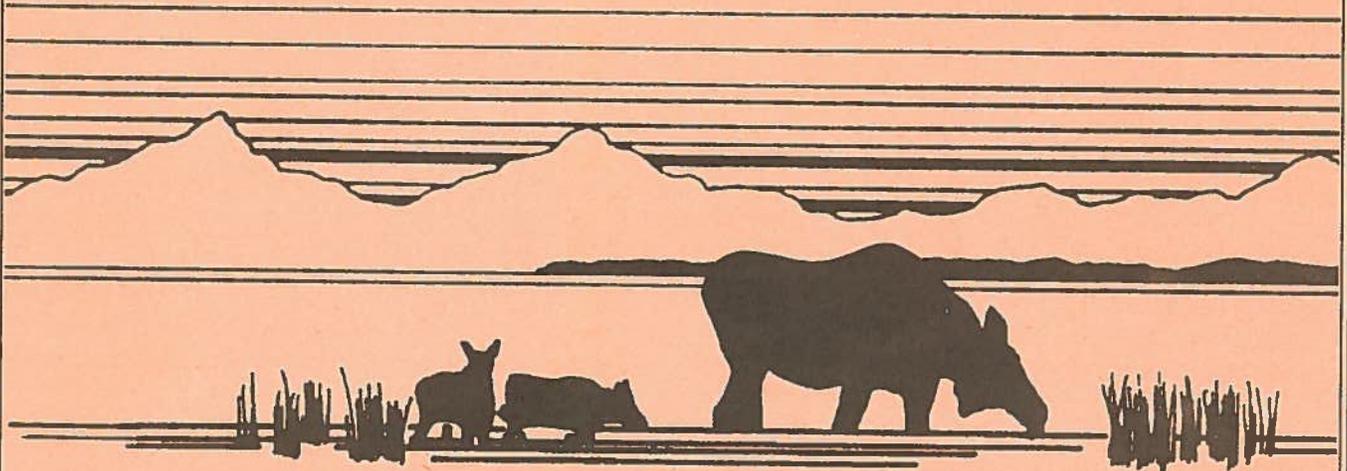


Land Protection Plan

Options for the protection
of fish and wildlife habitats



Kenai
National Wildlife Refuge

Land Protection Plan

for

*Kenai National Wildlife Refuge
Soldotna, Alaska*



U.S. Department of the Interior
Fish and Wildlife Service
Region 7
Anchorage, Alaska

October 1994

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Introduction

The Kenai Peninsula in Alaska has been recognized for its outstanding wildlife resources since 1941 when President Franklin D. Roosevelt set aside approximately two million acres of land there to protect the feeding and breeding habitat of "the giant Kenai moose...". With the passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980, the name and the mission of the Kenai National Moose Range (now the Kenai National Wildlife Refuge) were changed to reflect the importance of a wide variety of wildlife and fisheries resources and habitats on the Kenai Peninsula. ANILCA also cited environmental education and recreation as purposes of the refuge.

The U.S. Fish and Wildlife Service (Service) is responsible for managing the land and wildlife resources of the Kenai Refuge to benefit people, now, and in the future. The Service does not, however, own or have management authority over all of the land within the administrative boundary of the refuge. Private landowners have title or valid claims to approximately 73,000 acres or about 4% of these lands (Table 1).

Table 1. Land ownership (surface lands) on the Kenai National Wildlife Refuge as of May, 1994.

Current Ownership	Acres*
Federal	1,927,318
Native Corporation (conveyed & <u>valid</u> selections)	71,372
Native Allotments (conveyed/selected)	290
State of Alaska	1,137
Other patents	290
Total acreage inside administrative boundary	2,000,407

*Acreage figures are approximate and subject to change. Land status acreage figures in Alaska will not be finalized until conflicting claims are adjudicated by the Bureau of Land Management and all inholdings are surveyed.

Interspersed federal and private landownership complicates refuge management.

The Service protects wildlife on refuge lands but is also concerned that wildlife be protected on non-federal lands within refuge boundaries. Activities on private lands can affect resources on adjacent refuge lands and complicate management. Therefore, we would like to work with landowners to preserve the resource integrity of the Kenai Refuge and to ease management difficulties. We are particularly interested in working with owners of land with high fish and wildlife habitat values. Generally, this can be done through agreements with the landowners to manage land in a manner consistent with the purposes of the refuge, or through acquisition. An acquisition can be a partial interest in the land, such as a conservation easement, or outright purchase of all interests in the land (fee title).

Objectives of LPP

The goal of the Service in developing a land protection plan is to preserve the high quality wildlife habitat found on and in the vicinity of private lands within the Kenai National Wildlife Refuge. The plan is intended to guide the refuge's land protection activities and provide a framework for refuge and private landowner cooperation. The purpose of this document is to answer the following questions:

1. Where are the private lands in the Kenai Refuge?
2. What resources are we are trying to protect?
3. What methods do we have for resource protection?
4. What are the Service's priorities for resource protection on the Kenai Refuge?
5. What land protection measures do we recommend?
6. How will implementation of this plan affect landowners and others?

The land protection plan does not obligate either the refuge or landowners to undertake any of the land protection measures identified. Any course of action requires mutual consent. The refuge must consider its management goals, priorities, and the availability of funds when approached with land protection proposals from private landowners.



Where are the private lands in the Kenai Refuge?

The Kenai National Moose Range was established by Executive Order 8979 (as amended) on December 16, 1941. The original boundary encompassed 2,058,000 acres. The establishing order allowed settlement and other public land uses on the portion of the refuge in the vicinity of the present cities of Sterling, Soldotna, and Kenai, as well as a strip of land along the shore of Cook Inlet. These "settled" lands were removed from the refuge in 1964 when the boundary was changed to exclude the privately developed areas along the Kenai River, the coastal development between the Kasilof River and Point Possession, and portions of the Harding Ice Field. These exclusions reduced the size of the refuge to approximately 1.73 million acres (P.L.O. 3400, May 22, 1964). ANILCA (December 2, 1980) expanded the Kenai National Moose Range to its present size, 2,007,262 acres, designated 1.35 million acres wilderness, established the current boundary, and renamed it the Kenai National Wildlife Refuge (Figures 1 & 2).

In this section we will describe the private inholdings in the Refuge. Corresponding maps and tables are provided at the end of the chapter.

Pre-refuge land claims included 9 small parcels and state school sections.

When first established, the Moose Range contained nine parcels of private land, totaling 291.19 acres. (Table 3, Figure 3). These lands were originally patented as homesites, homesteads, headquarters sites and trade and manufacturing sites; some have since been subdivided. The Territory of Alaska also had valid existing claims to land in the newly created Moose Range. The Territory had reserved some sections of land for the support of common schools. "School sections" that were surveyed and approved prior to the establishment of the refuge passed to the State of Alaska when Alaska was admitted to the Union. The state now holds patent to 1,137 acres of land in the Kenai Refuge.

One of four Native allotment claims has been patented.

Additional lands have been conveyed out of federal ownership since the refuge was established. There are four Native allotment land claims in the Kenai Refuge, authorized pursuant to the Alaska Native Allotment Act of 1906, which allowed individual Natives to select up to 160 acres of land. So far, one Native allotment has been conveyed (79.97 acres), and three more applications, totaling 210 acres, are awaiting approval (Table 3, Figure 3).

Most private lands were conveyed pursuant to ANCSA.

The Alaska Native Claims Settlement Act (ANCSA) of December 18, 1971, and related negotiated agreements had the greatest impact on non-federal land ownership in the Kenai Refuge (Figure 4). So far, 70,995 acres of surface lands and 200,294 acres of subsurface interests have been conveyed to the following Native corporations: Kenai Natives Association, Inc. (KNA); Pt. Possession, Inc.; Salamatof Native Association, Inc.; The Tyonek Native Corporation; and Cook Inlet Region, Inc. (CIRI). Table 2 shows the amount of land selected and conveyed for each Native corporation, and their remaining entitlement in the refuge.

Of the approximately 135,000 acres of surface selections remaining, fewer than 2,100 acres are valid selections; the rest probably will be relinquished or rejected when the Bureau of Land Management (BLM) completes adjudication of claims for the Cook Inlet region. As for subsurface selections, CIRI has validly selected approximately 49,456 acres of coal, oil, and gas in the refuge, and has a remaining entitlement of about 36,537 acres.

CIRI negotiated for subsurface rights in the Kenai Refuge.

Generally, except for allowances for cemetery sites and historical places authorized by Section 14(h)(1), ANCSA conveyance rules did not allow regional corporations to select either the surface or subsurface of lands in National Wildlife Refuges when the Act was passed. However, CIRI negotiated a special agreement with the United States and the State of Alaska to fulfill its ANCSA entitlements. The agreement is known as the Terms and Conditions for Land Consolidation and Management in the Cook Inlet Area of December 10, 1975, as clarified August 31, 1976 (Terms and Conditions). Part of this agreement allowed CIRI to select approximately 10,240 acres of land (including subsurface), and up to 9.5 townships of coal, oil, and gas in the former Kenai National Moose Range. Conveyance of 3.58 townships of coal, oil, and gas fulfills CIRI's ANCSA Section 14(h)(8) entitlement; the remaining

5.92 townships are a portion of CIRI's in-lieu entitlement under Section 12(a)(1) of ANCSA. The lands were described in two appendices to the Terms and Conditions: B-1 (14(h)(8)) and B-2 (in-lieu).

Two subsequent agreements made changes to the descriptions and estates to be conveyed to CIRI pursuant to the Terms and Conditions. These were the Agreement of August 17, 1979 (ratified by Section 1432 of ANILCA and known as the Salamatof Agreement), and the Beaver Creek Settlement Agreement of May 18, 1981, an exchange agreement. In the Salamatof Agreement, CIRI received conveyance to the subsurface estate of certain Salamatof Native Corporation lands in the refuge. In the Beaver Creek Settlement Agreement, CIRI relinquished portions of its surface and subsurface selections in the Tustumena Lake area and portions of its coal, oil, and gas selections in exchange for subsurface estate and additional interests in coal, oil, and gas in the northwest corner of the refuge. In accordance with the two agreements, CIRI's in-lieu entitlement was reduced by a total of 11,344.60 acres.

CIRI's surface entitlement was removed from the refuge.

As a result of the Beaver Creek Settlement Agreement, CIRI's surface entitlement was reduced to 6,855 acres of land, which was interim conveyed in 1988. The conveyance, located west of Tustumena Lake, included subsurface estate except for a 1,320-foot-wide restricted zone along the banks of the Kasilof River and Tustumena Lake. Public Law 94-204 stipulated that the boundaries of the refuge should be reconfigured to exclude this conveyance to CIRI, but included a provision that the lands would again become part of the refuge system if reacquired by the United States. Although this land has been technically removed from the refuge boundary, we show it on our maps with an "interim" boundary because of the clause that would allow it to be returned to the refuge if reacquired. We have prioritized the resources on the "Tustumena" tract and will include it in this LPP discussion. However, it is not included in refuge acreage figures.

The United States claims title to all lake beds and water bodies in the portion of the refuge withdrawn prior to statehood. The State of Alaska, however, contends that submerged lands lying beneath navigable water bodies passed into state ownership at statehood (1959). In August of 1992 the state notified the Secretary of Interior

of their intent to file real property quiet title actions to certain submerged lands (lake beds), including three waterbodies on the Kenai Refuge: the mouth of the Kenai River to Kenai Lake, the mouth of the Kasilof River to Tustumena Lake, and Tustumena Lake. In other words, the state intends to ask the federal court to decide who is entitled to the submerged lands.

The Ninth Circuit Court awarded the bed of Tustumena Lake to the United States.

Ownership of the water and submerged lands of Tustumena Lake, however, has already been determined by the courts. In 1970 the Ninth Circuit Court of Appeals in San Francisco issued a decision awarding title to the bed of Tustumena Lake to the United States. The opinion of the Court was that President Roosevelt's executive order establishing the Kenai Moose Range withdrew the land and the water of the described refuge area, including the land under the water. They observed that water was just as critical to the well being of the moose as the land. The Court further determined that this land and water did not pass to the State of Alaska upon statehood.

On lands added to the Kenai Refuge by ANILCA, however, ownership of submerged lands will be decided on the basis of navigability. Submerged beds of waters determined to be navigable belong to the state.

Dall sheep occupy steep alpine tundra habitats in the Kenai Mountains.

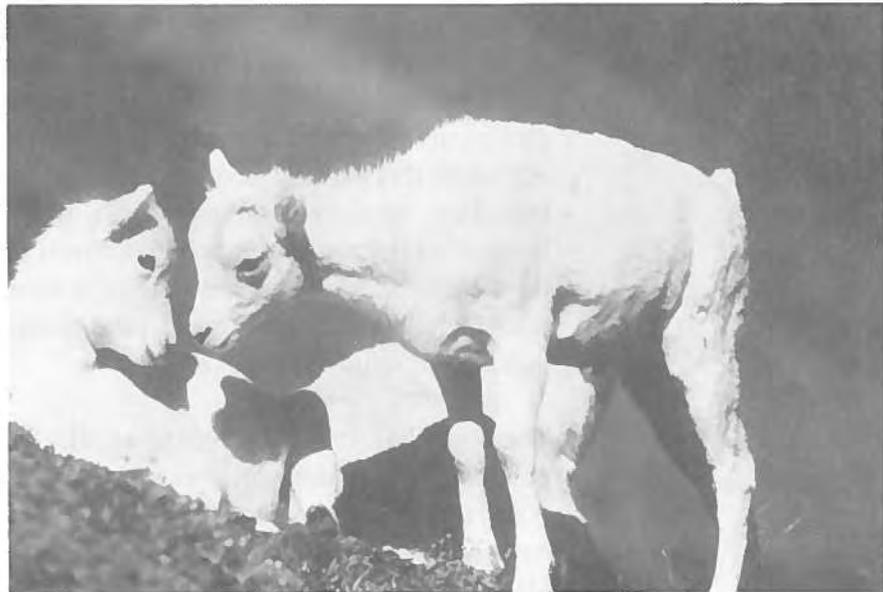


Figure 1

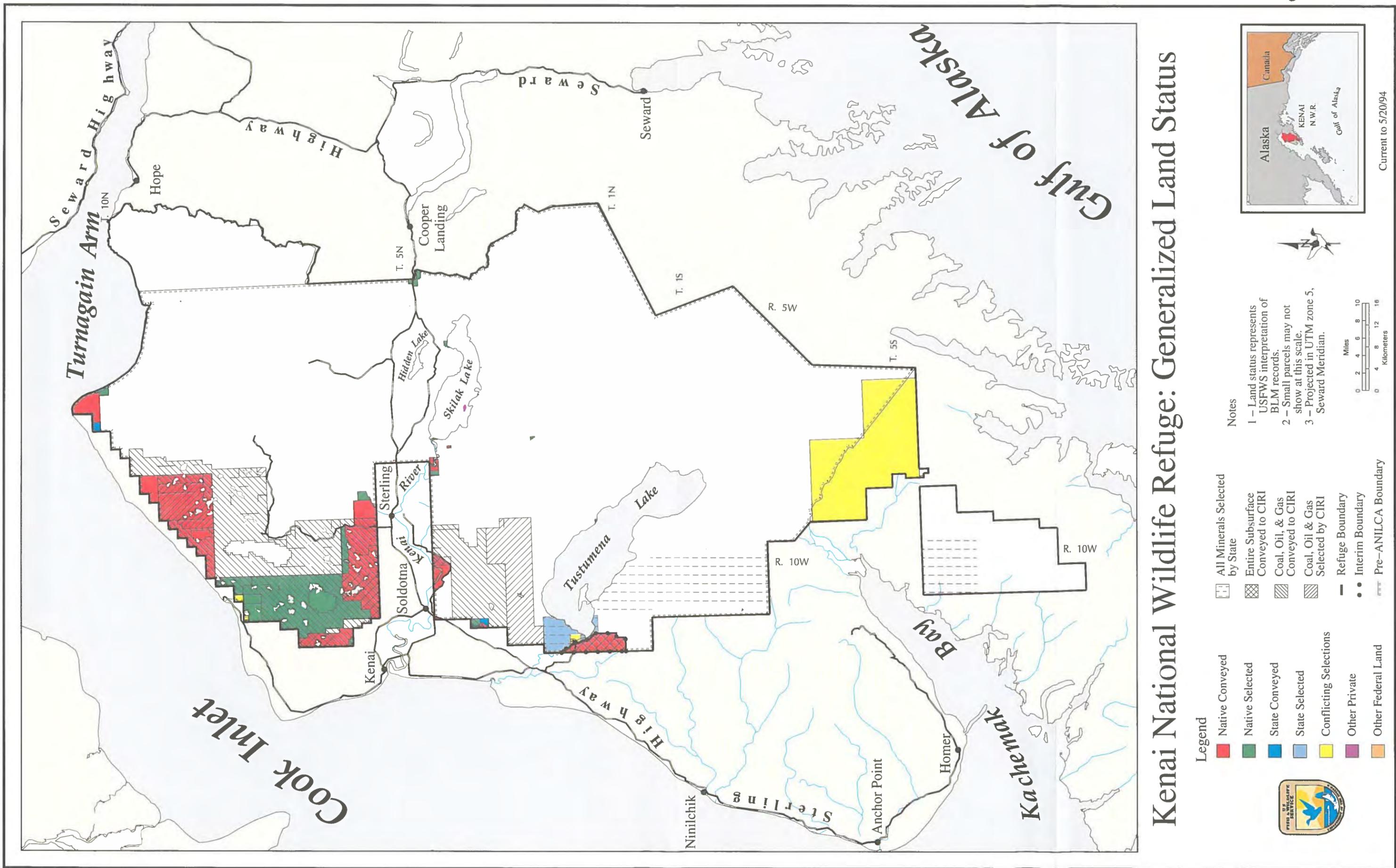
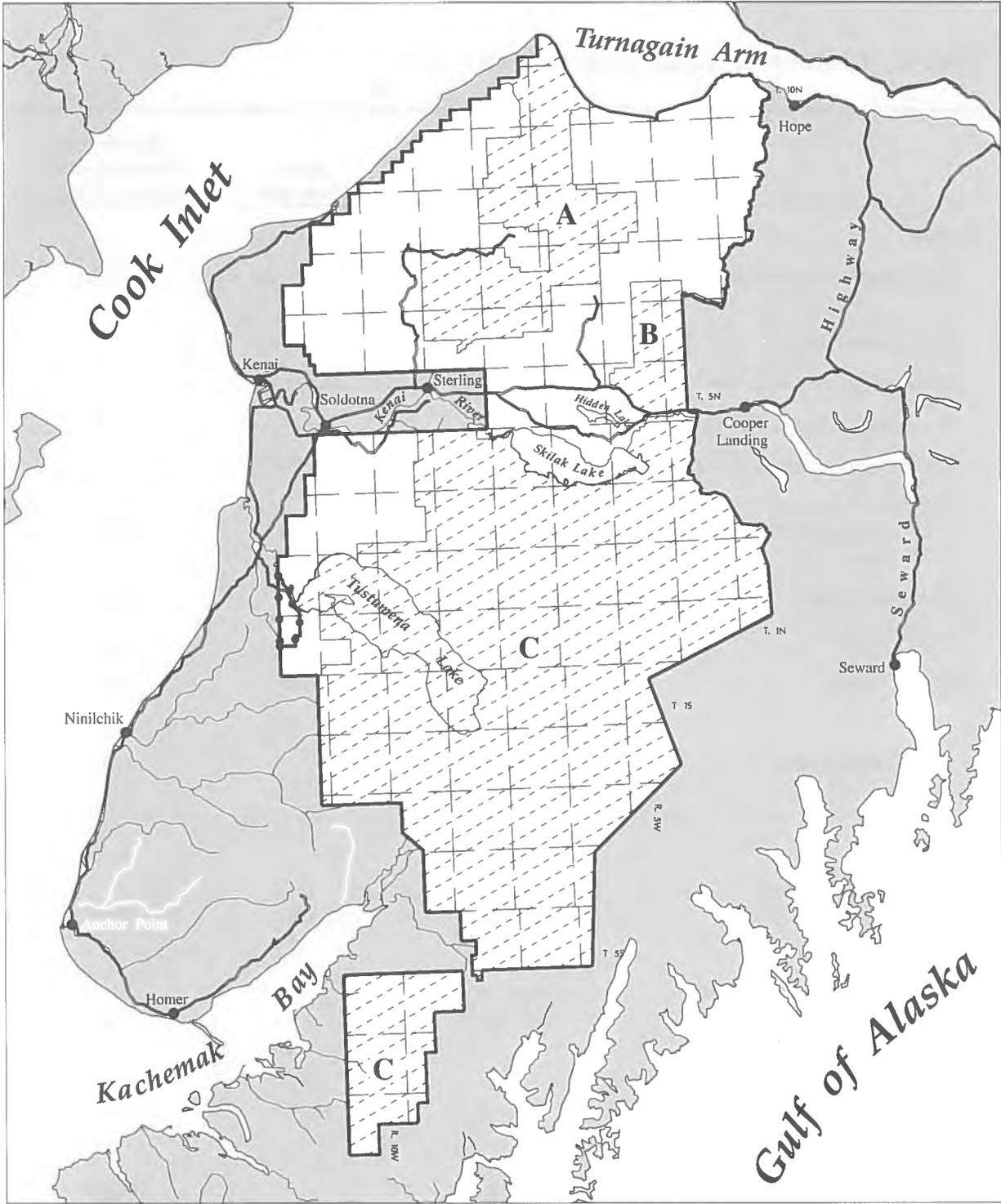


Figure 2



Kenai National Wildlife Refuge: Kenai Wilderness

Legend



- Refuge Boundary
- Interim Boundary
- ▨ Kenai Wilderness Areas
- A - Lowland Unit
- B - Mystery Creek Unit
- C - Andrew Simons Unit

Notes

- 1 - Land status represents USFWS interpretation of BLM records.
- 2 - Projected in UTM zone 5.
- 3 - Conveyed lands are not displayed. These lands are excluded from wilderness area.



Current to 5/20/94

Table 2. Land status of Kenai Refuge as of May, 1994.

	Acres¹ Patented or Interim Conveyed (IC)	Acres² Selected	Remaining Entitlement in Kenai Refuge
Surface			
Kenai Natives Association	16,767.55 (IC) 803	3,596.34	1,204.02
Pt. Possession, Inc.	4,481.32	639.34	0
Salamatof Native Assoc., Inc.	15,815.98 ³	44,123.56	0
The Tyonek Native Corporation	31,620.15	0	0
Native Corp Conflicting Selections ⁴		77,158.00	
Cook Inlet Region, Inc.			
Cemetery & Historic Sites		2147	680 ⁵
Other		165 ⁶	
Native Allotments	79.97	210	≤210
Small Parcels	289.97	0	0
State of Alaska	1,136.90	7,425 ⁷	0
Total Surface	70,995		≤2,094
Subsurface			
Cook Inlet Region, Inc.			
Coal, Oil, Gas Only	180,256.11 (IC) 5,883.85	49,456.60	≤36,537
Entire Subsurface Estate	13,627.68 (IC) 526.76		0
State of Alaska ⁸			
Entire Subsurface Estate		7,425	0
Mineral Estate		97,561	0
Total Subsurface	200,294.40		≤36,537

Footnotes on opposite page

Table 2 Footnotes

¹Surface acreage figures are given in two decimal places where surveyed; acreage is approximate where no decimal places shown and totals are rounded if some entries in column represent unsurveyed acreage. Subsurface acreage figures are calculated by BLM and are reported in two decimal places whether surveyed or not.

²This column is not totaled because some areas are selected by more than one entity and the acreage is listed twice.

³15,511 acres constitute entitlement from Salamatof Agreement of August 17, 1979. An additional 305 acre conveyance was made by the State of Alaska to the United States for reconveyance to Cook Inlet Region, Inc. (CIRI) on behalf of Salamatof Native Association. Authorized by Section 12 of P.L. 94-204 and amended by Section 3 of P.L. 95-178.

⁴Selected by the following Native Corporations: Chickaloon Moose Creek Native Assoc.; Knikatu, Inc.; Ninilchik Natives Assoc., Inc.; Salamatof Native Assoc., Inc; Seldovia Native Assoc., Inc. These ANCSA 12(b) selections are unlikely to be conveyed. The Terms And Conditions specifies where 12(b) conveyances are to be made, and these townships are not included therein. This methodology is one of the issues in Seldovia litigation. BLM will make final determination when lawsuit filed by Seldovia Native Assoc., Inc. is settled.

⁵Acreage certified eligible for conveyance by the Bureau of Indian Affairs

⁶Pre-Terms and Conditions selections considered invalid by BLM. 159.97 acres conflicting with Salamatof overselections and a parcel less than 5 acres.

⁷Considered invalid by BLM but still showing on BLM Master Title Plat.

⁸The state subsurface selections are invalid but have not yet been removed from the BLM Master Title Plats.

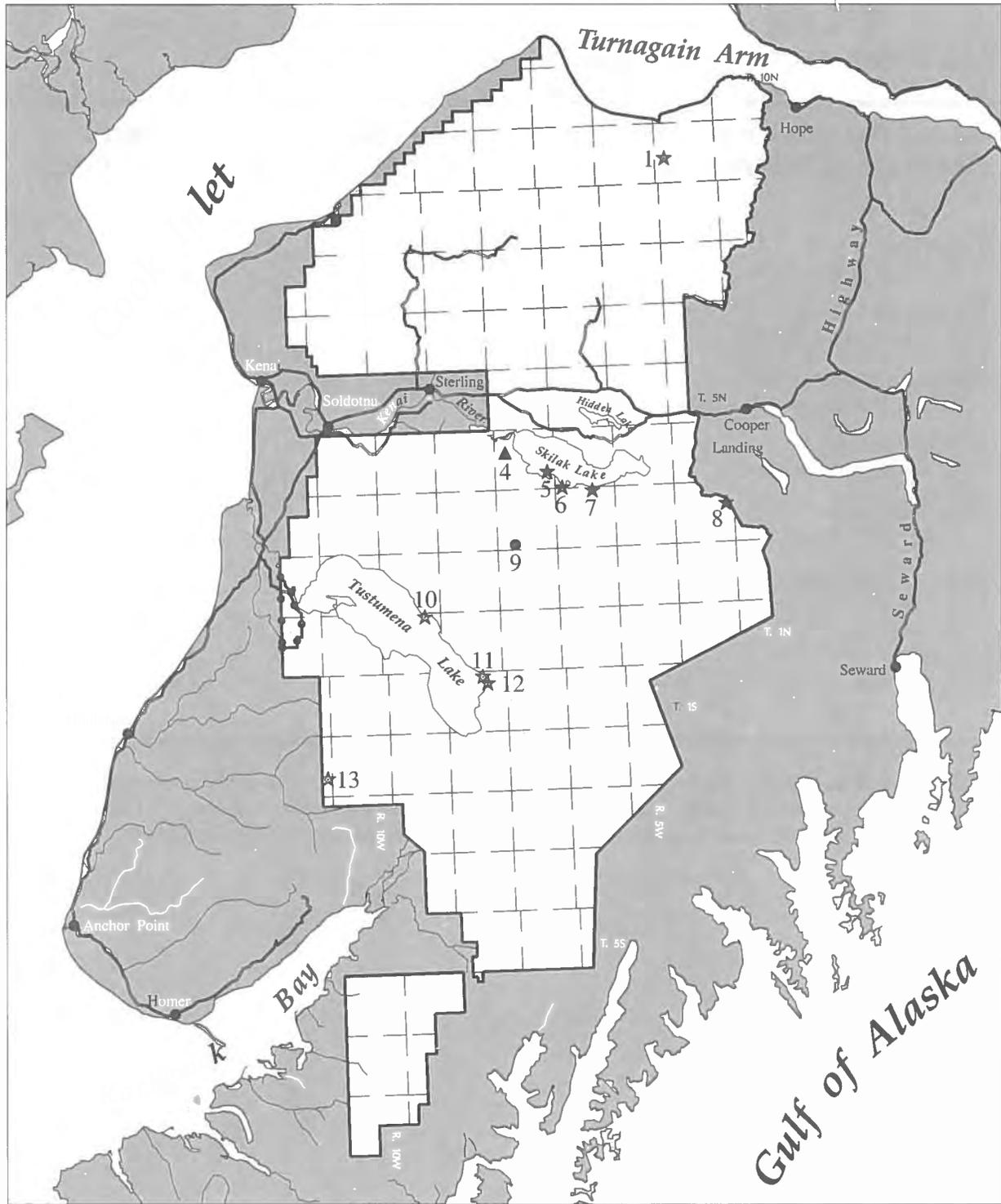
Table 3. Small parcel inholdings depicted in Figure 3. (Some of these lands have been subdivided since original patent.)

Parcel No.	Category/ BLM Serial #	U.S. Survey	Legal Description Seward Meridian, Alaska	Acres¹
1	Patent	3383	T. 9 N., R. 4 W., sec. 19	5.00
2	Native Allotment Application/AA47903		T. 8 N., R. 10 W., sec. 15	60
3	Native Allotment Application /AA47909		T. 8 N., R. 10 W., sec. 15	50
4	Native Allotment Conveyed	6735	T. 4 N., R., 7 W., sec. 17	79.97
5	Patent	2093	T. 4 N., R. 7 W., sec. 23, 24, 25, 26	158.02 ²
6	Patent	3141	T. 4 N., R. 6 W., sec. 31	5.00
7	Patent	3014	T. 3 N., R. 6 W., sec. 3	4.67
8	Patent	2633	T. 3 N., R. 4 W., sec. 12, 13	46.37
9	Native Allotment Appln./AA-8272 ParA		T. 3 N., R. 7 W., sec. 32	100
10	Patent	2087	T. 1 N., R. 9 W., sec. 2	49.06
11	Patent	3313	T. 1 S., R. 8 W., sec. 3	4.95
12	Patent	3304	T. 1 S., R. 8 W., sec. 2	5.00
13	Patent	4722	T. 2 S., R. 11 W., sec. 24, 25	11.90

¹ Acreage is approximate on unsurveyed parcels.

² Original patent was for 159.24 acres. This parcel has been subdivided. Two lots, equalling approximately 1.22 acres, have been returned to the United States.

Figure 3



Kenai National Wildlife Refuge: Small Parcel Inholdings

Legend

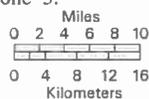
- Refuge Boundary
- Interim Boundary
- ▲ Native Allotments Conveyed
- Native Allotments Selected
- ★ Other Patents



See table for parcel description

Notes

- 1 - Land status represents USFWS interpretation of BLM records.
- 2 - Projected in UTM zone 5.



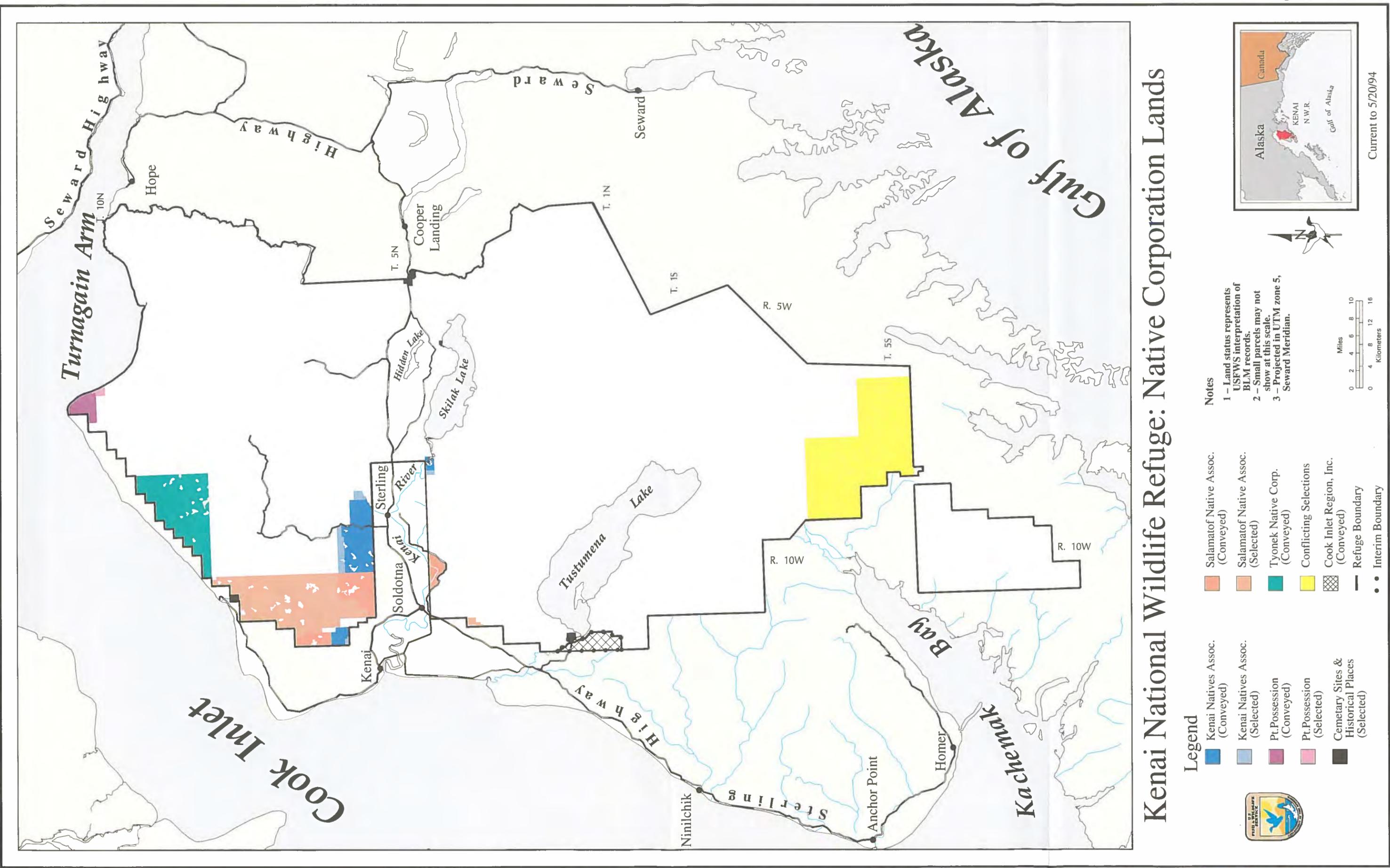
Current to 5/20/94

Table 4. Cook Inlet Region, Inc. selections under Section 14(h)(1) of ANCSA.

Cemetery Site/Historical Place Location (Seward Meridian, Alaska)	Acres Selected in Refuge	Acres Eligible for Conveyance in Refuge
Hidden Creek T. 4 N., R. 5 W., sec. 18	220	104.3
Kasilof River Landing T. 2 N., R. 11 W., sec. 22	495 ¹	0 ¹
Russian River Campground T. 5 N., R. 4 W., sec. 29, 32, 33	807	502
Russian River Trail T. 3 N., R. 4 W., sec. 10	80	16.8
Skilak Lake Outlet T. 4 N., R. 7 W., sec. 4, 5	65	40.5
Swanson Creek Village T. 8 N., R. 10 W., sec. 15	480	16
Total	2,147	680

¹All of section 22 was selected. Part of the selected section is within the boundary of Kenai Refuge and part is on CIRI land just outside the boundary. The 40 acre parcel certified eligible for conveyance is on CIRI land. When the Bureau of Land Management conveys these lands to CIRI the overselections will be relinquished.

Figure 4





What resources are we trying to protect?

The Alaska National Interest Lands Conservation Act (ANILCA), Section 303(4)(B) states that the Kenai National Wildlife Refuge was established and shall be managed:

"..(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to moose, bear, mountain goats, Dall sheep, wolves and other furbearers, salmonids and other fish, waterfowl and other migratory and nonmigratory birds;

(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;

(iii) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge;

(iv) to provide in a manner consistent with subparagraphs (i) and (ii), opportunities for scientific research, interpretation, environmental education, and land management training; and

(v) to provide, in a manner compatible with these purposes, opportunities for fish and wildlife-oriented recreation."

Fish and Wildlife

Kenai Refuge has an extraordinary diversity of fish, wildlife, and plants.

Approximately 200 species of mammals, birds, and amphibians permanently reside in, seasonally use, or are casual or rare visitors to the Kenai Refuge. This extraordinary diversity of fish and wildlife is due to a combination of landforms and a wide variety of associated plant communities (habitats), which provide animals with the food, water, and shelter necessary for their survival. Major landforms in this refuge, from west to east, are the Kenai Lowlands, the Tustumena Benchlands, and the heavily glaciated Kenai Mountains. Topography varies from sea level at Chickaloon Flats, to mountain peaks of up to 6,612 feet.

Forests of black and white spruce, aspen, and birch, interspersed with thousands of lakes, ponds, marshes, and bogs, dominate the lowlands. In the Tustumena Benchlands, between glacier-fed Skilak and Tustumena Lakes, the spruce-aspen forest grades to a subalpine shrub community consisting mainly of willow and alder, with black cottonwood along the rivers. Above 650 feet, the spruce-birch complex is replaced by spruce mixed with mountain and/or western hemlock. "The mountain tundra habitat above tree line is comprised of tall shrub (willow and alder) and dwarf shrubs and lichen communities." (USFWS 1993b).

Moose are an important component of the Kenai Peninsula ecosystem.

The Kenai Refuge was originally established to protect moose, an important herbivore and an integral part of the Kenai Peninsula ecosystem. Moose are a significant food source for wolves, black and brown bears, and species which scavenge predator or winter-killed moose, including coyote, lynx, bald eagles, ravens, and wolverines (USFWS 1993b). Thus, healthy moose populations help to maintain biodiversity in the refuge. In 1947 and 1969, large fires in the northern lowlands burned portions of mature forest. The young forests now growing in the burned areas support higher densities of wintering moose, and consequently predators of moose, than mature forest. (See distribution map, Figure A-4). Moose are also highly sought by sport hunters as a food source.

Black bears are common in all of the forested habitats on the refuge and prefer dense cover. They are abundant in much the same areas as moose, and seasonally prey on newborn moose calves. Brown

bear, on the other hand, use open or shrub habitats more often than dense forest. According to Bailey (1984) "...most brown bears generally are observed in subalpine and alpine areas, in open wetland areas or valley bottoms in the spring and along salmon streams in the late summer and fall" (Distribution map, Figure A-5).

Other large mammals include bears, sheep, goats, and caribou.

Dall sheep and mountain goats inhabit the higher elevations; sheep preferring the alpine tundra and cliff habitats, and goats the rocky habitats above the alpine zones and on steep mountain sides.

Caribou were reintroduced to the Kenai Peninsula in the mid 1960's resulting in two herds, the Kenai Mountain Herd and the Kenai Lowland Herd, which currently number 400 and 66 animals respectively. Introductions in the mid 1980's resulted in the formation of three additional herds: Twin Lakes Herd, Fox River Herd, and Killey River Herd, with 30, 60 and 300 animals respectively. (Distribution map, Figure A-6).



The varied topography of the Kenai Peninsula contributes to the beauty of the refuge and creates habitats for many species of animals.

Wolves, lynx, and many other mammals make their home in the refuge.

Approximately 80 wolves in 10 to 13 packs range throughout and adjacent to the refuge (Distribution map, Figure A-7), in close proximity to moose, their primary food source. Other furbearers found on the refuge include beaver, mink, muskrat, river otter, wolverine, weasel, lynx (Distribution map, Figure A-8) and coyote. Rounding out the list of mammals are snowshoe hares (which are an important prey species for raptors, coyotes, and lynx), red squirrels, porcupine, shrews, voles, mice, and bats.

The refuge supports a diversity of birds including waterbirds, waterfowl, shorebirds, seabirds, raptors, and neotropical migrant and resident landbirds. Its' rivers and myriad lakes are used by swans, ducks and geese, grebes, loons, gulls, and terns. Between 30 to 40 pairs of trumpeter swans, a species once endangered, nest in lakes throughout the lowlands (Distribution map, Figure A-9).

Lakes, rivers, wetlands and forests provide habitat for nesting and migrating birds—here, trumpeter swan cygnets hatch in a successful nest.



The Chickaloon Flats estuary and associated watershed is the major staging area on the Kenai Peninsula for thousands of migrating waterfowl and shorebirds. Among the species using the estuary are tundra and trumpeter swans, snow geese, lesser and cackling Canada geese, greater white-fronted geese, sandhill cranes, mallards, pintail, and other ducks and shorebirds.

Mature forested areas of the refuge are used by warblers, flycatchers, woodpeckers, chickadees, Canada jays, dark-eyed juncos, kinglets, and other landbirds. Great-horned owls and other raptors are found in many forested tracts. Bald eagles nest in large, mature cottonwood or quaking aspen trees along waterways in the lowlands and concentrate to feed on spawned-out salmon along some stretches of the Kenai and Kasilof Rivers in the winter (Figure A-10). A few golden eagles and peregrine falcons nest on cliffs in the Kenai mountains, primarily east of Tustumena Lake.

Three-toed woodpeckers inhabit mature forest.



Most of the refuge has high value salmon habitat.

Like moose, salmon and other fish provide food for humans and wildlife alike. Refuge salmon stocks are commercially, recreationally, and ecologically important. Salmon spawn in all of the major river drainages on the refuge. The Kenai River, together with its tributaries, the Moose, Funny, Killey, and Russian Rivers, is the largest drainage system on the Kenai Peninsula, providing spawning and rearing habitat for millions of king (chinook), silver (coho), red (sockeye), and pink salmon. All four salmon species also spawn in the Kasilof and Chickaloon River drainages, and three species, red, silver, and pinks, spawn in the Swanson and Fox River drainages. Resident sport fishes include Dolly Varden char and

rainbow trout; lake trout are found in Skilak, Tustumena, and Hidden Lakes. Sticklebacks and sculpins are prey for the refuge's abundant loon populations.

Salmon make a significant contribution to refuge food chain.

Salmon are an important food source for black bears, brown bears, bald eagles, and other species of wildlife. During fall and winter bald eagles concentrate on the Kenai River above and below Skilak Lake, where the river is often ice free, to feed on coho salmon. A late fall run of coho salmon provides fresh fish to eagles through December, while carcasses of spawned-out salmon are available to the eagles through February.

Public Use

Kenai Refuge has highest public use of any Alaskan refuge.

With its diverse landscape, abundant fish and wildlife populations, varied recreational opportunities, and road access to Anchorage, the state's largest population center, the Kenai Refuge has the highest level of public use of any national wildlife refuge in Alaska. Over 500,000 people visit the refuge annually. The refuge is unique among Alaskan refuges in that fish and wildlife oriented recreation is listed by ANILCA as a purpose of the refuge.

Sport fishing is one of the most popular recreational activities occurring on the refuge: over 100,000 visitors fish annually on refuge waters. The legendary salmon fishing draws anglers from all over the world. In addition to king, red, and silver salmon, anglers pursue Dolly Varden char, rainbow trout, and lake trout, Alaska's largest freshwater fish. Ice fishing for lake trout is popular in winter.

Fish and wildlife oriented recreation is a purpose of the refuge.

Visitors also come to the refuge to camp in established camp sites or primitive areas, canoe on the Swan Lake or Swanson River Canoe Routes (which are National Recreation Trails), go hiking, backpacking, horseback riding, or cross-country skiing on the many available trails, ride snowmobiles, pick berries, hunt, and trap. Some people just enjoy the scenery and wildlife as they drive through the refuge on their way from Anchorage to Homer or other destinations on the south peninsula. Or maybe they just want to get a picture of those big moose that they have been hearing about — the Skilak Wildlife Recreation Area is a designated wildlife viewing area.

The confluence of the Russian and Kenai Rivers is a favorite fishing spot.



The Kenai Refuge seems to have something for everyone, in the recreational sense, but management for wildlife is the refuge's first priority. As mandated by ANILCA, fish and wildlife-oriented recreation must be compatible with conservation of fish and wildlife populations and habitat.

Many commercial activities are allowed in the refuge.

Commercial activities are another type of public use of the Kenai Refuge. Most of the northern portion of the refuge, except for wilderness, is open to oil and gas exploration and leasing. The lease area includes both refuge-owned subsurface and CIRI subsurface.

Special Use Permits are issued for commercial recreational ventures such as guiding, outfitting, wildlife viewing, and air-taxi services. Sixty-seven guides provided visitor support services, including guided fishing, in 1993.

Sockeye and pink salmon spawned and reared on the Kenai Refuge are important to the Cook Inlet commercial fishery: although not as plentiful as the other species, coho salmon are also taken.



What methods do we have for resource protection?

The following are methods which the Service and a landowner may use to ensure that wildlife resources are protected. The options vary from written agreements on land management to outright purchase of the land. Land and interest in land may be acquired in fee title by several methods, which include exchange, purchase, or donation. Each parcel of land has unique resource values which dictate the necessary level of protection.

Cooperative Agreement

*A landowner-
Service working
relationship*

The Service and a landowner may enter into a formal agreement in which each party agrees to manage the land in a manner beneficial to wildlife. The Service can agree to do certain things to help a landowner, such as develop wildlife or land management plans, or do wildlife surveys and give the specific information to the landowners. These cooperative agreements are formal and written but usually place no legally binding restrictions on the land. No money is involved and either party may cancel the agreement with adequate notice to the other party. A cooperative agreement would not affect the tax status of the land. Taxes would still be paid where applicable.

Because landowners or land use plans may change, cooperative agreements do not grant permanent protection to fish and wildlife resources. However, agreements may be useful in meeting certain refuge objectives. At the very least, they help to develop a positive, working relationship with local landowners.

Lease

Short-term rental

A lease is a short-term agreement for full or specified use of a parcel of land. The lease generally includes occupancy rights for the Service, and a rental payment (usually annual) is made to the

landowner. Upon termination of the lease, all rights revert to the owner. This method is useful when the objectives are short-term or the owners are unable to provide other forms of land transfer. Long-term leases are not desirable because, within a few years, the cost of a lease rapidly approaches the cost of outright purchase. The property, if taxable, remains on the local tax rolls during the lease.

Easement

A property owner may sell an easement, which is a transfer of limited rights, to the Service. The owner keeps title to the land but agrees to certain conditions. Easements may allow additional public access or resource management on private land, or may place development and use restrictions on the land so that land uses are compatible with resource management objectives. Easements are legal agreements, become part of the title to the property, and are usually permanent. If a landowner sells the property, the easements continue as part of the title.

A purchase of limited rights



The Service has an easement along the Kasilof River on the CIRI-owned Tustumena parcel.

It allows temporary camping and access to Tustumena Lake.

A conservation, or non-development, easement is one of the most common easements purchased for land protection. In general, any conservation easement must prevent destruction or degradation of

wildlife habitat, often limiting or precluding development. It should also allow refuge staff to adequately manage uses of the area for the benefit of wildlife. The conditions or restrictions to which the landowner agrees in an easement may vary and must be worked out before the easement is purchased by the Service. Tax incentives are commonly associated with conservation easements. Properties subject to easements usually remain on the tax roll, but the tax assessment should be lowered by the reduction in market value.

Conservation easements are not considered an option on lands encumbered by Section 22(g) of ANCSA, a restrictive covenant already subjecting these lands to the same laws and regulations that govern the use and development of the refuge.

Donation

The most common reasons landowners donate lands or interests in lands to the Service are (1) to benefit conservation programs (2) to receive a tax benefit, or both. A landowner can donate land through a donation deed with or without restrictions or reservations. For instance, a donor may want to reserve life-use of the property. Title transfers, but Service ownership cannot interfere with donor's rights to continue to use all or a portion of the property during their lifetime, in accordance with the terms of the deed. Another option, donation by will, takes effect only at the donor's death.

Permanent protection and a tax benefit

Donation would free the landowner from local property taxes. Some federal income tax benefits may also be available. A landowner should consult with their tax advisor or local Internal Revenue Service (IRS) office for further information.

Several private conservation organizations, such as The Nature Conservancy, also accept donations of land to benefit wildlife conservation. These organizations may hold the donated land in trust for future addition to the refuge system. Donation of land to a conservation organization often can be accomplished quickly and the landowner may enjoy immediate tax benefits.

A trade of equal value

Land Exchange

An owner may want to trade a piece of land for land owned by the Service elsewhere. Our policy is that land exchanges (1) must benefit both parties since each party will have different reasons for wanting to exchange land, and (2) that the value of the lands or interests in lands be approximately equal, dollar value for dollar value, or the values may be equalized by the payment of cash by the grantor or by the United States. Land values will be determined by market value appraisals. Market value means the going rate or price for similar land being sold at the same time in the same general area. For purposes of exchange, oil, gas, and mineral rights are considered interests in land.

The Kenai Natives Association, Inc. and the United States of America are currently involved in exchange negotiations involving KNA and Kenai Refuge lands. On October 23, 1992, the President signed P.L. 102-458, directing the Secretary of Interior to enter into expedited negotiations with KNA and CIRI for the exchange or acquisition of lands. CIRI declined to participate in negotiations, but an exchange/acquisition proposal involving KNA lands has been submitted to Congress for review and approval. The exchange package is complex, but essentially, KNA would return lands of high resource and public interest values to the refuge in exchange for removal of the remainder of their lands from the refuge. If the proposal is not approved, settlement may be determined by the Congress. See Appendix II for a map showing the location of lands involved in the proposed exchange.

The Service could buy land.

Land Acquisition By Purchase

Acquisition by purchase is the most direct means of obtaining land title. It is a transfer of title in exchange for cash. The Service policy is to pursue a land purchase only with willing sellers. All purchases by the Federal Government must be based on fair market value as estimated by qualified appraisers. While a fee title acquisition involves most rights to a property, certain rights (i.e., use reservation, water rights, and mineral rights) may be withheld or not purchased. As with donations, many types of use reservations can be negotiated. A use reservation may be retained by the owner for a period of time or for the remainder of the owner's life.

The two primary funding sources for purchasing land for refuges are the Land and Water Conservation Fund and the Migratory Bird Conservation Fund. The Land and Water Conservation Fund is funded primarily from offshore oil and gas leases. Additional revenue comes from surplus property sales, motorboat fuels tax and certain recreation fees. The Service uses a national Land Acquisition Planning System (LAPS) to rank parcels for funding from the Land and Water Conservation Fund. In Alaska, we are prohibited from using the Migratory Bird Conservation Fund because the State of Alaska has not ratified the use of these funds for land acquisition within the state.

We will buy only from willing sellers.

Service policy is to buy land only from willing sellers. According to Section 1302 of ANILCA, lands which are owned by (A) the state or a political subdivision of the state (B) a Native corporation or Native group which has Natives as a majority of its stockholders or (C) occupants of 14(c)(1) or 14(h)(5) sites may not be acquired by the Service without the consent of the owner. For all practical purposes, the Service does not condemn land in Alaska.

Bald eagles are abundant on the Kenai Refuge, nesting throughout the lowlands. In winter they gather along the Kenai River above and below Skilak Lake, and along the Kasilof River at the outlet of Tustumena Lake.





Food, cover, and space are habitat requirements for brown bears. While food and cover are plentiful on much of the Kenai Refuge, undeveloped and undisturbed areas are necessary to fulfill the "space" requirement.



What are Service priorities for resource protection on the Kenai Refuge?

This chapter describes the procedures used to set land protection priorities. Both the resource values of a parcel of land, and the potential threat to the resource if the land is developed or land-use changes in some way, are considered.

Resource Analysis by APS Model

Nationwide, the Service develops land protection plans for all new or proposed wildlife refuges. These plans set land protection priorities that are specific to these proposed new refuges or project areas. Land protection planning in Alaska, however, involves setting priorities for inholdings within existing refuges. In 1971, ANCSA opened public lands in Alaska (including wildlife refuges) to land selections by Native Alaskans. Almost ten years later, ANILCA created new refuges encompassing a considerable amount of conveyed private land and ANCSA land selections.

In Alaska we set land protection priorities for existing refuges.

The Alaska Submerged Lands Act of 1988 mandated that the Service determine acquisition priorities for all inholdings within the national wildlife refuges in Alaska. This was a big task, with claims on approximately 23 million of the 92 million acres of land within the boundaries of the 16 national wildlife refuges in Alaska. In order to rank all of these inholdings, the Alaska Region of the U.S. Fish and Wildlife Service developed a computer model, or geographic information system (GIS), entitled the Alaska Priority System (APS).

The APS computer model ranks resources on private lands.

The selection of ranking factors (criteria) for the APS model was based on the missions of the Service and on the management concerns of each individual refuge. The Service has primary responsibility for migratory birds, endangered species, freshwater and

The model considers wildlife, diversity, public use, and management criteria.

anadromous fisheries, and certain marine mammals. The distribution and abundance of these animals are considered in the model, as well as species whose conservation is listed as a purpose of the refuge in ANILCA. Additional criteria considered include species diversity, public use, and management issues.

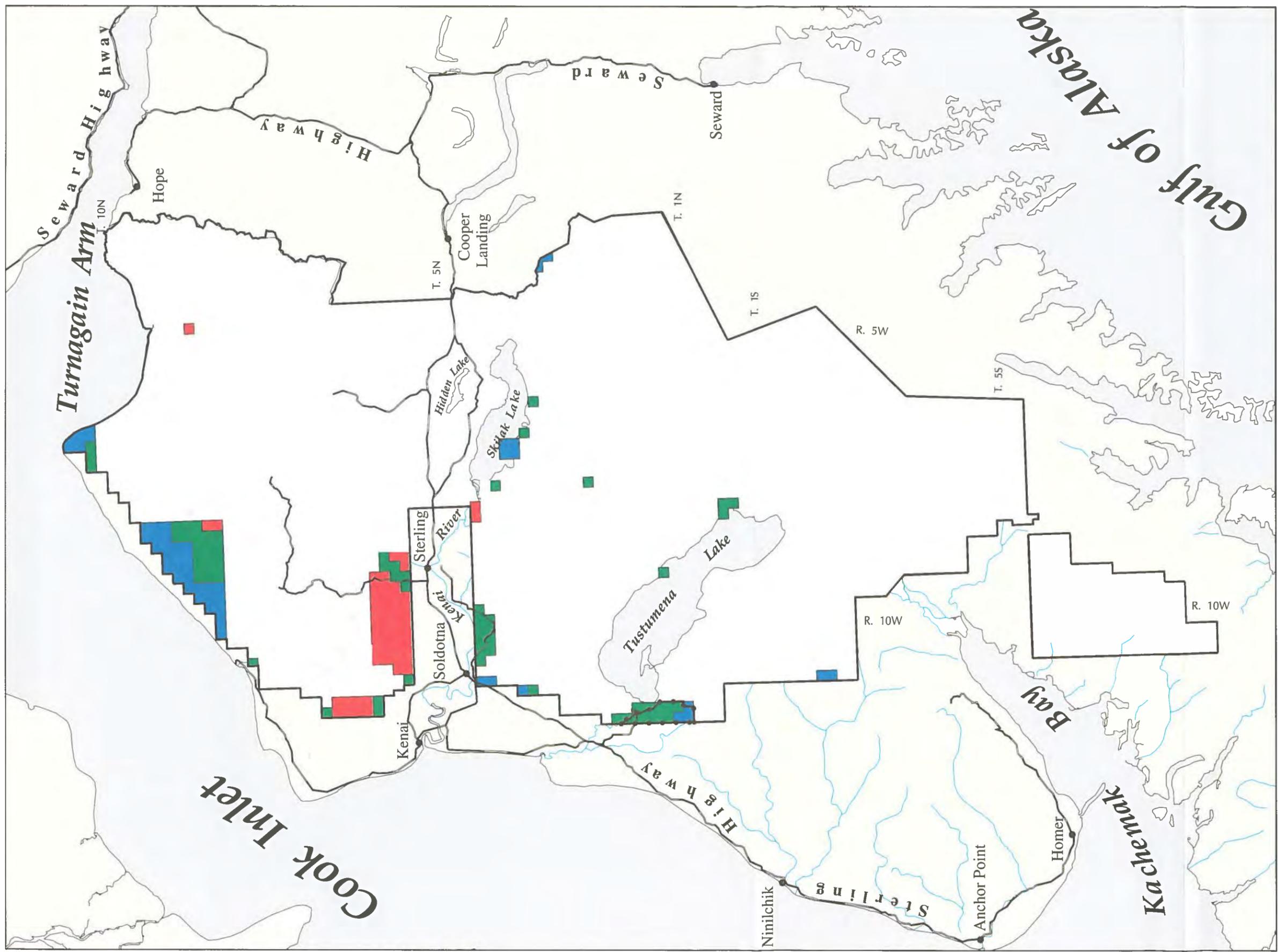
These criteria dovetail with the Service's national Land Acquisition Priority System (LAPS). The APS model serves as an initial ranking and sorting model for the large acreage of inholdings found in Alaska refuges. Areas ranked as high priority in APS can then be submitted into LAPS to compete with acquisition projects nationwide for Land and Water Conservation funds.

For individual refuge land protection plans, the APS model, which consists of a land status database and a resource database, was adapted to prioritize the resources on a single refuge rather than comparing resources across all refuges in the state. Since land status changes frequently on most refuges as state and Native land claims are adjudicated, land status maps used in the statewide APS model run were updated. Resource maps were also updated to take advantage of new data.

Private lands are ranked as high, medium, or low priority.

An explanation of how we used the APS model to rank wildlife resources and management concerns for the Kenai Land Protection Plan can be found in Appendix I. The fold-out map on the opposite page (Figure 5) shows the resulting land protection rankings for the inholdings on the Kenai Refuge. Private lands were classified as high, medium, or low priority, with approximately $\frac{1}{3}$ of the total acreage of conveyed private lands and Native allotment applications in each category. Acquisition funding requests will be based on these priority rankings and on an additive criteria — threats.

Figure 5



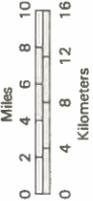
Kenai National Wildlife Refuge: Land Protection Priorities



- Legend**
- High Priority
 - Medium Priority
 - Low Priority
 - Refuge Boundary
 - Interim Boundary

Notes

- 1 - Land protection priorities displayed for conveyed lands and Native allotment applications.
- 2 - Small parcels are portrayed at the section level.
- 3 - Projected in UTM zone 5.



Current to 5/20/94

Land use changes can affect resources.

Threats

Wildlife resource values and management concerns, as scored by the APS model, are major considerations when selecting the necessary level of land protection. But, selection of land protection alternatives should also be based on the impact that land use changes, such as development, would have on these resources and on the overall health of the surrounding ecosystem.

The original "statewide" APS model included a threats criterion as part of the scoring process. A threat was defined as the likelihood that a site, or portion thereof, would be destroyed or degraded, directly or indirectly, through human actions. Points were awarded to a parcel of land based on the immediacy of the threat, the value of the resource being threatened, and the ability of acquisition to reduce or eliminate the threat. For the development of land protection plans, this criterion was moved outside of the model so that threats could be considered separately from the resource values of a parcel.

Development or other human uses on private lands in the Kenai Refuge could adversely affect wildlife habitats and populations. Potential problems include: outright loss of high quality wildlife habitat and displacement of animals; blockage of wildlife migration corridors; disturbance of unique or sensitive environments; threats to wilderness values; or impacts to resources on adjacent federal lands.

Habitat Loss and Displacement

In developed areas, wildlife may be displaced by a change in habitat, or eliminated when fenced, hunted, killed or harassed by dogs or cats. Species of animals on the Kenai Refuge that will be most affected by development or human activity are brown bears, wolves, lynx, trumpeter swans, and bald eagles. These animals already occur in small numbers and are known to be sensitive to disturbance. (See Appendix I for maps showing the distribution of these species across private lands.)

Brown bears, wolves, lynx, trumpeter swans, and bald eagles are especially sensitive to development and human disturbance.

In *A Management Strategy for Kenai Peninsula Brown Bears*, Jacobs (1989) concluded that current brown bear habitat is shrinking because of human encroachment on essential habitat through road

construction and land developments, causing harassment and displacement. He defined essential zones or habitats for brown bears as areas of high use by bears, which provided a critical source of food, cover and space.

On the Kenai Refuge, two areas in the essential zone are the benchlands between Skilak and Tustumena Lake and the Chickaloon River drainage — private lands in this zone include the KNA Kenai River parcel, southern two-thirds of Tustumena tract, and small parcel inholdings in the benchlands. Some of Jacobs' management recommendations for essential zones included: maintaining roadless conditions, prohibiting oil, gas, or mineral extraction, prohibiting the construction of subdivisions or recreational cabins, prohibiting logging operations, and restrictions on camping and other public uses. These relatively restrictive recommendations are based on the vulnerability of brown bears to development and human presence or activities. The maintenance of a viable brown bear population on the Kenai Peninsula is a matter of concern for all resource management agencies, including the Service (Jacobs 1989).

The North American lynx is one of three Category 2 candidate species in the Kenai Refuge.



Although no species listed as threatened or endangered under the Endangered Species Act occur on the Kenai Refuge, there are three Category 2 candidate species — the olive-sided flycatcher, the northern goshawk, and the North American lynx. This means that while there is information that indicates that these species might qualify as threatened or endangered in some parts of their range, the Service needs further information before the need for listing can be determined. In the meantime, sensitive species such as the lynx need to be managed carefully to maintain populations on the refuge because there are limited opportunities for immigration from mainland Alaska or natural refugia.

Wolves have a natural tendency to avoid development and humans. Bailey (1984) observed that, "The avoidance of human activity on the Kenai Peninsula is well documented by research which shows that established wolf packs avoided areas of human development along the Sterling Highway Corridor, and settled areas west of the refuge. Within the refuge, wolf packs avoided the intensively used Swanson River Oilfield."

Like wolves, bald eagles and trumpeter swans may be displaced by human disturbance. If disturbed when nesting, some eagles and swans may abandon their nests and build another in a more remote location, providing that an adequate nesting site can be found. "Trumpeter swans are not tolerant of disturbance when nesting and have been driven out of some otherwise high-quality nesting habitats by increased recreational use of lakes. Such disturbances force the swans to nest in marginal habitats elsewhere, reducing productivity." (USFWS 1985). Several long term nests and nesting territories are located on private lands within the refuge.

Movement Corridors

Movement corridors are important wildlife habitat features. From the standpoint of maintaining natural diversity, it is important to promote the natural pattern and connectivity of habitats and to minimize fragmentation. Larger blocks of habitat are better for maintaining some wildlife populations than smaller blocks; connected blocks of habitat are better than isolated ones. Artificial movement barriers should be avoided because they separate habitats, which may increase mortality rates of wildlife and disrupt their normal movements.

Connected habitats allow animals to move freely between all parts of the refuge.

Two such movement corridors occur on privately-owned lands west of Tustumena and Skilak Lakes. Tustumena Lake itself presents a large natural barrier to wildlife movement in the refuge. Wildlife (moose, brown and black bears, wolves, lynx, etc.) moving between the south and central part of the refuge on the west side of Tustumena Lake must traverse a narrow corridor of undeveloped CIRI-owned land in order to avoid the developed areas adjacent to the west border of this tract.

Caribou range through the corridor west of Skilak Lake. (See Fig. A-6)



The same situation exists on the west side of Skilak Lake, where animals moving between the central and northern parts of the refuge cross undeveloped KNA lands to avoid the developed Sterling corridor. Development in these corridors could reduce wildlife movements between major areas of the refuge and cause population declines or reduce genetic diversity.

Sensitive Ecosystems

Often, impacts from local projects or certain types of land-use can have far-reaching effects on unique or sensitive ecosystems — areas where a large number of species may be affected by their disturbance. Wetlands and stream banks are examples of areas that are particularly species rich and vulnerable to disturbance.

Salmon need vegetated stream banks for food and cover.

Streamside vegetation is an important variable affecting the quality and quantity of fish habitat, for instance. Vegetation growing in or hanging in the water slows water velocity and creates bank irregularities which provide places where fish can get out of the current to rest, feed, or hide from predators. Burger et al., 1985, found that 80% of the young salmon in the Kenai River can be found within 6 feet of the bank in undisturbed areas. The vegetation also harbors insects, (food for fish and other animals in the aquatic food chain), supplies shade to maintain suitable water temperatures for fish production, and nutrients (organic material) to the water column. Trampling, removing, or otherwise altering the vegetation can change the fish habitat and cause populations of fish to decline.

We need healthy watersheds for healthy rivers.

Maintaining healthy watersheds is imperative to maintaining both recreational and commercial salmon fisheries as well as populations of animals dependent on fish for food, particularly bears and eagles. According to Rosenberg (1983), "Fish habitat is directly related to and highly dependent on conditions of the surrounding watershed, especially the adjacent riparian zone." The River/Fisheries Committee of the Kenai River Special Management Advisory Board (1985) identified several types of habitats as being critical to the maintenance of the Kenai River and its' tributaries:

1. Riparian ecosystems - the vegetation growing along waterways;
2. Contiguous wetlands - wetlands, lakes, and tributaries adjacent to the river;
3. Habitats in the 100-year floodplain - the area subject to a one percent or greater chance of flooding within any given year. This includes the riparian ecosystems and contiguous wetlands as well as upland and forest communities.

The Kenai River watershed drains an area of approximately 2,150 square miles. Its tributaries in the Kenai Refuge include the Killey, Moose, Funny, and Russian Rivers. Threats to these watersheds may come from unregulated public use or from development.

Some concerns associated with unregulated public use are loss of habitat from construction of boat ramps, and stream bank erosion and siltation of streams resulting from the trampling of stream-side vegetation and from boat wakes. Trampling by anglers can have a serious effect on bank cover needed by young fish. Sediment added to the river from erosion can plug the spaces in the spawning gravel and lead to suffocation of developing eggs and salmon fry.

Even careful development can cause habitat loss and pollution.

Development actions can cause a different set of problems, regardless of how carefully regulated or how well-intentioned the developers. Removal of vegetation will cause loss of habitat to both fish and wildlife and increased chance of erosion and siltation in rivers and wetlands. Buildings and pavement prevent water absorption, which can lead to less groundwater recharge and increased surface runoff, causing higher flood levels.

Unintentional pollution can result from faulty septic systems and landfills as well as run-off from roads, construction sites, storage areas, etc. Some types of pollutants that find their way into the rivers in developed areas include gas and oil, fertilizers, cleaning agents, and sewage. The Alaska Department of Fish and Game found a water quality difference between the rural and urbanized areas of the Kenai River. In the urbanized area, fecal coliform bacteria counts (associated with sewage) were higher below the Soldotna Bridge compared to upriver locations (Litchfield and Kyle, 1992).

Wilderness Resource Values

Most Kenai inholdings retain wilderness character.

The value of wilderness to wildlife and as a primary factor in meeting refuge purposes is well documented and a matter of law. Most of the refuge's large private inholdings continue to meet federal criteria for designation as wilderness should these lands be reacquired. The defacto wilderness character of these lands may be transitory and threatened by potential actions of landowners.

Refuge visitors enjoy the nationally designated canoe trails in the Lowland Unit of the Kenai Wilderness.



All of the smaller patented parcels identified in the land protection plan are located within Kenai Wilderness or lands identified for future wilderness protection within the Kenai Comprehensive Conservation Plan (USFWS 1985).

Development on private lands may alter existing wilderness attributes.

Future activities on these parcels may conflict with adjacent wilderness resources. Access routes across wilderness lands to private parcels may also conflict with the wilderness character and traditional access methods ordinarily available to the general public.

The Spirit Lake (Elephant Lake) area was originally identified for wilderness designation by the Service before being removed from the available refuge land base. The 4,481 acre Pt. Possession, Inc. parcel was actually designated as part of the Kenai Wilderness until recognized as a private land claim. Wilderness resource attributes such as the absence of roads or permanent structures may be permanently altered by even limited development of a subject parcel.

Private parcels that retain ANCSA Section 22(g) status may be subject to development actions that are compatible with general refuge purposes criteria, but that foreclose future wilderness designation and/or management.

Inholdings within the wilderness boundary would be returned to wilderness status if reacquired.

Roadless areas on the Kenai Peninsula have become more scarce both on federal and non-federal lands as residential construction, logging, oil and gas exploration and development, commercial activities, and other activities have accelerated since the mid-twentieth century. Land conveyances and land disposal from the original refuge and federal land base have been significant and have resulted in an ever decreasing wilderness resource.

Wilderness resources and associated wildlife habitat and benefits may be considered threatened in the long term except where specifically protected by law. An expanding population, extensive subsurface and surface private ownership, increased miles of roads, logging, accelerated borough land disposal and increasing commercial activities will result in less wilderness resource and greater public dependency on remaining federal lands with wilderness values.

Evaluation of Threats

When planning protection priorities, the ability of acquisition to reduce the threats to wildlife resources and habitats posed by use and development actions is considered in addition to the APS model score. To evaluate whether development or other land use on private lands may pose a threat to refuge wildlife or resources, inholdings are evaluated as follows:

- **Suitability for Development** - Is the site geographically suitable for development, and would it be economically feasible to develop it?
- **Probability of Development** - Has the land owner expressed an interest in a development action, or is it probable that the site will be developed in the next ten years?
- **Impact to Refuge Resources** - How seriously would development impact refuge resources? Does the parcel rank well in the APS model? Are there other values not measured by the APS model? Will land protection measures be able to reduce the threat to wildlife?

Most of the private land in the Kenai Refuge is geographically suitable for development and much of the land has reasonably good access by Alaska standards. Inholdings are accessed by one or more

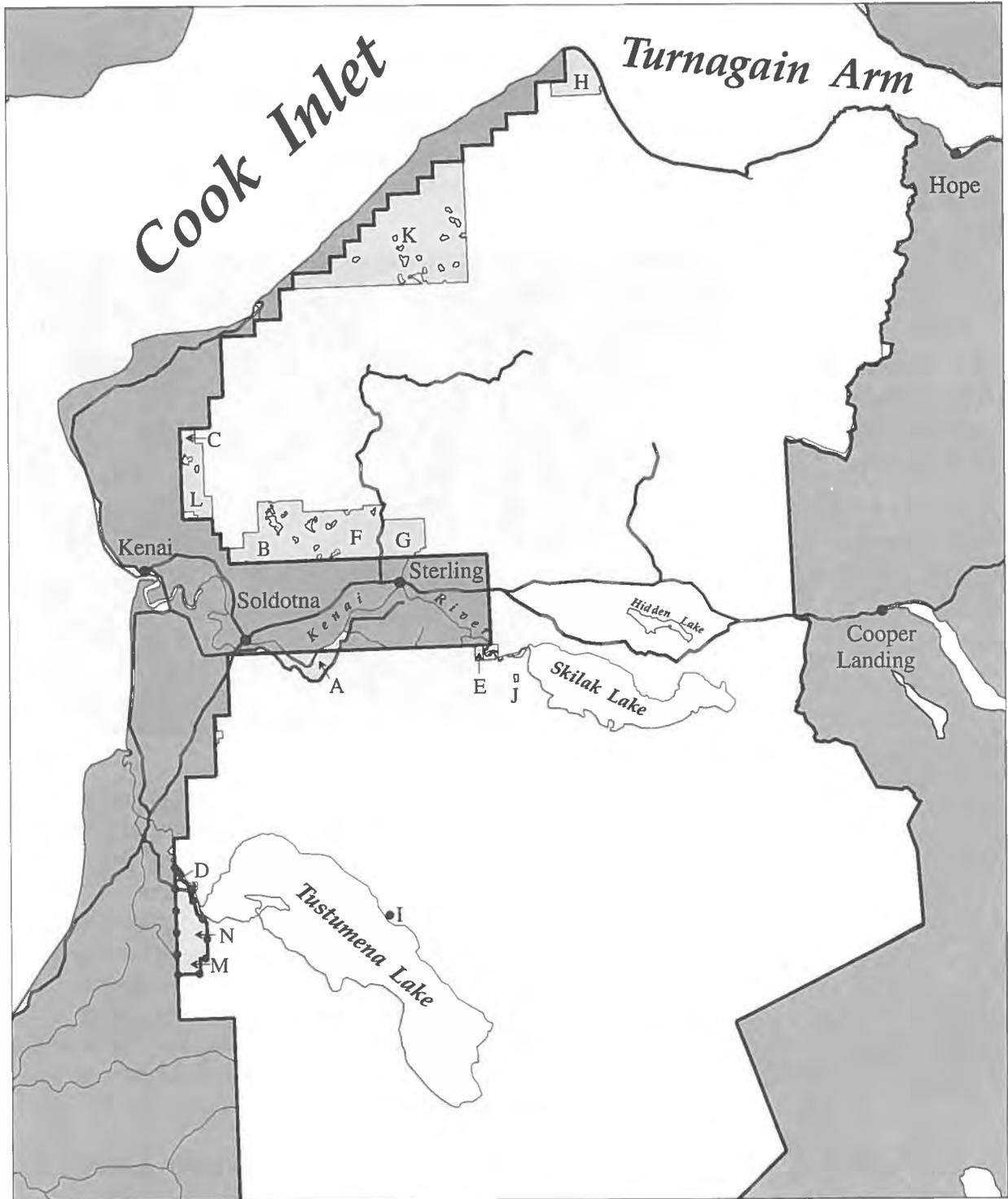
of the following: vehicles on gravel roads, all terrain vehicles, snowmobile, aircraft (both airstrip and floatplane) and boat. Current development ranges from a Salamatof Corporation subdivision on the Kenai River to private recreational cabins on some parcels; but the majority of Native Corporation lands remain undeveloped.

The northern 1/3 of the Tustumena tract has year-round road access.



Salamatof lands, with no 22(g) restrictions, have a high probability for development compared to other Native corporation surface lands. Some inholdings on the western boundary of the refuge are adjacent to existing subdivisions or other developed areas. Development pressure for housing and recreational facilities such as cabins and lodges will likely increase as populations on the Kenai Peninsula increase and as the economy of the Kenai Peninsula becomes strong enough to support such expansion. Increased pressure for recreational uses on private lands would result from this expansion and will also come from the metropolitan Anchorage area and the expanding tourism industry.

Parcels on the Kenai Refuge for which development is possible and most probable are listed in Table 5. New parcels can be added or subtracted as the economy and development pressures change. Parcels to be added will follow the same screening process as outlined above.



Parcels Susceptible to Development – Table 5

Kenai National Wildlife Refuge

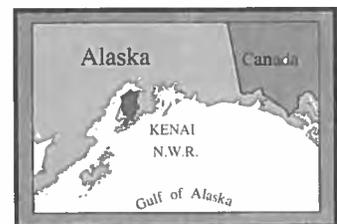
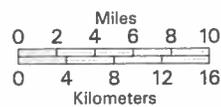


Legend

- Native Conveyed Land
- Other Private
- Refuge Boundary
- Interim Boundary

Notes

- 1 – Land status represents USFWS interpretation of BLM records.
- 2 – Projected in UTM zone 5.



Current to 5/20/94

Table 5. Parcels susceptible to development and/or use actions that may impact the Kenai Refuge. *This information will be considered, along with APS ranks, when evaluating land protection options.*

Parcel Identification (Owner)	APS Rank	Probability of Development	Ecological Significance/Comments
A. Kenai River - East 2/3 (Salamatof)	Medium	High No 22(g) Surveys, subdivided	<ul style="list-style-type: none"> ▪ Riparian habitat with high diversity of wildlife species; new road near wolf den active for many years
B. Spirit Lake a.k.a. Elephant Lake (Salamatof)	High	High No 22(g) Existing cabins & road	<ul style="list-style-type: none"> ▪ High density moose wintering; trumpeter swan nesting area ▪ Multiple land ownership, but land most important for acquisition is one owner
C. Konovalof Lake (Salamatof)	High	High No 22(g) Power line w/in ½ mile, subdivided	<ul style="list-style-type: none"> ▪ Important moose wintering area; wolves, bears, bald eagle nesting ▪ Parcel most wanted has multiple owners; possible year/round access
D. Tustumena N. 1/3 (CIRI)	Medium	High No 22(g) CIRI has capital for development; year-round road access	<ul style="list-style-type: none"> ▪ Riparian habitats with high diversity of wildlife species; movement/migration corridor; campground; recreational and wilderness access; cultural values ▪ CIRI has declined to sell to Service
E. Kenai River a.k.a. Stephanka (KNA)	High	High 22(g) restrictions*	<ul style="list-style-type: none"> ▪ Riparian habitats with high diversity of wildlife species; winter bald eagle concentrations; trumpeter swan staging and overwintering; high winter waterfowl use; major salmon spawning river; caribou winter range; essential brown bear habitat; recreational access; cultural values; wilderness ▪ Involved in Congressionally mandated land exchange proposal
F. West Swanson R. Rd. (KNA)	High	High 22(g) restrictions*	<ul style="list-style-type: none"> ▪ Has old growth forest, '47 burn and '69 burn; important moose winter area; staging for trumpeter swans; high waterfowl nesting; lynx, coyote and wolf denning ▪ Service owns gravel ▪ Involved in Congressionally mandated land exchange proposal

*Until ANCSA 22(g) regulations are promulgated, we do not know the degree of protection afforded these parcels by 22(g). We cannot dismiss the fact that they are geographically and physically suited for development.

Table 5 continued next page ▶

Table 5 Continued.

Parcel Identification (Owner)	APS Rank	Probability of Development	Ecological Significance/Comments
G. East Swanson River Rd. (KNA)	High River Medium Road	High 22(g) restrictions*	<ul style="list-style-type: none"> ■ Riparian habitats with high diversity of wildlife species along Moose River; bald eagle nesting; trumpeter & tundra swan staging; caribou winter range; lynx, coyote and wolf denning; recreational access ■ Eastern portion involved in Congressionally mandated land exchange proposal
H. Pt Possession Lands	Low & Medium	Medium Service doesn't have right of first refusal	<ul style="list-style-type: none"> ■ Trumpeter swans on Diamond Lake ■ No development yet, but inquiries from real estate agents ■ Formerly part of Kenai Wilderness. Development in this area could compromise wilderness values if reacquired
I. Bear Creek (Small Parcel)	Medium	High -9 ac. Medium - 40 ac.	<ul style="list-style-type: none"> ■ In wilderness. Inholders have ATV access privileges along wilderness beach: this type of access denied to the general public ■ 9 acre parcel is not subdivided; very important for access to refuge trails ■ 40 acres is subdivided & has 6-7 owners;
J. Olson Lake (Small Parcel)	Medium	Low (Unless Sold)	<ul style="list-style-type: none"> ■ In wilderness ■ Native Allotment with 8-10 owners; for sale but no current plans to develop
K. Tyonek Lands	Medium & High 1/2 Low 1/2	Medium Graycliff Subdivision is adjacent to W. border	<ul style="list-style-type: none"> ■ With acquisition could have stricter controls on road rehab w/oil & gas development; if road allowed on private lands it could be linked to other roads ■ On a portion of the tract, Service owns sub-surface (Bufflehead Lake) & Tyonek owns surface
L. Beaver Creek (KNA)	High 1/2 Medium 1/2	High 22(g) restrictions* Existing power line	<ul style="list-style-type: none"> ■ Winter moose concentrations; caribou range; wolf use ■ Involved in Congressionally mandated land exchange proposal ■ Problems with trespass activities (ATVs)
M. Tustumena - South 1/3 (CIRI)	Low	Medium No 22(g)	<ul style="list-style-type: none"> ■ Bog/meadow wetlands with high diversity of wildlife species; essential brown bear habitat; movement/migration corridor
N. Tustumena - Central 1/3 (CIRI)	Medium	Low No 22(g) Substrate boggy; more difficult to develop	<ul style="list-style-type: none"> ■ Bog/meadow wetlands with high diversity of wildlife species; essential brown bear habitat; movement/migration corridor

*Until ANCSA 22(g) regulations are promulgated, we do not know the degree of protection afforded these parcels by 22(g). We cannot dismiss the fact that they are geographically and physically suited for development.



What land protection measures do we recommend?

Existing Level of Protection

If none of the resource protection options are used, we would continue to rely on existing federal or state legislation to protect target resources. For example, development in the vicinity of lakes or rivers is subject to state and local water quality laws. In addition to these regulations the following offer some measure of protection:

ANCSA: Sections 14(h)(1) & 22(g)

Two provisions of ANCSA grant a limited level of resource protection. Section 14(h)(1) provided for the conveyance of cemetery sites and historical places to regional corporations. This provision allowed Alaska Natives to select and control areas they deem to have cultural significance. Sites must be certified by the Bureau of Indian Affairs (BIA). To date, five sites have been certified eligible for conveyance within the Kenai Refuge boundary, but none have been conveyed (Table 4). Since these sites are known to have cultural, religious, or historical significance, corporation shareholders likely will prefer that they remain protected from development. In addition, a covenant in the conveyance documents requires that historical and cultural values of these sites be protected. The 14(h)(1) sites are also subject to the provisions of Section 22(g) of ANCSA as outlined within 43 CFR 2653.5.

Section 22(g) specifies two title restrictions that pertain to conveyed lands within the boundaries of pre-ANCSA wildlife refuges:
(See Figure 1, the Generalized Land Status map. The pre-ANILCA boundary shown on this map also defines the pre-ANCSA portion of the Kenai Refuge.)

1. The United States retains a right of first refusal on the sale of former refuge lands that were conveyed to a Village Corporation.
2. Former refuge lands remain subject to the laws and regulations governing the use and development of the refuge.

The right of first refusal is a statutory right and procedures for implementation are provided for in 43 CFR 2650.4-6. The United States has 120 days to respond after being advised of a bona fide offer to purchase. If the right is not exercised, and that sale is completed, the right of first refusal terminates for that particular parcel. The right of first refusal will do little to protect refuge resources unless funds are available for acquisition prior to an offer to sell.

Regulations to implement the use and development restrictions of 22(g) have not been issued. However, the statute is clear that there may be restrictions on how that private land can be used and developed. Unlike the right of first refusal, this part of 22(g) remains with the land. Regardless of how often the land is sold, or whether its title is transferred by gift, inheritance, or by other means, this use and development covenant remains in force.

Tyonek and KNA patents are subject to both 22(g) restrictions.

Although all of the Native Corporation lands conveyed on the Kenai Refuge are located within the pre-ANCSA boundary, Section 22(g) does not apply equally to all conveyances. The Tyonek Native Corporation, a Native village corporation, and the Kenai Natives Association, one of the four cities granted land by Section 14(h)(3) of ANCSA, have conveyances which are subject to both the right of first refusal and the use and development restrictions of 22(g).

Pt. Possession lands are not subject to right of first refusal.

But, Pt. Possession and Salamatof conveyances resulted from stipulated settlements and do not conform to standard ANCSA conveyance rules. As a result, Pt. Possession lands have the use and development restrictions of Section 22(g) but are not subject to the right of first refusal, and Salamatof conveyances have no 22(g) restrictions. Pt. Possession, Inc., a Native group entitled to land under Section 14(h)(2) of ANCSA, withdrew a village application appeal to facilitate the processing of its group selection application. In the Decision to Issue Conveyance to Pt. Possession as a Native group, the BLM stipulated that the conveyance would be made subject to the requirement in Section 22(g) of ANCSA which provides that the conveyed lands will remain subject to the laws and regulations governing use and development of a wildlife refuge. However, the Service does not have the right of first refusal on Pt. Possession lands.

Salamatof conveyances have no 22(g) restrictions.

In a legislative settlement of a dispute over Salamatof's eligibility as a village corporation, Salamatof relinquished selections and selection rights to approximately 57,480 acres in the Kenai Moose Range. In return, they received approximately 15,511 acres of refuge land, unencumbered by 22(g). Salamatof has already subdivided and developed some of their holdings.

Use and development on those lands with 22(g) restrictions will be evaluated on a case-by-case basis. While the Service cannot advise exactly what types of use and development can take place on 22(g) lands, a high priority is placed on working with private landowners to conserve fish and wildlife resources.

Other Laws and Regulations

Private lands in the refuge are not zoned by the borough.

The Kenai Peninsula Borough does not currently zone private land in the Kenai Refuge or elsewhere in the borough, with few exceptions. According to the Kenai Peninsula Borough Planning Department, the borough may adopt "local option zoning" in the future. Neighborhoods could petition for a local zone. Lands to be zoned would have to be contiguous, so private lands along the refuge boundary may be included, but not inholdings surrounded by federal land. Whether future zoning could be beneficial to resources on the Kenai Refuge would depend on the type of zoning adopted.

Development actions within the Kenai Peninsula Borough that require a state or federal permit are subject to the consistency review process for the Alaska Coastal Management Program. The borough's Planning Department reviews all Coastal Zone applications for compliance with the established local Coastal Management Plan.

The Kenai Refuge has been open to oil and gas leasing since 1958. The original lease area was modified to exclude wilderness areas designated by ANILCA in 1980, and proposed wilderness areas identified in the Kenai Comprehensive Conservation Plan. Currently about 20% (398,000 acres) of the refuge is open to oil and gas leasing, and CIRI's subsurface conveyances fall within this area: therefore this activity may be allowed whether in federal or private ownership.

Refuge lease holders are subject to federal leasing regulations (43 CFR) and appropriate state regulations. CIRI must abide by state and federal regulations as well as a Surface Use Plan mandated by the Cook Inlet Terms and Conditions (P.L. 94-204), which stipulated that "All activities related to the extraction of oil and gas and coal which affect the surface of the Kenai National Moose Range shall be conducted in accordance with a surface use plan approved by the Secretary." The Surface Use Plan was approved by the Regional Director of Region 7, U.S. Fish and Wildlife Service in December, 1979, under authority delegated by the Secretary.

Subsurface interests are not prioritized in our land protection plans. Kenai is one of few refuges in Alaska where the Service owns the surface and a Native regional corporation holds the subsurface: Usually, villages own the surface and regions the subsurface. In Alaska the Service does not seek to acquire subsurface interests because, (1) where the surface is refuge land, surface use is already regulated, and (2) because the vast amount of privately-owned surface land must receive primary consideration.



*Oil and gas leasing is regulated by state and federal laws.
CIRI also abides by the refuge Surface Use Plan.*

Kenai Refuge Resource Protection Guidelines

A major objective of this plan is to make recommendations for land protection measures on private lands within refuge boundaries. Service policy is to acquire the minimum interest needed to protect refuge resources. Wildlife resources may be adequately protected in many areas and no federal action would be necessary. Decisions for resource protection on the Kenai Refuge will be based on the following considerations:

1. The relative ranking of resources of the APS model;

- The APS model divides the total acreage of refuge inholdings into three priority categories to show relative resource values. On the Kenai Refuge, all inholdings, except for those with concentrated residential development, have sufficient wildlife values for the Service to pursue acquisition of an interest in the land. Acquisition may be necessary to adequately protect the refuge and its resources.
- Usually, higher ranked lands would be acquired before lower ranked lands assuming threats to wildlife resources are the same.

2. Evaluation of development threats that would harm refuge resources;

- A high development potential exists on most of the private lands in the Kenai Refuge. Development or human use of private lands that is, or potentially could impact refuge wildlife, adds urgency to the need for acquisition. This is particularly true of lands with naturally high resource values — either high APS rankings or of high value to species whose conservation is listed by ANILCA as a purpose of the refuge.

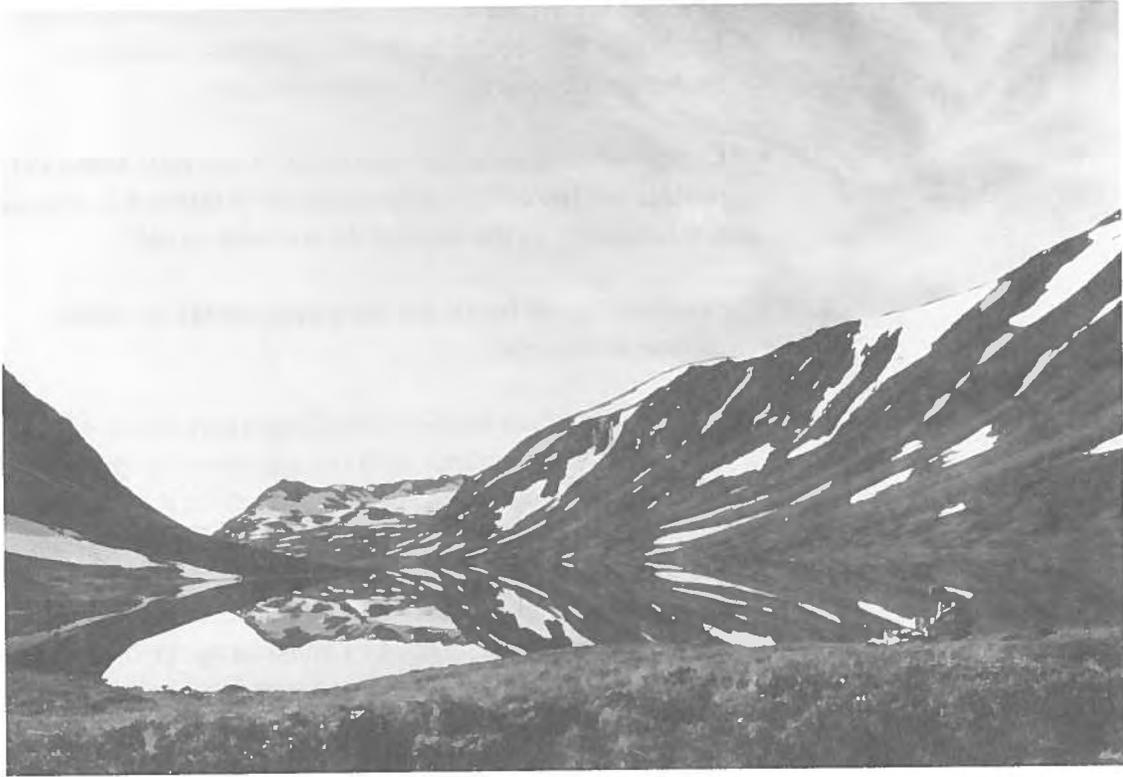
3. The willingness of landowners to work with the Service to protect the natural resources on their land;

- The Service would acquire land only from willing sellers. Interest in land could be obtained by lease, easement, exchange, donation, or fee title purchase.
- Cooperative agreements with landowners may adequately protect the resource if acquisition of an interest in the land is not necessary or the owners do not wish to sell.

4. The availability of funds for land acquisition or other protection measures.

- The Kenai Refuge has few inholdings (only about 4% of total acreage) compared with the millions of acres of private lands in other refuges in Alaska. Therefore it is feasible for the Service to restore the integrity of the refuge through acquisition if funding could be obtained. Alaskan refuges must compete with the National Park Service, the U.S. Forest Service, the Bureau of Land Management and other wildlife refuges nationwide for acquisition funding from the Land and Water Conservation Fund.

All land protection proposals, initiated by either the landowner or the Service, will be evaluated on a case-by-case basis. Most of the land protection measures described in this plan would require environmental documentation.



A wilderness camper finds solitude at Iceberg Lake near Skilak Glacier.



How will implementation of this plan affect landowners and others?

The Kenai Refuge lies within the Kenai Peninsula Borough. The two borough cities most closely associated with the refuge are Kenai and Soldotna, which are the population centers for the central peninsula. The refuge headquarters and visitor center are within the city limits of Soldotna. Other nearby cities include Sterling and Kasilof.

Cultural Resources

Early occupants of the Kenai Peninsula included the Chugach Eskimos, and later, Tanaina Athapaskans. The many archeological sites in the refuge, particularly along the rivers and lakes, attest to this Native presence. By the time the refuge was established, however, Natives had consolidated in larger communities not included in the new refuge.

Archeological sites are abundant on some of the conveyed Native corporation lands. Cook Inlet Region, Inc. has selected several additional sites as cemetery sites or historical places, and the portions certified eligible by BIA will be conveyed (Table 4). Acquisition by the Service should not impact cultural resources. If returned to federal management, these resources would be protected under Section 106 of the National Historic Preservation Act of 1966, which requires federal agencies to take into consideration cultural resources when granting federal licenses, permits, or funds to projects that could affect such resources.

Impact on Landowners

There are no Native villages or other defined communities within the Kenai Refuge boundaries. Although there are subdivisions on some of the private lands, the refuge has few permanent residents.

The refuge has few permanent residents.

Originally a homestead, Caribou Island, in Skilak Lake, has been subdivided into 227 lots. Refuge staff estimates that only one to three families live on the island year round. Most of the improved tracts are used seasonally or intermittently as secondary residences or recreational units.

Moose Range Meadows South is a Salamatof Native Association subdivision located along the Kenai River, about 3 miles east of the center of the City of Soldotna: there are fewer than 20 permanent households in about 100 riverfront lots in this subdivision. Salamatof has also subdivided some of their property in the Konovalof Lake and Strawberry Road areas. These lands are held primarily by shareholders, but some have been re-sold. Power and other city services are not presently available in these two areas, so there is no concentrated residential development.

The Service will compensate individuals or businesses for moving expenses if their land is bought.

Occupants or businesses required to move if the Service acquires their property will be compensated for moving expenses in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. Generally speaking, on the Kenai Refuge, large subdivisions with concentrated residential development would not be considered suitable for acquisition, therefore relocation may be an issue only in the less developed subdivisions and few small private tracts with permanent residents.

Impact on Economy

Basic industries important to the Kenai Peninsula economy include oil and gas production, tourism, and sport and commercial fishing. Commercial operations, such as guiding, outfitting, wildlife viewing, and air-taxi services, are allowed in the refuge by permit.

Recreational use of the refuge supports businesses such as hotels, restaurants, gas stations, and sport shops in the local communities.

Land protection measures should not significantly affect these industries. Because all of the larger tracts of refuge inholdings except for Salamatof's have ANCSA 22(g) use and development restrictions on them, there would not be much change in land use if the refuge acquired some of these private lands.

Public ownership provides many benefits.

On developable lands, refuge ownership would preclude some types of recreational development not compatible with refuge purposes. However, preservation of habitat and conservation of resources through public ownership will benefit recreation and tourism on the Kenai Peninsula in the long term. The Kenai Refuge is committed to provide fish and wildlife oriented recreational and educational use. Managing the resource to provide habitat for moose, fish, and other animals will ensure that hunting, fishing, and other recreational opportunities continue. Maintaining the scenic qualities of the area will help to promote tourism, and managing for healthy watersheds will benefit the commercial fishery.



Commercial enterprises such as guided raft trips are allowed by permit.

Compensation is provided for the loss of local tax revenue.

Federal acquisition may remove some lands from the Kenai Peninsula Borough tax rolls, but only a small percentage of refuge inholdings are currently taxed. Native corporation lands are exempt from taxation as long as they remain undeveloped, and Native allotments are tax exempt unless sold to non-Natives. The remaining developed Native corporation lands, such as Salamatof's subdivision, and private parcels of land such as Caribou Island subdivision and other small parcels, are subject to borough taxation.

Compensation to the borough for the loss of tax revenue from purchase or exchange of inholdings is provided through annual payments authorized by the Refuge Revenue Sharing Act. Revenue sharing payments are based on whichever of the following is greater: 25 percent of net receipts collected from refuge management fees (permit fees, sale of timber, minerals, sand and gravel, etc.), 75 cents an acre for the total acreage of the property purchased, or three-fourths of one percent of the fair market value of the property. Property is reappraised every five-years to determine its highest and best use. Congress is authorized to appropriate funds to make up any shortfalls in the revenue sharing fund. However, if Congress fails to do so, payments are reduced accordingly.

Impact on Public Use

Access is a component of public use that can be affected by land ownership. On Native corporation lands, some access is provided through Section 17(b) of ANCSA. This section provided for public use easements across lands and at periodic points along major waterways. Lands conveyed to the Salamatof Native Association, Inc., however, were not subject to Section 17(b) per the terms of the Salamatof Agreement. Instead, specific easements were described, including a 25 foot public use easement along the portion of the Kenai River that passes through Salamatof property. On other private parcels, access is at the discretion of the owners.

In refuge ownership, access to lands is regulated to protect fish, wildlife, and habitats from the impacts of overuse. If the refuge acquired private lands, long term traditional public access would generally be maintained. Although the refuge may impose some regulations on public use to protect resources, the likelihood of access restrictions or use fees on private lands is greater in the long term than on federal land.

Since many private lands on the refuge are not posted, it is often difficult for recreationists to determine whether they are on public or private land. The result is that they tend to use private lands as though they were part of the refuge. If private lands were posted, access could be restricted in portions of popular recreational areas. (See Appendix I, Figure A-11, for a map showing patterns of recreational use on the Kenai Refuge.)

Access is at the discretion of the owners on private lands.

Federal ownership may improve access to popular recreation areas.

Currently, refuge visitors would have difficulty detecting the boundary between refuge land in the bottom 1/3 of the photo, and private land which begins at the first bend in the river.



Any new land acquired by the refuge will be managed in the same manner as the surrounding refuge land. Management decisions regarding public use and access will be made according to the final Kenai Public Use Management Plan (USFWS, in preparation).

Kenai Refuge is the only refuge in the state for which the provision of subsistence use opportunities is not a major purpose as listed in ANILCA. However, rural residents receive a priority to harvest wildlife for subsistence purposes on all federal lands in Alaska where the Federal Subsistence Board has determined that there is a customary and traditional subsistence use of a particular wildlife population or fish stock (Title VIII of ANILCA). In contrast, the state subsistence priority is not restricted to rural residents.

Acquisition of inholdings would assure a subsistence priority for rural residents. The benefit to the residents of the Kenai Peninsula may be limited because most communities on the Kenai Peninsula are not considered rural, and there is no subsistence priority on several species of big game animals. For example, in the 1993/1994 subsistence regulations there is no subsistence priority in the Kenai Refuge portion of the peninsula for brown bear, caribou, sheep, and moose, although hunting for these animals may be permitted under state hunting regulations.

The status of the subsistence priority on big game animals could change based on customary and traditional use eligibility determinations in progress for several communities on the Peninsula. For further information, see the *Subsistence Management Regulations For Federal Public Lands in Alaska* (USFWS 1993).

Maintaining healthy moose populations is an important refuge objective.





Public Involvement

Citizen Participation

The main focus of this LPP is the wildlife resource on private lands within or near the Kenai Refuge. The planning process was designed to encourage landowners and members of the interested public to work with us to identify and meet land protection objectives. The planning team made an effort to notify and involve all interested individuals.

The Service contacted the public early in the planning process.

The first step was to develop a citizen participation program to identify the needed level of public involvement. This program was developed with the refuge staff and drew heavily on their experience with earlier refuge planning efforts. A preliminary mailing list was developed at that time. This mailing list is constantly being updated as individuals express an interest in the plan.

Statewide public meetings were held in Anchorage and Fairbanks during October, 1990 to announce the beginning of the LPP process for all refuges in Alaska. The Kenai LPP "kick-off" was in the form of a flyer announcing the beginning of the planning process and upcoming public meetings. The flyer was mailed to all village leaders, Native corporations, individual land owners, and organizations or individuals on the mailing list. Additional public meetings were held on April 9, 1991 in Soldotna and on April 24, 1991 in Anchorage. Notes were taken during the public meetings and copies of these notes were mailed to participants.

Land protection planning on the Kenai Refuge is an on-going process. Maintaining a working relationship with all landowners and interested individuals is an important part of this process. This commitment includes additional public or private meetings to further discuss the LPP if necessary. Please contact the Kenai Refuge or the Division of Realty if you have any questions or would like to request

a meeting. The addresses and telephone numbers are listed on the landowner interest form at the end of this chapter.

Land Protection Plan Revision

The Kenai Land Protection Plan will be reviewed by the Service on a recurring basis. Actual revision of the LPP will be based on the rate of change in land ownership and land uses, and whether these changes would affect our land protection priorities. Landowners and the general public will be notified if significant revisions are made.

We would like to hear from landowners.

Land ownership on the Kenai Refuge changes as land is subdivided or sold. For this reason, we have not included a list of individual owners. The Service does, however, keep a list of owners who express an interest in land protection plan options. The Division of Realty for the Alaska Region of the Fish and Wildlife Service in Anchorage maintains a computerized database of landowner responses. This list will be updated as new responses are received. The following page contains a form which a landowner can use to express an interest in working with us. Just fill out the form, tear it out, fold it, and mail it to address pre-printed on the back.

LANDOWNERS: Would you like to work with us to protect wildlife on your land?

**KENAI REFUGE
PLANNING PARTICIPANTS:** Would you like to receive future mailings concerning
the Kenai Refuge Land Protection Plan?

Please use this form to express your interest in the Kenai Refuge Land Protection Plan. The information you provide here will be used primarily for planning purposes and does not constitute an offer to buy land.

Name: _____

Address: _____

Telephone: _____

Please add my name to the Kenai Refuge LPP mailing list _____

There are 6 basic options that have been identified in the plan. Check the options in which you have an interest:

No Action (I'm not interested) _____

Cooperative Agreement (An agreement between a landowner and the Service to help each other manage the land. No money is involved) _____

Conservation Easement (Landowner keeps title to land but sells development rights to the Service) _____

Exchange for other federal land _____

Sell to Fish and Wildlife Service _____

Donate to Fish and Wildlife Service _____

Legal description of my parcel or allotment (on the Deed or other official correspondence):

T ___ S R ___ W Section ___ Lot _____

Comments: _____

If you have any questions, please contact:

Refuge Manager
Kenai National Wildlife Refuge
P.O. Box 2139
Soldotna, Alaska 99669-2139
(907)262-7021

U.S. Fish and Wildlife Service
Division of Realty
1011 E. Tudor Road
Anchorage, Alaska 99503
(907)786-3414

Please fold form and mail to address on the other side

Fold here

Place
Stamp
Here

From:

To: U.S. Fish & Wildlife Service
Division of Realty
1011 East Tudor Road
Anchorage, Alaska 99503-6119

Staple or Tape Here ↓

List Of Preparers

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Kenai National Wildlife Refuge

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Ernst, Rick	Fish and Wildlife Biologist/Pilot
Frates, Jim	Refuge Operations Specialist/Admin-Maint.
Johnston, Richard	Park Ranger/Pilot
Kent, William	Refuge Operations Specialist/Public Use
Loranger, Andre	Wildlife Biologist

Sources of Information

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Appendix I

The Alaska Priority System (APS)



The scenic Russian River is part of the Kenai River watershed.

APS Model

The APS model uses seven resource and two management criteria to rank land and resources. The seven resource criteria are: endangered species, migratory birds, diversity of wetlands, diversity of uplands, marine mammals, resident refuge purpose species, and fisheries. The two management criteria are public use and refuge management — the capacity of acquisition to enhance management of refuge lands. On the Kenai Refuge, there are no endangered species or marine mammals on private lands, so the remaining five resource criteria were used. (Figure A-1).

The resource criteria are subdivided into several categories, representing species of animals. For example, in the migratory birds criteria for Kenai Refuge are 12 species of birds, including ducks, geese, swans, and golden eagles. The resident refuge purpose species criterion is made up of mammals specifically mentioned in ANILCA. For the Kenai Refuge these include moose, mountain goats, Dall sheep, and wolves. Species 'groups' listed in ANILCA (for example bears and furbearers) were not included in this criterion: They get points in the diversity categories. Point values are assigned to each category (species) in the model based on the densities, distribution, and/or diversity of specific wildlife populations. The refuge management criterion is subdivided into categories relating the effect that private lands have on access, fire management, and the ability of the refuge to efficiently carry out its management functions.

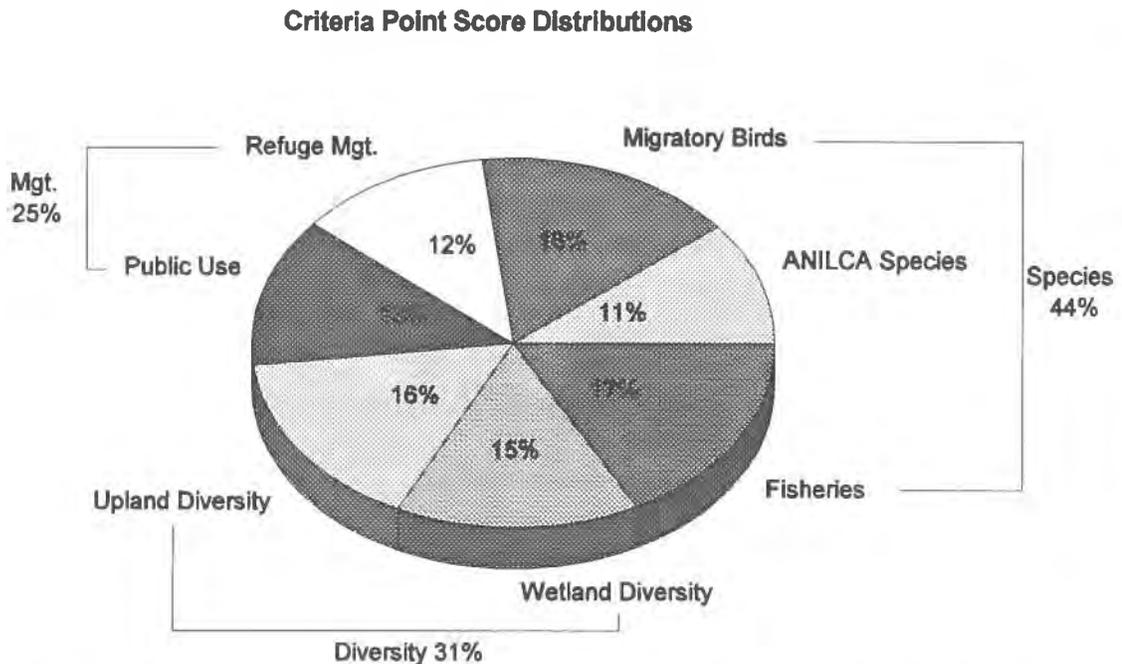


Figure A-1. The five resource criteria used in the Kenai APS model contributed 75% of the total points, while the two management criteria contributed 25% of the points.

Priority Levels

The priority process begins with the gathering and mapping of fish and wildlife data and management information. The hand drawn maps are then digitized using the geographic information system software known as ARC/INFO (Environmental Systems Research Institute 1989). The computer program ARC/INFO allows concurrent manipulation of computerized maps and attribute data. The result is a set of layers of mapped resource information in ARC (e.g. Figures A-1 through A-11) and numerical descriptions, which are the point scores associated with the mapped resources, in INFO.

To combine all of the maps into a final priority map, the maps of the individual species or management concerns are merged into seven criterion maps (Figures A-2 and A-3). The point scores were all added and then recalculated to the maximum points allowed in each criterion. The seven criterion maps with their recalculated scores were merged into one final resource map, with a final set of scores.

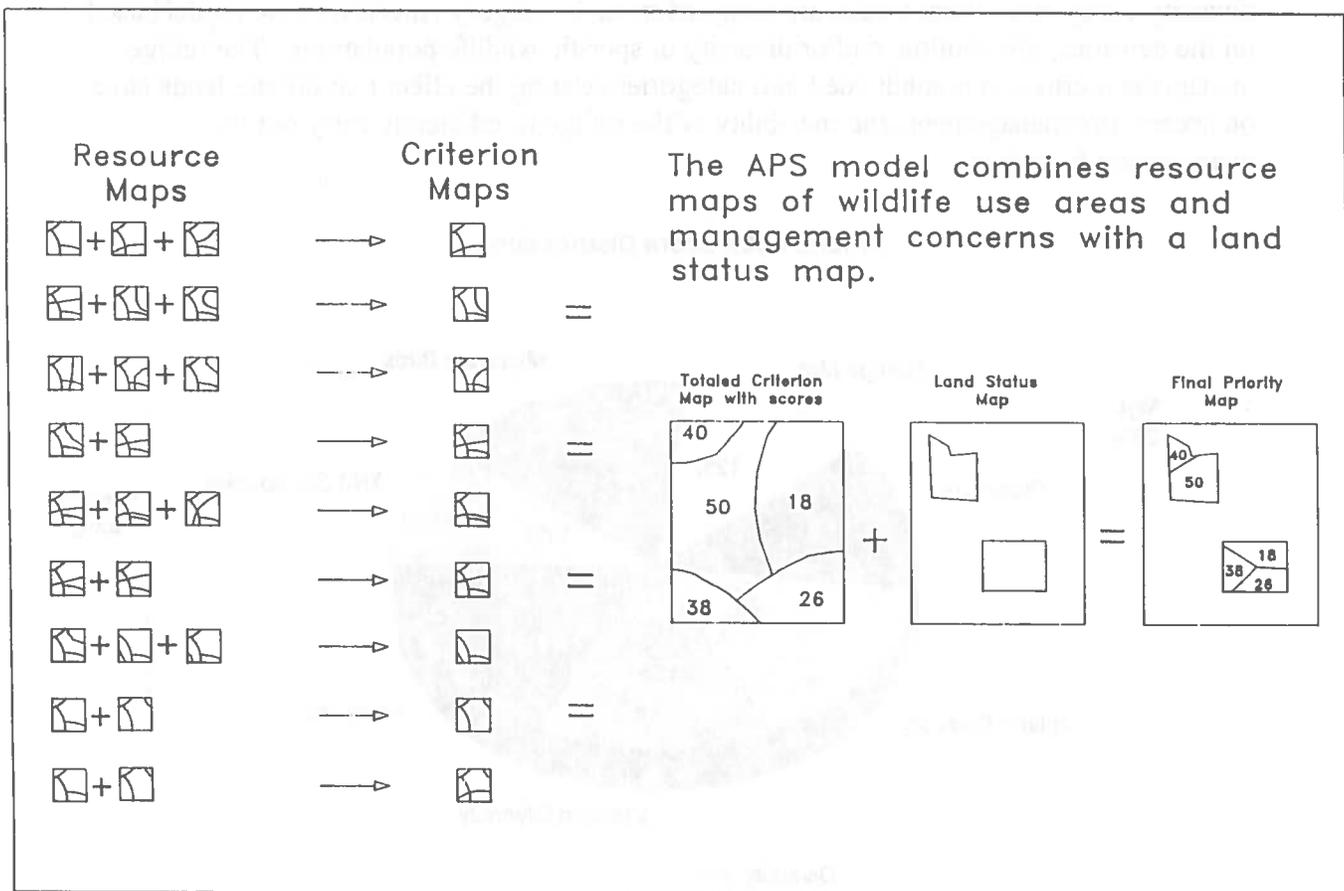


Figure A-2. The Alaska Priority System uses ARC/INFO to rank priorities.

Upland Diversity

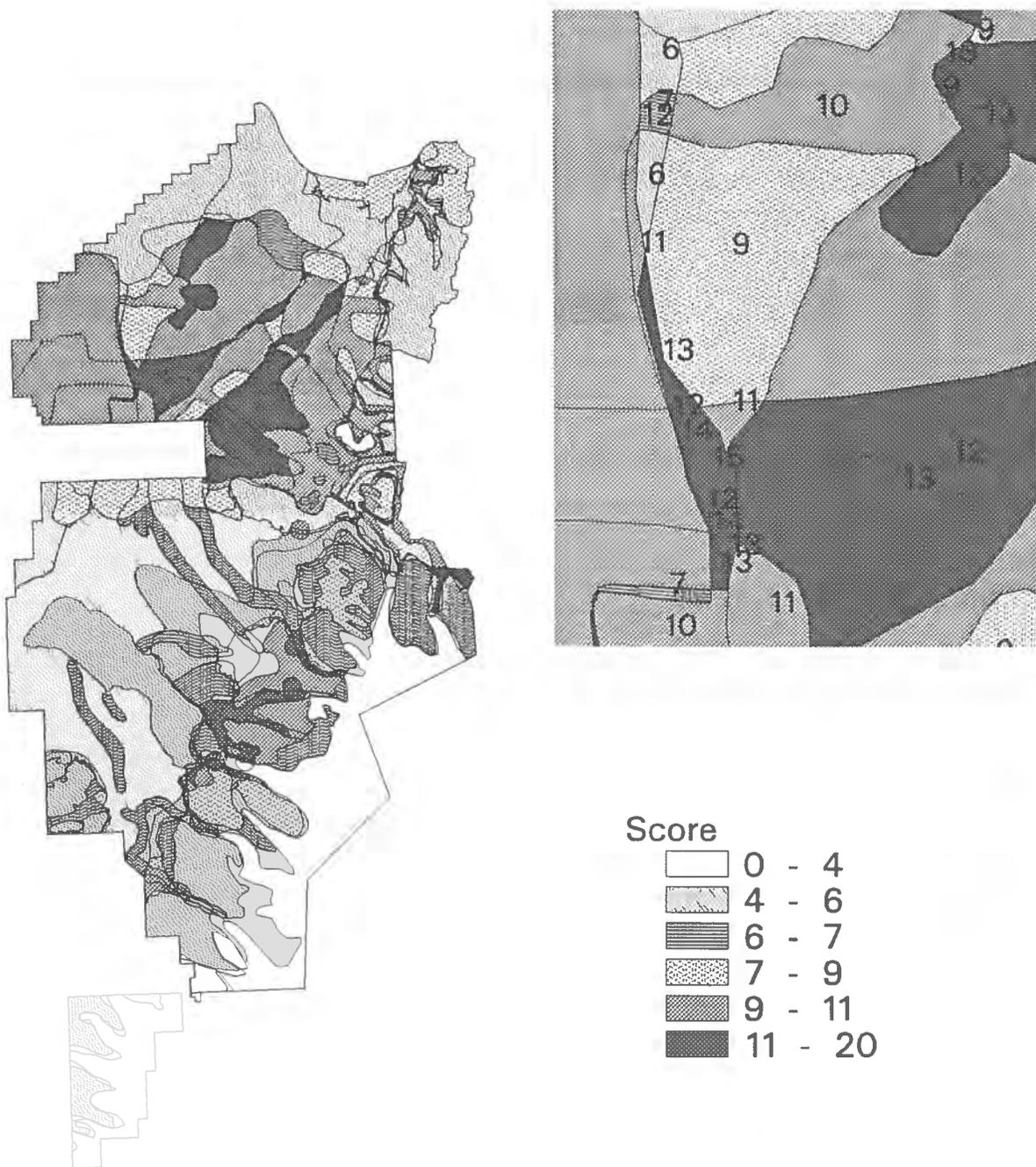


Figure A-3. Scores for Upland Diversity Criterion

The final step in the priority process is to rank the private lands and create a priority map. To rank the private lands, the model totaled the acreage of conveyed private lands and Native allotment applications, then divided that acreage into three approximately equal parts (high, medium, or low) based on point scores.

Table A-1. Number of acres of land in each land protection priority category, by owner.

Priority	Native Corporation (Conveyed)	Native Allotment (Conveyed)	Native Allotment (Selected)	State	Other Private	Totals
H	25,469.0	1.5	0	0	5.8	25,476.3
M	26,605.6	77.2	158.7	1,056.0	69.8	27,967.3
L	23,514.5	0	0	82.2	223.3	23,820.0
						77,263.6

On the priority map, (Figure 5), priorities are displayed in whole sections, based on the highest score for each section.

A detailed description of the APS model criteria, categories, and point values can be found in a separate APS paper available from the Anchorage Realty office (USFWS 1993).

The following maps are examples of the resource and management maps used in the Kenai APS model. A total of 38 different maps were used: Since some maps were used in more than one criterion, (e.g. the moose map was used in ANILCA species and Diversity of Uplands) the model had 56 different layers. Large parcels of private land, in this case Native Corporation lands, are shaded in gray in these examples to show their relationship to the areas of relative abundance of certain animals or the density of recreational use.

APS Model Resource Maps

Moose

Salamatof and KNA lands are within the area burned by the 1947 and 1969 forest fires, and contain the early forest habitat favored by moose.

Density of moose in these habitats has been recorded at 1.3 moose per square mile in the 1947 burn and 10 moose per square mile in the 1969 burn.

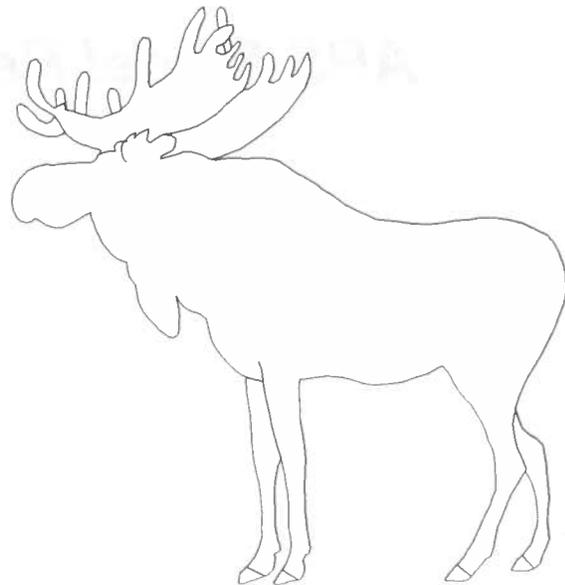
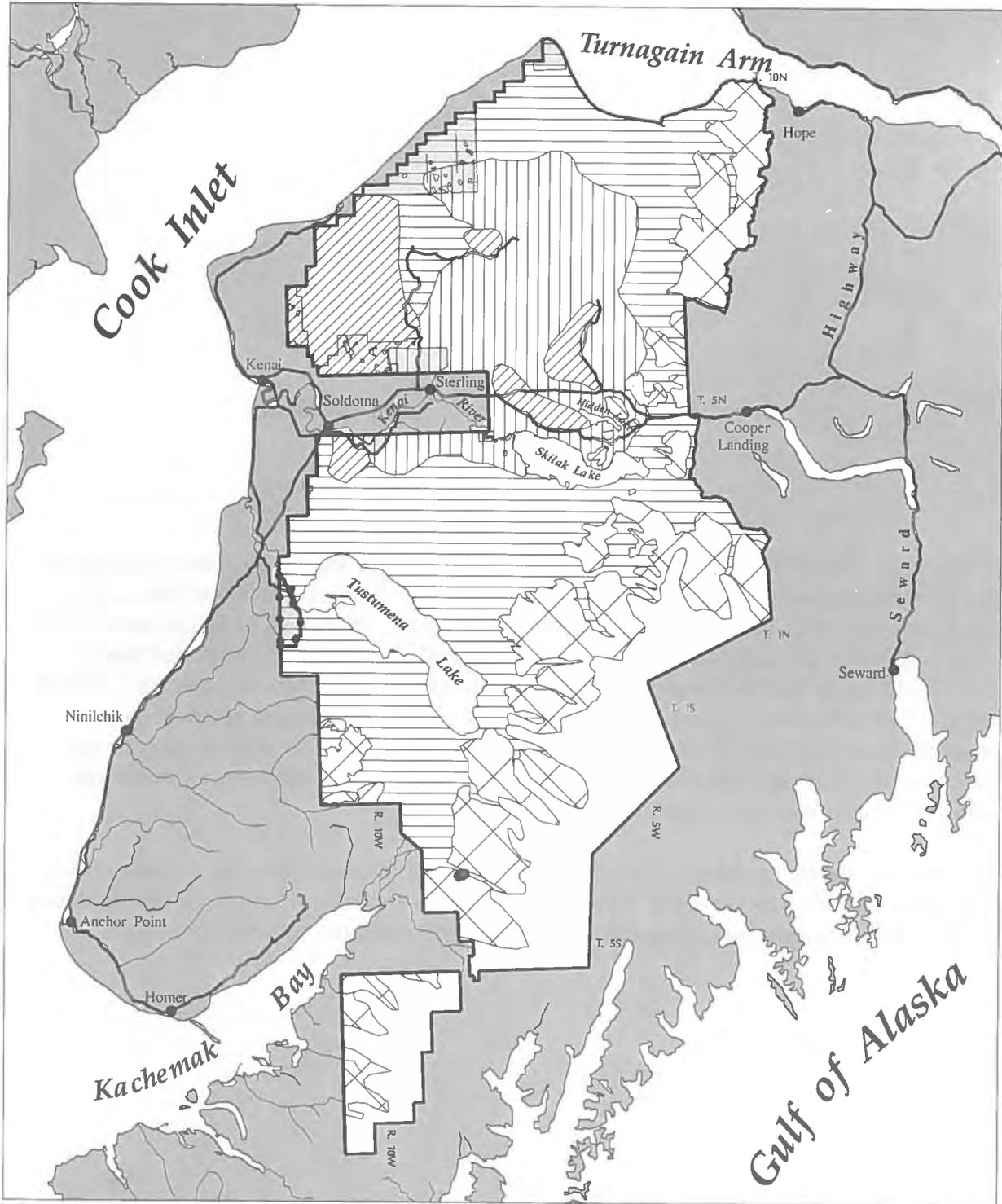


Figure A-4



Moose: Relative Abundance

Kenai National Wildlife Refuge

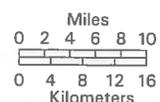


Legend

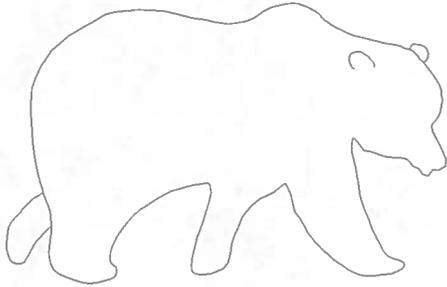
- High 1969 Burn/ Early Forest
- Medium 1947 Burn
- Low
- Sparse
- Native Conveyed Land
- Refuge Boundary
- Interim Boundary

Notes

- 1 - Land status represents USFWS interpretation of BLM records.
- 2 - Projected in UTM zone 5.



Current to 5/20/94

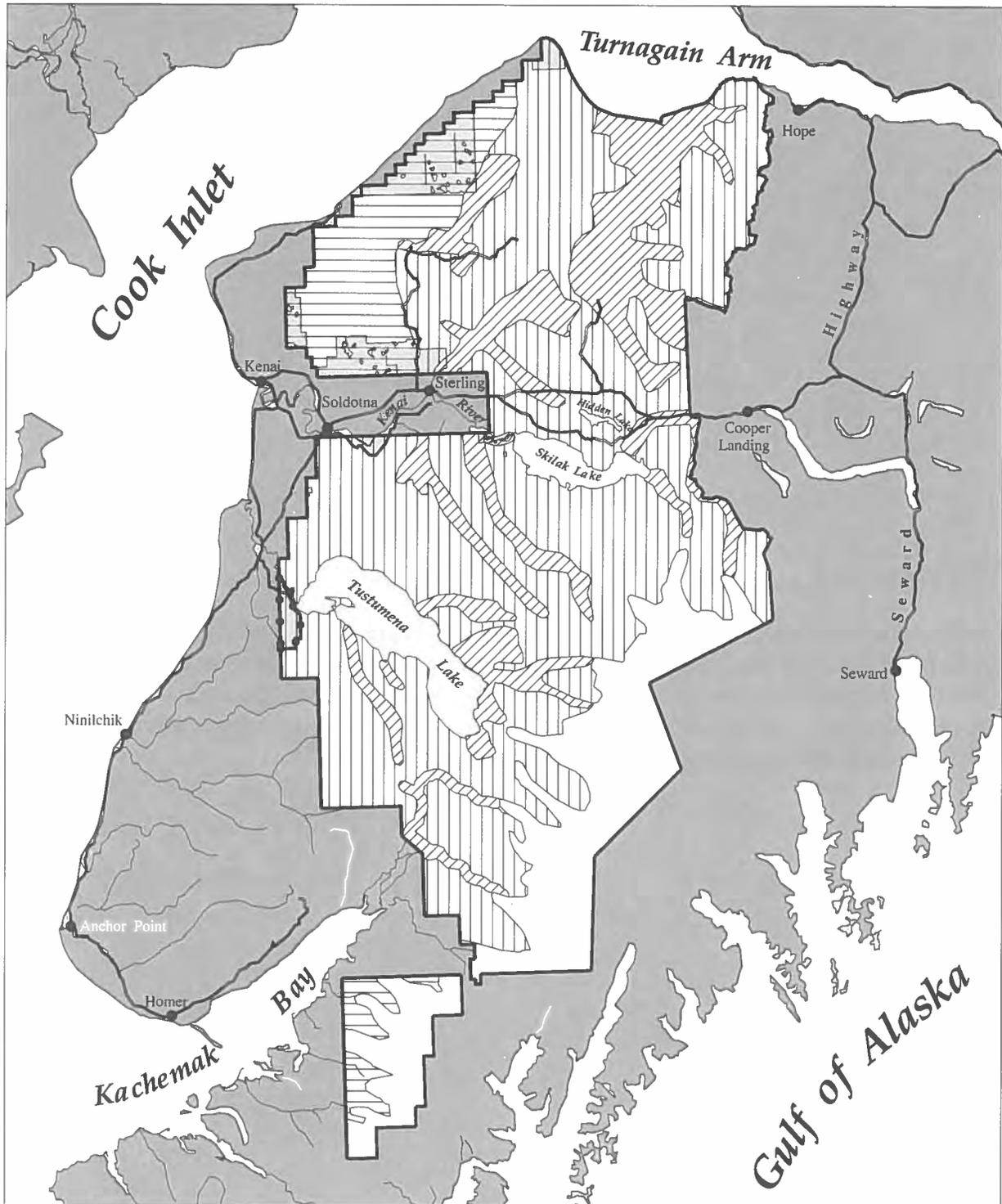


Brown Bear

While most of the Kenai Refuge provides potential brown bear habitat, the bears concentrate along rivers seasonally to feed on salmon. Other essential habitats include the benchlands between Skilak and Tustumena Lake, and the Chickaloon River drainage. Private lands in this zone include the KNA Stephanka, or Kenai River parcel, the Tustumena tract, and small parcel holdings in the benchlands. The lowest densities of brown bears are associated with the highest levels of human use and development distinct from concentrated, seasonal food sources. Since bears and humans generally do not tolerate each other there is concern that continued development will shrink the undisturbed habitat necessary for brown bear survival, limiting their distribution on the Kenai Peninsula.

The densities shown on the map are subjective because of a lack of objective, reliable census data for brown bears on the Kenai Refuge. Brown bears are difficult to see and census among dense vegetation, especially along salmon streams where the bears concentrate to feed.

Figure A-5



Brown Bear: Relative Abundance

Kenai
National
Wildlife
Refuge

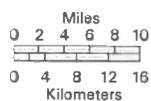


Legend

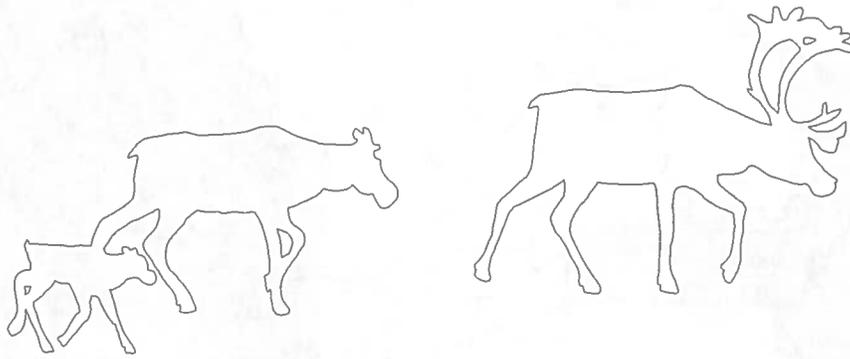
- High
- Medium
- Low
- Sparse or None
- Native Conveyed Land
- Refuge Boundary
- Interim Boundary

Notes

- 1 - Land status represents USFWS interpretation of BLM records.
- 2 - Projected in UTM zone 5.

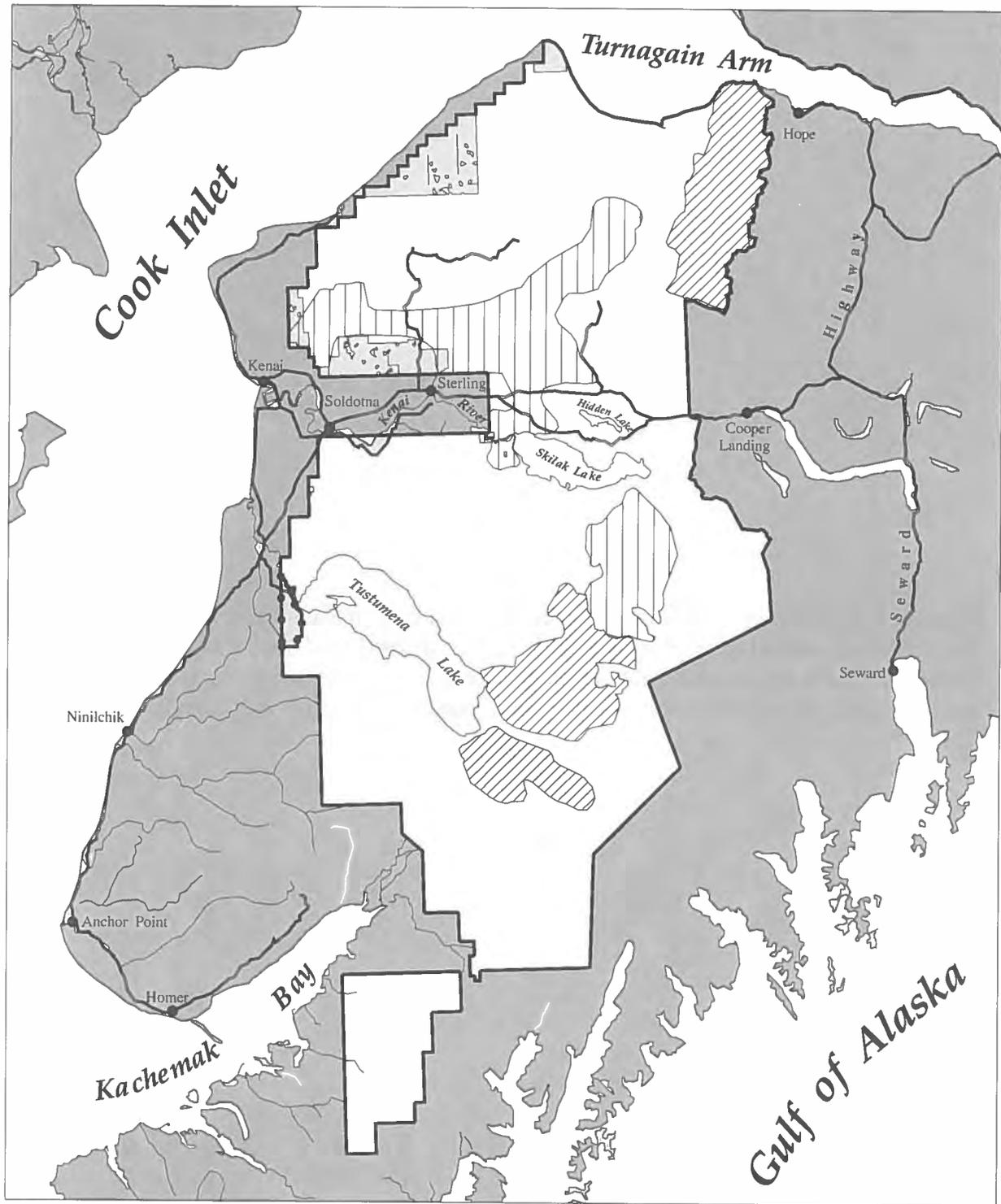


Current to 5/20/94



Caribou

Caribou reintroductions in the 1960's and 1980's resulted in the formation five herds of caribou. The lowland herd ranges through KNA and Salamatof lands adjacent to the north side of the Sterling Corridor, and through KNA's Stephanka, or Kenai River tract, which is part of a movement corridor west of Skilak Lake. Caribou also range in the wilderness east of Tustumena Lake where some small private parcels are located.



Caribou: Relative Abundance

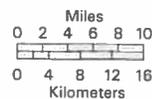
Kenai National Wildlife Refuge



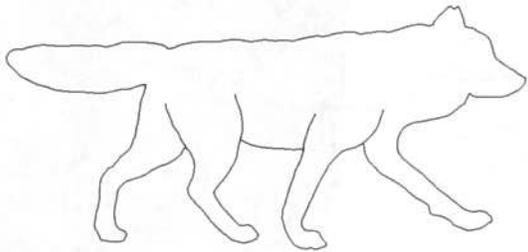
- Legend**
- > 200 each in North Herd and combined South Herds
 - < 100 in each herd
 - Native Conveyed Land
 - Refuge Boundary
 - Interim Boundary

Notes

- 1 - Land status represents USFWS interpretation of BLM records.
- 2 - Projected in UTM zone 5.

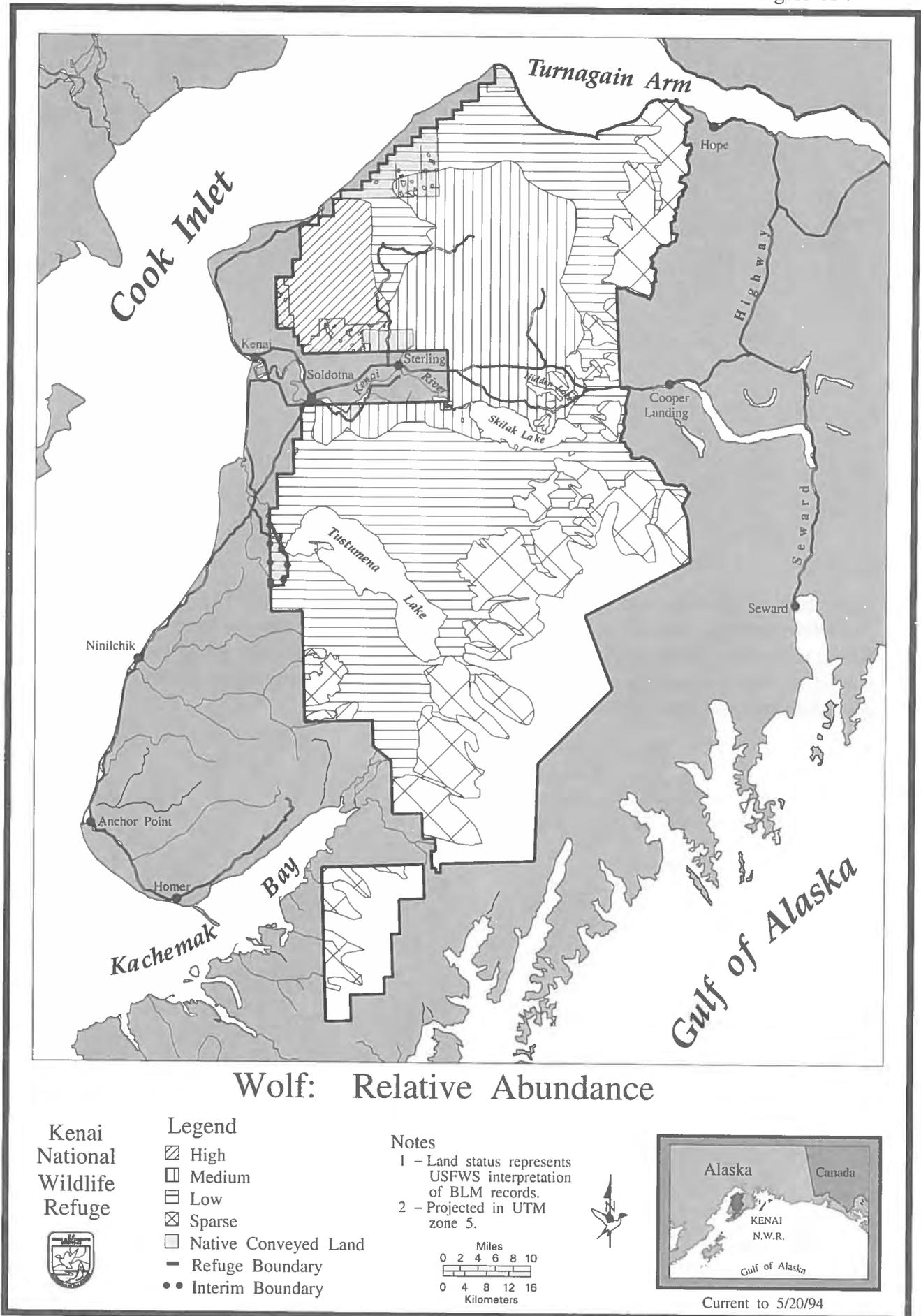


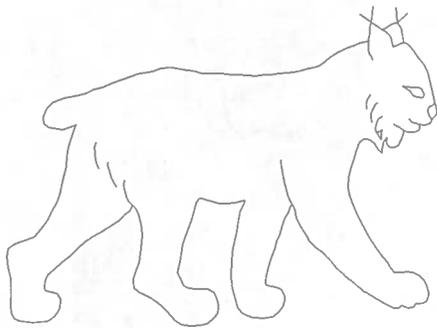
Current to 5/20/94



Wolf

Approximately 80 wolves in 10 to 13 packs range throughout and adjacent to the refuge. Wolf density is related to the density of moose, their primary food source on the Kenai Peninsula. These shy animals avoid developed areas, so human settlements, transportation corridors, and gas and oil facilities reduce the amount of acceptable habitat available.

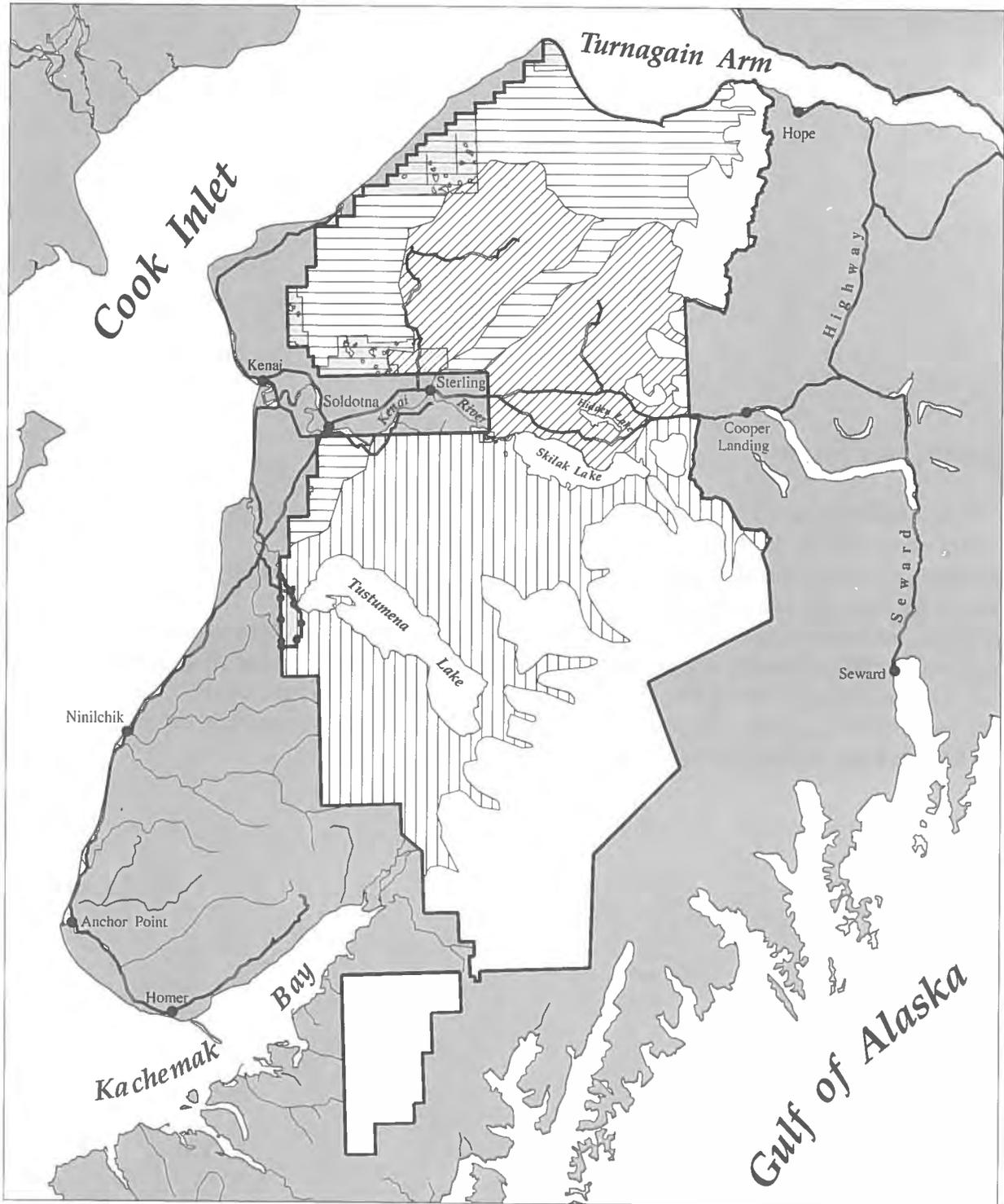




Lynx

Lynx are most abundant in middle-aged burns on the refuge, such as the 1947 burn, where snowshoe hares are plentiful and cover is dense. Younger burns, very old burns, mature forest, and open muskeg support fewer snowshoe hares and fewer lynx. Some 1947 burn habitat within KNA lands (e.g. south of Sunken Island Lake,) currently provide ideal snowshoe hare and lynx habitat.

Figure A-8



Lynx: Relative Abundance

Kenai National Wildlife Refuge

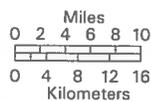


Legend

-  > 3 lynx/100 square miles
-  1-3 lynx/100 square miles
-  < 1 lynx/100 square miles
-  Sparse or None
-  Native Conveyed Land
-  Refuge Boundary
-  Interim Boundary

Notes

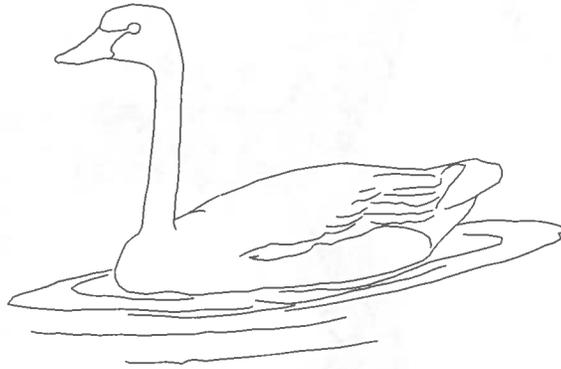
- 1 - Land status represents USFWS interpretation of BLM records.
- 2 - Projected in UTM zone 5.

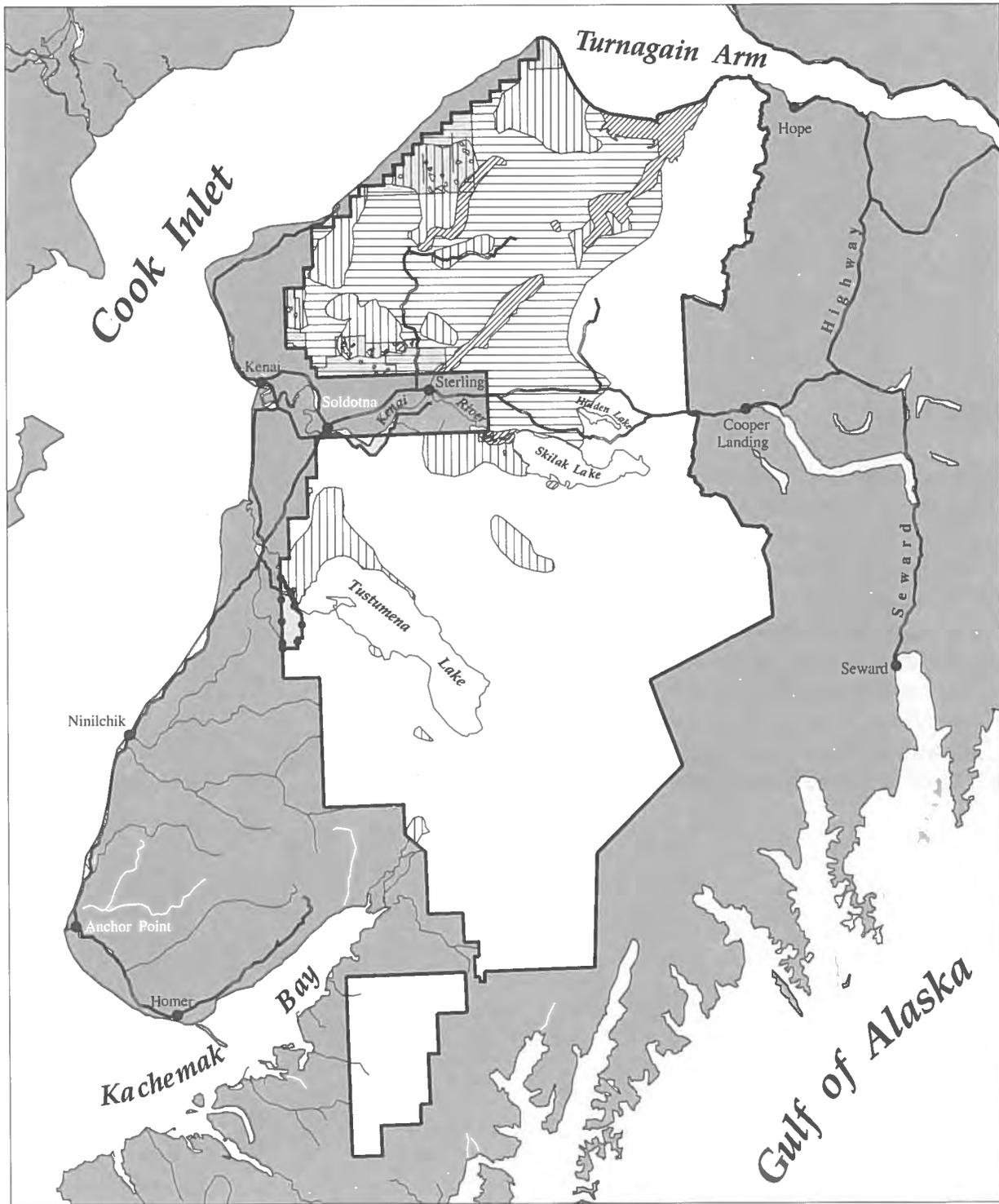


Current to 5/20/94

Trumpeter Swan

Favored nesting sites for trumpeter swans are islands in lakes or on peninsulas. On the Kenai Refuge, swans are most abundant in shallow, nutrient rich lakes or ponds with abundant aquatic vegetation except when staging, or gathering in large numbers in preparation for migration. Trumpeter swans stage in the Chickaloon drainage, the Moose River, parts of the Swanson River, and on the Kenai River at the outlet of Skilak Lake. High quality nesting habitat and staging areas both, can be found on private lands within the refuge boundary.





Trumpeter Swan Habitats

Kenai National Wildlife Refuge

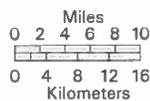


Legend

-  Staging Areas
-  High Quality Nesting Habitat
-  Other Nesting
-  Native Conveyed
-  Refuge Boundary
-  Interim Boundary

Notes

- 1 - Land status represents USFWS interpretation of BLM records.
- 2 - Projected in UTM zone 5.

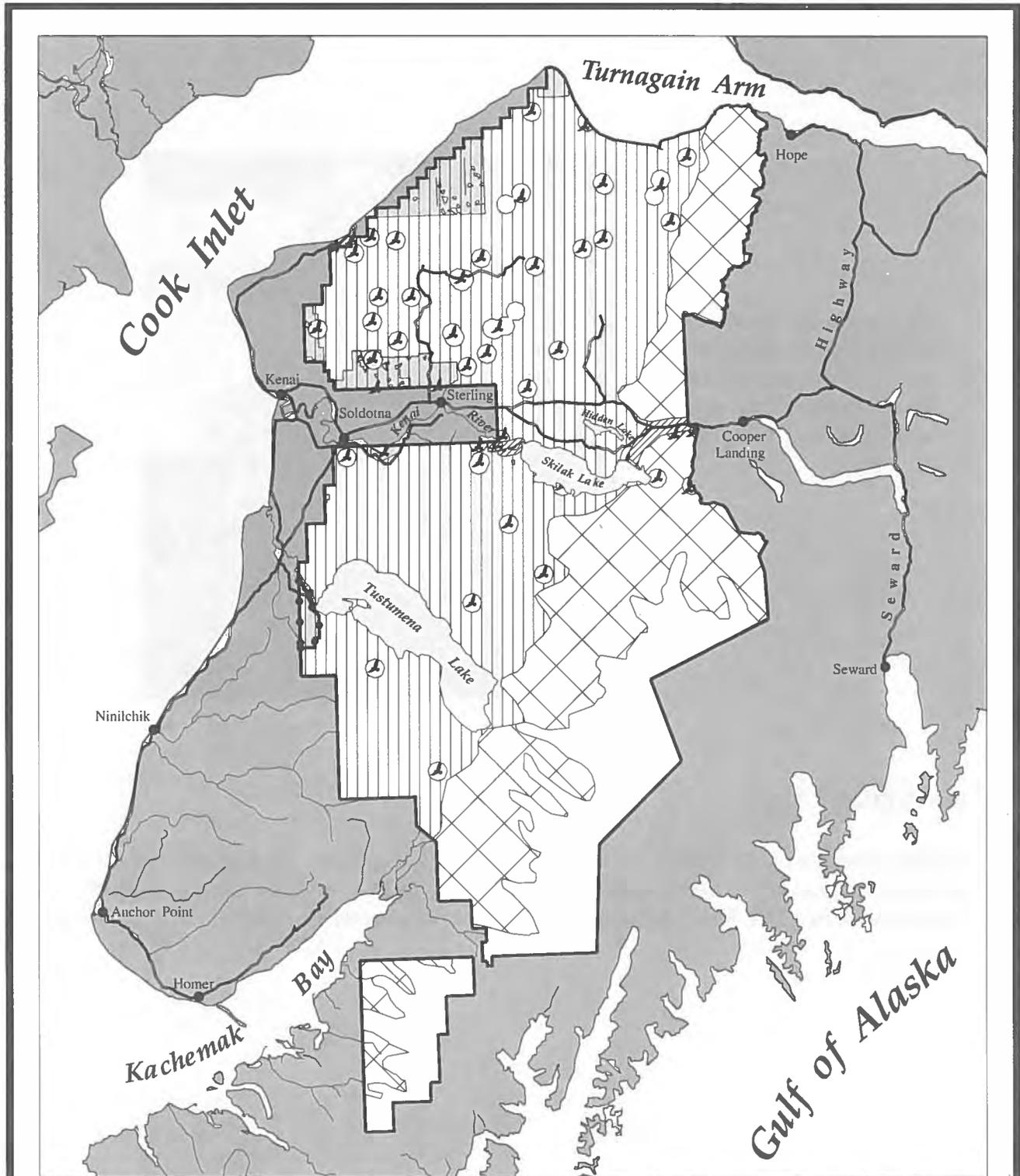


Current to 5/20/94

Bald Eagle

Bald eagles nest in large, mature cottonwood or quaking aspen trees along waterways in the lowlands and concentrate to feed on salmon along some stretches of the Kenai and Kasilof Rivers in winter. Some nests have been documented on private lands throughout the refuge and winter concentrations occur along the Kasilof River in the northern part of the CIRI-owned Tustumena parcel, and in the KNA parcel on the Kenai River.





Bald Eagle: Occurrence and Relative Abundance

Kenai National Wildlife Refuge

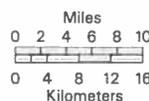


Legend

- High Winter Concentrations
- Known Nests with 1 Mile Buffer
- Medium Density Nesting
- Low Density Nesting
- Native Conveyed Land
- Refuge Boundary
- Interim Boundary

Notes

- 1 - Land status represents USEWS interpretation of BLM records.
- 2 - Projected in UTM zone 5.



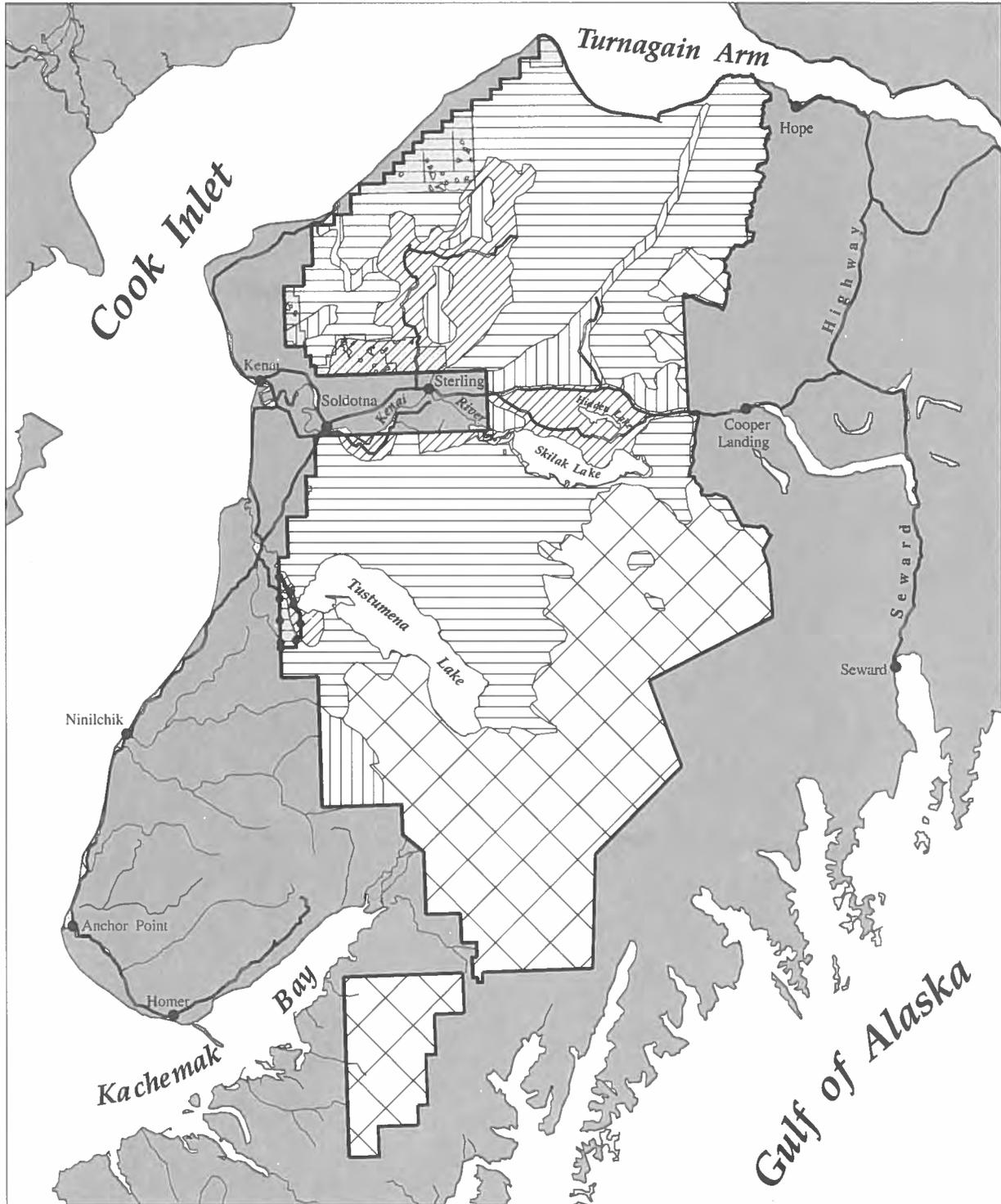
Current to 5/20/94

Protecting the resources of the Kenai will allow these and other youngsters to enjoy wildland recreational opportunities throughout their lives.



Recreational Use

Popular recreation areas include the lowland lakes, the Kenai River, the Kasilof River access to Tustumena Lake, and Skilak Lake and the Skilak Loop area along the Sterling Highway. Lands owned by CIRI, KNA, Salamatof, and a few small parcels are within these heavily-used areas.



Recreational Use Areas

Kenai National Wildlife Refuge

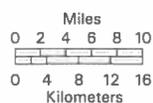


Legend

- High density year-round use
- Moderate density year-round use, high density seasonal use
- Low density year-round use, moderate density seasonal use
- Low density or sparse year-round use
- Native Conveyed Land
- Refuge Boundary
- Interim Boundary

Notes

- 1 - Land status represents USFWS interpretation of BLM records.
- 2 - Projected in UTM zone 5.

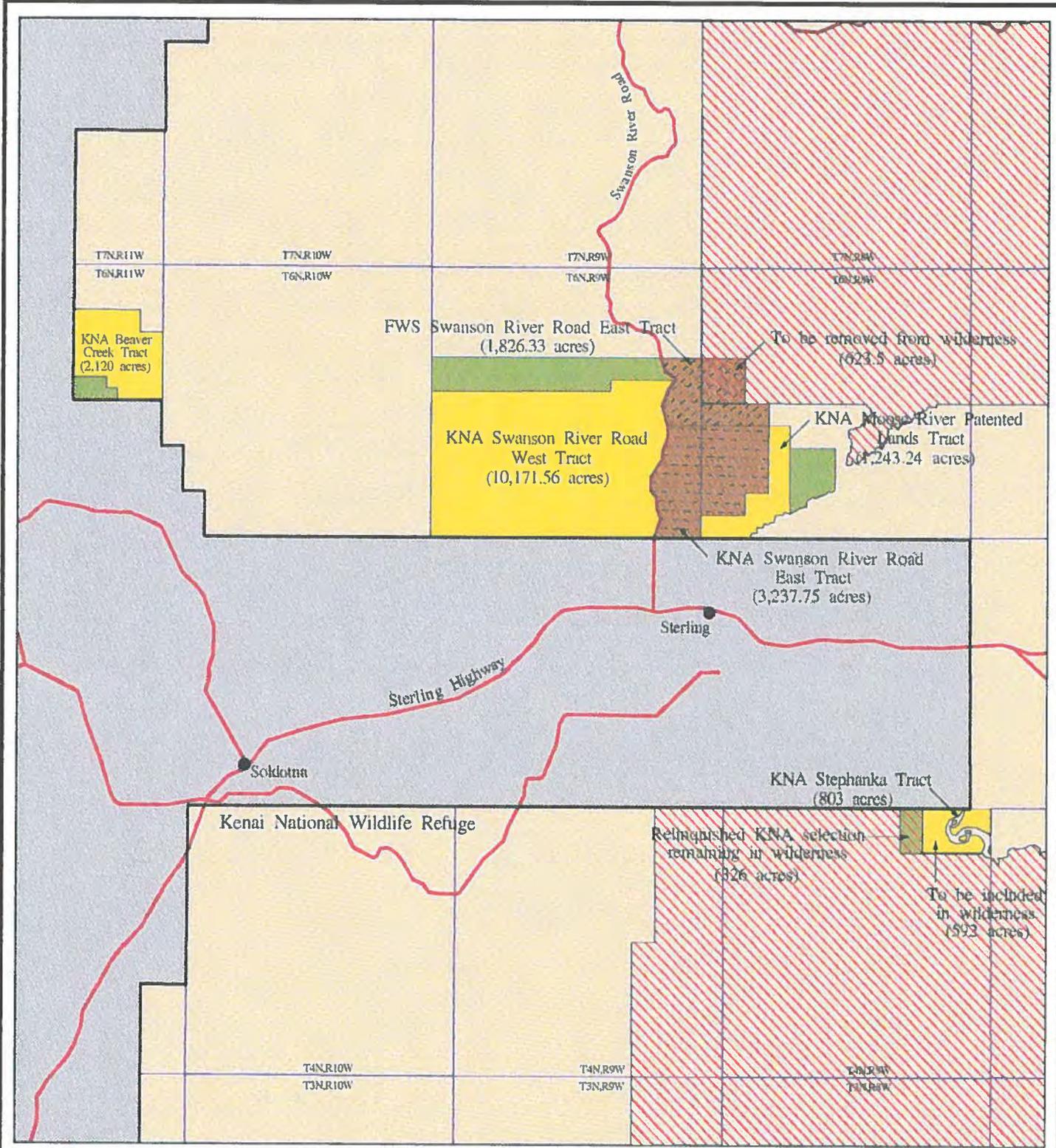


Current to 5/20/94

Appendix II ***Negotiated Land Exchange***

**Kenai Natives Association, Inc.
and
U.S. Fish and Wildlife Service**

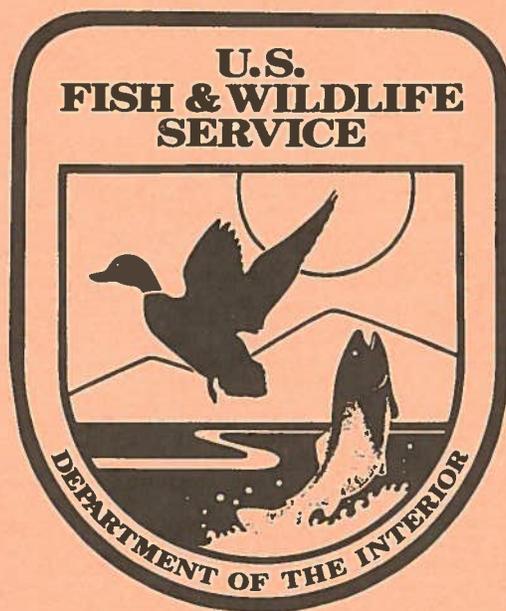
The Kenai Natives Association, Inc. and the United States of America are currently involved in exchange negotiations involving KNA and Kenai Refuge lands. On October 23, 1992, the President signed P.L.102-458, directing the Secretary of Interior to enter into expedited negotiations with KNA and CIRI for the exchange or acquisition of lands. CIRI declined to participate in negotiations, but an exchange/acquisition proposal involving KNA lands has been submitted to Congress for review and approval. The exchange package is complex, but essentially, KNA would return lands of high resource and public interest values to the refuge in exchange for removal of the remainder of their lands from the refuge. If the proposal is not approved, settlement may be determined by the Congress.



- Lands returning to refuge
- Relinquished KNA selections (includes remaining entitlement of 1,207 acres)
- Lands removed from refuge
- FWS surface & subsurface to KNA (COG reserved)
- FWS subsurface to KNA (COG reserved) Surface currently patented to KNA
- Designated wilderness

P.L. 102-458
Kenai Natives Association, Inc.
and
U.S. Fish and Wildlife Service
Negotiated Exchange/Acquisition Package





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U.S. Department of the Interior
Office of Equal Opportunity
1849 C. Street, N.W.
Washington, D.C. 20240