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Kenai National Wildlife Refuge : summary

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# Kenai

## National Wildlife Refuge

Summary

Draft

Comprehensive  
Conservation  
Plan

Environmental  
Impact  
Statement

Wilderness  
Review





## KENAI NATIONAL WILDLIFE REFUGE

### SUMMARY DRAFT COMPREHENSIVE CONSERVATION PLAN, ENVIRONMENTAL IMPACT STATEMENT AND WILDERNESS REVIEW

U.S. Fish and Wildlife Service  
Region 7, 1011 East Tudor Road  
Anchorage, Alaska 99503

DECEMBER 1983

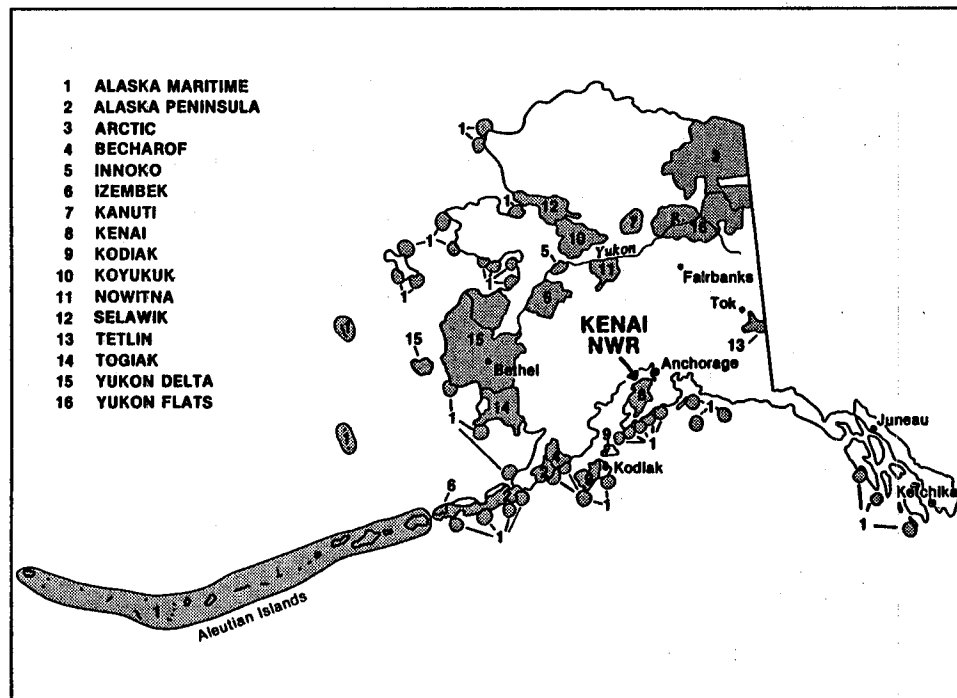
This summary describes five alternative strategies for management of the Kenai National Wildlife Refuge, the process used in their development, and the environmental consequences of implementing each alternative. The alternatives range from the Maximum Use Alternative (that allows the greatest diversity of uses, and involves the most habitat manipulation) to the Wilderness Alternative (that manages a substantial portion of the refuge to protect wilderness values). The Current Situation (No Action Alternative), the Service's Preferred Alternative, and the Minimum Use Alternative occupy intermediate positions within the range of alternatives.

The plan evaluates refuge lands not previously designated as wilderness as to their suitability or non-suitability for designation as wilderness as required by section 1317 of the Alaska National Interest Lands Conservation Act (ANILCA). Each alternative identifies lands suitable for wilderness designation under the management strategy for that alternative.

In order to be considered in development of the final plan, comments must be received by March 31, 1984. Those wishing to review the complete environmental impact statement or needing further information should contact:

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Environmental Specialist  
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Figure 1. Location of National Wildlife Refuges in Alaska.



## Kenai National Moose Range

The Kenai National Moose Range was established by Franklin D. Roosevelt on December 16, 1941 for the purpose of "... protecting the natural breeding and feeding range of the giant Kenai moose on the Kenai Peninsula, Alaska, which in this area presents a unique wildlife feature and an unusual opportunity for the study in its natural environment of the practical management of a big game species that has considerable local economic value ..." (Executive Order 8979).

## Alaska National Interest Lands Conservation Act (ANILCA)

The ANILCA affected the Moose Range by broadening its purposes from moose conservation to protection and conservation of a broad array of fish, wildlife, habitats, other resources, and educational and recreational opportunities. The act also changed the name of the Moose Range to Kenai National Wildlife Refuge, added nearly a quarter of a million acres and designated 1.35 million acres as wilderness.

The purposes of the refuge specified in ANILCA are to:

- o conserve fish and wildlife populations and habitats in their natural diversity, including but not limited to moose, bears, mountain goats, Dall sheep, wolves and other furbearers, salmonoids and other fish, and waterfowl and other birds;
- o fulfill international treaty obligations (relating primarily to migratory waterfowl);
- o ensure water quality and quantity;
- o provide opportunities for research, interpretation, environmental education, and land management training; and
- o provide opportunities for fish and wildlife-oriented recreation.

Figure 2. Map of the Kenai vicinity.

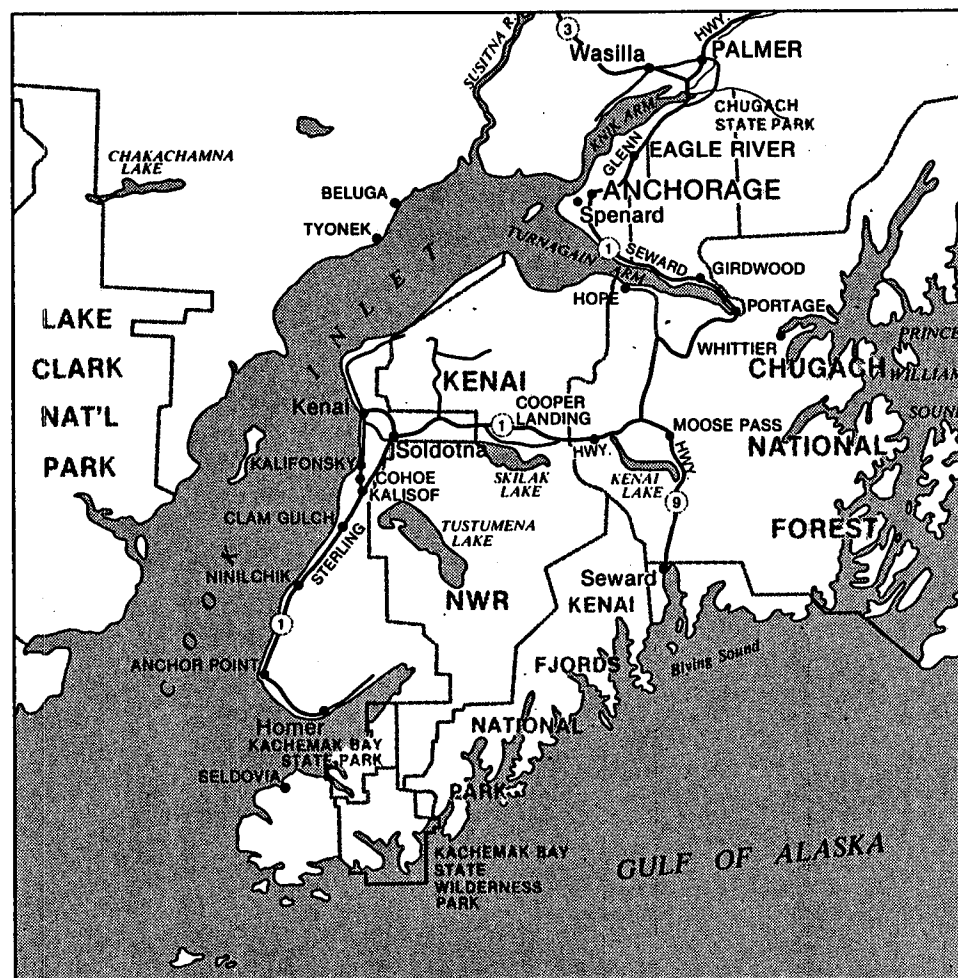
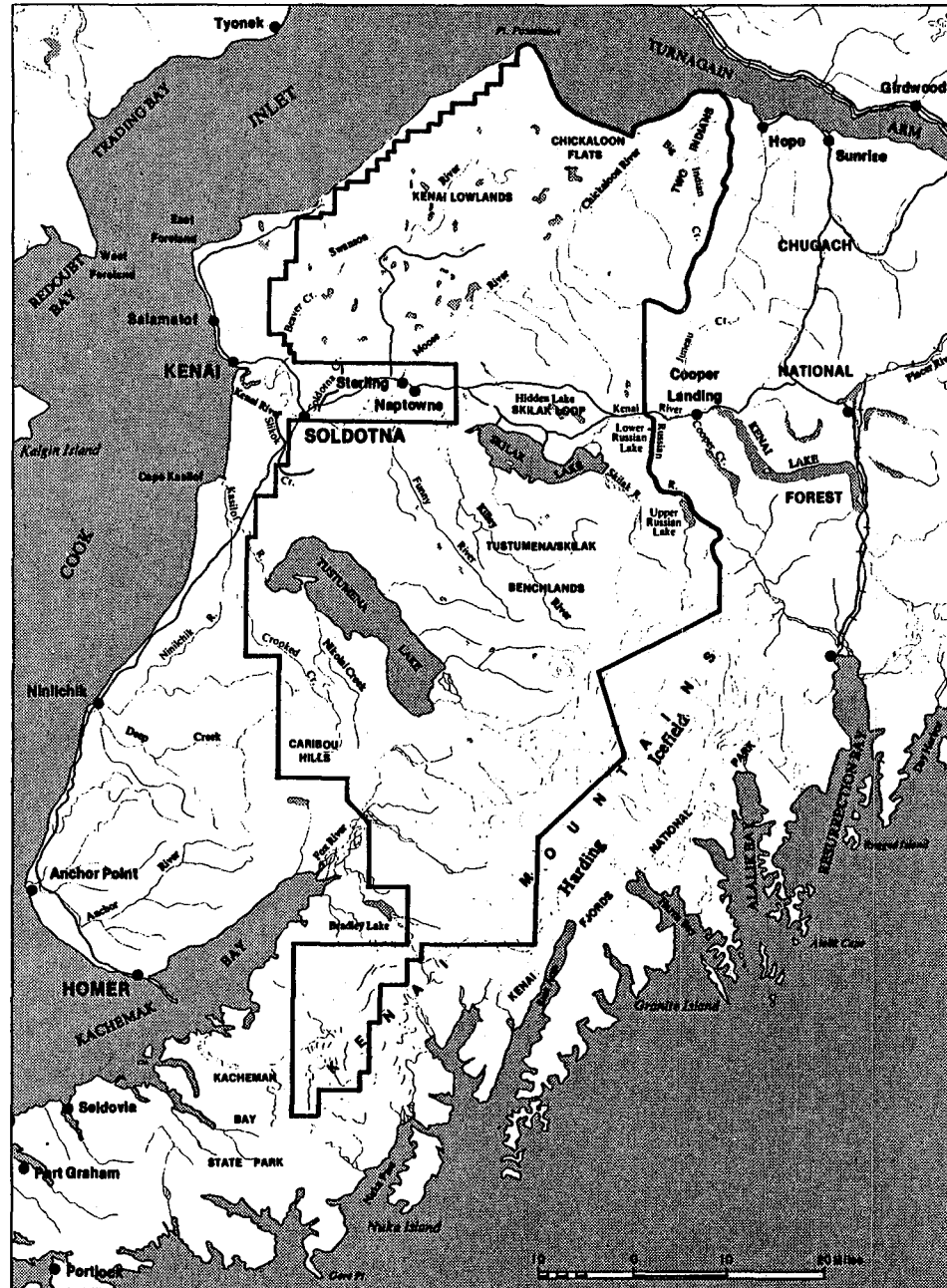


Figure 3. Landforms and water resources on the Kenai Refuge.



## The Planning Process

One of the first steps in the planning process was to design a public participation and interagency coordination program to assist in identifying special values and significant problems of the refuge and issues that needed to be addressed in the plan.

Natural resource and public use information was gathered from field inventories, through satellite technology, refuge files, other resource agencies, standard technical references, and current technical literature. The information was then analyzed by resource specialists from government agencies and the private sector to identify special values, significant problems, and issues as required by ANILCA.

## Land Status

- o 1.97 million acres within refuge boundaries (1.35 million acres of designated wilderness)
- o 137,000 acres of subsurface estate--oil, gas and coal--conveyed to Cook Inlet Region, Inc. (CIRI) with an additional 83,000 acres pending conveyance
- o 65,513 acres of land conveyed to Native associations or village corporations with an additional 9,775 acres pending conveyance
- o 291 acres of pre-1941 recreation or residential inholdings
- o 470,000 acres of non-wilderness lands open to oil and gas leasing
- o 12,000 acres of oil and gas leases or pipeline rights-of-way

## Landscape Characteristics

- o one-third of the refuge lies within the Kenai Mountains (elevation 3,000 to 6,600 feet)
- o two-thirds of the refuge lies within the Kenai Lowlands (containing over 4,600 lakes)
- o 54% of the Kenai River watershed is located within the refuge
- o vegetation includes humid coastal forests dominated by Sitka Spruce; interior forests of white and black spruce mixed with birch; and mountain tundra, glaciers, and snowfields

Figure 4. Land status on the Kenai Refuge, 1983.

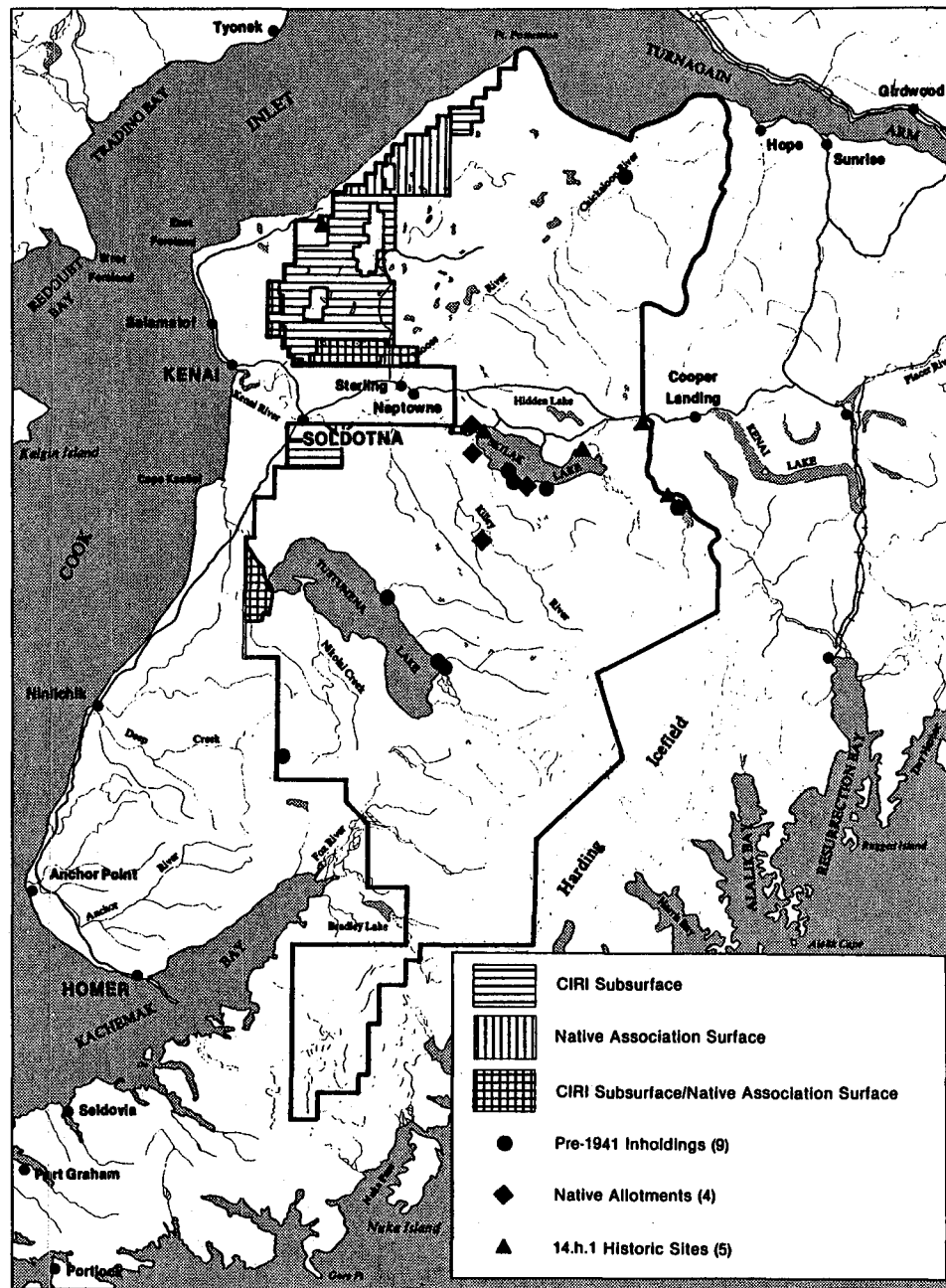
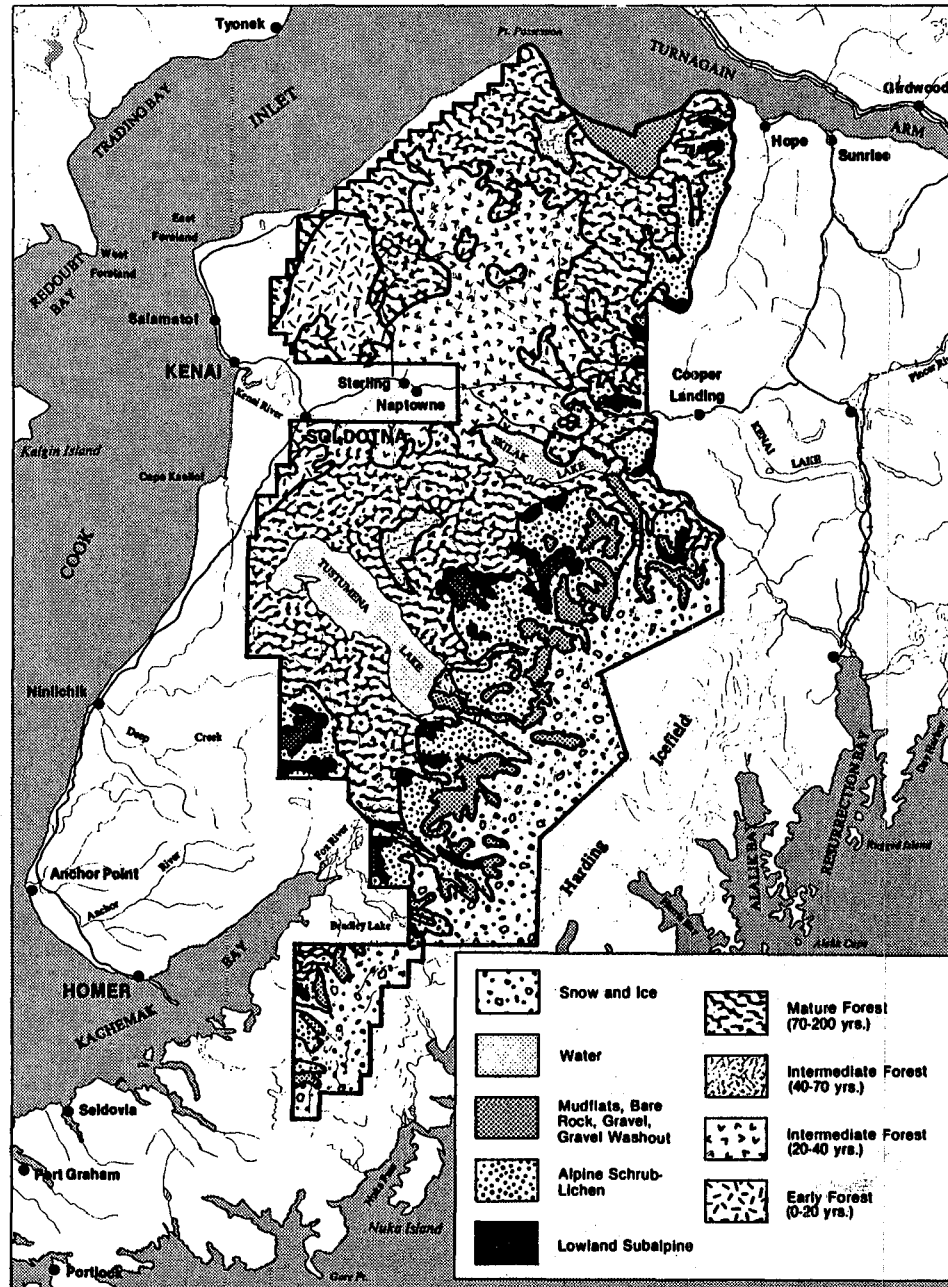


Figure 5. Terrestrial habitats on the Kenai Refuge.



## Fish and Wildlife

Over 200 species of amphibians, birds, mammals, and fishes permanently reside in, seasonally use, or are casual visitors to the refuge. These include:

- o bald eagles
- o marten
- o black and brown bear
- o moose
- o wolves
- o mountain goats
- o caribou
- o Dall sheep
- o Peregrine falcon
- o trumpeter swans
- o chinook, coho, pink and sockeye salmon
- o lake and rainbow trout
- o Dolly Varden and arctic char

## Public Uses

In 1981 over 168,000 people visited the refuge to:

- o fish for salmon in the Russian River
- o hunt moose along Mystery Creek
- o canoe the Swanson River or Swan Lake Canoe Routes
- o raft the Kenai Canyon
- o hike the Skyline Trail
- o snowmobile in the Caribou Hills
- o camp on Dolly Varden Lake
- o observe and photograph wildlife

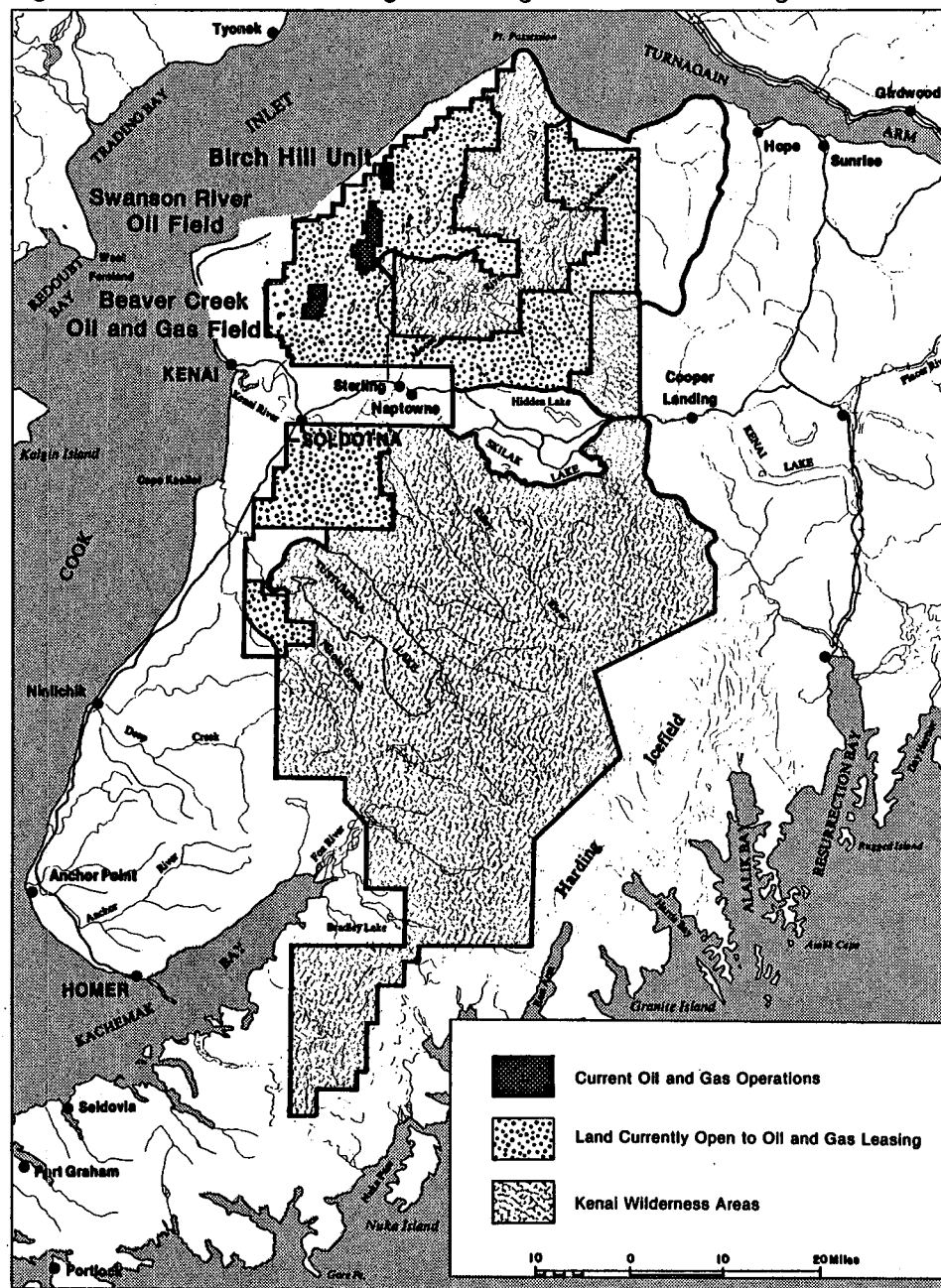
Another 500,000 people enjoyed the refuge's wildlands and wildlife as they drove the Sterling Highway to other destinations on the peninsula.

## Economic Uses

During 1981 the refuge accounted for over:

- o 3 million barrels of crude oil
- o 3,000 cords of firewood
- o 27,000 passengers on the Russian River Ferry
- o 3,000 users at commercial fly-in tent camps
- o 1,700 users on Kenai River float trips

Figure 6. Areas of oil and gas leasing on the Kenai Refuge.



## Special Values

During the planning process the following special values of the Kenai Refuge were identified:

- o the Harding Ice Field, a reservoir of ice for glaciers that continue to carve valleys through the Kenai Mountains and feed the peninsula's rivers.
- o the Tustumena-Skilak Benchlands, a unique ecological area consisting of mountain and glacier formations, habitats for Dall sheep, mountain goats, and brown bear, timberline moose ranges, and adjacent foothills.
- o the Kenai River and its tributaries that provide priceless spawning and rearing habitat for millions of chinook, sockeye, pink, and coho salmon.
- o the diversity of resources and uses of the refuge--the wide variety of landforms, habitats, fish and wildlife, and mix of human uses combine to produce an area unique in Alaska.

## Significant Problems

In accordance with ANILCA, the plan identifies the following significant problems that may adversely affect refuge fish and wildlife populations and habitats.

- o Effects of intensive public use on fish and wildlife populations and habitats. Fish and wildlife populations and habitats in subarctic environments are particularly sensitive to disturbance. Populations of bald eagles, trumpeter swans, mountain goats, Dall sheep, caribou, marten, wolves, lynx, brown bear, and beaver have been or are now depressed apparently due to human activities.
- o Off-Refuge Commercial and Sport Harvest of Adult Salmon. Although carefully regulated to ensure escapement, heavy commercial harvests significantly reduce the number of fish entering rivers to spawn. This decreases sport fishing opportunities, reduces the number of fish available to predators, and the number of carcasses available to scavengers, as well as for nutrient recycling.

- o Lack of Resource Data. There is too little information available on the resources of the refuge, the uses people make of them, or the effects of uses upon continued productivity of the resources. Management of the refuge is handicapped and achievement of its purposes uncertain without this information.
- o Development and Use of Adjacent Private Lands. Many wildlife species range on and off refuge lands. The use of adjacent private lands can adversely affect these species.
- o Refuge Inholdings. Activities on private inholdings may conflict with refuge management programs and values on adjacent lands.
- o Oil and Gas Development. Existing laws recognize the need for energy development as well as wildlife, wilderness, and resource protection. Refuge management will be challenged to meet the requirements of sometimes conflicting management goals.



## Issues

The following are issues that the Service considers significant. The list does not include all the issues identified during the scoping process.

- o increased moose production through intensive habitat manipulation
- o artificial enhancement of fisheries resources
- o management for the benefit of all species
- o management of large predators (wolves and bears)
- o protection of critical wildlife areas
- o development of resources (e.g., oil, gas, timber)
- o impacts of resource development on fish and wildlife
- o personal use of refuge resources (e.g., firewood, logs)
- o establishment of wildlife viewing areas
- o continuation of hunting, fishing, and trapping opportunities
- o conflicts between motorized and non-motorized recreational users
- o need for more law enforcement
- o lack of public information on recreational opportunities
- o limiting fish and wildlife enhancement activities in wilderness
- o limiting motorized access in wilderness
- o restrictive management of wilderness
- o maintaining traditional access
- o liberalizing access
- o restricting motorized access
- o need for greater federal/state coordination
- o need for additional fish and wildlife data

## Alternatives

The development of alternatives began with an extensive inventory of refuge resources. Information, opinions, and suggestions were solicited from individuals, special interests, and public agencies. Through this process it soon became clear there were conflicting demands for refuge resources.

Refuge management must comply with laws and regulations although the lands may be managed for many uses. For example, congressional designation of 1,350,000 acres as wilderness restricts the types of facilities that may be built and equipment used in that area. Ensuring protection of sensitive habitats such as wetlands and riparian areas for wildlife limits the potential for other uses. Therefore, it was necessary to place areas of the refuge that have different resources and uses into different management categories. A management category is a set of refuge management strategies applied to an area (in light of resources, existing and potential uses, and compatibility) to enhance management and the accomplishment of refuge purposes.

The five alternatives reflect a spectrum of management philosophies in response to comments from the public and other agencies. This was accomplished by varying the size and location of management categories under each alternative.

## Management Categories

- o Intensive Management is characterized by areas of high public and economic use. Natural processes are modified and the influence of human activities is evident. Public facilities, administrative sites, economic development, and transportation systems are allowed.
- o Moderate Management is characterized by areas easily accessible to the public and in which a significant amount of habitat could be manipulated to benefit populations of selected species (principally moose). Although some natural processes are altered, habitat management is designed to maintain natural landscapes. Permanent facilities may be provided for resource protection or public safety.
- o Traditional Management is characterized by undeveloped areas where habitat and public use are managed to provide a mixture of benefits in a natural setting. No roads occur within this category. Management of forest habitats relies on natural tools such as prescribed burning with no mechanical manipulation or commercial timber harvest.
- o Minimal Management is characterized by areas that have high wilderness values but that have not been designated as wilderness. The pristine character of these areas is maintained pending action by the President and Congress. Restrictions are placed on motorized access, recreation, and economic uses.
- o Accessible Wilderness is a category applicable only to designated wilderness. It permits limited use of snowmobiles, motorboats, aircraft, and non-motorized surface transportation methods for traditional activities.
- o Primitive Wilderness preserves the primitive character of designated wilderness areas not accessible by aircraft or motorboats. Natural fish and wildlife population dynamics and habitats are emphasized although regulated hunting, fishing, and trapping is allowed. This is the most restrictive of the categories.

Table 1 compares the six management categories. The range of physical settings includes those "noticeably altered and dominated by the works of man" to those that are "pristine and unmodified." The works of man that could dominate a physical setting include permanent facilities such as campgrounds, roads, and cabins (Table 2). Under Primitive Wilderness only temporary facilities are allowed with physical settings unmodified.

Natural processes may be "substantially altered through habitat manipulation" as in Intensive Management or unaltered and "dominant" as in Primitive Wilderness. As shown in Table 3, fire is the primary influence in forest succession throughout the refuge, and wildfires the only means of establishing early-stage forests within wilderness areas. Prescribed burning, mechanical manipulation, and commercial timber harvest can be used to alter succession in areas under Intensive Management.

Table 1. Comparison of management categories.

	Intensive Management	Moderate Management	Traditional Management	Minimal Management	Accessible Wilderness	Primitive Wilderness
The Physical Setting would be....	noticeably altered and dominated by the works of man	natural appearing, balancing the works of man and nature	natural and dominated by the works of nature	natural or pristine and unmodified	natural and dominated by the works of nature	pristine and unmodified
Natural Processes would....	be substantially altered through habitat manipulation	be occasionally altered through habitat manipulation	play a primary role	play a primary role or be dominant	play a primary role	be dominant
Fish & Wildlife Populations would....	emphasize species of high public interest	balance species of high public interest and natural population dynamics	emphasize natural population dynamics	emphasize or be dominated by natural population dynamics	emphasize natural population dynamics	be dominated by natural population dynamics
Recreational Experiences focus on....	affiliation with individuals or groups, with convenience of both access and sites	equal opportunity for either group involvement or isolation, with convenience of access	solitude, risk, challenge, and reliance on outdoor skills, in an accessible setting	solitude, risk, challenge, and reliance on outdoor skills, possibly in an accessible setting	solitude, risk, challenge, and reliance on outdoor skills, in an accessible setting	solitude, risk, challenge, and reliance on outdoor skills

Table 2. Comparison of the effects of management policies on the physical setting.

	Intensive Management	Moderate Management	Traditional Management	Minimal Management	Accessible Wilderness	Primitive Wilderness
The Physical Setting would be....	noticeably altered and dominated by the works of man	natural appearing, balancing the works of man and nature	natural and dominated by the works of nature	natural or pristine and unmodified	natural and dominated by the works of nature	pristine and unmodified
....and the permanent facilities present may include....	Visitor Center Campgrounds Access Areas All-weather Roads Unimproved Roads Oil Fields Navigation Aids Public Safety Cabins Fly-in Tent Camps					

Table 3. Comparison of the effects of management policies on natural processes.

	Intensive Management	Moderate Management	Traditional Management	Minimal Management	Accessible Wilderness	Primitive Wilderness
Natural Processes would....	be substantially altered through habitat manipulation	be occasionally altered through habitat manipulation	play a primary role	play a primary role or be dominant	play a primary role	be dominant
Early Stage Forest would result from....	Man-caused Fires----->					>
	Lightening Strikes----->					>
....or through habitat manipulation....	Prescribed Burns----->					
	Mechanical Crushing----->					
	Timber Management----->					

Table 4. Comparison of the effects of management policies on fish and wildlife populations.

	Intensive Management	Moderate Management	Traditional Management	Minimal Management	Accessible Wilderness	Primitive Wilderness
Fish & Wildlife Populations would....	emphasize species of high public interest	balance species of high public interest and natural population dynamics	emphasize natural population dynamics	emphasize or be dominated by natural population dynamics	emphasize natural population dynamics	be dominated by natural population dynamics
The average over-winter densities for moose would be....	4-7 per sq. mile	4-10 per sq. mile	2-10 per sq. mile	1-10 per sq. mile	1-10 per sq. mile	1-10 per sq. mile
Population compositions would be....	20-30 bulls per 100 cows	30-50 bulls per 100 cows	50-90 bulls per 100 cows	50-100 bulls per 100 cows	50-90 bulls per 100 cows	75-100 bulls per 100 cows
Large antlered bulls would be..	rare	common	abundant	moose up to 20 years old present	abundant	moose up to 20 years old present
Trophy bulls would be....	absent	rare	common	abundant	common	abundant

Note: Overwinter densities reflect mid-winter conditions in high quality moose habitat, 50 sq. miles or larger in size, located between sea level and 400 feet in elevation. The narrower density ranges reflect increased population stability brought about by regularly scheduled habitat manipulation.



In terms of fish and wildlife populations, Intensive Management emphasizes high-interest species while Primitive Wilderness stresses natural diversity and processes. Table 4 shows how populations of moose (the main high-interest species on the refuge) would respond to population management under the various management categories. Moose populations in Intensive or Moderate Management areas can remain relatively stable through a regular program of habitat manipulation. Changes in forest successional stages in Primitive Wilderness areas can be abrupt and cause populations

to fluctuate considerably. Moose populations, in such areas, however, would contain more bulls including older, trophy-class bulls. In addition, other wildlife such as wolves, wolverines, or brown bears are more likely to be present in Primitive Wilderness than in Intensive Management areas.

Table 5 shows the social characteristics of the six categories that range from "affiliation with individuals or groups, with convenience of both access and sites" to "solitude, challenge, risk, and reliance on

outdoor skills." Recreational opportunities associated with groups and easy access include environmental education and interpretation, camping at established campgrounds, and driving for pleasure. Such activities require permanent facilities and the use of motor vehicles to reach them. Hunting, fishing, and trapping can occur in all management categories; only the means of access differ. For example, a moose hunter can use a 4-wheel-drive vehicle on an unimproved road in a Moderate Management area, fly into a remote lake in a Traditional Management

Table 5. Comparison of the effects of management policies on recreational opportunities.

	Intensive Management	Moderate Management	Traditional Management	Minimal Management	Accessible Wilderness	Primitive Wilderness
Recreational Experiences focus on....	affiliation with individuals or groups, with convenience of both access and sites	equal opportunity for either group involvement or isolation, with convenience of access	solitude, risk, challenge, and reliance on out- door skills, in an accessible setting	solitude, risk, challenge, and reliance on out- door skills, <u>possibly</u> in an accessible setting	solitude, risk, challenge, and reliance on out- door skills, in an accessible setting	solitude, risk, challenge, and reliance on out- door skills
Activities would include....	Hunting-----▷					
	Fishing-----▷					
	Trapping-----▷					
	Canoeing-----▷					
	Hiking-----▷					
	Viewing Wildlife-----▷					
	Environmental Ed.					
	Auto Canping					
	Driving for Pleasure					
....with access by....	Licensed Highway Vehicles-----▷					
	Airplane-----▷					
	Motorboat-----▷					
	snowmobile-----▷					
	Non-motorized Boat-----▷					
	Horseback-----▷					
	Foot-----▷					

area, or travel by horseback in a Primitive Wilderness area.

Table 6 identifies important public and economic uses and management policies which may be compatible with refuge purposes under each management category. Some of the uses would be compatible only under certain conditions. For example, hunting may not be compatible in all

categories without appropriate controls (e.g., seasons, bag limits, and special permit requirements). Lakes occupied by nesting trumpeter swans and within Traditional Management areas are seasonally closed to aircraft. Vehicles are restricted to all-weather or unimproved roads. Conditions on activities are promulgated through the Service's regulatory procedures.

Table 6. Comparison of the effects of management policies on public and economic uses and access.

	Intensive Management	Moderate Management	Traditional Management	Minimal Management	Accessible Wilderness	Primitive Wilderness
Public uses....	Hunting-----	subject to State and Federal regulations-----				
	Fishing-----	subject to State and Federal regulations-----				
	Trapping-----	subject to State and Federal regulations-----				
	Canoeing-----					
	Hiking-----					
	Tent Camping-----					
	Auto Camping-----					
Economic Uses...	Environmental Ed.					
	Timber Harvest-----					
	Firewood Removal-----					
	Sand/Gravel Removal-----					
	Oil and Gas Leasing-----					
	Fly-in Tent Camps-----					
Access....	Guiding-----					
	Float Trips-----					
	Licensed Highway					
	Vehicles-----	on designated roads--				
	Aircraft-----	in designated areas-----				
	Motorboats-----	in designated areas-----				
Resource Management....	Snowmobiles-----	in designated areas-----				
	Non-motorized Boat-----					
	Foot-----					
	Egg Takes (fish)-----					
	Natural Fires Let Burn-----					
	Stocking (fish)-----					
	Prescribed Burns-----					
	Timber Management-----					
	Mechanical Manipulation-----					
	Fertilization-----					

## Management Directions Common to All Alternatives

Management of the refuge under any of the alternatives is governed by federal laws, Service policies, and principles of sound resource management--all of which restrict the range of potential activities. Accordingly, the five alternatives share a set of common management policies. These include:

- o to avoid duplication of effort and focus on increased management efficiency, coordination with other resource management agencies will continue
- o recommending acquisition of inholdings to consolidate refuge management authority and to reduce conflicts
- o permanent snow, icefields, glaciers, mudflats, gravel and rock habitats will not be disturbed
- o forests will be the only terrestrial habitats actively manipulated to benefit wildlife
- o refuge management programs will stress native wildlife and the role of natural processes and ecological relationships in order to maintain natural diversity
- o non-native species will not be introduced
- o native species will not be allowed to decline to levels that would threaten genetic integrity or viability
- o motorized access will be managed to provide a full range of compatible access to refuge resources
- o a full range of recreational opportunities and facilities will remain available
- o existing public campgrounds, primary and secondary roads, access sites, waysides, and trailheads will continue to be maintained
- o high-interest activities such as auto-camping, wildlife viewing, hunting and fishing will be favored to provide maximum benefits from expenditures of public funds
- o the Kenai Wilderness will continue to be managed to preserve wilderness values
- o the Two Indians area will receive minimal management to protect its wilderness values
- o a full range of commercial activities will continue on the refuge, generating significant benefits to the local economy
- o oil and gas exploration and leasing will be allowed when compatible with refuge purposes
- o fire will continue to be an important management tool used to increase wildlife and habitat diversity
- o cultural resources will be preserved to benefit future generations, as required by state and federal laws

Although all five alternatives share the policies discussed above, each alternative has a distinct management emphasis. Each alternative would achieve refuge purposes and comply with laws, regulations, and Service policies. The management policies and estimated effects of their implementation are discussed on the maps that accompany this document.

## Comparison of Alternatives

Each of the five alternatives represents a different mix of policies designed to achieve the purposes for which the refuge was established. Each would attain those purposes to some degree and provide a unique combination of uses and access opportunities. The components of each alternative must be examined independently to determine how each achieves the purposes of the refuge. Several of these components relate to key

public issues that are briefly discussed to provide a basis for comparing the five alternatives.

Table 7 displays the acreage and percentage of refuge lands that would be managed under each of the six management categories in each alternative. Together with Table 1, it can be used to determine the various combinations of uses and access opportunities provided by each alternative.

Table 7. Acreage of management categories under the five alternatives.

	Intensive Management	Moderate Management	Traditional Management	Minimal Management	Accessible Wilderness	Primitive Wilderness	Private Inholdings
Alternative A	68,000 4%	47,500 2%	385,500 20%	97,500 5%	225,000 11%	1,125,000 57%	21,500 1%
Alternative B	183,000 9%	318,000 16%	- -%	97,500 5%	706,000 36%	644,000 33%	21,500 1%
Alternative C	68,000 4%	198,500 10%	220,500 11%	111,500 6%	223,500 11%	1,126,500 57%	21,500 1%
Alternative D	45,500 2%	31,000 1%	328,000 17%	194,000 10%	93,500 5%	1,256,500 64%	21,500 1%
Alternative E	44,000 2%	- -%	174,000 9%	380,500 19%	- -%	1,350,000 69%	21,500 1%

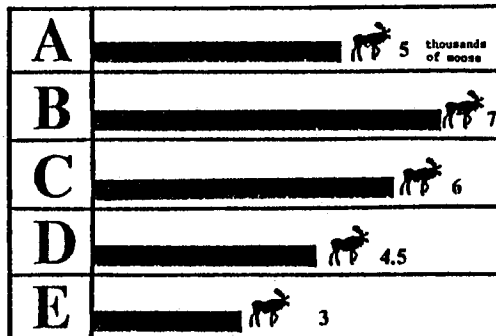
Note: Private in-holdings includes 14,073 acres conveyed to the Solamato Native Corporation and 7,040 acres conveyed to Cook Inlet Region, Inc., over which the provisions of Section 22(g) of ANSCA do not apply.



## Moose

Moose were identified as a key issue because they are important for both consumptive and non-consumptive purposes. Much attention is focused on the potential manipulation of forests to increase moose numbers. Table 8 displays the impact of each alternative on moose populations. The present refuge moose population of about 5,000 animals would peak at 6,000-7,000 under Alternatives B and C because of the intensive program of habitat manipulation in those alternatives. The lowest number (3,000 animals) would be found in Alternative E which emphasizes natural population dynamics.

Table 8. Projected populations of moose under the five alternatives.

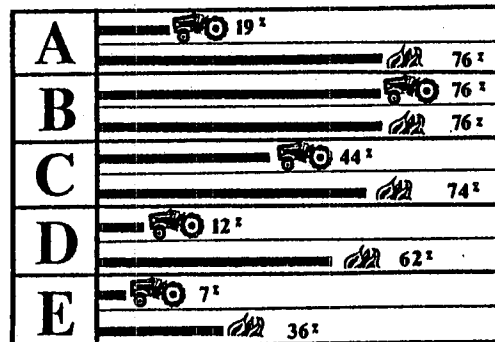


## Habitat Manipulation

Habitat manipulation is a key issue of public concern. Manipulating habitats to make them more suitable for certain species is favored by people interested primarily in moose and opposed by those who favor management designed to benefit all

species. Table 9 shows how much of the non-wilderness land on the refuge would be available for manipulation either by mechanical means or prescribed burning. Alternative B provides the greatest opportunity for manipulation while Alternative E provides the least. Alternatives A, B, and C would maintain current levels of prescribed burning. The amount of land on which mechanical manipulation could be used varies from 76% of all non-wilderness land in Alternative B to 7% in Alternative E.

Table 9. Proportion of non-wilderness refuge lands open to habitat manipulation under the five alternatives.

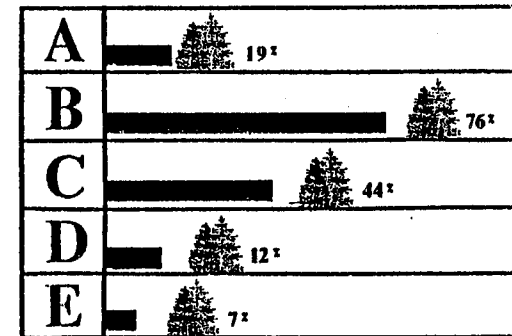


## Timber Harvest

Timber harvest is an effective means of habitat manipulation for managing moose. Timber harvesting can also serve as a commercial use. Table 10 displays the proportion of refuge non-wilderness lands that would be available for timber and firewood harvesting. Alternative B provides the greatest opportunity for timber

harvest while Alternative E eliminates timber harvesting altogether. Conversely, Alternative E is least likely to damage habitats and populations while Alternative B has the most potential for such damage.

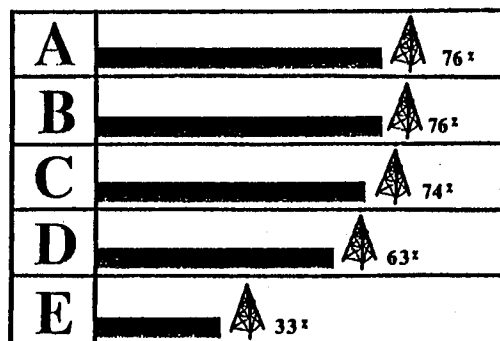
Table 10. Proportion of non-wilderness refuge lands open to timber harvest under the five alternatives.



## Oil and Gas Leasing

The extraction of oil and gas and the potential impacts of these activities on fish and wildlife are key issues. Table 11 displays the percentage of non-wilderness land open to oil and gas leasing under each alternative. Under Alternative A, the Current Situation, 76% of these lands would be open to leasing. Alternatives B and C would maintain this level. Alternative E significantly reduces the area available for leasing but would be least likely to adversely affect habitats and populations. Alternatives A, B, and C have the greatest potential for adverse effects.

Table 11. Proportion of non-wilderness refuge lands open to oil and gas leasing under the five alternatives.



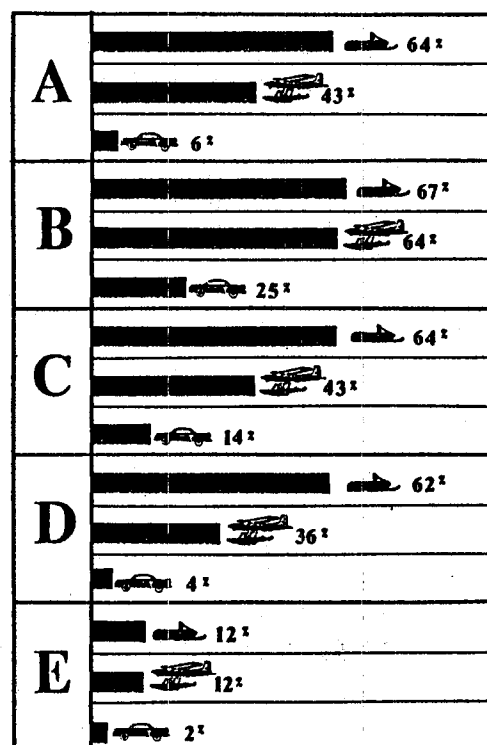
## Access

Access to refuge lands was one of several key issues identified by the public. This concern relates both to maintaining traditional means of access and to restricting motorized access in the Kenai Wilderness. The five alternatives provide a broad range of access opportunities.

Table 12 displays the percentage of refuge lands that would be accessible in each alternative by snowmobile, aircraft, and automobile. Alternatives A, B, C, and D maintain current snowmobile opportunities on 62-67% of the refuge while Alternative E severely curtails that use. Aircraft are allowed at current levels on 43% of the refuge in Alternatives A and C while Alternative B significantly increases the open areas to 64% of the refuge. The use of aircraft is reduced in Alternatives D and E with the greatest reduction occurring in E. Differences in automobile access

result from the way in which industrial or utility roads are handled following completion of the projects for which they were originally built. Alternative B maintains these roads and opens most of them to public use; Alternative C removes most roads, while Alternatives D and E remove all such roads. Overall, Alternative B provides the greatest opportunity for motorized access while Alternative E is the most restrictive.

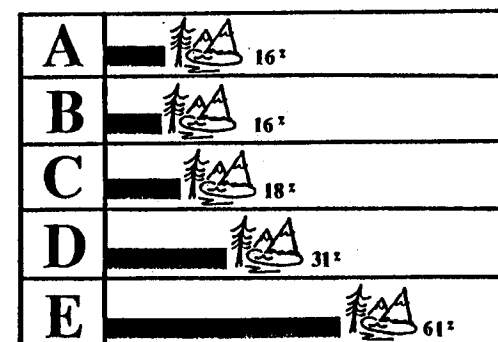
Table 12. Proportion of the refuge open to snowmobiles, aircraft, and automobiles under the five alternatives.



## Minimal Management

This category of management would be applied to areas outside designated wilderness that have been identified through the wilderness review process as having values that make them especially suitable for designation. Such areas are managed to protect wilderness values pending action by the President and Congress. Table 13 shows the proportion of non-wilderness lands placed in this management category in each alternative. The amount varies from 16% in Alternatives A and B to 61% in Alternative E.




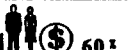

Table 13. Proportion of non-wilderness refuge lands under Minimal Management in the five alternatives.



## Staffing and Management Costs

Table 14 displays the increases in full-time staff positions and costs necessary to implement each alternative relative to Alternative A, the Current Situation. Alternative B would be the most costly of all the alternatives to implement. It would require a staffing level and annual budget 200% greater than Alternative A. Alternative E would be the least costly with an increase of 40% over current levels. Alternatives B, C, D, and E would each cost significantly more than Alternative A, the Current Situation with 12 full-time staff-members and a \$1 million annual operations and maintenance budget.

Table 14. Staffing needs and management costs under the five alternatives.

A	 Current Levels
B	 200%
C	 100%
D	 60%
E	 40%

## Selection of the Preferred Alternative

Table 15 ranks each alternative according to its ability to achieve the purposes for which the refuge was established. The evaluation is based on a scale of 1 to 5. A rank of "1" represents the alternative that most fully achieves a purpose while a "5" represents the worst alternative for that purpose. Every effort was made to objectively analyze each alternative based on available information, although an element of subjective judgment is inevitable in such ranking.

The preferred alternative was not selected by adding the scores together or seeking the smallest total. It was determined by deciding which alternative was uniformly acceptable in meeting as many purposes as possible. For the first three purposes (all of which deal with fish and wildlife populations and habitats), Alternative E provides most protection while Alternative B offers the most potential for degradation. Alternative C provides the best balance between these two extremes. In considering the remaining two purposes that deal with research and recreation, Alternative C provides the greatest opportunity for achieving these purposes while Alternative E provides the least opportunity and Alternative B assumes a moderate

position.

Alternative C was chosen as the preferred alternative because it balances conservation of fish and wildlife habitats and populations with enhanced opportunities for fish and wildlife-oriented recreation.

Table 15. Evaluation of alternatives by refuge purpose.

Refuge purpose	Alternative				
	A	B	C	D	E
To conserve fish and wildlife populations and habitats in their natural diversity.	4	5	3	2	1
To fulfill international treaty obligations.	4	5	3	2	1
To ensure water quality and quantity	4	5	3	2	1
To provide opportunities for scientific research and land management training.	2	3	1	4	5
To provide opportunities for fish and wildlife-oriented recreation.	2	4	1	3	5

Note: 1 most fully meets purpose  
5 least fully meets purpose

## Response Form

**Alternative A**

**Alternative D**

**Alternative B**

**Alternative E**

**Alternative C**

**Additional Comments**

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**Regional Director  
U.S. Fish and Wildlife Service  
1011 E. Tudor Road  
Anchorage, Alaska 99503**

**Attention: William Knauer**

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I wish to be placed/retained on the mailing list to receive information about comprehensive planning for the Kenai National Wildlife Refuge in Alaska. I understand that names and addresses on U.S. Government mailing lists may be released to the public upon request, under provisions of the Freedom of Information Act of 1974.

Name: \_\_\_\_\_

Mailing address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_