bring further conservation and management measures into effect;

Have agreed as follows:

ARTICLE I

1. The taking of polar bears shall be prohibited except as provided in Article III.

2. For the purpose of this Agreement, the term "taking" includes hunting, killing and capturing.

ARTICLE II

Each Contracting Party shall take appropriate action to protect the ecosystems of which polar bears are part, with special attention to habitat components such as denning and feeding sites and migration patterns and shall manage polar bear populations in accordance with sound conservation practices based on the best available scientific data.

ARTICLE III

1. Subject to the provisions of Articles II and IV, and Contracting Party may allow the taking of polar bears when such taking is carried out:

(a) for *bona fide* scientific purposes; or

(b) by that Party for conservation purposes; or

(c) to prevent serious disturbance of the management of other living resources, subject to forfeiture to that Party of the skins and other items of value resulting form such taking; or

(d) by local people using traditional methods inthe exercise of their traditional rights and in accordance with the laws of that Party; or

(e) wherever polar bears have or might have been subject to taking by traditional means by its nationals.

2. The skins and other items of value resulting from taking under sub-paragraphs (b) and (c) of paragraph 1 of this Article shall not be available for commercial purposes.

ARTICLE IV

The use of aircraft and large motorized vessels for the purpose of taking polar bears shall be prohibited, except where the application of such prohibition would be inconsistent with domestic laws.

ARTICLE V

A Contracting Party shall prohibit the exportation from, the importation and delivery into, and traffic within, its territory of polar bears or any part or product thereof taken in violation of this Agreement.

ARTICLE VI

1. Each Contracting Party shall enact and enforce such legislation and other measures as may be necessary for the purpose of giving effect to this Agreement.

2. Nothing in this Agreement shall prevent a Contracting Party from maintaining or amending existing legislation or other measures or establishing new measures on the taking of polar bears so as to provide more stringent controls than those required under the provisions of this Agreement.

ARTICLE VII

The Contracting Parties shall conduct national research programs on polar bears, particularly research relating to the conservation and management of the species. They shall as appropriate coordinate such research with research carried out by other Parties, consult with other Parties on the management of migrating polar bear populations, and exchange information on research and management programs, research results and data on bears taken.

ARTICLE VIII

Each Contracting Party shall take action as appropriate to promote compliance with the provisions of the Agreement by nationals of States not party to this Agreement.

ARTICLE IX

The Contracting Parties shall continue to consult with one another with the object of giving further protection to polar bears.

ARTICLE X

1. This Agreement shall be open for signature at Oslo by the Governments of Canada, Denmark, Norway, the Union of Soviet Socialist Republics and the United States of America until 31st March 1974.

2. This Agreement shall be subject to ratification or approval by the signatory Governments. Instruments of ratification or approval shall be deposited with the Government of Norway as soon as possible.

3. This Agreement shall be open for accession by the Governments referred to in paragraph 1 of this Article. Instruments of accession shall be deposited with the Depositary Government.

4. This Agreement shall enter into force ninety days after the deposit of the third instrument of ratification, approval, or accession. Thereafter, it shall enter into force for a signatory or acceding Government on the date of deposit of its instrument of ratification, approval or accession.

5. This Agreement shall remain in force initially for a period of five years from its date of entry into force, and unless any Contracting party during that period requests the termination of the Agreement at the end of that period, it shall continue in force thereafter.

6. On the request addressed to the Depositary Government by any of the Governments referred to in paragraph 1 of this Article, consultations shall be conducted with a view to convening a meeting of representatives of the five Governments to consider the revision or amendment of this Agreement.

7. Any Party may denounce this Agreement by written notification to the Depositary Government at any time after five years from the date of entry into force of the Agreement. The denunciation shall take effect twelve months after the Depositary Government has received the notification.

8. The Depositary Government shall notify the Governments referred to in paragraph 1 of this Article of the deposit of instruments of ratification, approval or accession, of the entry into force of this Agreement and of the receipt of notifications of denunciation and any other communications from a Contracting Party specifically provided for in this Agreement.

9. The original of this Agreement shall be deposited with the Government of Norway which shall deliver certified copies thereof to each of the Governments referred to in paragraph 1 of this Article.

10. The Depositary Government shall transmit certified copies of this Agreement to the Secretary General of the United Nations for registration and publication in accordance with Article 102 of the Charter of the United Nations.

IN WITNESS WHEREOF the undersigned, being duly authorized by their Governments, have signed this Agreement.

DONE at Oslo, in the English and Russian languages, each text being equally authentic, this fifteenth day of November, 1973.

I hereby certify that this is a true copy of the original document deposited in the archive of the Royal Norwegian Ministry of Foreign Affairs.

Per Tresselt.
Head of Division, Legal Department
Royal Norwegian Ministry of Foreign Affairs.

Resolution appended to the 1973 Agreement on the Conservation of Polar Bears by the Plenipotentiaries who signed the Polar Bear Agreement

RESOLUTION ON SPECIAL PROTECTION MEASURES

THE CONFERENCE,

BEING CONVINCED that female polar bears with cubs and their cubs should receive special protection;

BEING CONVINCED FURTHER that the measures suggested below are generally accepted by knowledgeable scientists to be sound conservation practices within the meaning of Article II of the Agreement on the Conservation of Polar Bears;

HEREBY REQUESTS the Governments of Canada, Denmark, Norway, the Union of Socialist Republics and the United States of America to take such steps as possible to:

1. Provide a complete ban on the hunting of female polar bears with cubs and their cubs; and

2. Prohibit the hunting of polar bears in denning areas during periods when bears are moving into denning areas or are in dens.

Appendix B. Canadian Declaration on the Ratification of the Agreement on the Conservation of Polar Bears

DECLARATION

In depositing this Instrument of ratification the Government of Canada declared as follows:

1. The Government of Canada interprets the phrase "scientific purposes" in Article III, paragraph 1(a) as including scientific "research" and scientific "management" and considers that the term "taking" in Article III, paragraph 1, includes the capturing and killing of polar bears by the use of various means, including "aircraft and large motor vessels", in order to meet the requirements of Article VII, despite the general prohibition of such means contained in Article IV.

2. As regards the hunting rights of local people, protected under Article III, paragraph 1, sub-paragraphs (d) and (e), Canadian practice is based on the following considerations:

(a) Research data, compiled annually by the Federal-Provincial Polar Bear Technical Committee, indicate that there is, in Canada, a harvestable quantity of polar bears. On the basis of these biological data the Committee recommends annual management quotas for each sub-population.

(b) The polar bear hunt in Canada is an important traditional right and cultural element of the Inuit (Eskimo) and Indian peoples. In certain cases this hunt may extend some distance seaward. Traditional methods are followed in this hunt.

(c) In the exercise of these traditional polar bear hunting rights, and based on the clause "in accordance with the laws of that Party" the local people in a settlement may authorize the selling of a polar bear permit from the sub-population quota to a non-Inuit or non-Indian hunter, but with additional restrictions providing that the hunt be conducted under the guidance of a native hunter and by using dog team and be conducted within Canadian jurisdiction.

The Government of Canada therefore interprets Article III, paragraph 1, sub-paragraphs (d) and (e) as permitting a token sports hunt based on scientifically sound settlement quotas as an exercise of the traditional rights of the local people.

3. The government of Canada interprets the requirement to "consult" in Article VII as applying only when any other party requests such consultation, not as imposing a requirement to hold consultations annually.

Appendix C. Inupiat-Inuvialuit Management Agreement for Polar Bears of the Southern Beaufort Sea

The Inuvialuit of Canada and the Inupiat of the United States,

Noting that both groups have traditionally harvested a portion of polar bears from the same population in the southern Beaufort Sea;

And Noting that the continued hunting of polar bears is essential to maintain the dietary, cultural and economic base of the groups;

And Noting that the maintenance of a sustained harvest for traditional users in perpetuity requires that the number of polar bears taken annually not exceed the productivity of the population;

And Noting that the International Agreement on the Conservation of Polar Bears makes provision for cooperation in the research and management of shared populations;

And Noting that nothing in this Agreement shall be read to abrogate the responsibilities of Federal, Provincial or State authorities under existing or future statutes;

And Noting that the Inuvialuit and the Inupiat will have a long-term fundamental influence on the maintenance and use of this resource and that the efforts of other parties will also be required to ensure effective conservation;

Have agreed as follows:

ARTICLE I

Definitions:

(a) The species considered in this Agreement is the polar bear (Ursus maritimus).

(b) The area covered by this Agreement is the southern Beaufort Sea from approximately Baillie Islands, Canada, in the east to Icy Cape, USA in the west.

(c) The people covered by this Agreement are the Inuvialuit of Canada and the Inupiat of the North Slope of Alaska.

(d) The settlements whose hunting practices may be affected by this Agreement are Barrow, Nuiqsut, Wainwright, Atqasuk and Kaktovik in the United States and Inuvik, Aklavik, Tuktoyuktuk and Paulatuk in Canada.

(e) Sustained yield is a level of taking which does not exceed recruitment and is consistent with population ranges determined to be optimal and sustainable.

(f) The Joint Commission shall consist of two (2) representatives designated by each of the Inuvialuit Game Council and the North Slope Borough Fish and Game Management Committee. The Technical Advisory Committee shall be appointed by the Joint Commission.

ARTICLE II

Objectives:

(a) To maintain a healthy viable population of polar bears in the southern Beaufort Sea in perpetuity.

(b) To provide the maximum amount of protection to female polar bears.

(c) To minimize detrimental effects of human activities, especially industrial activities, on important bear habitat.

(d) To manage polar bears on a sustained yield basis in accordance with all the best information available.

(e) To encourage the collection of adequate technical information on a timely basis to facilitate management decisions.

(f) To further refine the eastern and western boundaries of the population of polar bears.

(g) To encourage the wise use of polar bear products and by-products within the context of management on a sustained yield basis.

(h) To facilitate the exchange of polar meat and products between traditional users in Alaska and Canada **(Enabling legislation required)**.

(i) To legalize the sale of polar bear hides and by-products by the traditional Alaskan users in Alaska **(Enabling legislation required)**.

(j) To facilitate the export of polar bear hides and other polar bear products from the Western Arctic of Canada into the USA **(Enabling legislation required)**.

(k) To consider at a later date a limited legalized Alaskan sport harvest of polar bears which emphasizes benefits to local hunters of the area **(Enabling legislation required for Federal management)**.

ARTICLE III

Regulations; to conserve this population of polar bears, the Inuvialuit and the Inupiat have agreed as follows:

(a) All bears in dens or constructing dens are protected.

(b) Family groups made up of female and cubs-of-the-year or yearlings are protected. The birthdate of cubs is fixed at January 1 and cubs less than five feet (152 cm.) in straight line body length are protected.

(c) The hunting season shall extend from December 1 to May 31 in Canada and from September 1 to May 31 in Alaska.

(d) The annual sustainable harvest shall be determined by the Technical Advisory Committee in consultation with the Joint Commission and shall be divided between Canada and Alaska according to annual review of scientific evidence. Allocation agreements shall be negotiated and ratified prior to September 1 annually. Each signatory to this Agreement shall determine for itself the distribution of the harvest within its jurisdiction.

(e) These regulations do not preclude either party from unilaterally introducing additional conservation practices within their own jurisdictions.

(f) Any readjustment of the boundaries pursuant to the above may necessitate a readjustment of user allocations under the management plan.

(g) The use of aircraft or large motorized vessels for the purpose of taking polar bears shall be prohibited.

(h) Each jurisdiction shall prohibit the exportation from, the importation and delivery into, and traffic within, its territory of polar bears or any part or product thereof taken in violation of this Agreement.

(i) Polar bears in villages during closed seasons should be deterred from the area.

(j) Polar bears threatening human safety or property may be taken at any time of the year and may be counted against the village allocation as ascribed by the Joint Commission.

ARTICLE IV

Collection of Data and Sharing of Information:

(a) The following data will be recorded for each bear killed: sex, date and location of the kill, and hunter's name.

(b) The following shall be collected from each bear killed: an undamaged post-canine tooth, ear tags or lip tatoos if the tags are missing, other specimens as agreed to by the hunters of either jurisdiction for additional studies.

(c) A summary of all harvest information from each jurisdiction shall be exchanged annually.

(d) The number of collars deployed for research purposes shall be limited to the minimum number necessary to provide accurate population information.

ARTICLE V

Duration of Agreement:

(a) This Agreement shall enter into force when it has been signed by the representative of both parties.

(b) This Agreement shall remain in force unless either Contracting Party requests it be terminated.

(c) Amendments to the Agreement may be proposed by either signatory and accepted or rejected by mutual agreement after consultation with the North Slope Borough Fish and Game Management Committee.

The Alaskan signatories of this document have no authority, to bind and do not purport to bind the North Slope Borough to any agreement which would otherwise be in violation of the exclusive federal treaty power established by the United States Constitution, but are acting solely as representatives of the local traditional user group of the polar bear resource in furthering the consultation, management, and information exchange goals of the International Agreement on the Conservation of Polar Bears.

SIGNED on this the 29th day of January, 1988 in the Town of Inuvik, Northwest Territories.

On behalf of the North Slope Inupiat

Nolan Solomon, Chairman North Slope Borough, Fish & Game Management Committee
Benjamin P. Nageak, Director, North Slope Borough,Department of Wildlife Management

On behalf of the Inuvialuit Game Council

Alex Aviugana, Chairman, Inuvialuit Game Council
Andy Carpenter, Vice Chairman, Wildlife Management Advisory Council (N.W.T.)

Appendix D. Protocol of Intentions on the Conservation and Regulated Use of the Bering and Chukchi Seas Polar Bear Population Common to the United States and Russia

The Parties to the Protocol

Guided by the Agreement on the Conservation of Polar Bears between Denmark, Canada, Norway, USSR, and United States (1973);

Attaching great significance to the study, conservation and regulated use of the Bering and Chukchi Seas polar bear population common to the United Sates and Russia;

Recognizing that population's unique role in the lives of the indigenous Native peoples of Alaska and Chukotka, in the preservation and development of traditional ways of life and maintenance of ecological security in those regions;

Noting the fragility of the Bering and Chukchi Seas ecosystems and the international status of the polar bear habitat including denning, feeding areas, and migratory routes;

Guided by principles of sustainable use of the polar bear population and maintenance of its optimum sustainable population level;

Acknowledging the equal rights of each country to the use of the shared population;

Have decided:

1. In order to review all issues regarding the study, regulated use, and conservation of the polar bear population of the Bering and Chukchi Seas, the Ministry of Ecology and Natural Resources of the Russian Federation, the Association of Native Peoples of Chukotka and Kolyma, the U.S. Fish and Wildlife Service, and indigenous Natives of local communities of the West and Northwest coasts of Alaska will combine efforts to develop a management agreement for the Bering and Chukchi Seas polar bear population.

2. That such an agreement should specify the forms of cooperation, giving priority to the following: exchange of ecological information on the status of the Bering and chukchi Seas polar bear population common to the United States and Russia with particular emphasis on evaluation of population abundance and regulation of its use; coordination and cooperation with international and Native organizations whose activities are connected with the study and conservation of polar bears; biomonitoring using coordinated methodologies; joint field research; coordination of polar bear conservation and management activities; and exchange of information on environmental legislation.

3. That it is essential to create special working groups composed of representatives of both government agencies as well as Native peoples to prepare proposals for such an agreement.

4. By mutual agreement, to convene a meeting of working groups composed of representatives of both government agencies as well as Native peoples to prepare proposals for such an agreement.

DONE on October 22, 1992 at Anchorage (Alaska, United States) in duplicate, in the English and Russian languages, both texts being equally authentic.

for the Ministry of Ecology and
Natural Resources
of the Russian Federation

Grigoriy K. Kovalyov
Deputy Director
Main Directorate of Biological
Natural Resources

for the Fish and Wildlife and Wildlife
United States Dept. of Interior
United States

Walter O. Stieglitz
Regional Director
Alaska Region

Appendix E. Protocol of Intentions Between the Indigenous Peoples of Chukotka and Alaska on the Conservation, Protection, Management, and Study of the Bering and Chukchi Seas Shared Polar Bear Population

The Parties to the Protocol:

Guided by

The Convention of the International Labor Organization #169 regarding the indigenous and nomadic peoples in independent countries, the Arctic Environmental Protection Declaration (Rovaniemi, 1991), The Protocol of Intentions on the Conservation and Regulated Use of the Bering and Chukchi Seas Polar Bear Population (1992), signed by the Ministry of Ecology and Natural Resources of the Russian Federation and the U.S. Fish and Wildlife Service, The Nuuk Declaration on the Arctic Development and Environment (1993), and The Resolutions of the 1st Congress of Indigenous Minorities of Chukotka (Anadyr, 1994),

and

Recognizing that population's unique role in the lives of the indigenous Native peoples in the preservation and development of their traditional ways of life, and noting the fragility and vulnerability of the Bering and Chukchi Seas ecosystems and the international status of the polar bear habitat including migratory routes, and recognizing the mutual concerns of Alaskan and Chukotkan users,
Have decided:

1. In order to review all issues regarding the study conservation and management of the shared polar bear population of the Bering and Chukchi Seas, to combine efforts of indigenous villages of the northern coastal areas of Chukotka and western and north-western coasts of Alaska to develop and Agreement for the joint management for the Bering and Chukchi Seas polar bear population.

2. The Agreement should follow the following priority principles of cooperation between the indigenous peoples of Chukotka and Alaska:

    a. The text of the agreement must not contradict the International Agreement on the Conservation of Polar Bears (1973);

    b. It is essential to create a special working group composed of representatives of Indigenous peoples which must be involved in the work between the federal agencies of Russia and United States in the development of an international agreement between the United States and Russia;

    c. The Agreement must provide for a unified system of management of the polar

bear population and protection of polar bear habitats on the basis of western scientific knowledge and the traditional knowledge of Natives and on the basis of their concerns of national subsistence use, including exchange of environmental information, estimates of population, coordination of activity on conservation, protection and management of the shared population, and exchange of information on environmental jurisdiction;

d. The Agreement must provide for the development of measures based on sustainable management and harvesting of the polar bear population by the indigenous peoples of Chukotka and Alaska as a source of food and subsistence use.

e. The Agreement must take into consideration the appropriate environmental federal laws relating to Chukotka and Alaska and should assess responsibility for violating the requirements of the united management of the shared polar bear population.

3. This Protocol is a provisional one providing the basis for the future development of a more detailed plan and joint agreements on the management, study, and conservation of the shared polar bear population by indigenous peoples of Chukotka and Alaska with the participation of federal agencies and the federal governments of Russia and United States.

4. To hold a meeting of Working Groups in 1994 in order to develop an Agreement between Native peoples of Chukotka and Alaska on the joint management of the shared polar bear population.

DONE on April, 25, 1994 at Anadyr (Chukotka, Russia) in duplicate, in the English and Russian languages, both texts being equally authentic.

On behalf of the Chukotka Natives

Alexander A. Omrypkir
President
Chukotka Native Association

Zoya V. Baomaeva
Chairman of the Elders Council
Chukotka Native Association

On behalf of Natives of Alaska

Charles H. Johnson
Executive Director
Eskimo Walrus Commission

Charles D.N. Brower
Executive Manager
Dept. of Wildlife Mgmt., NSB

Walter G. Sampson
Vice President Land
NANA Region Corporation