

Original

ALASKA PENINSULA/BECHAROF
NATIONAL WILDLIFE REFUGES

King Salmon, Alaska

ANNUAL NARRATIVE REPORT

Calendar Year 1987

U. S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEWS AND APPROVALS

ALASKA PENINSULA/BECHAROF NATIONAL WILDLIFE REFUGES

King Salmon, Alaska

ANNUAL NARRATIVE REPORT

Calendar Year 1987

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3/30/88
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6/14/88
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INTRODUCTION

The Alaska Peninsula splits Bristol Bay and the Bering Sea on the north and west from the Pacific Ocean on the south and east. This rugged peninsula juts out in a southwesterly crescent from the mainland beginning at the 59th parallel of latitude and running nearly 400 miles to about the 54th parallel. The southwestward crescent is continued for another 1500 miles by the Aleutian Islands. The backbone of the Alaska Peninsula is the Aleutian Mountain Range. This volcanic mountain range lies along the Pacific coast on the east side of the peninsula. Numerous peaks rise above 6000 feet elevation. This creates a Pacific coast that is rocky and heavily fjorded. The Aleutian Range, including the Aleutian Islands, contains nearly 50 volcanoes known to have erupted or vented steam since 1760. They are part of a chain of volcanoes that rim the Pacific Ocean known as the "Ring of Fire". The Alaska Peninsula and Becharof National Wildlife Refuges are superimposed over this rugged range of mountains. (Figure 1).

The **Becharof Refuge** contains approximately 1.2 million acres. It is 10 miles south of King Salmon and 295 miles southwest of Anchorage (Figure 2). The refuge lies between Katmai National Park and Alaska Peninsula Refuge.



Mt. Peulik's last reported activity was in 1952. An eruption occurred in 1814. The Ukinrek Maars (foreground) erupted in 1977.

KIW

The refuge landscape consists of tundra, lakes, wetlands, and volcanic peaks. Becharof Lake, the second largest lake in Alaska, is nestled between the low tundra wetlands to the north and west and the Aleutian

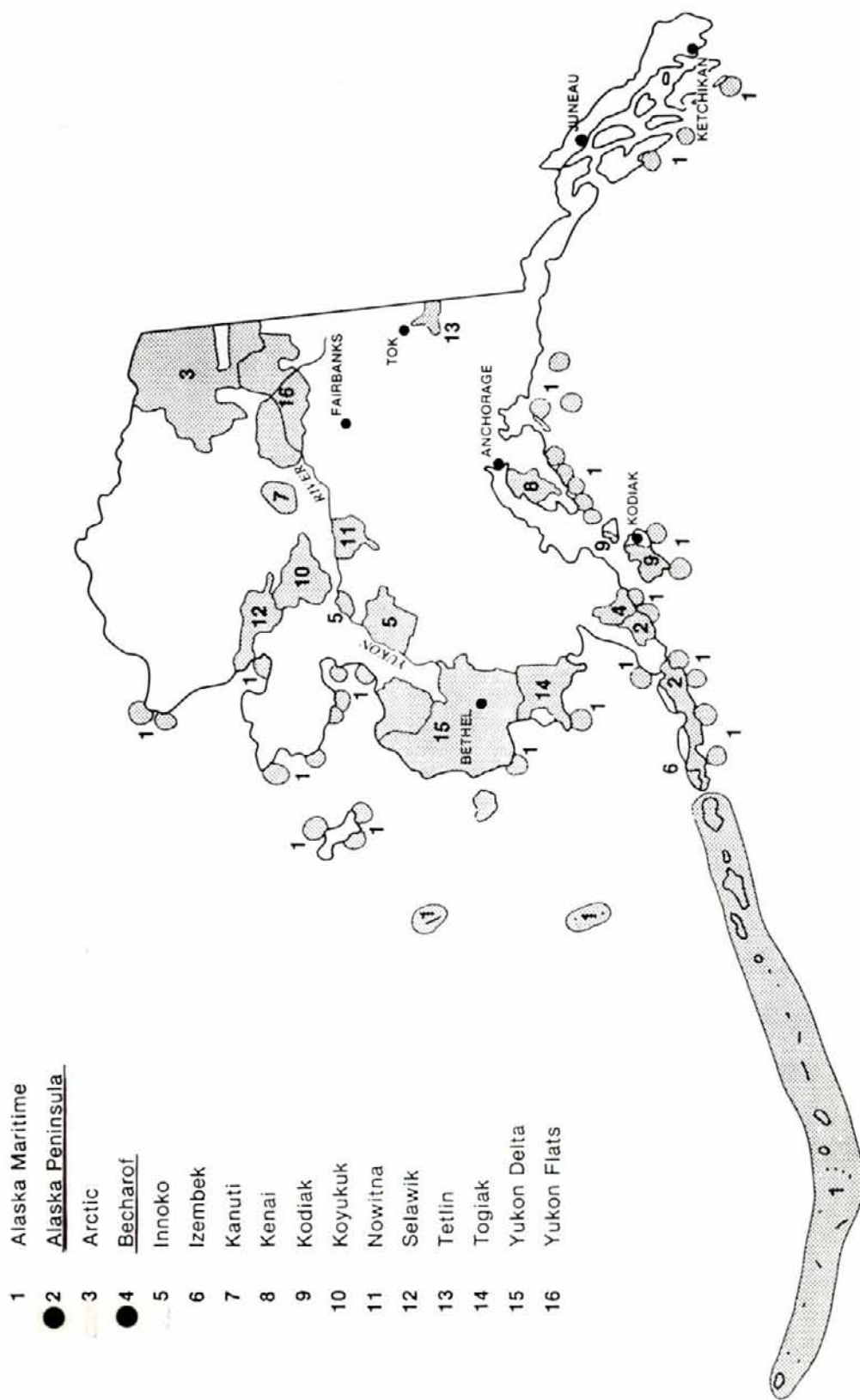


Figure 1. National Wildlife Refuges in Alaska.

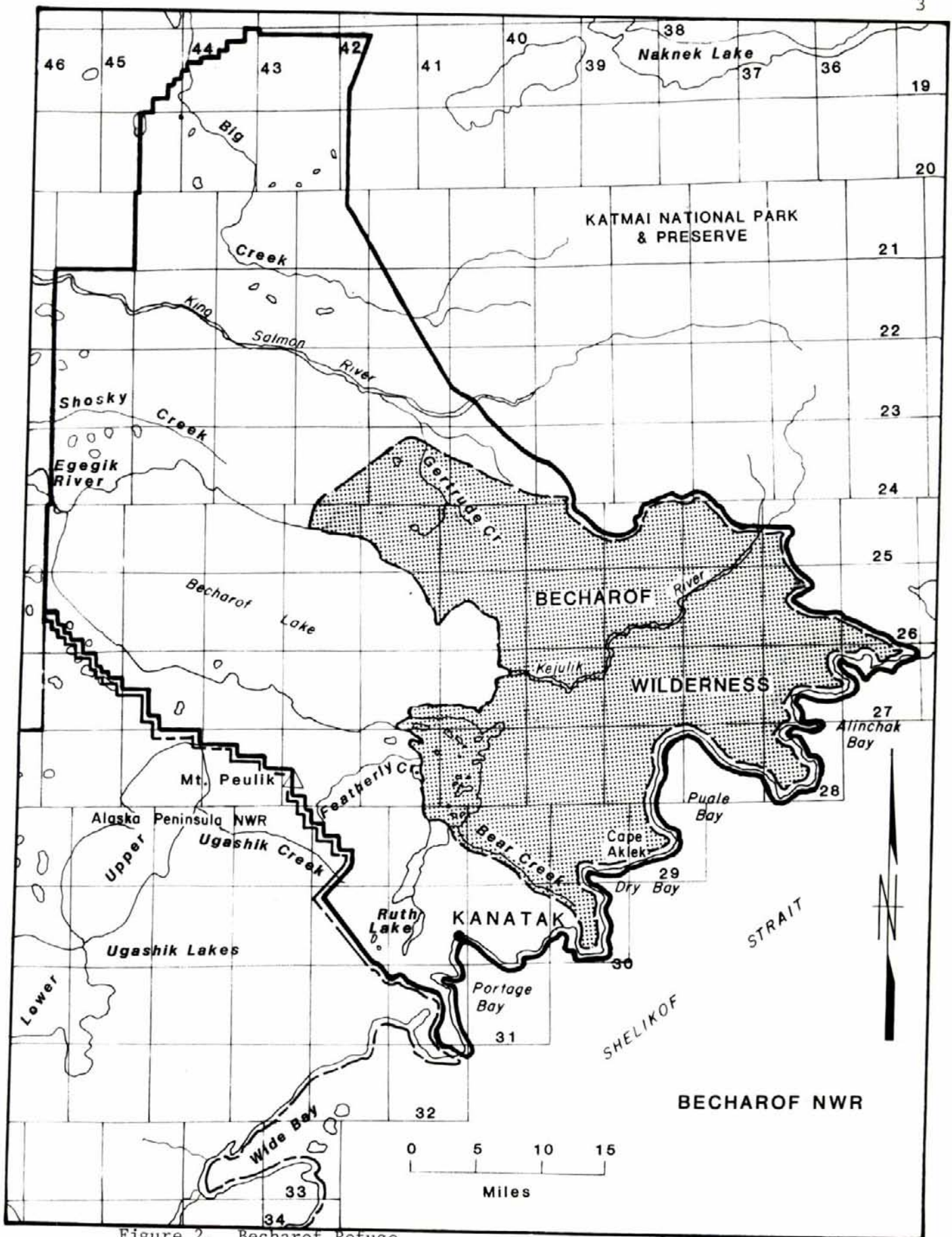


Figure 2. Becharof Refuge

Mountain Range to the east and south. Mount Peulik drops to the edge of the lake about midway along its southern shore. The geologically active Ukinrek Maars bares scars of the eruption that took place in 1977.

The lowest elevation on the west side of the refuge is about 50 feet above sea level. The highest elevations on the refuge are about 5,000 feet where the northern boundary crosses the Kejulik Mountains. The Kejulik River Valley, about six miles wide at Becharof Lake, splits the main trend of the Aleutian Range, separating the rugged Kejulik Mountains from the coastal range. A few glaciers are on slopes and upper valleys of higher peaks on the northeast boundary of the refuge.

Becharof Lake and its tributary streams provide important nursery habitat for the multi-million dollar salmon industry in Bristol Bay. This system is renowned for its spawning runs of red salmon, an important food source for brown bears. Dolly Varden, grayling rainbow trout, five species of Pacific salmon and other fish are found in refuge streams.

The refuge's fauna includes a large population of brown bears. Moose inhabit the area in moderate numbers and over 15,000 caribou migrate through the area during fall and winter. Other animals found are wolves, foxes, wolverines and lynx. Sea otter, sea lions, and harbor seals inhabit the shorelines as do nesting bald eagles, peregrine falcons, and thousands of seabirds on the rocky seacliffs of the Pacific coast. Nesting and migratory waterfowl are found on wetlands and lakes throughout the refuge.

Section 302(2)(B) of Alaska National Interest Lands Conservation Act (Lands Act) set forth the following major purposes for which Becharof 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, brown bears, salmon, migratory birds, the AlaskaN Peninsula caribou herd and marine birds and mammals;

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

- (iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and

- (iv) 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.

The **Alaska Peninsula Refuge** boundaries encompass about 4.3 million acres of land--an area bigger than the State of Connecticut (Figure 3). Stretching for nearly 340 miles along the Alaska Peninsula, the

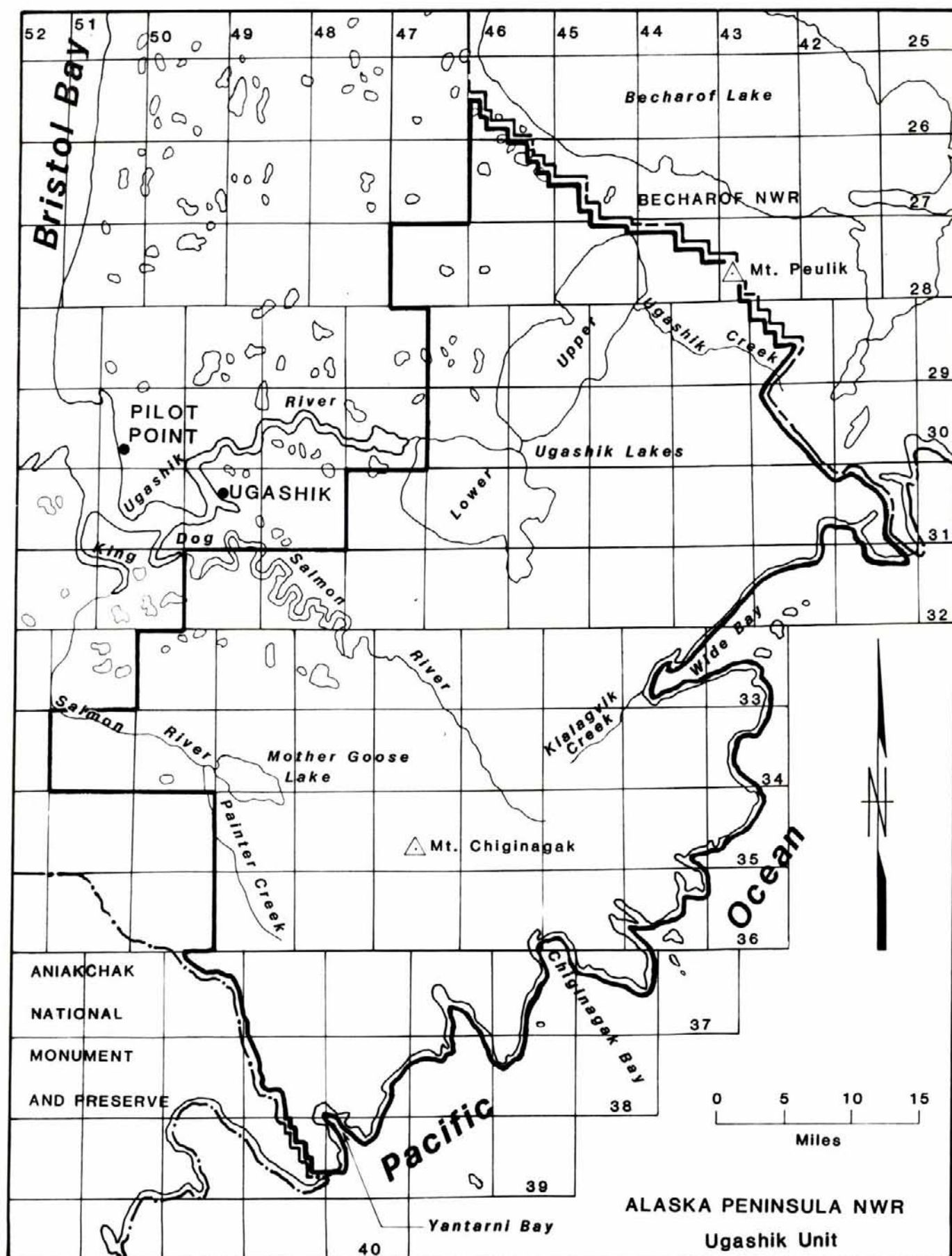


Figure 3. Alaska Peninsula Refuge.

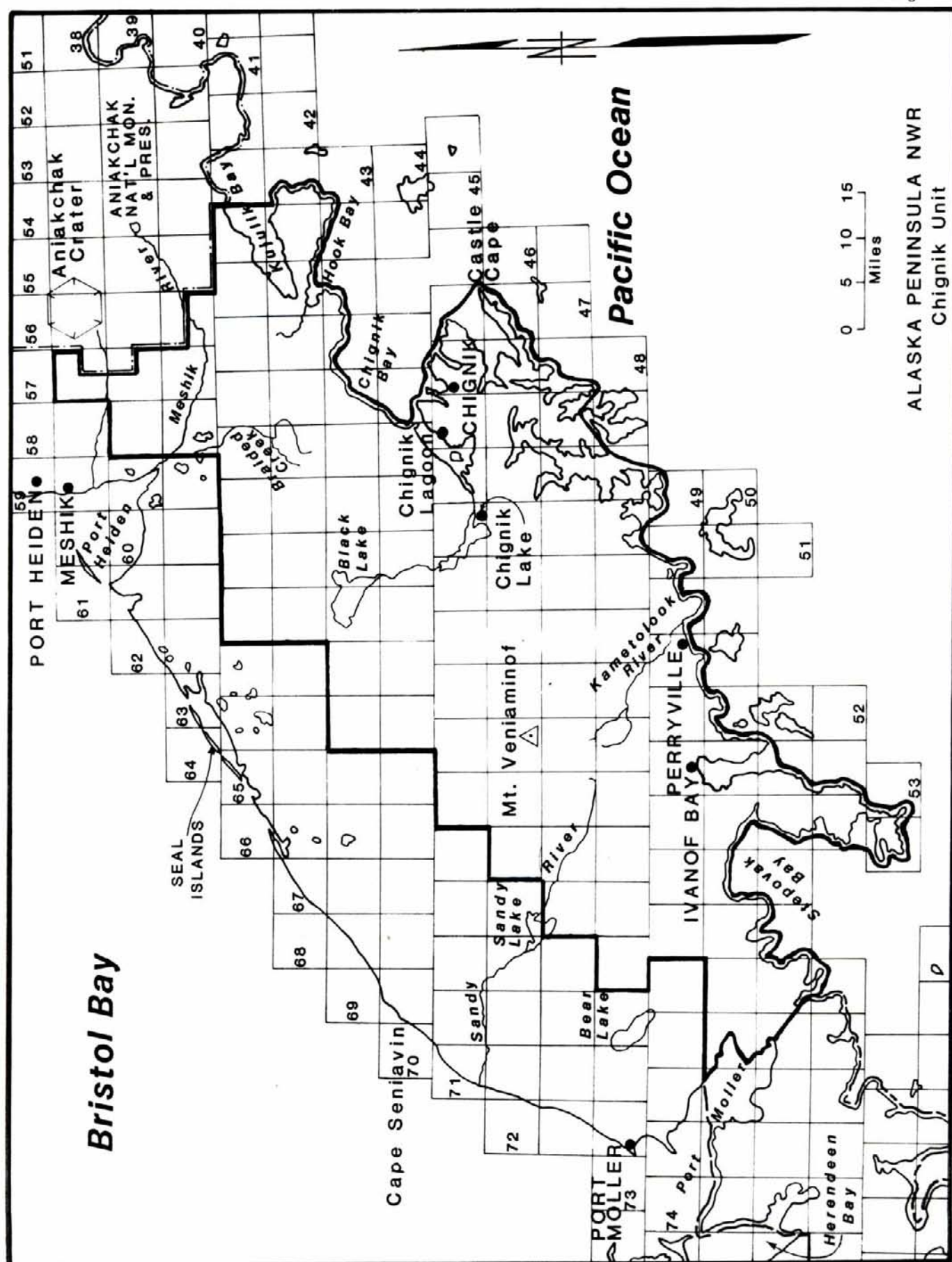


Figure 3. Continued.

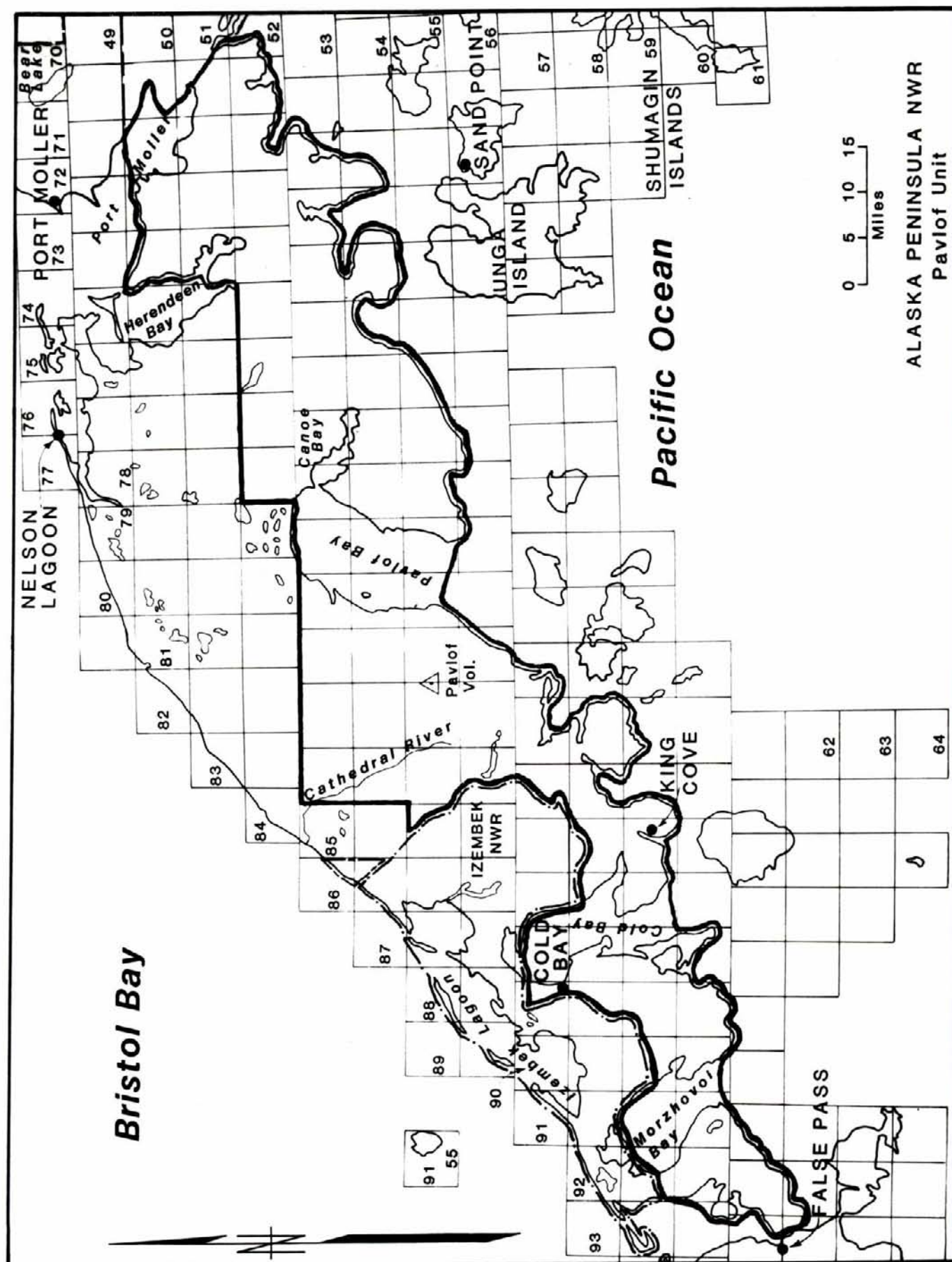


Figure 3. Continued.

refuge is subdivided into three units: the Ugashik Unit, the Chignik Unit, and the Pavlof Unit.



Mt. Chiginagak's latest activity was in 1929.

JWS

The Ugashik Unit's northwestern boundary is about 60 miles south of the refuge headquarters at King Salmon and 300 air miles southwest of Anchorage. It is bounded on the north by the Becharof Refuge and on the south by the Aniakchak National Monument and Preserve. The Chignik Unit bounds the Monument's southern boundary with the Pavlof Unit occupying the southwestern end of the Alaska Peninsula crescent. Izembek Refuge adjoins the unit's southwest corner.

Landforms of the Alaska Peninsula Refuge include rugged mountain crests, rounded sub-summits, U-shaped valleys with sheer walls, sea cliffs and fjords, low tundra wetlands, glacial lakes, and moraines. The dominant geographical feature is the rugged Aleutian Range. Eleven major volcanoes, including seven that are active, are inside the refuge. They range from 4,400 feet to 8,300 feet in elevation. Cinder beds radiate from eruptive centers in the volcanic systems, and the volcano slopes are covered with glaciers and summit ice fields.

The refuge lands on the Bristol Bay side of the range gradually slope toward the Bristol Bay coastal plain northwest of the mountains. The coastal plain terrain is flat, with lakes, and meandering streams. Remnants of glacial moraines provide the only local relief. Toward the tip of the peninsula the southwestern half of the refuge has fewer lakes and assumes a progressively narrower slope.



Mt. Veniaminof erupted in 1983. Activity continued into 1984.

REH

The Ugashik, Meshik, and Chignik rivers, and the Ugashik lakes provide habitat necessary for the five species of salmon that spawn in the refuge. Over 30 species of mammals are present, including brown bear, moose, caribou, wolves and wolverine. Sea otters, sea lions, and harbor seals inhabit the Pacific coastal area. The refuge's lakes and wetlands are heavily used by migrating waterfowl.

Section 302(1)(B) of the Lands Act sets forth the following major purposes for which the Alaska Peninsula 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, brown bears, the Alaska Peninsula caribou herd, moose, sea otters and other marine mammals, shorebirds and other migratory birds, raptors, including bald eagles and peregrine falcons, and salmonids and other fish;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii) above, the opportunity for continued subsistence uses by local residents; and

(iv) 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.

A. HIGHLIGHTS

- On April 21st, a signing ceremony for the first Alaska Land Bank Agreement on the Alaska Peninsula was held in Anchorage. Assistant Secretary for Fish and Wildlife and Parks, William Horn signed for the Department of Interior, Acting Regional Director, Walt Stieglitz signed for the Service, while Ralph Angasan and Trefon Angasan signed for the Alaska Peninsula Corporation. Several more agreements were signed in 1987 (Section C.2.).
- A "Record of Decision" for the Alaska Peninsula Refuge Comprehensive Conservation Plan is signed on December 2, 1987 by Regional Director Walt Stieglitz (Section D.1.).
- Survey and inspection of all cabins on Becharof Lake shoreline is completed as initial step in Section 106 of National Historic Preservation Act compliance (Section D.4.).
- Six staff complete Emergency Trauma Technician training (Section E.6.).
- A successful fall migration watch at Cinder River Lagoon yields more emperor goose population data (Section G.3.).
- The first waterfowl brood production survey for the Alaska Peninsula/Becharof refuges is completed (Section G.3.).
- A complete nesting and production survey of the Pacific coast for bald eagles is completed (Section G.6.).
- Public use camp at Ugashik Narrows reveals heavy public use and a serious problem with Arctic grayling population (Sections G.11. and H.9.).
- Discovery of an unknown World War II crash site of a Coast Guard Gruman Goose stirs national interest (Section J.3.).
- World War II crash site of a U.S. Navy PBY-5A No. 7297 is verified and recorded (Section J.3.).
- Three of four new houses were accepted in May; the fourth was accepted in July (Section I.1.).
- New well and water system installed at refuge headquarters (Section I.2.).

1. General

The upper Alaska Peninsula is characterized by polar maritime climate with moderate temperatures, protracted cloud cover, frequent precipitation and high winds.

Large atmospheric differences between interior Alaska and the Pacific Ocean and Bering Sea are the dominate influences on weather. Pacific Ocean and Bering Sea winds with high moisture content blow frequently across the upper peninsula forming fog and clouds which tend to develop into precipitation. High winds and turbulence are especially common in mountain passes. The heaviest precipitation occurs on the Pacific Ocean side of the refuge, while the Bering Sea side enjoys more clear weather but lower average temperatures. From fall to spring, the skies are clear to partly cloudy 40% of the time, while in summer this occurs only 20% of the time. King Salmon averages 50 clear days per year.



A rare day on the Alaska Peninsula--it's clear!

REH

Precipitation varies with elevation and distance from coasts. Less than 20 inches of precipitation falls annually in the western lowlands, while as much as 160 inches falls on the Pacific side of the refuge.

Temperatures are generally moderate throughout the year. Daily maximum temperatures may exceed the freezing mark all months while daily minimum temperatures drop below freezing on approximately one-half the days of the year. The King Salmon temperatures average 12 degrees F in December, the coldest month, and 54 degrees F in July, the warmest month. Extremes range from -46 degrees F to 88 degrees F.

Daily King Salmon winds average 10 to 15 miles per hour. However, most months have peak winds from 40 to 70 miles per hour with the extreme being 94 miles per hour.

At King Salmon the dangerous effects of wind chill can be dramatic. Interior Alaska is known for the low winter temperatures and the Aleutian Islands for their high winds. However, when climatic influences of each area meet on the upper Alaska Peninsula, the wind chill factor may exceed -120 degrees F.

January-March

The year started off with extremely mild temperatures for the first quarter. Monthly averages ranged 9 to 11 degrees F above normal (Table 1). The low for the year was -45 degrees F which occurred on January 11th. Fortunately the winds were only 10 miles per hour on the 11th. However, on January 12th, the temperature dipped to -24 degrees F while the winds blew in excess of 40 miles per hour. As a result the Naknek River, which was partly open and unsafe for crossing through the beginning of the year, froze over and became safe for crossing. However, due to the mild temperatures, the river opened and refroze several time during the quarter making crossing the river by subsistence caribou hunters risky. The Naknek River was open and relative ice free by mid March, one month earlier than usual. Most refuge lakes were open by mid to late April. Precipitation was normal for the quarter. The year started off with one inch of snowcover and accumulated to a maximum depth of 17 inches by January 10th. By February 6th, only two inches or less of snowcover remained until March 8th when only a trace could be observed through the end of the quarter. The winds blew in excess of 40 miles per hour on 17 days with gusts peaking at 60 miles per hour on March 23rd.

April-June

Spring quarter exhibited normal temperatures. Except for June 15th, night time temperatures remained above freezing beginning May 12th. A normal amount of precipitation fell during the quarter, however, precipitation was recorded on all but six days. There were only six clear days, the remaining days being either partly cloudy or cloudy. The ground remained snow free after April 26th. April was the only month in which the winds did not exceed the 40 miles per hour rank. On June 23rd the winds blew to 58 miles per hour.

Table 1. 1987 climatological data - National Weather Service, King Salmon, Alaska.

Month	Temperature (degrees F)			Precipitation (inches)		Max. Snow on Ground (inches)	Wind (mph)		Sky Cover ^a (days)				
	High	Low	Avg.	Norm.	Total		Norm.	Snow	Avg.	Peak	Clear	Pt. Cldy.	Cldy
Jan	40	-45	21	13	2.38	1.04	24.7	17	12	48	4	5	22
Feb	44	-01	24	15	0.54	0.88	2.7	5	13	53	5	5	18
Mar	46	-08	30	19	0.55	1.13	2.7	2	12	60	4	7	20
Apr	53	06	32	31	0.81	1.05	9.4	2	12	38	6	5	19
May	60	29	43	42	1.74	1.18			11	45		3	28
Jun	65	29	49	50	1.49	1.50			13	58		2	28
Jul	82	41	56	55	1.94	2.08			10	43	1	4	26
Aug	79	34	57	54	2.73	3.13			10	46	4	5	22
Sep	62	22	45	47	2.99	2.78			11	47	2	6	22
Oct	53	8	38	33	2.47	1.92	0.1		10	53	2	5	24
Nov	43	-24	16	23	2.75	1.40	13.2	7	9	58	6	5	19
Dec	42	-33	09	12	1.07	1.24	8.9	5	8	52	10	3	18
Total					21.46	19.33	61.7				44	55	266

^aSky cover: Clear = 0 to .3 cloud cover; Partly cloudy = .4 to .7 cloud cover; and cloudy = .8 to 1.0 cloud cover.

July-September

Summer quarter exhibited normal temperatures. The high for the year was a record 82 degrees F, which occurred on July 27th. This was the first time King Salmon temperatures exceeded the 80 degree mark since 1981. The high of 79 degrees on July 26th and 77 degrees on July 28th were also record temperatures for those dates. The first frost for the growing season occurred on August 13th when the temperature dropped to 27 degrees. The low for the quarter was recorded the following day at 22 degrees. There were only seven clear days observed during the quarter. Precipitation for the quarter was normal. On July 11th, King Salmon experienced a rare occurrence when a thunderhead passed overhead emitting several cloud to cloud and at least two cloud to ground lightning bolts. During September precipitation was recorded on all but six days. No snow was recorded within the quarter. The winds were moderate, blowing to 47 miles per hour on September 29th.

October-December

The fall quarter exhibited normal temperatures except for November which was 7 degrees below the monthly norm. November was the first and only month during the year to exhibit below normal temperatures. The Naknek River froze over and became safe for crossing the week of November 22nd. By the end of November, all small lakes between King Salmon and Port Moller were frozen. The fall quarter was the only quarter to receive a slightly above normal amount of precipitation. Measurable amounts of snow began to accumulate on November 10th. At year's end no snow cover existed. Ten clear days were recorded in December--a normal year has only 55 clear days! The highest wind for the quarter was 58 miles per hour, recorded on November 15th.

C. LAND ACQUISITION

1. Fee Title

Unlike most refuges in the lower 48, Alaska refuges have been created and modified by several major pieces of legislation. On November 16, 1978, the Secretary of the Interior invoked his emergency withdrawal powers under Section 204(e) of the Federal Land Policy Management Act (Organic Act) and withdrew land throughout Alaska. Part of this withdrawal was Public Land Order (Order) 5653 (as amended), which included lands which are now the Alaska Peninsula National Wildlife Refuge. Order 5653 was rescinded in December 1980 with the passage of the Alaska National Interest Lands Conservation Act (Lands Act) and created the Alaska Peninsula National Wildlife Refuge from the lands in the Order.



The Alaska Peninsula's Aleutian Mountain range is very scenic.

REH

On December 1, 1978, President Carter established the Becharof National Wildlife Monument by Presidential Proclamation 4614. The Monument then became protected from all forms of land entry under existing Public Domain laws. In 1980 with the passage of the Lands Act, the Becharof Monument became the Becharof National Wildlife Refuge.

Along with the Lands Act, other major legislation has had profound effects on land status in both refuges. These other acts include the Alaska Statehood Act and the Alaska Native Claims Settlement Act (Claims Act). Both pieces of legislation provided a legal means of transfer of lands under Federal trusteeship to State and Native ownership. The implementation of these acts continue to create a dynamic land status on refuge lands due to the selections, transfers and relinquishments by Natives, Native corporations and the State of Alaska.

The Alaska Peninsula Refuge is divided into three management units: Ugashik, Chignik and Pavlof. For administration purposes the Pavlof unit is administered from Izembek Refuge in Cold Bay and therefore is not discussed herein. The Ugashik and Chignik units contain nearly three million acres within refuge boundaries. Approximately 2.5 million acres are under Federal jurisdiction at present. The remaining acreage has been selected by 23 Native villages in three

Native Regions (Koniag, Aleut, and Bristol Bay), the State of Alaska, individual Native allotments and other private interest (Table 2).

Table 2. Land status of the Alaska Peninsula Refuge.^a

Management Unit	Administration	Acres
Ugashik	Federal	956,583
	Native Selected Lands	175,953 ^b
	Native Conveyed Lands	113,545
	Native Allotment Application	591
	Native Allotment Certificate	---
	Historical Place Selection	145
	State of Alaska Selections	142,419 ^b
	Private	68
Sub-total		1,389,304
Chignik	Federal	1,656,990
	Native Selected Lands	271,358 ^b
	Native Conveyed Lands	430,329
	Native Allotment Application	4,509
	Native Allotment Certificate	296
	Historical Place Selection	140
	State of Alaska Selections	123,990 ^b
	Agricultural Selections	220
	Private	1,045
Sub-total		2,488,877
Grand Total		3,878,181

^aThe discussion of the Pavlof Unit of the Alaska Peninsula Refuge can be found in the Izembek Refuge Annual Narrative.

^bSome acreage has been selected by both Native Corporations and State of Alaska.

The "checker board" land status found on the Alaska Peninsula Refuge is largely absent on the Becharof Refuge, primarily because of the protection afforded by previous National Monument status. The overall land status of Becharof is presented in Table 3.

Table 3. Land status of Becharof Refuge.

Management Unit	Administration	Acres
Becharof	Federal	1,153 000
	Native Selected Lands	99,640
	Native Conveyed Lands	4,280
	Native Allotment Application	700
	Native Allotment Certificate	250
	Historical Place Selection	10
	State of Alaska Selections	16,800
	Private	200
Grand Total		1,274,880

2. Easements

The Alaska Land Bank Program (Land Bank Program) was established by Section 907 of the Lands Act, as a mechanism through which lands under the terms of the Claims Act could be retained in Native ownership, yet encourage the same low impact compatible uses as allowed on adjacent Federal lands. Since subsistence activities are an integral part of Native land ownership, small scale development (fish racks, tent platforms and primitive cabins) in support of subsistence life styles is generally considered compatible with the purposes of the Land Bank Program. In addition, the Land Bank Program supports subsistence uses and prevents lands from falling out of Native ownership because of court judgements, adverse possession or taxation.

While a Native corporation and/or individual land owner can offer all lands owned for inclusion in the Land Bank Program, the opportunity exists to place some lands in a "management" category. Generally, management lands are those lands within existing refuge boundaries, adjacent to refuge boundaries or have uses which directly affect refuge objectives. When lands are placed in the management category, the owner is obligated to maintain land uses that are compatible with the refuges' Comprehensive Management Plan.

Native Corporation and/or private landowners may sign a 10-year agreement with the Department of Interior placing their property in the Land Bank Program. The agreement may be extended for additional five-year periods, if the landowner and Department agree.

On April 21st, a signing ceremony for the Alaska Land Bank Agreement between the Alaska Peninsula Corporation and the Fish and Wildlife Service was held in the Bureau of Land Management's Anchorage Office. Assistant Secretary for Fish and Wildlife and Parks, William Horn signed for the Department of Interior, Acting Regional Director, Walt Stieglitz signed for the Service, while Ralph Angasan and Trefon Angason signed for the Alaska Peninsula Corporation. Refuge Manager Ron Hood represented the Alaska Peninsula/Becharof refuges. This agreement, placed approximately 400,000 acres near the communities of

Kokhanok, Newhalen, South Naknek, Ugashik and Port Heiden into the Land Bank Program.

This was followed on August 28th by Bay View Incorporated adding 79,000 acres near Ivanof Bay. Becharof Corporation signed an agreement on December 31st adding nearly 89,000 acres around Egegik. All total, approximately 568,000 acres were placed in the Land Bank Program in 1987. Draft agreements were reviewed for 121,000 acres near Naknek, offered by Paug-Vik, Incorporated, Ltd. and 95,000 acres offered by Pilot Point Corporation near the community of Pilot Point.

Much of the land selected by Native corporations has been conveyed into Native ownership. During the conveyance process the Bureau of Land Management (Bureau) placed numerous site/or access easements under Section 17(b) of the Claims Act. Many of the easements placed on conveyed Native lands were improperly applied, illegal or incorrectly identified. Regulations implementing Section 17(b) of the 1971 Claims Act were not published until late 1978, after much land had already been conveyed and easements recorded. In 1985, the Bureau received policy direction to "conform" all previously recorded easements. As a result of this conformance program, all easements are being reviewed, corrected or eliminated on Native lands. Beginning in late September the refuges began to receive notices of conformance and has had an opportunity to comment on easement changes. While this is creating tons of new easement maps and documents, the refuges are generally not affected by the conformance process, unless access to refuge land or uses of adjacent lands are involved.

D. PLANNING

1. Master Plan

Alaska refuges do not utilize master planning as it exists for the refuges in the lower 48 states, but rather comply with Public Law 96-487, Alaska National Interest Lands Conservation Act (Lands Act). Section 304 directs the Secretary of the Interior to prepare comprehensive conservation plans.

Becharof Refuge. In April, 1985, the Final Comprehensive Conservation Plan/Environmental Impact Statement and Wilderness Review for the Becharof Refuge was mailed out for public review. Alternate B (the preferred alternative) would:

- maintain most of the refuge in a relatively undeveloped state;
- maintain the refuge's natural diversity and key fish and wildlife populations and habitats by minimizing potential impact from development;
- provide future opportunities for oil and gas exploration in designated area;

- maintain traditional access;
- provide for continued subsistence use of refuge resources;
- maintain opportunities for recreational hunting and fishing;
- recommend wilderness designation for (1) the northeast section of the refuge including the drainages of Big Creek, the eastern reaches of the King Salmon River, and Gertrude Creek, and (2) the southeast section of the refuge including Mount Peulik - Gas Rocks area, Mount Becharof, and the drainages of Otter Creek, Featherly Creek, and Island Arm.

Regional Director Robert Gilmore signed the Record of Decision on August 1, 1985. Alternative B, the Preferred Alternative, was selected with modifications that included:

- oil and gas exploration may be allowed in the minimal management area in the northwestern and southwestern parts of the refuge;
- the wilderness proposal defined in Alternative B will be submitted to the Secretary, and;
- the Service will allow all traditional modes of access when utilized for subsistence activities under all management classifications including Congressionally designated wilderness areas.

However, before action could be taken to implement the Record of Decision a significant change in the oil and gas policy for Alaskan refuges placed it in abeyance. On October 28, 1985, Regional Director Robert Gilmore issued a policy statement designed to ensure the national interest determination and other requirements of Section 1008 of the Lands Act were given appropriate consideration. "The policy now allows exploration in all refuge areas other than designated wilderness, if an activity is determined to be compatible with the purposes for which the refuge was established, and consistent with the management objective adopted for the area."

On those refuges where a national interest determination had not been incorporated into the Comprehensive Conservation Plan and Record of Decision and where adequate information on oil and gas potential is lacking, the Bureau of Land Management would assess that potential.

A final Oil and Gas Assessment was received on June 24, 1987. Two areas of high geological potential were identified. One area of high potential extends along the Pacific Ocean coast from the northern boundary of Becharof Refuge to Ivanof Bay in the Chignik Unit of Alaska Peninsula Refuge. It extends inland to a line running southwestward through the middle of Becharof Lake to just southeast of Black Lake (Chignik Unit) and then swings eastward to the coast. The other area of high potential runs along the Bristol Bay/Bering Sea

coast from approximately 20 miles southwest of Port Heiden (Chignik Unit) to Moffet Lagoon on Izembek Refuge.

Alaska Peninsula Refuge. On August 1, 1985, the Final Comprehensive Conservation Plan/Environmental Impact Statement and Wilderness Review for the Alaska Peninsula Refuge was mailed out for public review. Comments were received until September 9, 1985. Alternate B (the preferred alternative) would:

- maintain most of the refuge in a relatively undeveloped state;
- emphasize the maintenance of the refuge's natural diversity and key fish and wildlife populations and habitats in their present condition;
- maintain traditional access;
- provide for continued subsistence use of refuge resources;
- provide additional opportunities for public use and motorized access near Cold Bay;
- consider development of trans-peninsula transportation corridor in the future, subject to the provision of Title XI of the Lands Act; and
- propose areas with outstanding wilderness values for wilderness designation.

Shortly before the Record of Decision was to be issued in September 1985, the restatement of the oil and gas policy for Alaska refuges was issued. As a result, the Record of Decision was held in abeyance pending the results of an Oil and Gas Assessment of the Alaska Peninsula/Becharof refuges conducted by the Bureau of Land Management. As noted above, a final assessment was received on June 24, 1987.

A "Record of Decision" for the Alaska Peninsula National Wildlife Refuge Comprehensive Conservation Plan was signed by Regional Director Walter Stieglitz on December 2, 1987.



Steam vent on Mt. Chiginagak. This area was dropped from the proposed wilderness. REH

As a result of public comments on the final plan and the Oil and Gas Assessment, the Service modified the Preferred Alternative (B). The modification was based on a combination of Alternatives B and E. Highlights include:

- reduce the amount of land proposed for wilderness designation from 1.9 million acres to approximately 640,000 acres;
- the wilderness review will not be final until a Supplemental Environmental Impact Statement is completed;
- the land removed from the Service's wilderness recommendation was placed into the minimal management category; and
- the Service will do a detailed oil and gas compatibility analysis of those areas redesignated to minimal management.

2. Management Plan

The King Salmon Fishery Assistance Office has the lead in developing a Fishery Resource Management Plan for both Alaska Peninsula and Becharof refuges. In January a coordination meeting between Fishery Assistance and the refuges was held to discuss Phase I "issues and concerns". No further progress was made during the year due to a

crisis on Togiak Refuge that required the full attention of the King Salmon Fishery Assistance Office.

4. Compliance with Environmental Mandates

On June 23rd and 24th, a complete survey of cabins on the Becharof Lake shoreline was conducted by Refuge Manager Ron Hood, Regional Archeologist Chuck Ditters and National Park Service Historic Architect Dave Snow.



Historic Architect Dave Snow measuring tar paper shack. REH

A Bell-206 helicopter under contract from Kenai Air Alaska, Inc. was utilized. Ten cabins were located and documented. Dave Snow, self-styled expert on tar paper shacks in Alaska, observed of the cabins that it was "one of the most significant tar paper shacks that I've seen". It was built in the 1920's with a clipped cable roof and "cupolk" air vents. Dave and Chuck will prepare reports that will allow us to complete compliance with Section 106 of the National Historic Preservation Act. We will then be able to remove or restore the cabins.



A historic commercial fishing skiff known as the "Bristol Bay Double-ender". REH

Near the mouth of the Ruth River, a large village site was found with over 10 house pits being counted. On June 26th, an attempt to investigate the abandoned village of Kanatak had to be abandoned because of inclement weather

5. Research and Investigations

Becharof NR87- "Island Denning and Seasonal Movement of Brown Bear within Becharof National Wildlife Refuge (74515-83-01)

In 1983, a study was initiated to determine movements and denning of brown bears in southeast Becharof Lake, known as the "Island Arm". It has been determined that denning on islands is an uncommon occurrence. Flights using radio-tracking in winter showed that most dens occurred in the rugged Aleutian Mountain Range northeast of the capture locations at Becharof Lake. Others winter dens occurred in the mountains to the southeast. The final year of the study will be in 1988. Preliminary findings of some of the data are found in Section G.

Alaska Peninsula NR87- "Wildlife and Vegetation Studies
in Alaska Peninsula National Wildlife Refuge" (74515-101-BE3)

Funds from Refuge Resource Problem-Related Projects allocated to Becharof Refuge have supported a study in three sites within the Alaska Peninsula Refuge between 1985 and 1987. The locations included Braided Creek (1985-1986) of the Meshik River drainage, southeast Herendeen Bay and Lawrence Valley (1985-1986), and the Dog Salmon River (1986-1987) of the Ugashik River drainage. The studies were established to gather data along "transportation corridors" which were proposed as land use alternatives in the Bristol Bay Regional Management Plan (Figure 4). Tabulation of data and write-up of the results began in earnest this fall. A final report is expected in 1988 with some results in the 1988 narrative.

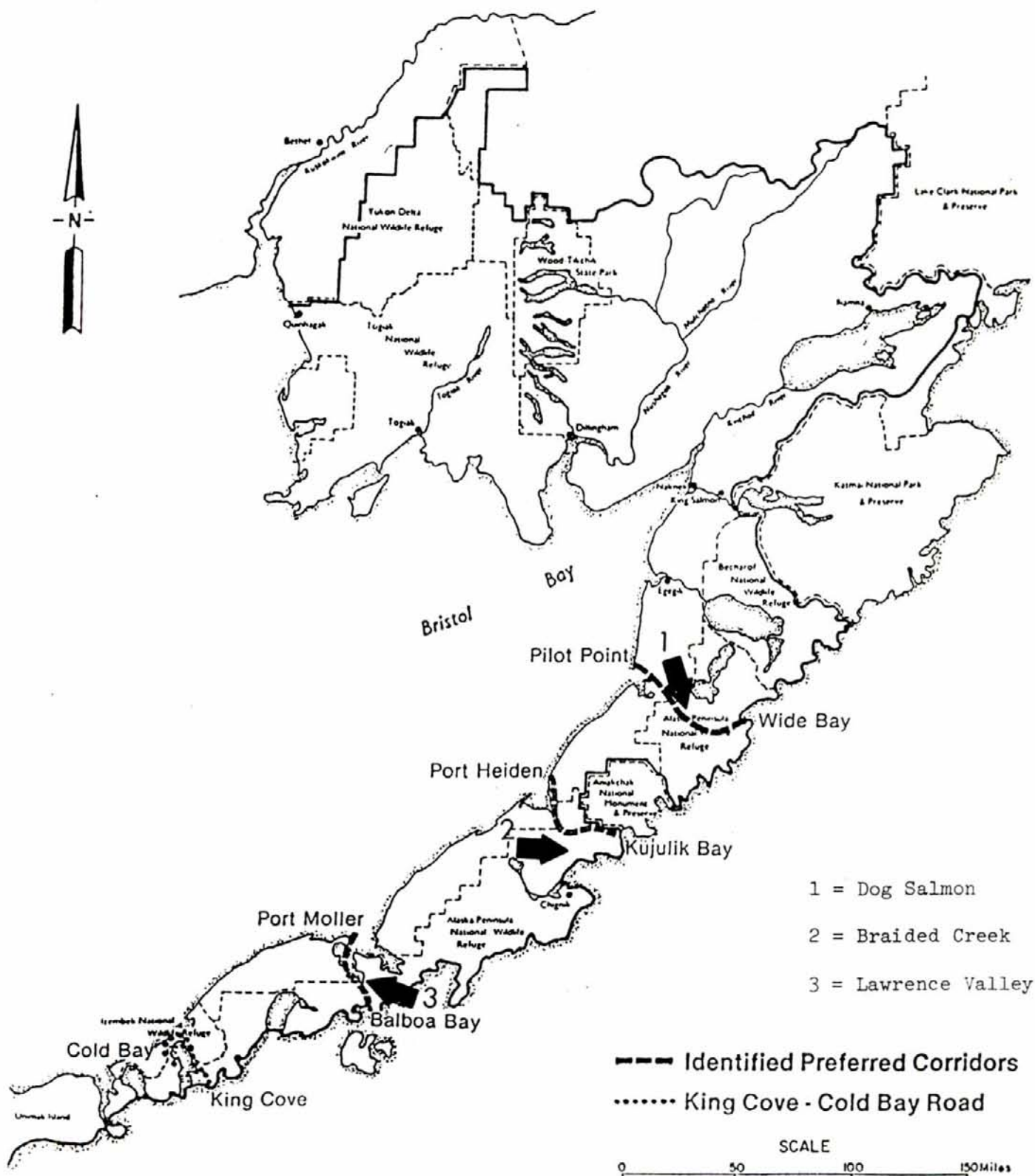


Dog Salmon River basin--site of 1986-1987 field work. KIW

Alaska Peninsula/Becharof NR87- "Aerial Survey and Sampling
of Tundra Swans in the Northern Alaska Peninsula (74510-85-02)

Since 1983 nesting data have been gathered in lowlands of the northern Alaska Peninsula (Kvichak River to Port Moller). A sampling and monitoring scheme was developed from data on densities of swans. Final reports were prepared from this study, completed in 1987. Annual monitoring of the population will continue. Some tables and figures with summary from the study are found in Section G.

Figure 4. Transportation corridors proposed for land-use alternatives in the Bristol Bay Regional Management Plan. Arrows show approximate locations of study sites.



E. ADMINISTRATION

The Fish and Wildlife Service intends to reorganize the three Alaska Peninsula refuges (Becharof, Alaska Peninsula, and Izembek National Wildlife Refuges). To accomplish the proposed reorganization, the Service will have to submit a proposal to Congress to adjust the boundaries. Boundaries would be altered by combining Becharof Refuge with the Ugashik and Chignik units of the existing Alaska Peninsula Refuge. The Pavlof Unit would be incorporated into Izembek Refuge. The new boundary between Alaska Peninsula Refuge and Izembek Refuge would cross the peninsula between the Right Head of Port Moller Bay on the Bristol Bay side and American Bay on the Pacific Ocean side. Becharof Refuge would no longer exist as a separate refuge.

The Alaska Peninsula and Becharof refuges are currently being managed as one refuge under this administrative view point. In prior years an annual narrative for each refuge was produced. This year approval was received to produce only one narrative.

1. Personnel

	<u>Name</u>	<u>Title</u>	<u>Grade</u>	<u>EOD</u>	<u>Term.</u>	<u>Status</u>
1.	Ronald E. Hood	Refuge Manager	GS-485-12	09-15-85	Present	PFT
2.	Elton Savery	Deputy Refuge Manager	GS-485-11	09-29-85	Present	PFT
3.	Randall Arment	Assistant Refuge Manager/Pilot	GS-485-12	10-03-82	Present	PFT
4.	John Payne	Assistant Refuge Manager/Pilot	GS-485-12	09-29-85	Present	PFT
5.	Randall J. Wilk	Wildlife Biologist	GS-486-11	06-27-83	Present	PFT
6.	Dwight Mumma	Biological Technician	GS-404-05	02-19-84	Present	PFT (local hire)
7.	Alan Rogers	Maintenance Worker	WG-4749-08	03-04-84	07-08-87	PFT
8.	Raymond Gallup	Maintenance Worker	WG-4749-08	09-27-87	Present	PFT
9.	Janice Collins	Refuge Secretary	GS-318-05	06-11-84	Present	PFT
10.	Randy Cordray	Biological Technician	GS-404-04	06-29-87	07-28-87	Temp
11.	Brian Lane	Biological Technician	GS-404-05	06-01-87	09-05-87	Temp
12.	Kristine Sowl	Biological Technician	GS-404-05	07-05-87	10-24-87	Temp
13.	Stuart Spencer	Biological Technician	GS-404-05	06-21-87	09-05-87	Temp
14.	Karen I. Wilk	Biological Technician	GS-404-05	05-14-87	Present	INTM



Front Row: Savery, R. Wilk, Collins, Arment
 Back Row: Mumma, Hood, Payne, Gallup, K. Wilk

FWS

YOUTH CONSERVATION CORPS

Chimene Terry	Enrollee	06-08-87	08-15-87
Tanya Fundeen	Enrollee	06-08-87	08-01-87
Andy Anderson	Enrollee	06-08-87	08-15-87
Michael Greig	Enrollee	06-08-87	08-01-87

VOLUNTEERS

Charles "Bo" Sloan	Tupelo, MS	05-25-87	08-22-87
Dan Thompson	Romayor, TX	05-24-87	09-03-87

STUDENT CONSERVATION ASSOCIATION

Bonnie Nevel	Ann Arbor, MI	05-24-87	08-15-87
John Loegering	Barnsville, MN	05-24-87	08-15-87

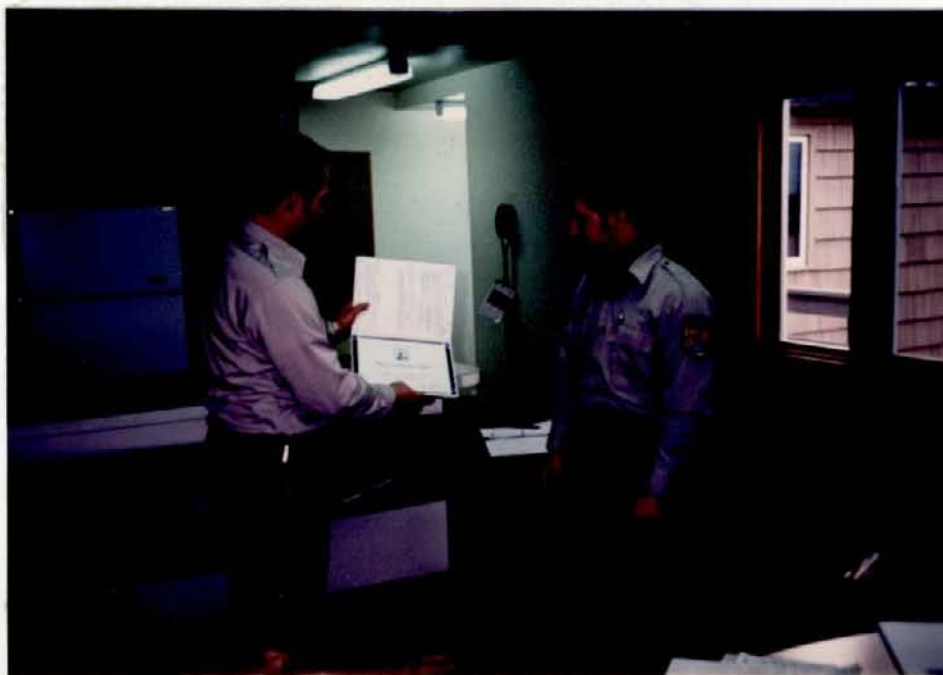


Youth Conservation Corps crew for 1987, from left to right:
Andy Anderson, Chimene Terry, Tanya Fundeen, and Mike Greig.

JES

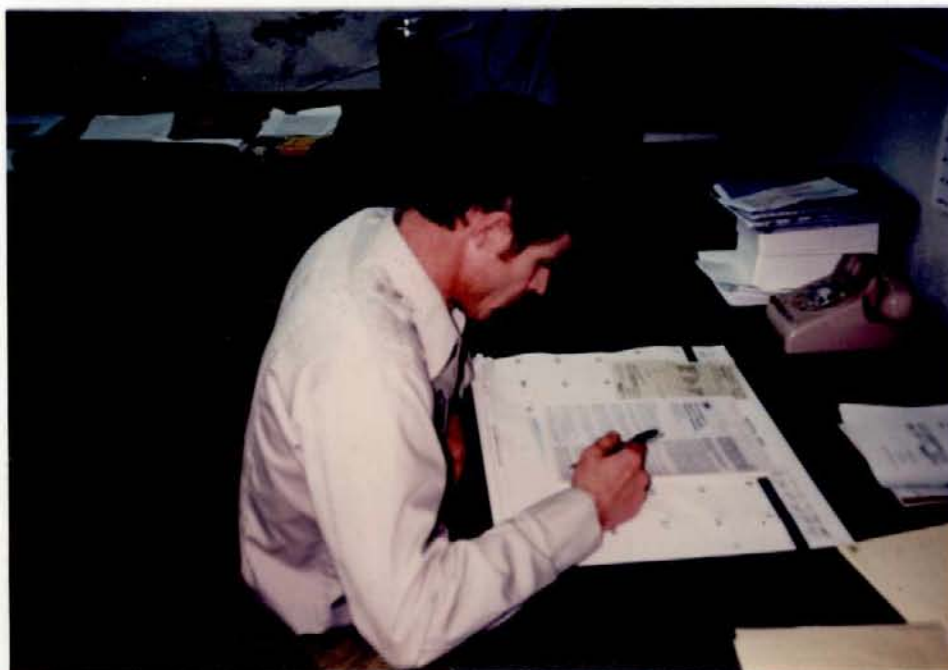
Highlights of the year included:

- Jessie Lockhart, Personnel Management Specialist, and Mary Conner, Position Classification Specialist, from the Region 7 Personnel Office conducted a staff assistance audit visit on March 23-24. All staff had an opportunity for one-on-one discussions with Jessie and Mary.
- Assistant Refuge Manager/Pilot John Payne attended the Basic Refuge Academy in Blair, Nebraska.
- Performance awards were presented by Deputy Refuge Manager Jim Savery on March 16th to Secretary Jan Collins, for work on the Annual Narrative and sustained performance; Biological Technician "Moose" Mumma for exemplary field camp supply for four field camps and sustained performance; and Wildlife Biologist Randall Wilk for the supervision of the four field camps, development of sampling scheme for tundra swans, and overseeing and training in the brown bear capture operation. Awards were earned in 1986.

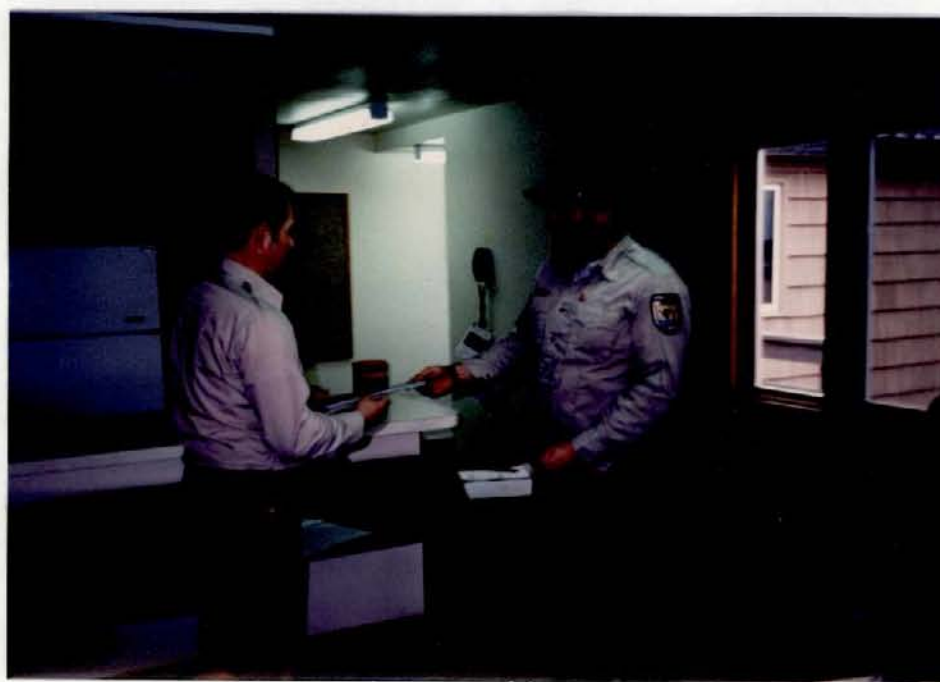


Wildlife Biologist Randy Wilk receives award from Deputy
Refuge Manager Jim Savery. DDM

- Maintenance Worker Alan Rogers applied for medical retirement in April. He was placed on sick leave until the Office of Personnel Management ruled on his application. On July 8th, medical disability retirement was approved. Alan was notified on the 10th; our Personnel Office received notification on the 14th; the movers arrived on the 20th; and Alan, Gail, David and Patty departed for Tennessee on the 22nd. We all wish Alan a pain-free retirement in the warmer climate.
- The search for seasonal Biological Technicians was particularly arduous this year. It required reviewing a number of certificates and numerous phone calls.
- A temporary Maintenance Worker position was filled by Raymond Gallup. Ray reported for work on July 6th. The permanent position was filled effective September 27th. Ray successfully competed for that position.
- Performance awards were presented by Deputy Refuge Manager Jim Savery on December 7th to Secretary Collins for sustained performance and Biological Technician "Moose" Mumma for supervising the Youth Conservation Corps crew. Awards were earned in 1987.



Maintenance Worker Alan Rogers completes his application
for medical retirement. DDM



Biological Technician "Moose" Mumma receives award from
Deputy Refuge Manager Jim Savery CRA



Refuge Secretary Jan Collins receives award from Deputy
Refuge Manager Jim Savery. DDM

- Wildlife Biologist Randall Wilk was promoted to GS-11, effective December 20th. This promotion was earned through "accretion of duties".

Alaska Peninsula/Becharof refuges have an approved staffing pattern as shown in Figure 5. Our Resource Problems-Related Project provided funding for five temporary biological technicians.

Figure 5. Approved organizational chart for Alaska Peninsula/Becharof refuges.

Refuge Manager
GS-12

Deputy Refuge Manager
GS-11

Refuge Secretary GS-5	Maintenance Worker WG-8	Biotech. GS-5	Wildlife Biologist GS-11	ARM/ Pilot GS-12	ARM/ Pilot GS-12
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These positions require 6.8 Full Time Equivalent's. One position is local hire which does not count as a full time equivalent. The full time equivalent and funding for the maintenance position is shared with the King Salmon Fishery Assistance Office. The allocation history is shown in Table 4.

Table 4. Historic record of full time equivalent allocation and use.

FY	Full Time Equivalent			
	AKP	BCH	TOTAL	USED
88	5.0	4.0	9.0	--
87	5.0	5.0	10.0	8.24
86	3.4	5.7	9.1	8.66
85	3.4	3.4	6.8	6.28
84	3.4	4.0	7.4	6.74

2. Youth Programs

The Refuge staff assisted the National Park Service with establishing their Youth Conservation Corps program by handling the recruiting and selecting process. All applications were submitted to the refuge office where a pool of enrollees was established. Of the ten applicants, six were selected; four by the Refuge office and two by the Park Service. This process was established in 1986 and worked very well to reduce the amount of confusion that applicants have between agencies, and the amount of paper work.

The Youth Conservation Corps program began on June 8th and was scheduled for termination on July 31st. Four enrollees participated: Chimene Terry, Tanya Fundeen, Andy Anderson and Michael Greig. Two enrollees were extended for two additional weeks to aid the Refuge Secretary in the office and the Maintenance Worker in the shop. The Deputy Refuge Manager coordinated the program while the Maintenance Worker and Biological Technician directed the field activities.

One enrollee provided operational support to the refuge in the form of office help. Major duties included typing report and correspondence, using both typewriter and word processor, answering the telephone, filing reports and correspondence and distributing mail to various offices. The remaining three enrollees worked on general maintenance and facility projects around headquarters. Most of these projects could not have been accomplished without the Youth Conservation Corps help. The projects included: fencing maintenance; terracing and rehabilitation of the river beach front; seeding, fertilizing and trimming the grass; painting and staining several buildings and structures; facility housekeeping; washing and waxing vehicles; and litter control. The crew helped the refuge complete a waterfowl brood survey in which a total of 30 square miles of habitat were researched. As part of a "Take Pride" project, the crew picked up and bagged trash and repainted the Wilderness administrative cabin site on the Kejulik River.



Wilderness administrative cabin on the Kejulik River before
Youth Conservation Corps "spruce up" effort. RJW



Wilderness administrative cabin on the Kejulik River after
Youth Conservation Corps "spruce up" effort. JES

Several safety topics and environmental awareness programs were presented to the enrollees by the refuge staff through means of lecture and audio/visual aids. Subjects included: description, purposes and objectives of the National Wildlife Refuge System and the Alaska Peninsula/Becharof Refuges; brown bear safety; habitat study and capture techniques; aircraft and flight safety; tundra swan study and banding techniques; area fish population dynamics and safety; and general safety procedures and precautions.

3. Other Manpower Programs

This was the first year the refuge utilized Student Conservation Association assistants in our field camp program. Two individuals were selected from the list of applicants. These were John Loegering from North Dakota State University and Bonnie Nevel from the University of Michigan. Their twelve week program began on May 25th and terminated on August 14th. The assistants attended a four day training session at refuge headquarters prior to leaving for the field camps. The total cost for each assistant was \$2,216.30. This cost is somewhat higher for Alaska than the "lower 48".

All aspects of the program went very well. Eight applications were received in adequate time to select two qualified candidates. Very little time or paper work was involved to completely process the assistants and have them arrive on station. The Student Conservation Association has apparently worked out most of the problems. We plan to use the Student Conservation Association assistants extensively in 1988.

4. Volunteer Programs

This year the refuge only utilized the services of two volunteers for our field camp program. Two volunteers assisted three biological technicians collecting public use and fish creel data in the Ugashik Narrows and Gertrude Lake field camps. They also assisted in the waterfowl production surveys at Ugashik Narrows.

5. Funding

The funding picture for Fiscal Year 1987 proved to be an emotional roller coaster. Our initial funding allocation was bleak. Then in early November word came that Congress passed a Fiscal Year 1987 Appropriations Bill that contained a number of supplementals for Alaskan refuges. Everything looked rosy. Then in mid-December came word that the Office of Management and Budget was proposing a rescission package that included all supplementals and Accelerated Refuge Maintenance Management funds--back to the emotional depths. It was mid-fiscal year before we knew our funding status.

This emotional roller coaster continued into Fiscal Year 1988. Again, an initial funding allocation that was bleak. Congress finally passed an appropriation bill just before Christmas. At this writing, we are still waiting for fiscal funding allocations. The funding history of both refuges is presented in Tables 5 - 7.

Table 5. Alaska Peninsula Refuge funding Fiscal Years 1984 to 1988.

FY	1260					1360	TOTAL
	Base	ARMM	RPRP	CIP	TOTAL		
88 ^a	\$214.0K ^b	\$ 4.0K	\$50.0K	\$27.0K	\$295.0K	--	\$295.0K
87	\$323.0K	\$135.0K ^c	--	--	\$458.0K	--	\$458.0K
86	\$180.6K	\$ 66.4K ^d	--	--	\$247.0K	--	\$247.0K
85	\$179.5K	\$235.5K ^f	--	--	\$415.0K	\$ 5.0K ^e	\$420.0K
84	\$285.0K	\$130.0K	--	--	\$415.0K	\$10.0K ^e	\$425.0K

^aInitial allocation.

^bIncludes \$115,000 for radio system purchase.

^cIncludes \$45,000 for large ARMM projects.

^dIncludes \$180,000 for large ARMM projects.

^eEarmarked to assist King Salmon Fisheries Resource Station in developing a Fishery Management Plan.

^fEarmarked for large ARMM projects.

ARMM = Accelerated Refuge Maintenance Management

RPRP = Resource Problem-Related Projects

CIP = Contaminant Impact Problems

Table 6. Becharof Refuge funding Fiscal Year 1984 to 1988.

FY	1260					1360	TOTAL
	Base	ARMM	RPRP	CIP	TOTAL		
88	\$272.0K	\$150.0K ^b	\$ 30.0K	\$30.0K	\$482.0K	--	\$482.0K
87	\$237.0K	\$256.0K ^c	\$ 45.0K	--	\$538.0K	--	\$538.0K
86	\$201.6K	\$ 56.4K ^d	\$101.0K	--	\$359.0K	--	\$359.0K
85	\$216.0K	\$169.0K ^f	\$101.0K	--	\$486.0K	\$ 5.0K ^e	\$491.0K
84	\$240.0K	\$ 80.0K	--	--	\$320.0K	\$10.0K ^e	\$330.0K

^aInitial allocation.

^bEarmarked for large ARMM projects.

^cIncludes \$151,000 for large ARMM projects.

^dIncludes \$132,000 for large ARMM projects.

^eEarmarked to assist King Salmon Fisheries Resource Station in developing a Fishery Management Plan.

^fEarmarked for large ARMM projects.

Table 7. Base funding history for Alaska Peninsula/Becharof refuges.

FY	AKP	BCH	TOTAL
88	\$214.0K	\$272.0K	\$486.0K
87	\$208.0K ^a	\$237.0K	\$445.0K
86	\$180.6K	\$201.6K	\$382.2K
85	\$179.5K	\$216.0K	\$395.5K
84	\$285.0K	\$240.0K	\$525.0K
83	\$280.0K	\$260.0K	\$540.0K
82	\$290.0K	\$287.0K	\$577.0K
81	\$ 62.0K	\$206.0K	\$268.0K

^a\$115,000 earmarked for radio system removed from total.

6. Safety

Field operations in bush Alaska are inherently hazardous. This year several small aircraft accidents on and around the refuge reinforced the obvious fact that the primary means of transportation is not without peril. Weather patterns are unpredictable, operations are usually in remote, rugged areas and both refuges have a healthy population of brown bears. All combine to make life interesting and create a need for constant attention to safety.

This year our seasonal staff as well as some of our permanent staff received a 32 hour course in bear safety, cold-water survival, field injury care, aircraft operations, camp expectations and radio communications prior to any field work. The course content was well received and plans are to incorporate student comments into a 40 hour course for 1988.

The training received by the seasonals soon paid-off. One of the Student Conservation Association volunteers found a sharp rock and had to be evacuated from the Dog Salmon field camp. All went well and after a few stitches in his knee and a few days rest he was back to Dog Salmon, this time on the look-out for man-eating rocks.

Assistant Refuge Manager/Pilot Payne completed a 120-hour Emergency Medical Technician training course in February. All too soon his training was utilized. One Friday evening, while leaving work, two of our Youth Conservation Corp enrollees riding a three-wheeler, connected rather hard with a gate post at the headquarters entrance. Both enrollees were transported to the clinic in Naknek by ambulance. Fortunately, neither was seriously injured and both were able to return to work on the following Monday; bruised, sore and somewhat wiser in the operation of three-wheelers.



The Naknek River is cold in early June.

KIW



Refuge staff practices "securing" a patient for transporting.

DDM

Emergency Trauma Technician training was conducted by Patricia Murray, Bristol Bay Area Health Corporation, Dillingham on the 16th through the 25th at the refuge bunkhouse. The following staff completed this training: Refuge Secretary Collins, Maintenance Worker Gallup, Refuge Manager, Hood, Biological Technician Mumma, Deputy Refuge Manager Savery, Biological Technician K. Wilk and Wildlife Biologist R. Wilk. We recommend this training for **all** Service employees.



Assistant Refuge Manager/Pilot John Payne practices starting IV fluids in Maintenance Worker Ray Gallup. DDM

Also during November, Assistant Refuge Manager/Pilot Payne attended a 55-hour advanced life support training session after which he became certified as an Emergency Medical Technician II. With most of our staff now trained higher than basic first aid, we can offer support both to our field operations and to the local community.

Monthly safety programs were presented with various staff members leading each program. Each subject presented was geared toward present field operation and peninsula climatic conditions. The stations safety committee continues its contribution in helping provide a safe and healthy working environment.

On November 14th, six staff members attended an eight hour training session on back-hoe operation, safety and maintenance. Engineering Equipment Operator, Richard Kivi, of Kenai Refuge presented the training which certified the attending staff members in back-hoe operation.



RUN! Deputy Refuge Manager Jim Savery learning to operate the Refuge's backhoe. DDM

F. HABITAT MANAGEMENT

1. General

Geographically, the Alaska Peninsula extends approximately 450 miles from an area near Lake Iliamna to Isanotski Strait at the beginning of the Aleutian Islands. The peninsula's width varies from about 100 miles at Lake Iliamna to three miles near the southern tip. The Becharof and Alaska Peninsula refuges extend over a wide area of land and variety of habitat on the peninsula. By "lower 48" standards, the manipulation of any of these habitats is not possible. The lack of access by any road system places an absolute limit of mechanical manipulation methods. The peninsula, overall, is considered an extremely low fire risk area. The precipitation and generally wet fuel preclude habitat manipulation using fire.



Winter view of Cathedral Creek Valley in the Chignik Unit. REH

Little information is available on the vegetation of either the Alaska Peninsula or Becharof refuges. Studies done to date have been restricted to small, isolated plots, local historical records and military surveys. The best information available is from the 1981 Bristol Bay Land Cover Cooperative Mapping Project. This study utilized Landsat satellite imagery and computer technology to create a gross overview of peninsula cover types (Table 8).

Table 8. Major cover types on the Alaska Peninsula and Becharof refuges.^a

Refuge	Cover Type	Approximate ^b	
		Number	Total
Becharof	Open low shrub/grass tundra	460,000	31.5
	Deep clear water	299,000	20.5
	Barren	120,000	8.2
	Closed shrub/grass	90,000	6.2
	Open low shrub/heath tundra	69,000	4.7
	Miscellaneous deciduous	71,000	4.9
	Snow/cloud/light barren	22,000	1.5
	Marsh/very wet bog	22,000	1.5
	Shallow sedimented water	17,000	1.2
	Wet bog/wet meadow	17,000	1.2
	All other types	273,000	18.6
Total		1,460,000	100.0
Alaska Peninsula ^c	Closed shrub/graminoid	881,000	19.2
	Barren	847,000	18.4
	Snow/cloud/light barren	616,000	13.4
	Miscellaneous deciduous	558,000	12.2
	Deep clear water	473,000	10.3
	Open low shrub/graminoid tundra	431,000	9.4
	Open low shrub/ericaceous tundra	297,000	6.5
	Wet bog/wet meadow	258,000	5.6
	Marsh/very wet bog	142,000	3.1
	Shallow sedimented water	27,000	0.6
	All other types	61,000	1.3
Total		4,591,000	100.0

^aData from Bristol Bay Land Cover Cooperative Mapping Project.

^bDue to scale of Landstat cover type mapping, total land cover acreage does not correlate with land status acreage.

^cIncludes Ugashik, Chignik and Pavlof management units.

2. Wetlands

A close look at Table 8 shows a significant area of both refuges having some form of water at the surface. The Becharof Refuge has the second largest lake in Alaska as its dominate landmark. Becharof Lake is some 35 miles long and 15 miles wide covering 293,000 acres. The Refuge also contains 172 other lakes totaling over 25 acres in size and thousands of ponds and potholes under 25 acres along with three

major drainages: Big Creek (a tributary of the Naknek River), the King Salmon River and the Egegik River.

The Alaska Peninsula Refuge is truly a land-of-many lakes with 300 lakes, greater than 25 acres in size, nine lakes over 1000 acres and thousands of small "pot-hole" lakes. There are 18 major rivers, several hundred tributary streams and over 80 coastal bays.

6. Other Habitats

Tundra is the major vegetation type on the Alaska Peninsula. Three general categories of tundra are classified: wet, moist (heath) and alpine.



Grass/sedge/low shrub tundra lowlands provide habitat for a variety of wildlife such as this large concentration of caribou.

REH

Wet tundra is generally found below 200 feet elevation. Crowberry, willow and a variety of forbs characterize the vegetation of this zone. Wet tundra is most common on the north side of the peninsula with much of it lying outside of the refuge boundaries.

Moderately well drained areas are dominated by moist tundra. This type makes up about five percent of the area on Becharof Refuge (Table 8) and is a minor habitat on the Alaska Peninsula Refuge. Moist tundra occurs primarily on poorly drained soils, upland sites and on slopes. These plant communities contain dwarf birch with willow or heath shrub, heath mat and cushion tundra.

Four private inholdings currently exist within the wilderness area. Three of the inholdings are owned by registered guides. Mr. Jim Cann sold his two parcels to another registered guide, Mr. Phil Shoemaker. During the year, Mr. Shoemaker built a new lodge on his lands. Former Alaska Governor, Jay Hammond, continues to offer his inholding for sale; but is very selective about who he sells it to.



Kejulik Mountain peak--the Kejulik Mountains create a majestic boundary between Becharof Refuge Wilderness Area and the Katmai National Park and Preserve. REH

An additional 347,000 acres (29%), of the refuge has been recommended for wilderness designation under the Becharof Comprehensive Conservation Plan. The proposed additions include: the lower Island Arm/Ruth Lake area; Mount Peulik/Gas Rocks area; eastern reaches of the King Salmon River drainage; and Big Creek drainage. The wilderness review will not be final until a Supplemental Environmental Impact Statement is completed. This will include an opportunity for public review and comment.

On somewhat drier slopes, especially on the lower portions of the Alaska Peninsula Refuge, an open low shrub/graminoid tundra occurs. This tundra is very similar to heath tundra but usually has a dense shrub growth form.

Alpine tundra occurs at higher elevation on slopes and ridges of the Aleutian Range, as well as higher, well drained areas. These areas are dominated by crowberry, lichens and grasses.



The Pacific side of the Alaska Peninsula reveals outstanding scenery and provides key habitat for brown bears. REH

12. Wilderness and Special Areas

Becharof Refuge. Approximately 400,000 acres or one third of the refuge was established under the Lands Act as the Becharof National Wilderness Area. The values of the wilderness area are several fold. The area represents a variety of superlative pristine habitats with a complete compliment of plant and animal associations still intact. Wilderness designation insures that representative samples of these interdependent associations, some of which are unique, will be perpetuated for this and future generations to enjoy. The genetic diversity protected by the unit will serve as a invaluable source of data for scientific investigation and for potential future needs for fish and wildlife protection, restoration and enhancement. Because of the area's designation as wilderness, it will mean that the special wildlife/wildland association within will be the last place on the refuge subject to irreversible development.



A caribou herd uses a permanent ice field on top of Mt. Peulik to escape from insects (8-26-87). This area has been proposed for wilderness designation.

REH

Alaska Peninsula Refuge. At present, no refuge lands are designated wilderness. Approximately 1.9 million acres (53%) of the refuge was recommended for wilderness designation under the preferred alternative of the Alaska Peninsula Refuge Comprehensive Conservation Plan. To reach this recommendation the Service used seven criteria in evaluating the wilderness qualities of the Alaska Peninsula Refuge: land ownership; natural integrity of the area; apparent naturalness; opportunities for solitude; primitive recreation opportunities; size; and the presence of special/unique features. The recommendation included approximately 70% of the Ugashik Unit and 40% of the Chignik Unit.



The Sandy River valley lies within the Mt. Veniaminof National Natural Landmark. This area has been proposed for wilderness designation by Congress. REH

A Record of Decision was signed on December 2, 1987 that reduced the amount of land proposed for wilderness designation from 1.9 million acres to approximately 640,000 acres. The land removed from the Services's wilderness recommendation was placed into the minimal management category. Figure 6 depicts the wilderness recommendation. The wilderness review will not be final until a Supplemental Environmental Impact Statement is completed. This will include an opportunity for public review and comment.

Mount Veniaminof National Natural Landmark. Mount Veniaminof was determined to be eligible for natural landmark status in 1967. It was registered in August 1970. This unique active volcano is located in the Chignik Unit of the Alaska Peninsula Refuge. It is located about 20 miles northeast of Port Moller (Bristol Bay side) and 20 miles west of Chignik (Pacific Ocean side) and approximately 450 miles southwest of Anchorage.

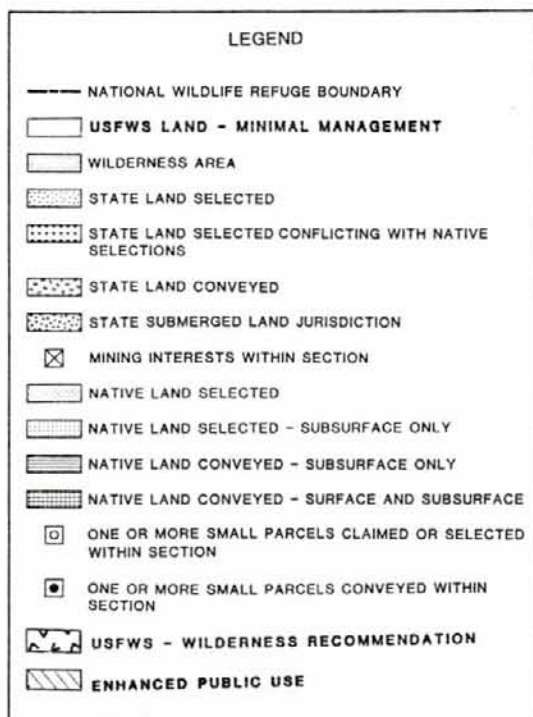


Figure 6. Proposed wilderness recommendation for Alaska Peninsula Refuge.

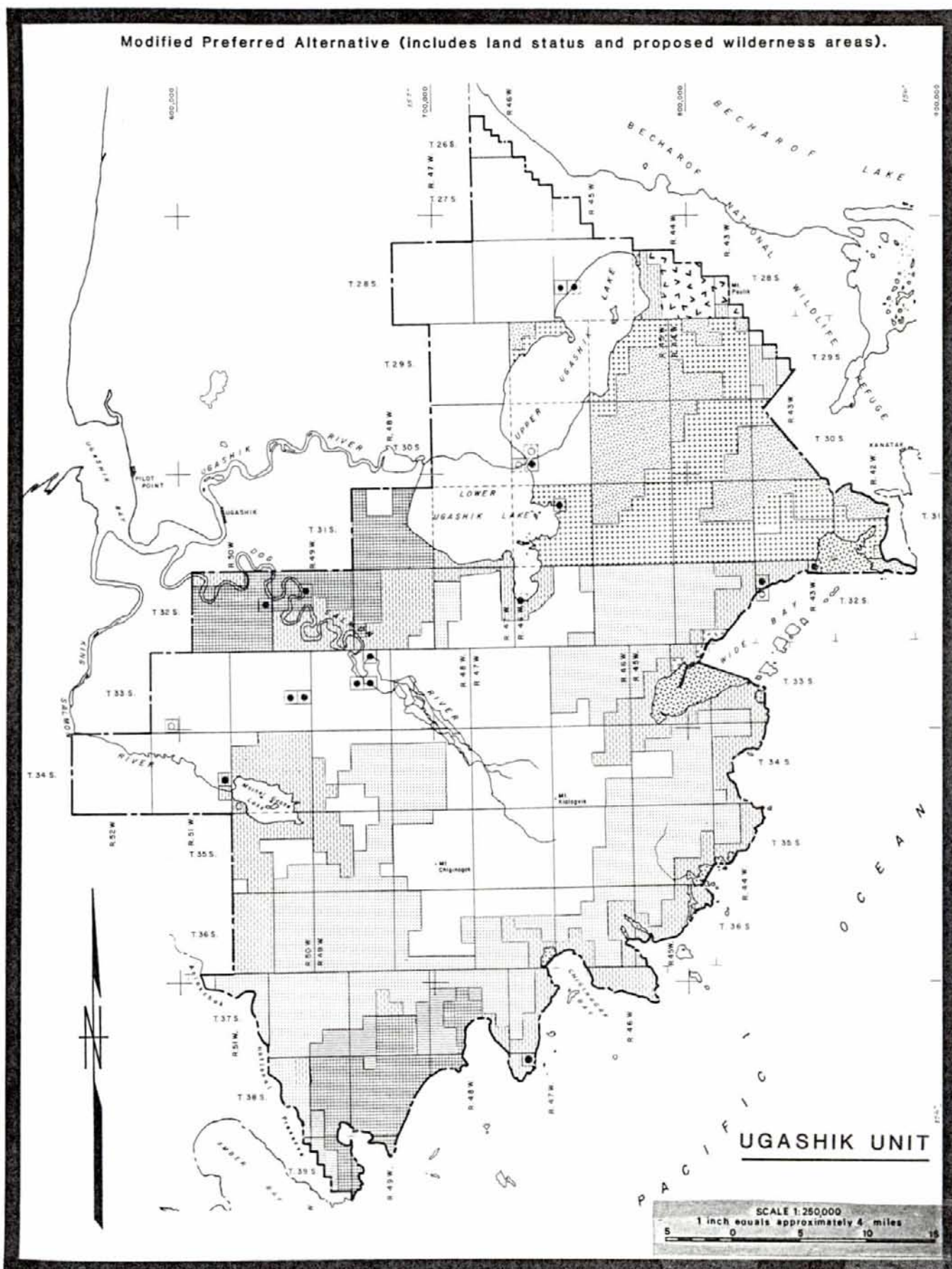


Figure 6 continued.

Modified Preferred Alternative (includes land status and proposed wilderness areas).

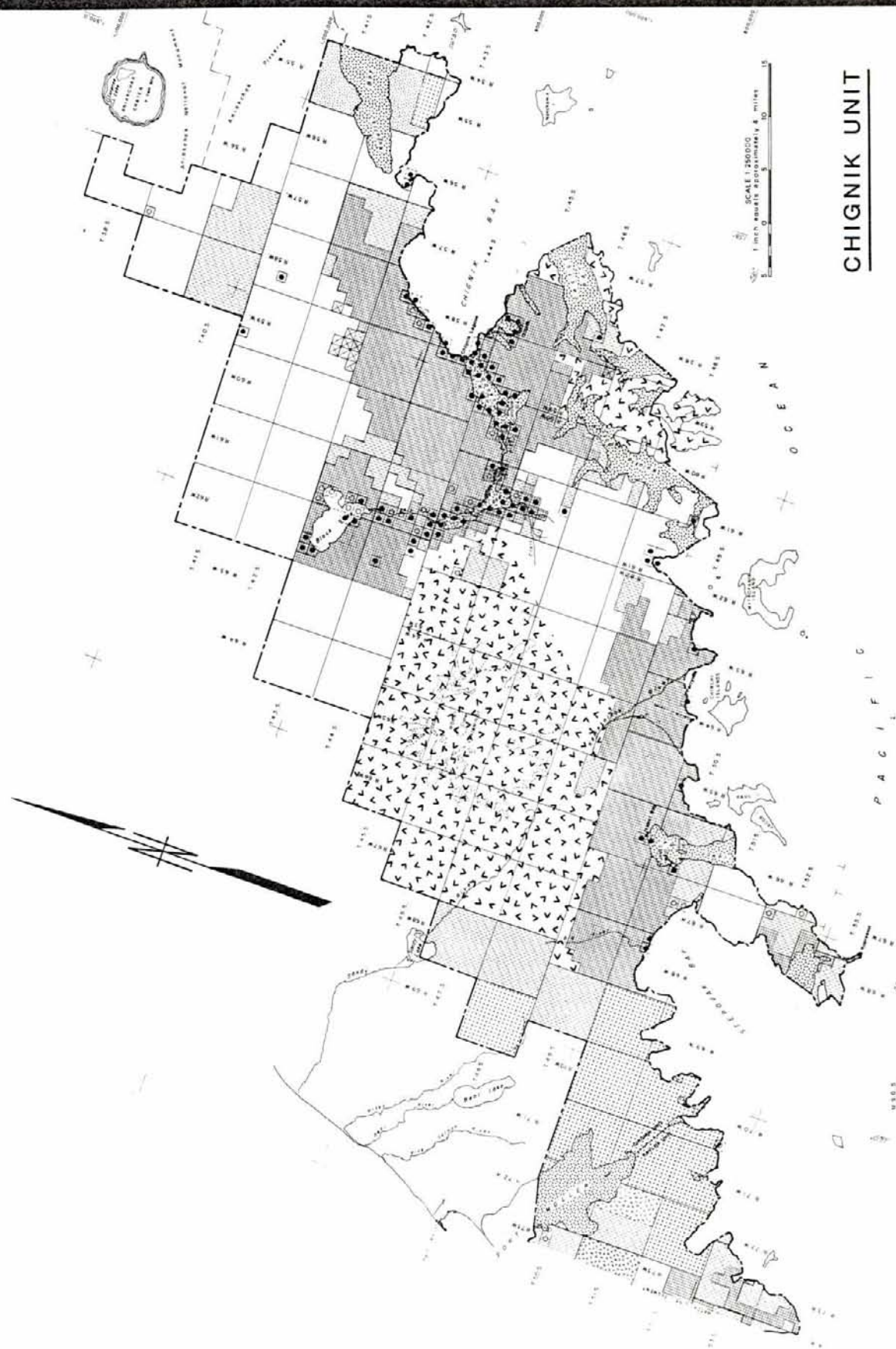


Figure 6 continued.

Modified Preferred Alternative (includes land status and proposed wilderness areas).

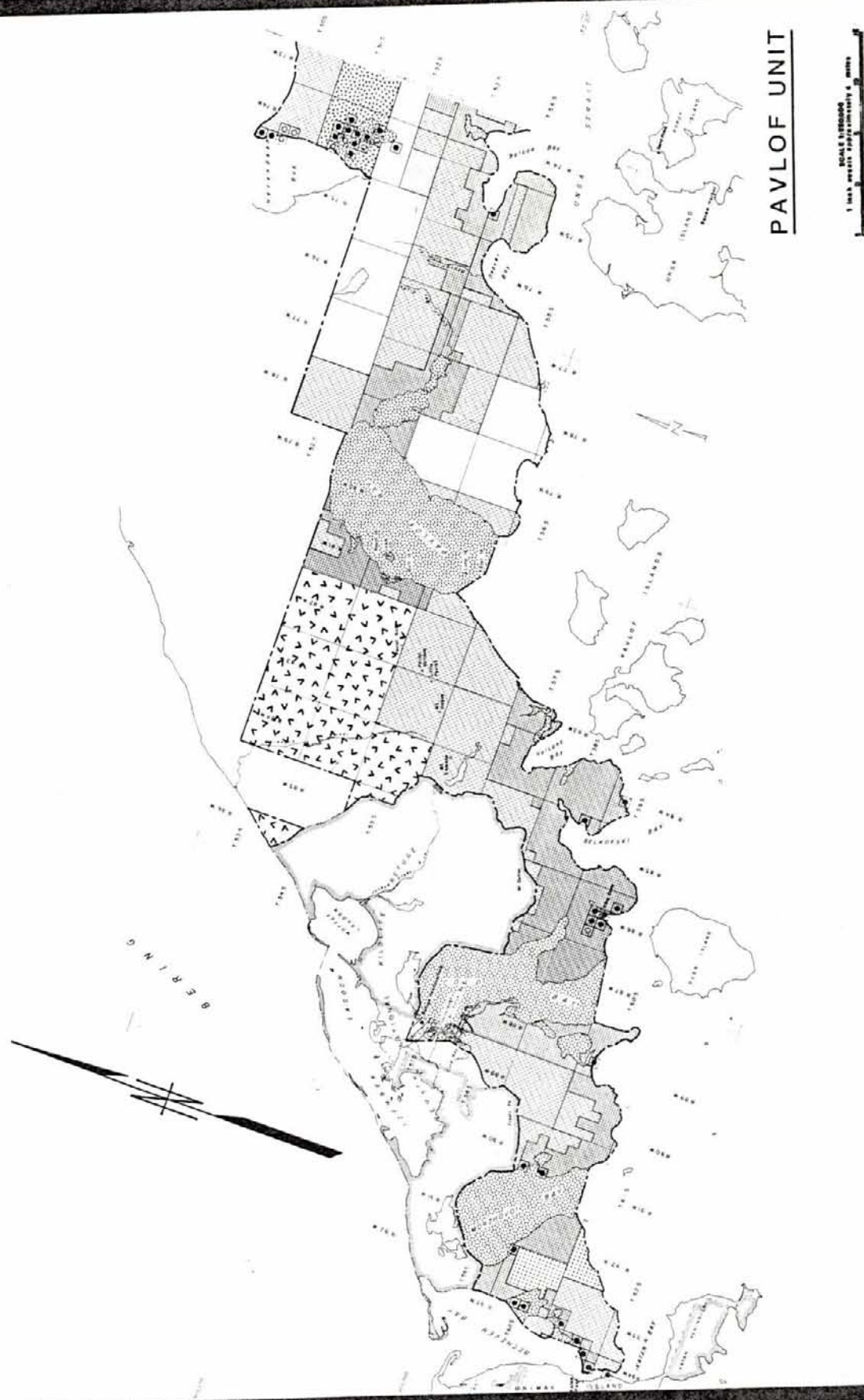


Figure 6 continued.



Mt. Veniaminof erupting in 1983.

USGS

Named for Russian Orthodox priest Ivan Veniaminof who studied Aleutian Chain cones early in the 19th Century, this 8,400-foot volcano is centered on the last wide lobe of the Alaska Peninsula. The climactic eruption that formed the Veniaminof caldera occurred about 3700 years ago. Mount Veniaminof is massive. The summit crater is about 5.2 miles in diameter and contains a 25-square mile cupped ice field--the most extensive crater-glacier in North America. It is the only known glacier on the continent with an active volcanic vent in its center. The volcano's base is over 30 miles in diameter. The Landmark's boundaries encompass over 800,000 acres.



The Alaska Peninsula visitor rarely gets a clear view of Mt. Veniaminof.

REH

G. WILDLIFE

1. Wildlife Diversity

The Alaska Peninsula's great geographical extension, diverse physiography and narrow, tapering land mass--influenced by the Bering Sea, and the North Pacific Ocean fosters a tremendously diverse environmental regime. At least 186 bird species, 30 land and 11 marine mammals occur in or adjacent to refuge habitats during various stages of the annual cycle. Freshwater streams and lakes are home to at least 24 species of fish, including five Pacific salmonids.

3. Waterfowl

Estuaries, bays and coastal wet tundra lowlands of the Alaska Peninsula are vital waterfowl habitats for major populations of ducks, geese, tundra swans and brant. Emperor, cackling, and greater white-fronted geese and brant stage in Bering Sea side lagoons during migration. Emperors also occur in much lower numbers on the Pacific side. The northern peninsula lowlands and Izembek Lagoon represent two of 34 areas of importance to waterfowl in the North American Waterfowl Management Plan.

Waterfowl Production Surveys

In 1987, the first waterfowl production surveys on the Alaska Peninsula were carried out by refuge personnel. The surveys provide data on the number of young produced, which enables specialists of migratory waterfowl to make general predictions about the fall populations of ducks. The surveys are conducted by several Alaska refuges (primarily northern refuges) each summer. Crews of two to three people walked randomly-selected plots of one square mile each in four locations in the northern peninsula. The locations included the Naknek River drainage, Ugashik Lakes, the Dog Salmon drainage, and Egegik River. Surveys were carried out between June 30th and July 16th. Two-hundred and fifty nine ponds and 91 quarter-mile stream sections (each section is equivalent to one pond) were surveyed for an equivalent of 350 water bodies. The results are listed in Table 9.

Table 9. Species composition and sizes of broods (mean \pm SD) of waterfowl and associated water birds recorded during surveys in the Alaska Peninsula, June 30, 1987 to July 16, 1987.

Species	Number of broods	Size (mean \pm SD)	Number broody females
Red-throated Loon	1	2.0	0
Pacific Loon	1	1.0	0
Common Loon	2	1.0 \pm 0.0	0
Red-necked Grebe	4	1.3 \pm 0.5	1
Tundra Swan	6	3.8 \pm 1.2	0
Green-winged Teal	5	5.0 \pm 2.0	0
Mallard	5	3.2 \pm 2.4	2
Northern Pintail	5	4.2 \pm 2.8	1
American Wigeon	11	5.8 \pm 4.5	2
Greater Scaup	7	6.0 \pm 2.3	0
Harlequin Duck	2	2.5 \pm 2.1	2
Black Scoter	3	6.7 \pm 0.6	1
Common Merganser	2	9.5 \pm 9.2	0
Unid. dabblers	1	1.0	0
Unid. diver	2	3.5 \pm 3.5	0
Totals	57		9



Volunteers conducting counts of waterfowl broods in the Dog Salmon drainage.

KIW

Tundra Swans

The population of tundra swans of Bristol Bay comprises an estimated 16 and 18 percent of the Pacific Flyway and Alaska populations, respectively. An estimated 70% of the land area encompassing habitats of this population occurs in the lowlands of the northern Alaska Peninsula, with an estimated 10% on refuge lands. Aerial surveys of swans were initiated in 1983, to gather basic data on populations which could be used for management purposes. Population data have been gathered each year. Management study number 74510-85-02, "Aerial Survey and Sampling of Tundra Swans in the Northern Alaska Peninsula" was completed in 1987, and provided a baseline of data for swans of the northern peninsula (Tables 10 - 13 and Figures 7 and 8). A sampling scheme was developed and will be used in sampling of populations in the future (Table 14). One hundred eighty six sampling units were established (Figure 9) with areas of potential habitat of swans ranging from 5 to 159 kilometers.

Aerial surveys are conducted along transect lines within plots equivalent to U.S. Geological Survey quadrangle maps of scale 1:63,360. Swan observations are recorded on maps to distances of one-half mile each side of the aircraft. Based on this procedure, a bias in detectability of swans is evident. In 1986, the refuge conducted surveys from two different altitudes and different speeds to quantify the number of swans missed using procedures from the

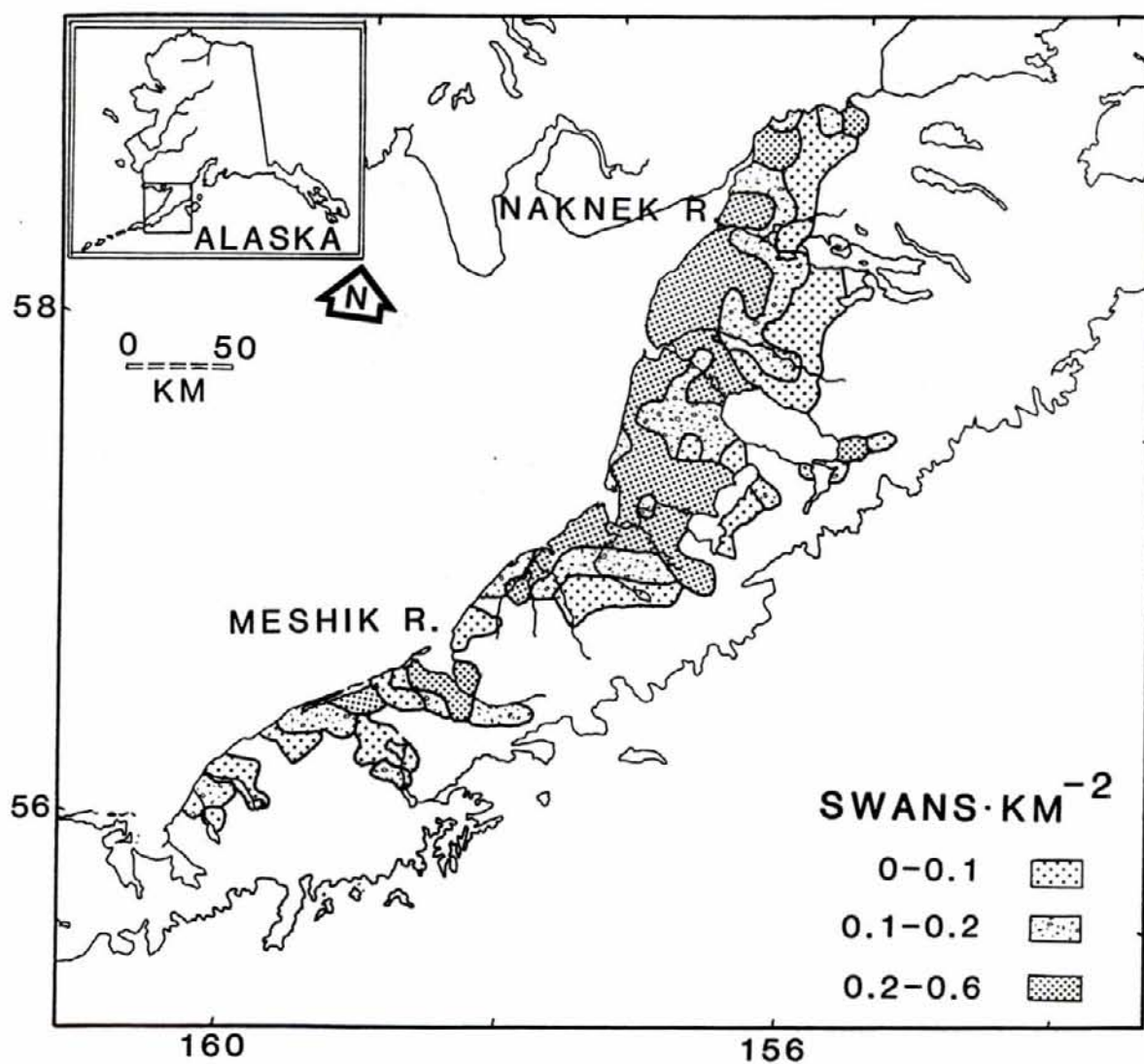


Figure 7. Distribution and density of paired and single tundra swans from aerial surveys, 1983-1985.

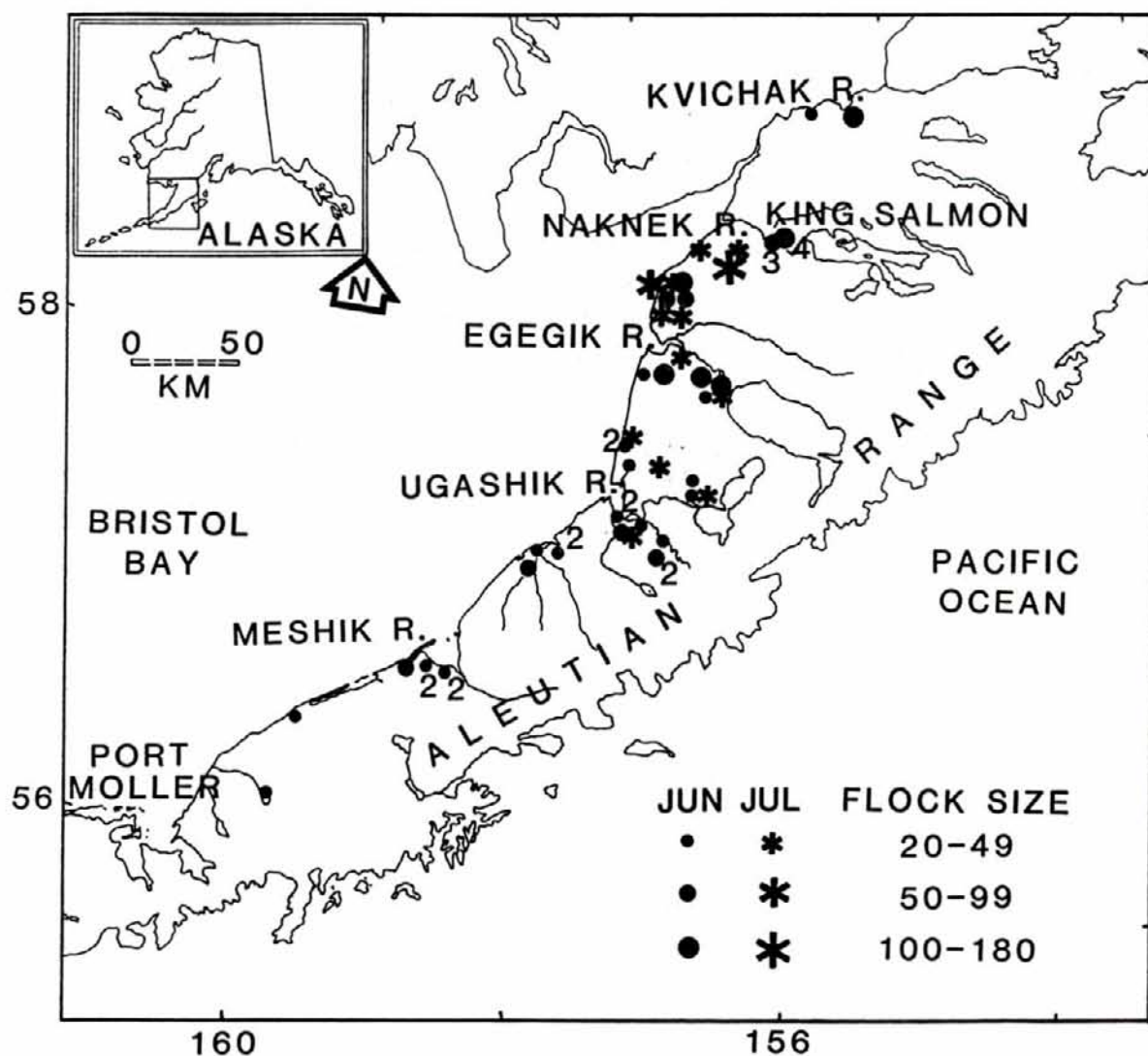


Figure 8. June and July distribution of flocks of tundra swans with 20 or more individuals in the northern Alaska Peninsula, 1983-1986. Numbers 2-4 next to some symbols indicate number of years flocks were recorded at site.

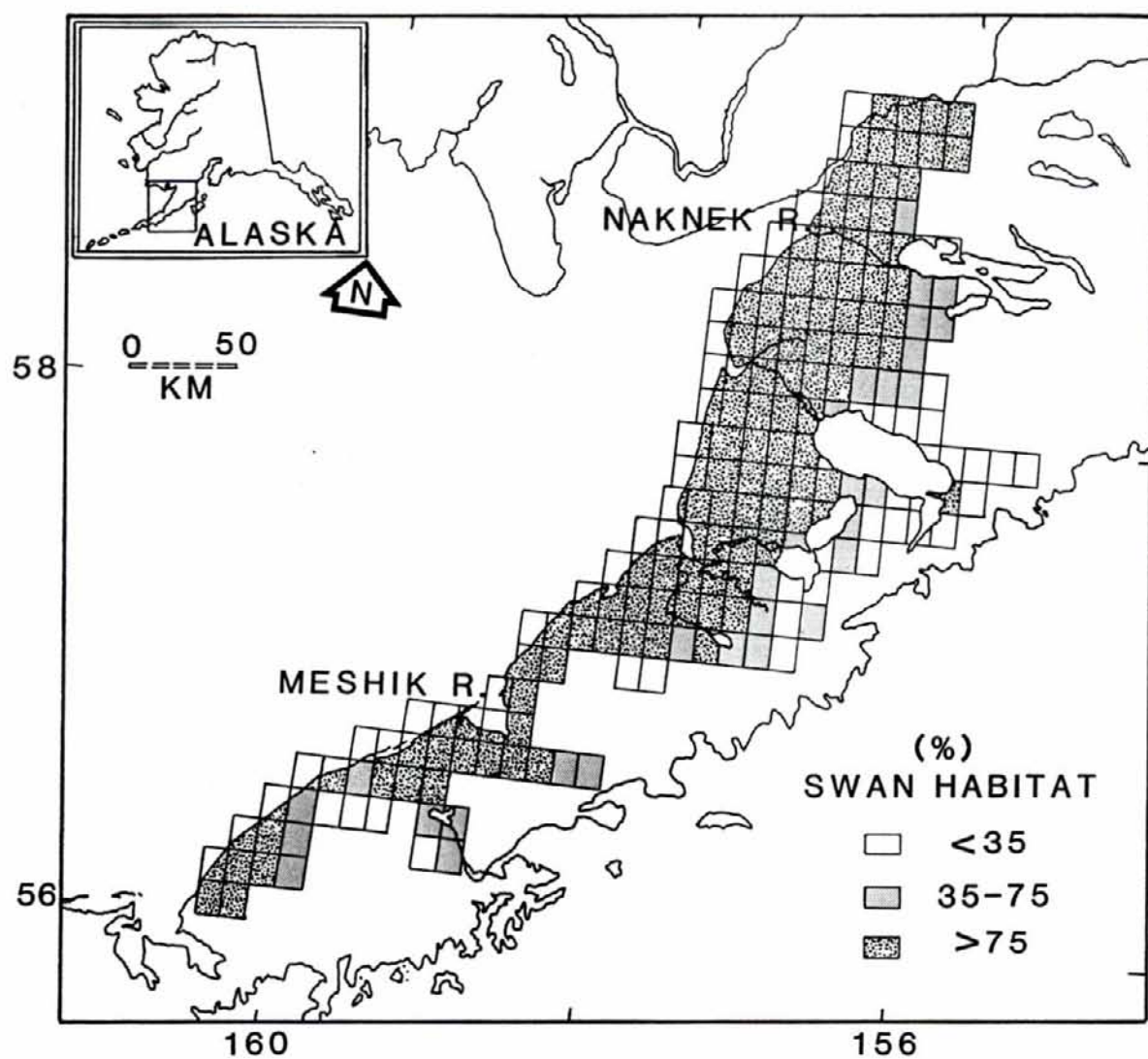


Figure 9. Area of potential habitats on land and water surfaces with sampling plots in the northern Alaska Peninsula.

scheduled annual surveys (Figure 10). It was determined that at least 38% of the swans seen at the lower altitude were missed from 500 feet (152 m). Tables 15 - 17 list results for comparisons carried out in June and July. A more detailed report can be obtained from the refuge.



Tundra swans on the Naknek River in April.

KIW

Table 10. Population estimates of tundra swans and area surveyed in the Bristol Bay lowlands, northern Alaska Peninsula.

	Pairs and singles	Swans in flocks	Young	Sampling plots (N)	Area sampled (%)
June					
1983	3,058 \pm 2.5	791 \pm 17.2		98	54.0
1984	2,865 \pm 1.0	1,317 \pm 10.9		162	86.5
1985	3,142 \pm 2.7	1,940 \pm 23.2		95	62.0
1986	2,875 \pm 8.9	776 \pm 43.9		28	17.9
1987				10	7.4
July					
1983	2,555 \pm 4.7	1,618 \pm 9.5		50	24.8
1984	2,783 \pm 2.4	1,592 \pm 7.2	1,726 \pm 4.9	102	56.5
1985	3,011 \pm 6.8	1,844 \pm 16.1	1,506 \pm 11.4	42	28.1
1986	3,016 \pm 11.0	1,515 \pm 39.6	1,550 \pm 21.6	21	13.1
1987				10	7.4

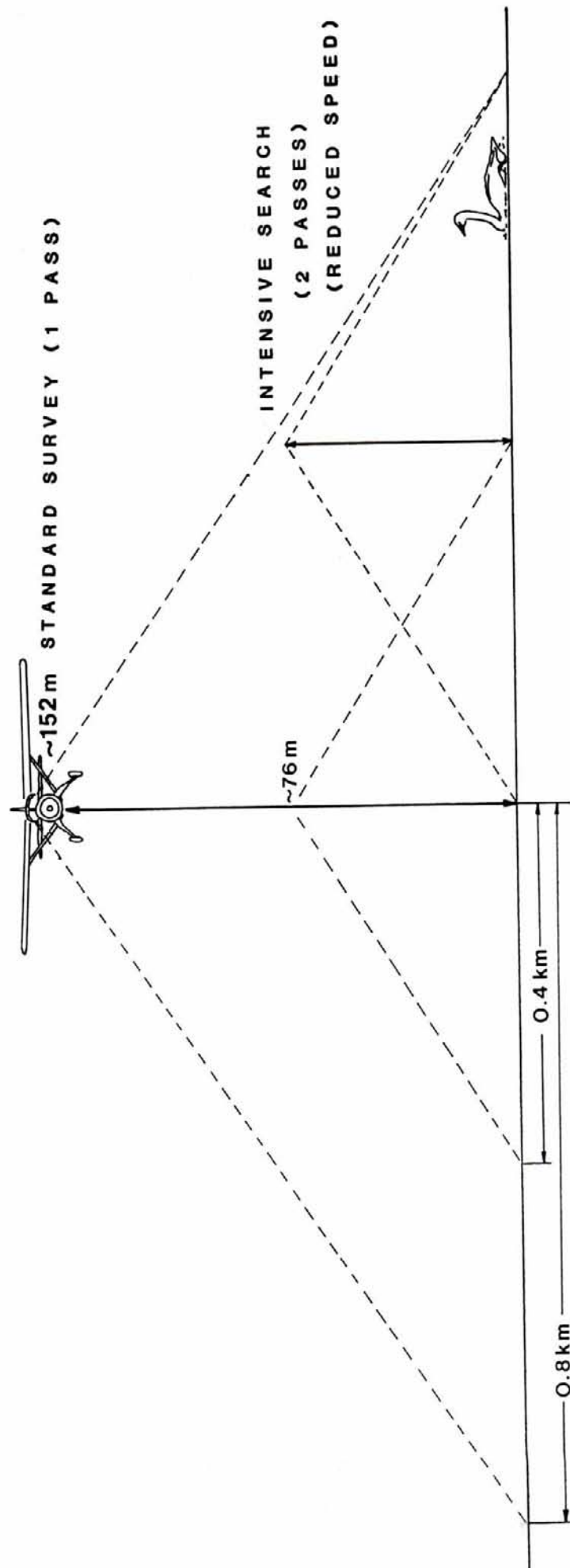


Figure 10. Two methods of aerial survey used to determine sightability of tundra swans.

Table 11. Percent pairs with nest or brood in the northern Alaska Peninsula from scheduled aerial surveys.

Year	July	August
1983	27.7 _b	
1984	43.5 _b	30.5
1985	35.5	55.5 ^a
1986	27.7	43.6 ^a
1987	41.4	24.7

^aSamples less than 100 pairs.

^bSamples larger than 500 pairs.

Table 12. Sizes of broods of tundra swans in the northern Alaska Peninsula from scheduled aerial surveys.

Year	Mean \pm SE	
	July	August
1984	3.42 \pm 0.08 _b	3.18 \pm 0.16
1985	2.95 \pm 0.10 _b	3.33 \pm 0.49 ^a
1986	3.56 \pm 0.13 _b	2.74 \pm 0.29 ^a
1987	2.97 \pm 0.12 _b	3.06 \pm 0.27

^aSamples less than 25 broods.

^bSamples larger than 100 broods

Table 13. Percent of adult and subadult swans identified as singles or pairs from scheduled aerial surveys.

Year	June	July
1983	72.1	61.7
1984	67.6 ^a	61.7 _b
1985	62.4 ^a	61.1
1986	55.5 _b	66.5
1987	38.4 ^{c,d}	50.1

^aSamples of less than 3,000 swans.

^bSamples larger than 2,000 swans.

^cSamples larger than 1,000 swans.

^dSurvey conducted in late May.

Table 14. Sample sizes and allocation of 1/4 map sampling units to obtain 95% confidence intervals on total observed paired and single swans in the northern Alaska Peninsula.

Interval	Number of Sampling Units			Total	Percentage of sampling units
	Low	Medium	High		
+ 0.00	68	58	60	186	100.0
+ 0.05	24	20	43	87	46.8
+ 0.10	10	9	18	37	19.9

Table 15. Observations of swans in 25 plots using two survey methods, June 1986.

Observations	500 feet	250 feet
Single swans		
with nest or young	16	20
lone	46	61
Swans in pairs		
with cygnets	2	17
with nest	29	22
lone pairs	63	85
Total potential breeders	250	328
Pairs with nest/young (%)	37.6	36.0
mean swans/km ² (SE)	0.27 (0.04)	0.35 (0.05)
Broods	3	17
mean size of broods	3.33 (0.33)	2.89 (0.32)
Swans in flocks		
flocks	3	3
mean size of flocks (SE)	17.7 (8.4)	6.0 (3.0)

Table 16. Observations of swans in 15 plots using two survey methods, July 1986.

Observations	500 feet	250 feet
Single swans		
with nest or young	1	1
lone	13	16
Swans in pairs		
with cygnets	20	19
with nest	0	0
lone pairs	21	41
Total potential breeders	96	135
Pairs with nest/young (%)	48.8	29.6
mean swans/km ² (SE)	0.18 (0.04)	0.26 (0.05)
Broods	20	19
mean size of broods (SE)	3.17 (0.25)	3.39 (0.22)
number in brood: 2-3	13	11
4-6	5	7
unknown	2	1
Swans in flocks		
flocks		11
mean size of flocks (SE)	4.6 (0.9)	3.5 (0.2)

Table 17. Observed sightability correction factor (SCFo) and estimates of pairs and singles of tundra swans in the northern Alaska Peninsula, 1986.

Date	No. Plots	500 feet Population estimate \pm (%) SE	SCFo \pm SE	250 foot expanded Population estimate \pm (%) SE
June	25	2,875 \pm 8.9	1.3752 \pm 0.0167	3,954 \pm 10.4
July	15	3,016 \pm 11.0	1.5426 \pm 0.1741	4,653 \pm 15.8

Emperor Geese

Observations of emperor geese during "migration watches" were first obtained during fall staging in 1986 in the lagoon at Cinder River of the central northern peninsula (Figure 11). In 1987, the work continued. The purpose of this effort was to provide information on geese seen with neck collars, and obtain age ratios from flocks feeding in the lagoon.

Thousands of geese stage at Cinder River between mid-September and mid-October, enroute to their Aleutian Island and Alaska Peninsula wintering areas. Some also occur around Kodiak Island in winter. The feeding cycle of staging geese evolves around the tide (Figure 12) which exposes blue mussels and other invertebrates which are fed upon by geese. As the tide ebbs, geese move along the tide line until they concentrate near the outlet of the lagoon by low tide. With the flow of tide, geese begin departing the feeding areas as the beds are inundated. Geese seek refuge in upland roosts during high tide where they rest and occasionally feed on crowberry (when available) or oysterleaf (along the beach). The feeding flights begin as the tide ebbs, and the cycle continues. Our data have shown that age composition ratios have higher proportions of young as family groups first arrive to the feeding areas. This may provide young with an early feeding advantage as they are probably less competitive for food than adults. In high tide roosts, ratios are lower on average and are much more variable (Table xx)

Table 18. Percent young (mean \pm SE) of emperor geese by period of flock activity in relation to the tide at Cinder River lagoon, Alaska Peninsula

	Period of activity (hours in relation to low tide)			
	high (-4, -3)	low (-2 to 2)	(3, 4)	high (5, 6, -5)
Percent young (mean \pm SE) (N)				
1986	48.9 \pm 3.5 (6)	40.8 \pm 1.6 (27)	41.9 \pm 5.9 (5)	36.4 \pm 8.8 (4)
1987	49.2 \pm 2.3 (11)	43.6 \pm 0.1 (25)	43.6 \pm 2.7 (11)	36.6 \pm 3.6 (17)

The size of feeding flocks of geese number in the thousands. This makes representative sampling of age composition difficult since patterns of intermixing and distribution of flocks of family groups and apparent nonbreeders are not understood. Disturbance of large flocks by aircraft and bald eagles (which flush thousands of birds disrupting distribution) can further confuse this problem. Some of

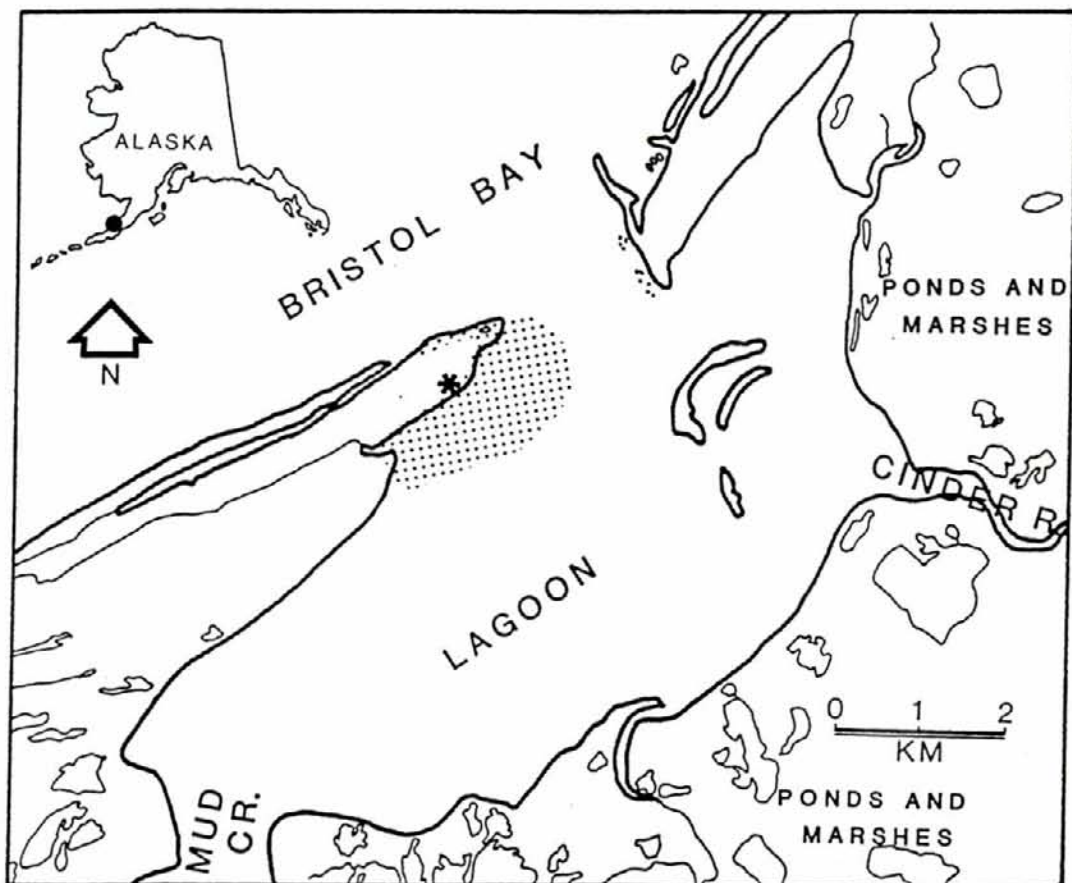
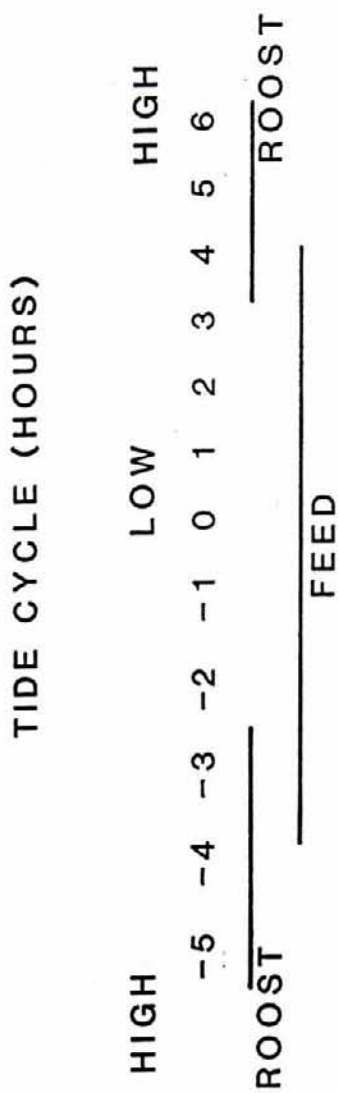


Figure 11. Study area of emperor goose studies in Cinder River Lagoon. Stippling shows locations where flocks were sampled.



the same geese however, may use the same feeding areas for the duration of staging, and from year-to-year, evidenced by resighting of geese with neck collars in the same areas in 1986 and 1987. Therefore, comparisons from the same study area may still be a useful means of assessing relative productivity. Results from 1986 and 1987 may be found in more detail from reports on file at the refuge.



Adult emperor goose (middle) with four young arrive to feed at Cinder River lagoon. Note the variation in the development of head plumage of the young.

KIW

Naknek River Aerial Survey

Each spring the refuge conducts aerial surveys of water birds that stage on the Naknek River near King Salmon (Figure 13). The purpose of the survey is to document the composition and abundance of the common and most visible species, as many use refuge and adjacent wetlands during the breeding season. We have concluded that the peak abundance of tundra swans which stage on the river prior to nesting occurs between April 18th and the 24th, regardless of local weather conditions. In 1985, during a late spring, the peak occurred during the same period, though swans delayed nesting until ponds opened in mid-May. Generally, peak abundance of white-fronts, and northern pintail also occurs at this time. For Canada geese, dates and total numbers may be more variable. Table 19 shows the highest totals of waterfowl recorded and/or estimated on the Naknek River, determined from aerial surveys and ground observations. The peak abundance of each species varies with the timing of migration.

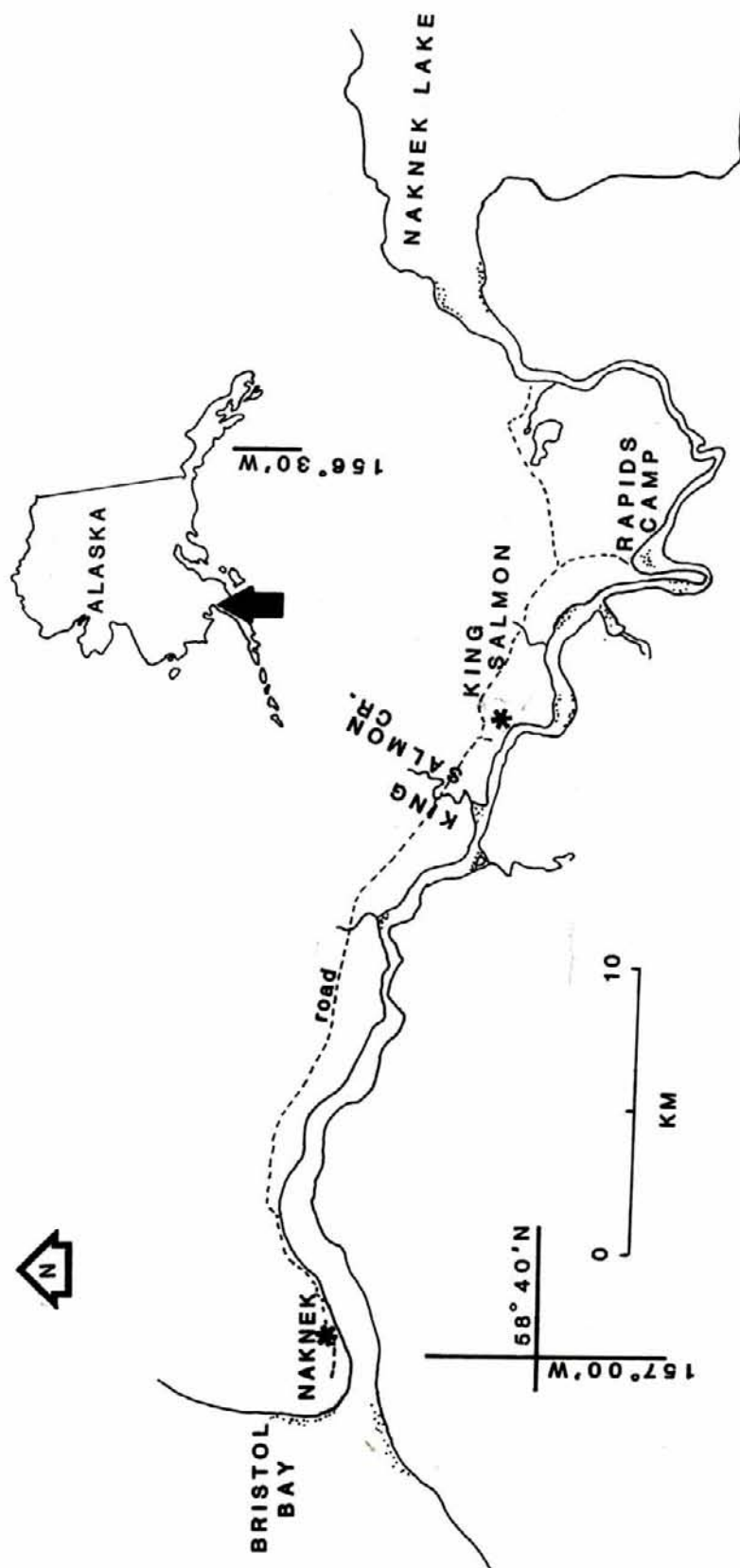


Figure 13. Naknek River, Alaska Peninsula.

Table 19. Species composition and highest recorded or estimated abundance of common waterfowl on the Naknek River, Alaska, March to May 1983-1987.

	Number	Years ^a
Tundra swan	2,903	
Greater white-fronted goose	2,453	
Emperor goose	1	1987
Brant	1	1985
Canada goose	846	
Green-winged teal	200	
Mallard	650	
Northern pintail	2,000	
Northern shoveler	150	
Gadwall	25	
Eurasian wigeon	4	1986-1987
American wigeon	375	
Canvasback	3	1986
Redhead	2	1986
Greater scaup	150	
Oldsquaw	4	1985-1987
Black scoter	50	1986-1987
White-winged scoter	20	1986-1987
Common goldeneye	1,102	
Bufflehead	4	
Merganser (common and red-breasted)	2,075	

^aSpecies recorded in all years, if not listed.

4. Marsh and Waterbirds

A variety of water birds occur in the refuge during migration and the summer. Red-throated, Pacific, and common loons were all documented with young in the Alaska Peninsula Refuge in 1987, as were red-necked grebes (see Section on Waterfowl Product Surveys, G. 3). Lesser sandhill cranes are common nesters in lowland wet meadows. At Dog Salmon in 1987, we discovered a crane nest with nestling and one pipping egg on June 8th.



Sandhill cranes peer above tall grass.

KIW

5. Shorebirds, Gulls, Terns and Allied Species

Least sandpipers are the most common shorebirds nesting on the refuge, based on information gathered between 1985 and 1987. They occur in wet meadows and build nests in Sphagnum hummocks. The nests are mere impressions in which they apparently excavate a space to accommodate a litter base which can be perhaps two to three inches deep (below the bowl). Small leaves from dwarf shrubs, and dead grasses make up this litter which is usually gathered from the immediate vicinity. On study plots in 1987, we determined a hatching date of June 15th. Other nesting shorebirds recorded from 1985 to 1987 included short-billed dowitchers (hatch date of June 23, 1987), semipalmated plovers, dunlins, red-necked phalaropes, greater yellowlegs, and common snipes.



Least sandpiper, a common and abundant breeder in wet meadow habitats.

RJW

During migration, least and western sandpipers occur in large numbers. Dunlin and Rock Sandpipers are also common in large numbers. Whimbrels are among the earliest migrants, as flocks are seen as early as late June. Bar-tailed godwits occur in the thousands in the southern peninsula in fall, and Hudsonian and marbled godwits are in lesser numbers. For years it has been speculated that marbled godwits nest in the Ugashik area, but never documented.

Glaucous-winged gulls, mew gulls, and Arctic terns are the most common larids on the refuge. Parasitic and long-tailed jaegers are also common, and probably account for high mortality of duck broods as they relentlessly maraude the tundra during the brood-rearing period. Gulls search in a similar manner and have been observed killing and eating ducklings.



Arctic tern alights on Naknek River debris.

KIW

6. Raptors

The bald eagle is the most visible and most common bird of prey found on the refuges. Nests are constructed atop cliffs and seastacks and, occasionally, in treetops found in the northern reaches of Becharof Refuge. In the summer of 1987, the first bald eagle inventory along the Pacific coast of both refuges was completed. The Pacific coastline was divided into 55 inventory plots, seven miles on each side. A random sample of 30 plots was selected to represent the entire coastline (Figures 14 - 16). Two additional plots were added (not randomly selected) because they were inventoried in a similar survey of the entire peninsula coastline in 1983 by Wildlife Biologists Jack Hodges and Jim King. Only the coastline portion of each plot was surveyed since the majority of eagle feeding areas and preferred nesting habitat was along the coast. Although the plots were the primary focus of the inventory, the entire coastline was surveyed and each eagle observation mapped.

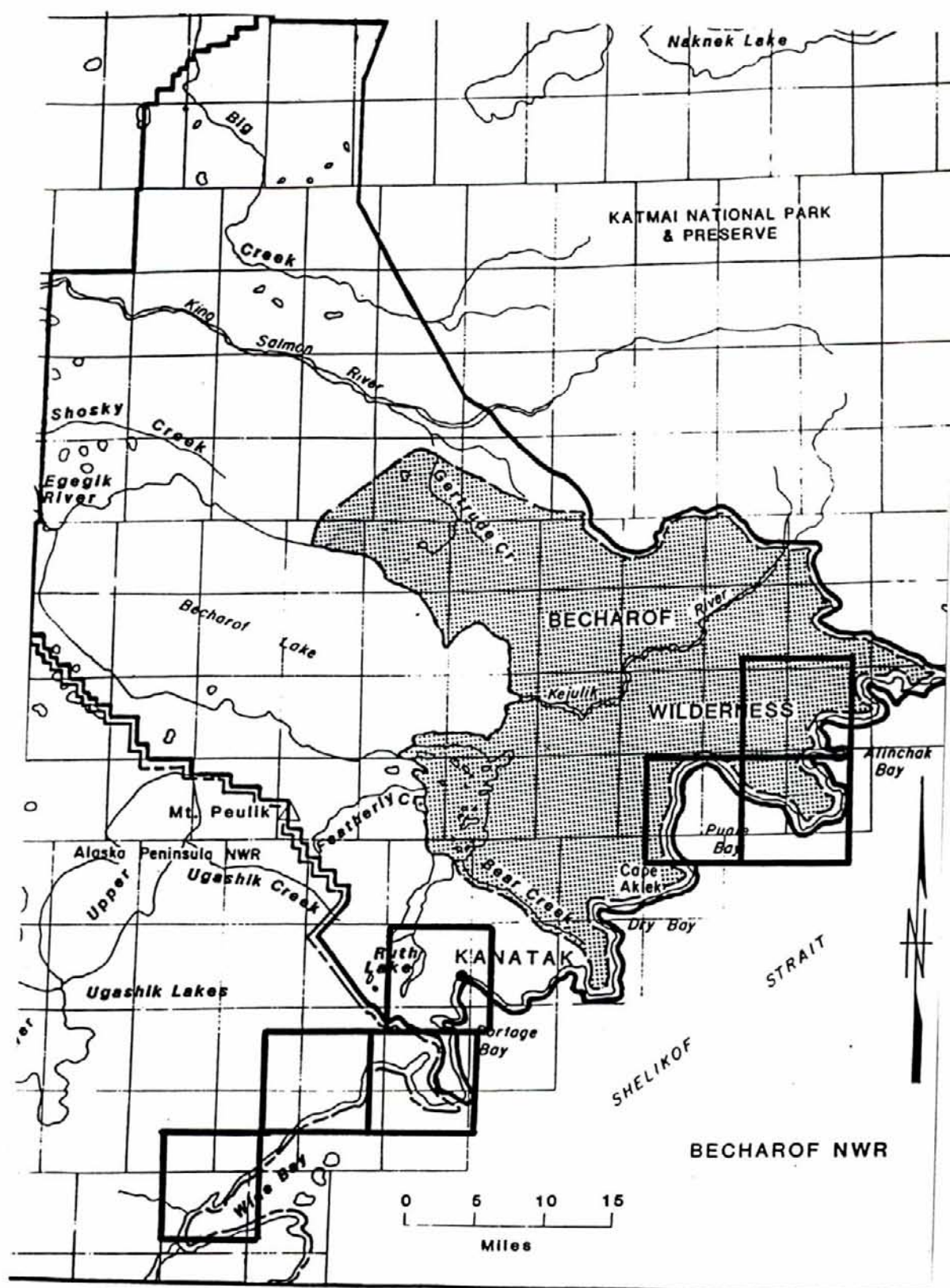


Figure 14. Eagle survey plots, Becharof Refuge.

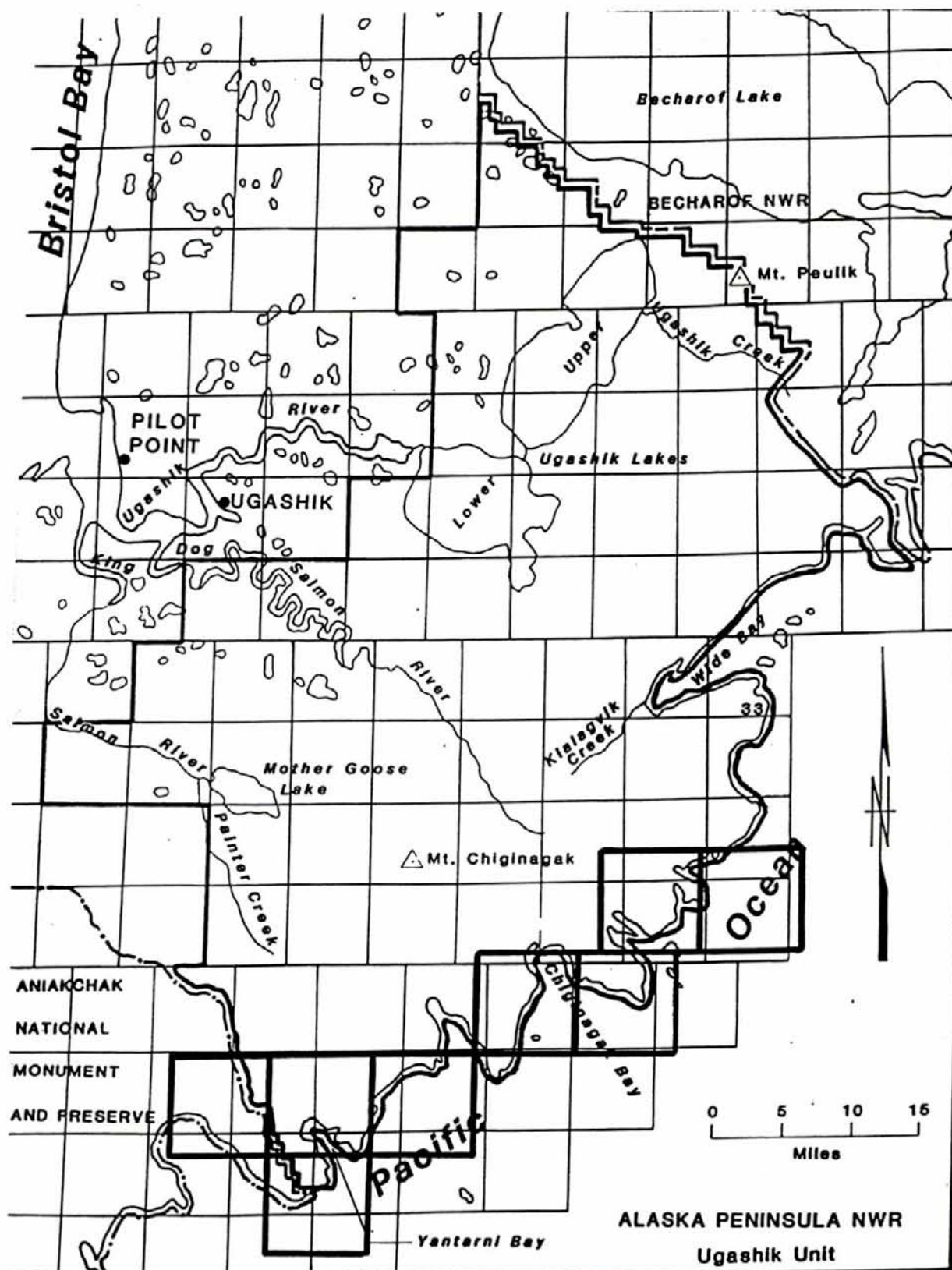


Figure 15. Eagle survey plots, Ugashik Unit, Alaska Peninsula Refuge.

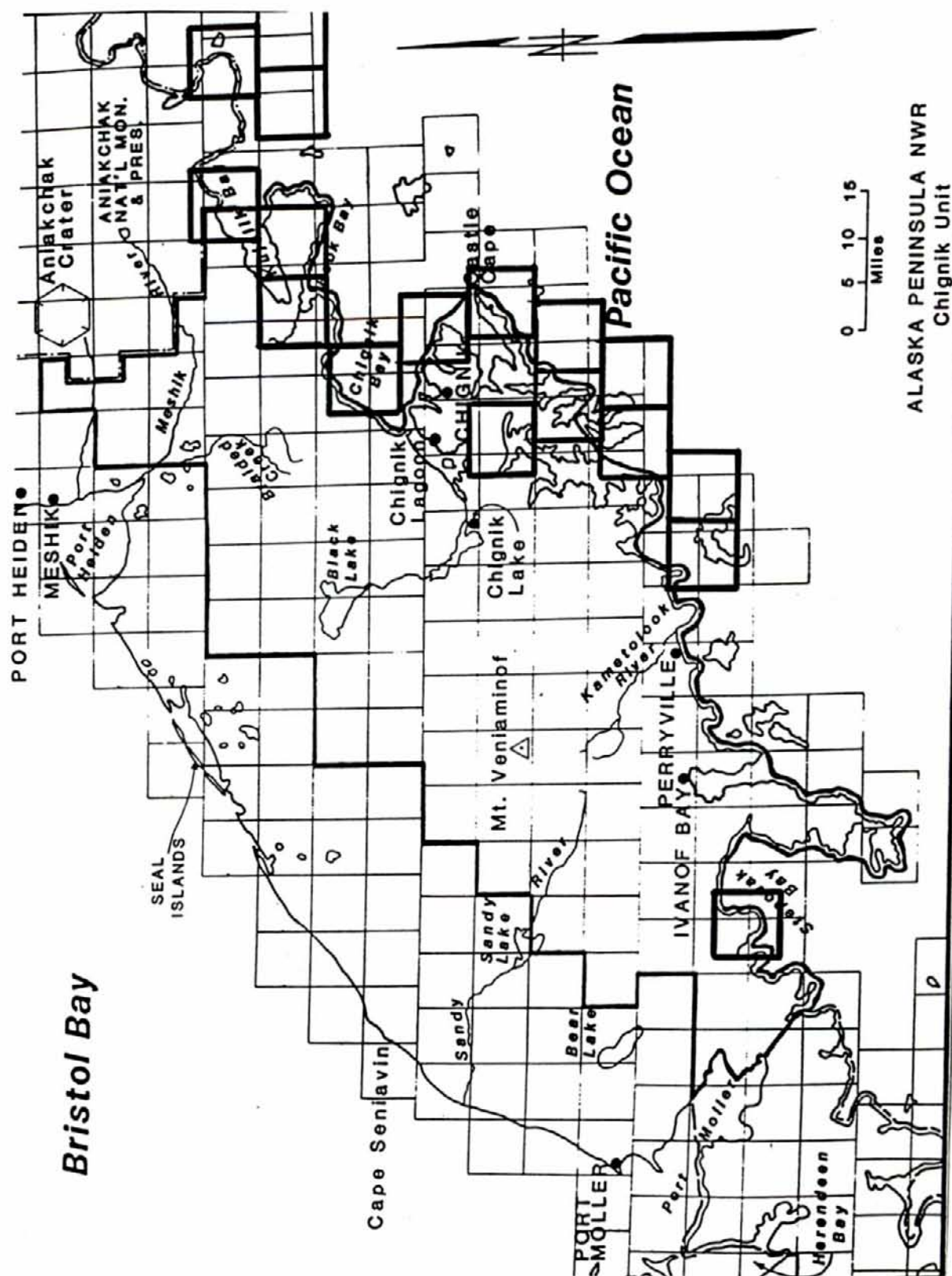


Figure 16. Eagle survey plots, Chignik Unit, Alaska Peninsula Refuge.



A typical nest for the bald eagle.

KIW

A subjective estimate of the number of eagles in each plot was used to stratify the plots into low, medium and high categories. The classification was based on the miles of shoreline within each plot and the expected density of nesting eagles. For example, deep fjords and areas of heavy human activity have a low expected density. In contrast, exposed shorelines, islets and areas with strong tidal influence have high expected densities.

The inventory began on June 8th and was completed on June 13th. Approximately 700 miles of shoreline were flown from Cape Kubugakli, on the extreme northeast boundary of Becharof refuge, to Chichagof Bay, on the southeast boundary of the Chignik Unit of Alaska Peninsula Refuge. The results summarized in Tables 20 - 22, show the Pacific coastline to be a haven for these magnificent birds. Along with the 44 nests observed within the plots, an additional 24 nests, 98 mature eagles and 21 immature eagles were recorded outside the plots.

In sharp contrast to coastal findings, an incidental survey on June 23rd and 24th around Becharof Lake yielded only one nest and two mature eagles observed.

Populations of other raptors on the refuges are unknown. Several species have been documented at three study areas, on the Alaska Peninsula Refuge, at Dog Salmon, Braided Creek and Herendeen Bay during the field seasons of 1985 through 1987. These include the northern harrier, rough-legged hawk, golden eagle, merlin, peregrine falcon and gyrfalcon.

Table 22. Overall Eagle Observations.

Selection	Stratum	Plot No.	Adults Perched	Adults Flying	Adults Nests	Total Adults	Immature Perched	Immature Flying	Total Immature	Eaglets In Nest
1	L	4	--	--	--	--	--	--	--	--
2	L	5	2	--	--	2	--	--	--	--
3	L	6	--	--	--	--	--	--	--	--
4	M	8	2	--	1	3	--	--	--	--
5	M	9	1	--	2	3	--	--	--	--
6	H	10	--	--	2	2	--	--	--	--
7	H	13	6	--	4	10	--	--	--	--
8	M	15	2	--	--	2	--	--	--	--
9	L	16	1	--	1	2	--	--	--	--
10	L	17	--	1	--	1	--	--	--	--
11	L	18	--	--	--	--	--	--	--	--
12	L	19	--	--	--	--	--	--	--	--
13	L	21	3	--	3	6	--	--	--	2
14	L	22	1	--	--	1	--	--	--	--
15	M	24	5	--	6	11	--	--	--	2
16	L	25	4	--	2	6	--	--	--	--
17	M	26	3	--	3	6	1	1	2	--
18	L	28	--	--	--	--	--	--	--	--
19	L	30	--	--	2	2	--	--	--	--
20	L	32	3	--	--	3	--	--	--	--
21	H	33	--	--	--	--	--	--	--	--
22	H	35	5	1	4	10	--	--	--	--
23	H	37	3	--	3	6	--	--	--	--
24	H	38	6	--	2	8	--	1	1	--
25	M	39	1	--	2	3	--	--	--	2
26	M	40	--	--	3	3	--	--	--	--
27	M	42	5	2	--	7	1	--	1	--
28	M	44	7	2	--	9	3	1	4	--
29	M	46	2	2	1	5	--	--	--	--
30	M	47	1	1	2	4	--	--	--	--
31	M	48	3	1	1	5	1	--	1	4
32	M	49	1	1	--	2	--	1	1	--
TOTALS			67	11	44	122	6	4	10	10

Definitions used in tables:

Stratum = L(low), M(medium), H(High)
 Nh = Total plots available for sampling
 nh = Number of plots sampled
 s2yh = variance between sampled plots
 yh = mean eagles per sampled plot
 yn = estimated population of eagles in stratum

Table 20. Mature adult bald eagle population estimate.

Stratum	Nh	nh	Nh(Nh-nh)	s2yh	yh	Yn = Nhyn
L	22	13	198	3.391	1.769	39
M	22	13	198	7.641	4.846	107
H	11	6	55	17.600	6.000	66
Totals	55	32	451	28.632	12.615	212

95% confidence interval = 212 ± 2

Adult Eagle Population = 212 ± 40.2 from Cape Kubugaki to Chichagof Bay

Table 21. Immature bald eagle population estimate.

Stratum	Nh	nh	Nh(Nh-nh)	s2yh	yh	Yn = Nhyn
L	22	13	198	0	0	0
M	22	13	198	1.397	0.692	15
H	11	6	55	0.167	0.167	2
Totals	55	32	451	1.564	0.859	17

95% confidence interval = 17 ± 2

Immature Bald Eagle Population = 17 ± 9.4 from Cape Kubugaki to Chichagof Bay

7. Other Migratory Birds

Among the common passerines recently documented as breeding on the refuge (1985-1987) are tree and bank swallows, black-billed magpies, common ravens, black-capped chickadees, hermit and gray-cheeked thrushes, American robins, water pipits, northern shrikes, orange-crowned, yellow and Wilson's warblers, American tree and savannah sparrows, fox, golden-crowned and white-crowned sparrows, lapland longspurs, and common redpolls. In 1986, a pine grosbeak nest

was found in an alder thicket in Lawrence Valley, southeast Herendeen Bay, providing a rare discovery for the refuge. Also at Herendeen (Grass Valley) in 1986, a white wagtail was observed, providing the first record for the refuge and the Alaska Peninsula.

Christmas Bird Count

The increasingly popular Audbon Christmas Bird Count found its way to the King Salmon-Naknek area in 1986, and in 1987, the second annual count was carried out by personnel from the refuge and the Alaska Department of Fish and Game. In 1986, the National Park Service also participated. The count is centered half-way between Naknek and King Salmon along the trans-Alaska Peninsula Highway, enabling counts in both villages, including the Naknek River and a portion of Bristol Bay. Two or three teams of four (1987) to six (1986) total individuals have participated. The roads and pathways between King Salmon and Naknek, including the Air Force Station are walked and driven and observations of birds are recorded. The information is tabulated and forwarded to the National Audobon Society in New York, and is incorporated in a publication of American Birds along with hundreds of other counts throughout the nation. Table 23 lists the results.

Table 23. Species composition and numbers of birds recorded in the King Salmon-Naknek Christmas Bird Count, 1986-1987.

Species	1986	1987
Goldeneye spp.	30	
Common merganser	293	1,259
Merganser spp.	125	
Bald eagle adult(s)	8	14
immature(s)	2	2
Unknown		3
Peregrine falcon	1	
Willow ptarmigan		1
Glaucous-winged gull		60
Rock dove	1	
Black-billed magpie	42	26
Common raven	231	246
Black-capped chickadee	20	5
Boreal chickadee	4	3
Chickadee spp.		6
Northern shrike	1	3
White-crowned sparrow	1	
Pine grosbeak	4	
Common redpoll	19	

Brown Bear Study

In late 1983, a brown bear study was initiated on Becharof Refuge. The objectives of the study are to:

- determine the extent of low elevation denning sites on the islands of Becharof Lake;
- record seasonal movements of brown bears, both in and out of the refuge;
- locate and describe winter denning sites; and
- increase the knowledge of brown bear use on the refuges and establish a data base.

During the summers of 1984, 1985, and 1986, a total of 44 brown bears were captured and collared. Of the 44 initial bears collared, 36 retained the radio collars long enough to track to a den site. Tracking flights during the winters of 1984-1985 and 1986-1987 identified 35 general locations of individual dens, most of which were 50 to 70 miles north of Becharof Lake (Figure 17).

Studies done in 1974 by National Park Service biologist Troyer indicated 14 dens on islands within Becharof Lake. Earlier studies on the Alaska Peninsula and Kodiak Island showed most bear dens occurred mid-slope in mountainous terrain. Preliminary investigations by refuge staff found only one den on an island. No bears involved in the radio telemetry study have shown any tendency toward island denning. Instead, all collared bears have denned at elevations of at least 500 feet above sea level with most denning at elevations above 1200 feet.

In June 1987, a helicopter was available to locate and survey a sample of den sites. An attempt was made to access higher elevation dens, but severe turbulence and poor visibility limited the survey team to dens less than 1200 feet above sea level.

Four dens were investigated, however, only one den was in good enough condition to allow measurement. The other three dens had collapsed. Bear number 05-04, a 1985 collared bear, utilized a den at 1000 foot elevation during the winter of 1986-1987.

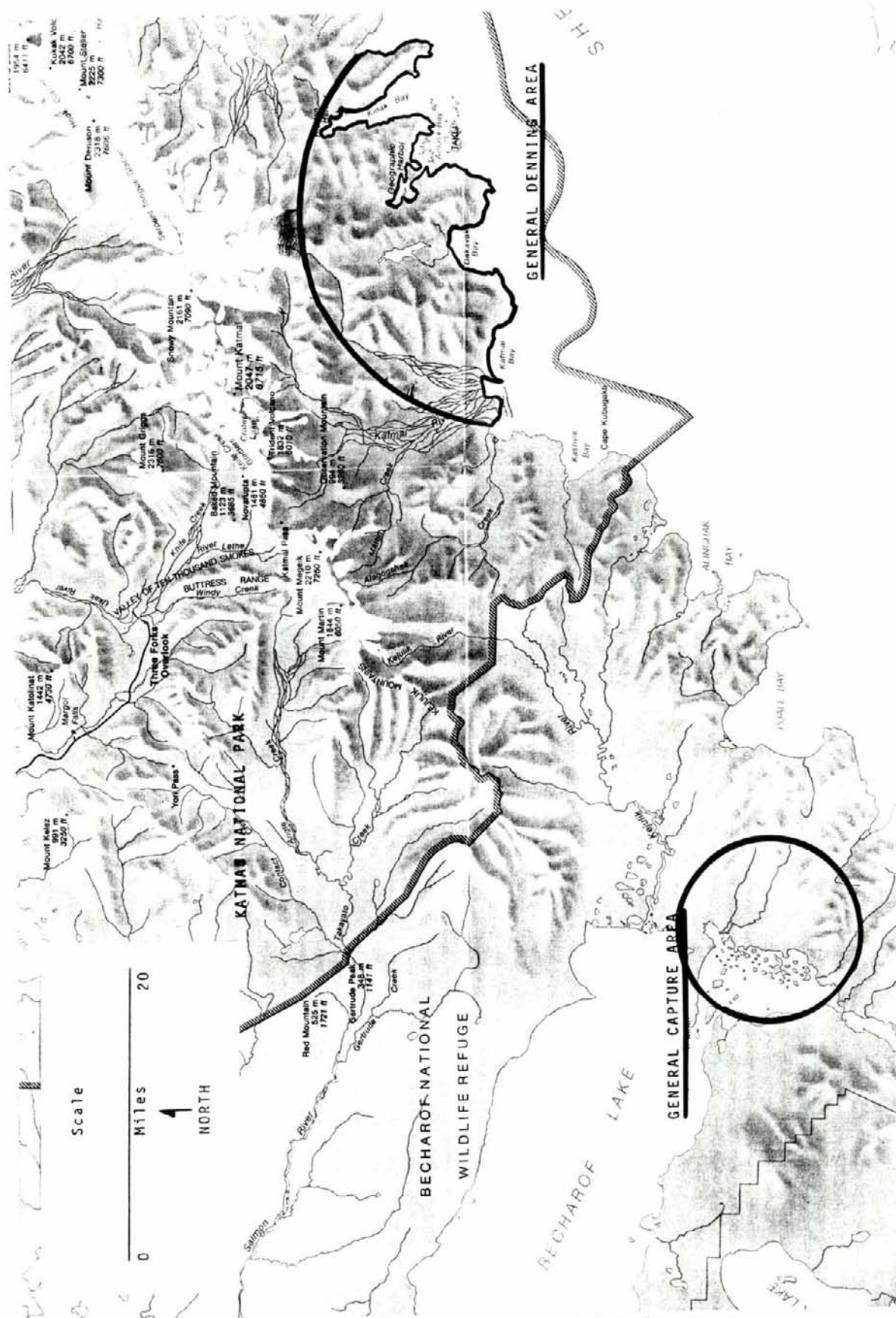


Figure 17. General brown bear capture and denning areas.



Brown bear emerging from den.

DDM

The den was in soft, sandy-loam soil, on a steep south facing slope. The vegetation consisted mainly of alder with a grass understory. The interior of the den was very well rounded with smooth walls and ceiling. Root endings, from protruding vegetation, were present throughout the entire entrance tunnel, but were not present in the denning chamber. The den was void of bedding material or animal hair. Measurements (Table 26) were taken from three separate locations. Overall, the den was very fragile and assumed to be utilized only one season. A number of dig outs in the immediate vicinity indicate the bears may "test" the soil several times before choosing a final den site.

Table 26. Brown bear den measurements.

Location	Measurement (Feet)	Cubic Feet Volume
Entrance tunnel	Length 6.00	25.41
	Width 1.75	
	Height 2.42	
Den chamber	Length 5.17	91.41
	Width 4.42	
	Height 4.00	
Excavated soil, front of den	Length 6.00	----
	Width 5.00 ^a	
	Depth --- ^a	

^aDepth measurement not possible due to frozen ground.

When the radio collars were purchased, the life expectancy was two years. The first collars were put into service in early August 1984 (Table 27). Some of those 1984 collars transmitted signals until late 1987. If the collars placed in service in 1985 and 1986 have the same record we could continue gathering information until late 1989!

Table 27. Summary of brown bear capture and tracking, 1984-1987.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
04-02 Sow	08/13/84 Capture - Freq. .300			Fishing
	08/16/84 (A)			
	08/27/84 (A)			
	10/02/84 (A)			
	10/18/84 (A)			
	10/19/84 (A)			
	04/10/85 (A)			Den
	09/04/85 (A)			
	02/19/86 (A)	2/19/86	1800'	
	04/28/86 (A)			
	03/12/87 (A)	3/12/87	2100'	Den
	12/31/87 - Collar inactive			

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
04-03 Sow	08/13/84 Capture - Freq. .280 08/16/84 (A) 08/27/84 (A) 09/13/84 (A) 09/17/84 (A) 09/27/84 (A) 10/02/84 (A) 10/19/84 (A)			Fishing
	07/09/85 - Dropped Collar, reassigned to 05-13			
04-04 Sow	08/13/84 Capture - Freq. .220 08/27/84 (V) 11/13/84 (A)			Fishing Travel
	04/10/85 (A) 05/22/85 (A) 06/11/85 (A) 07/05/85 (V) 08/24/85 (V)	4/10/85	2000'	Den Sunning Fishing
	05/22/86 (A) 08/13/86 (A)	5/22/86	2000'	Den
	12/31/87 - Collar inactive			
04-05 Sow	08/13/84 Capture - Freq. .260 08/16/84 (A) 08/27/84 (A) 10/03/84 (V) 10/18/84 (V) 10/19/84 (V) 10/29/84 (A) 11/03/84 (A)			Fishing Browsing Browsing Browsing
	04/09/85 - Dropped Collar, reassigned to 05-15			
04-06 Sow	08/13/84 Capture - Freq. .200 08/16/84 (V) 08/27/84 (V) 09/17/84 (A) 09/27/84 (V)			Fishing Fishing Fishing Caribou kill

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
04-06	10/02/84 (A)			
Cont'd	10/18/84 (A)			
	10/19/84 (A)			
	10/29/84 (A)			
	04/10/85 (A)			
	08/24/85 (A)			
	08/30/85 (A)			
	10/11/85 - Dropped Collar, reassigned to 06-16			
04-07	08/13/84 Capture - Freq. .380			Fishing
Sow	08/16/84 (V)			Fishing
	08/27/84 (A)			
	09/17/84 (V)			Travel
	10/02/84 (A)			
	10/18/84 (A)			
	10/19/84 (A)			
	08/24/85 (V)			Fishing
	08/30/85 (A)			
	09/04/85 (V)			Fishing
	02/13/86 (A)	2/13/86	1500'	Den
	04/28/86 (A)			Den
	05/14/86 (A)	2/13/86	1800'	Den
	08/13/86 (A)			
	10/16/86 (A)			
	10/24/86 (A)			
	03/13/87 (A)	3/13/87	500'	Den
	04/20/87 (A)		500'	Den
	07/08/87 (A)			
	08/12/87 (A)			
	12/31/87 - Collar inactive			
04-08	08/13/84 Capture - Freq. .181			Fishing
Sow	08/27/84 (A)			
	09/27/84 (V)			Sunning
	10/02/84 (V)			Sunning
	10/19/84 Dropped Collar (not retrieved)			
04-09	08/13/84 Capture - Freq. .420			Fishing
Sow	08/16/84 (V)			Fishing
	09/17/84 (A)			

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
04-09 Cont'd	09/27/84 (A)			
	10/02/84 (V)			Travel
	10/01/85 (A)			
	03/10/86 (A)	3/10/86	UNK	Den
	04/28/86 (A)	3/10/86	UNK	Den
	05/14/86 (A)		UNK	Den
	08/13/86 (A)			
	10/02/86 (V)			Travel
	03/12/87 (A)	3/12/87	2000'	Den
	04/20/87 (A)			Den
	08/12/87 (A)			
	12/31/87 - Collar inactive			
04-10 Sow	08/14/84 Capture - Freq. .101			Fishing
	08/16/84 (V)			Fishing
	08/27/84 (A)			
	09/17/84 (A)			
	09/27/84 (A)			
	10/02/84 (A)			
	10/19/84 (A)			
	10/28/84 Dropped Collar, reassigned to 05-14			
04-11 Sow	08/14/84 Capture - Freq. .339			Fishing
	08/27/84 (A)			
	09/17/84 (A)			
	09/27/84 (A)			
	10/02/84 (A)			
	10/18/84 (A)			
	10/19/84 (A)			
	10/29/84 (A)			
	04/09/85 (A)			
	09/30/85 Dropped Collar (not retrieved)			
04-12 Sow	08/14/84 Captured			Fishing
	08/16/84 (V)			Fishing
	08/27/84 (A)			
	09/13/84 (A)			
	09/17/84 (A)			
	09/27/84 (A)			
	10/02/84 (A)			

Table 27 continued.

Bear	Signal		Date Den		Elevation	Activity
	Date (A) or (V) ^a	Located				
04-12	10/18/84 (A)					
Cont'd	10/19/84 (A)					
	10/29/84 (A)					
	04/10/85 (A)					
	08/24/85 (A)					
	09/04/85 (A)					
	10/03/85 (A)					
	11/01/85	Dropped Collar (not retrieved)				
04-13	08/14/84	Capture - Freq. 160				Fishing
Sow	09/17/84 (A)					
	10/02/84 (V)					Travel
	08/04/85 (V)					Fishing
	10/01/85 (V)					Travel
	02/13/86 (A)	2/13/86		1500'		Den
	04/28/86 (A)					
	05/14/86 (V)			1700'		Emerge
	08/13/86 (V)					Travel
	11/21/86 (A)					
	02/10/87 (A)	2/10/87		1400'		Den
	04/20/87 (A)					Den
	08/12/87 (A)					
	10/01/87	- Killed by hunter, collar retrieved.				
04-14	08/14/84	Capture - Freq. .360				Fishing
Sow	08/16/84 (V)					Fishing
	08/27/84 (A)					
	09/13/84 (A)					
	09/17/84 (A)					
	10/02/84 (V)					Travel
	10/18/84 (V)					Travel
	10/19/84 (V)					Travel
	11/03/84 (A)					
	11/08/84 (A)					
	08/24/85 (A)					
	08/30/85 (A)					
	09/30/85 (A)					

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
04-14	01/02/86 (A)	1/2/86	2500'	Den
Cont'd	04/28/86 (A)			Den
	05/14/86 (A)			Den
	05/22/86 (A)			Den
	08/13/86 (A)			
	09/18/86 (A)			
	10/03/86 (V)			Travel
	11/21/86 (A)			
	12/31/87 - Collar inactive			
04-15	08/15/84 Capture - Freq. .051			Fishing
Sow	09/27/84 (V)			Travel
	10/02/84 (V)			Travel
	10/19/84 (V)			Fishing
	10/29/84 (A)			
	04/10/85 (A)			
	05/22/85 (A)			
	06/11/85 (A)			
	09/04/85 (A)			
	08/13/86 (A)			
	12/31/87 - Collar inactive			
05-01	08/03/85 Capture - Freq. .399			Fishing
Sow	08/30/85 (A)			
	09/04/85 (A)			
	01/02/86 (A)	1/2/86	2000'	Den
	04/28/86 (A)			Den
	05/14/86 (A)			Den
	06/30/86 (V)			Travel
	08/13/86 (V)			Sunning
	09/18/86 (A)			
05-02	08/03/85 Capture - Freq. .119			Fishing
Sow	09/30/85 (A)			

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
05-02	02/07/86 (A)			
Cont'd	02/13/86 (A)	2/13/86	2000'	Den
	04/28/86 (A)		1800'	Den
	08/07/86 (A)			
	08/13/86 (A)			
	09/18/86 (A)			
05-03	08/03/85 Capture - Freq. .081			Fishing
Boar	08/26/85 (V)			Fishing
	08/30/85 (A)			
	09/04/85 (A)			
	10/11/85 (A)			
	11/07/85 (A)	11/7/85	UNK	Den
	05/14/86 (A)			
	08/07/86 (A)			
	08/13/86 (V)			Travel
	10/02/86 (A)			
	11/21/86 (A)			
	02/09/87 (A)	02/09/87	UKN	Den
	04/20/87 (A)			
	07/08/87 (A)			
	08/12/87 (A)			
05-04	08/03/85 Capture - Freq. .140			Fishing
Sow	09/04/85 (A)			
	10/03/85 (V)			Caribou kill
	11/01/85 (A)	11/01/85	1000'	Den
	11/07/85 (A)			Den
	08/13/86 (V)			Fishing
	10/02/86 (A)			
	10/24/86 (A)			
	03/13/87 (A)	03/13/87	800'	Den
	04/20/87 (A)			Den
	08/12/87 (A)			

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
05-05 Sow	08/03/85	Capture - Freq. .040		Sunning
	08/26/85 (V)			Fishing
	09/04/85 (V)			Fishing
	10/04/85 (A)			
	11/01/85 (A)			
	11/12/85 (A)	11/12/85	UKN	Den
	07/31/86	Recapture		Fishing
	08/13/86 (V)			Fishing
	09/18/86 (A)			
	10/02/86 (A)			
	10/24/86 (A)			
	11/21/86 (A)			
	03/26/87 (A)	03/26/87	1300'	Den
	04/20/87 (A)			Den
	07/08/87 (V)			Travel
	08/12/87 (A)			
	10/11/87 - Killed by hunter, collar retrieved.			
05-06 Sow	08/03/85	Capture - Freq. .320		Fishing
	09/30/85 (A)			
	02/19/86 (A)	02/19/86	UKN	Den
	03/10/86 (A)			Den
	03/27/86 (A)		2500'	Den
	04/28/86 (A)			Den
	05/14/86 (A)			Den
	08/13/86 (V)			Fishing
	09/18/86 (A)			
	10/02/86 (V)			Travel
	04/20/87 (A)	04/20/87	UKN	Den
	08/12/87 (A)			
	10/14/87 - Killed by hunter, collar retrieved.			
05-07 Sow	08/03/85	Capture - Freq. 109		Fishing
	09/04/85 (V)			Fishing
	10/03/85 (V)			Browsing

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
05-07 Cont'd	01/02/86 (A)			
	02/20/86 (A)	02/20/86	1700'	Den
	04/28/86 (A)			Den
	05/14/86 (A)			Den
	08/13/86 (V)			Fishing
	10/16/86 (V)			Sunning
	03/11/87 (A)	03/11/87	2100'	Den
	04/20/87 (A)			Den
	08/12/87 (A)			
05-08 Sow	08/03/85 Capture - Freq. .021			Fishing
	08/24/85 (V)			Fishing
	08/30/85 (V)			Fishing
	09/04/85 (A)			
	10/03/85 (V)			Browsing
	12/19/85 (A)	12/19/85	UKN	Den
	01/02/86 (A)		2000'	Den
	04/20/86 (A)			Den
	05/14/86 (A)			Den
	05/22/86 (A)			Den
	06/30/86 (V)			Travel
	08/06/86 (A)			
	08/13/86 (A)			
	08/20/86 (A)			
	09/18/86 (A)			
	10/01/86 (A)			
	03/04/87 (A)	03/04/87	1600'	Den
	04/20/87 (A)			Den
	08/10/87 (A)			
05-09 Sow	08/03/85 Capture - Freq. .058			Fishing
	08/24/85 (A)			
	01/02/86 (A)	01/02/86	3000'	Den
	04/28/86 (A)			Den
	05/14/86 (A)			Den
	08/01/86 (V)	Recaptured, not recollared		
	08/13/86 (V)			Browsing
	11/21/86 (A)			

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
05-09 Cont'd	03/04/87 (A) 04/20/87 (A) 08/20/87 (A)	03/04/87	1600'	Den Den
05-10 Sow	08/03/85 Capture - Freq. .441 10/02/85 Dropped collar, reassigned to 06-07			Fishing
05-11 Sow	08/04/85 Capture - Freq. .009 10/01/85 (A) 02/07/86 (A) 02/13/86 (A) 04/28/86 (A) 05/14/86 (A) 08/13/86 (V) 09/18/86 (A) 10/01/86 (V) 11/21/86 (A) 02/10/87 (A) 04/20/87 (A) 08/10/87 (A)	02/13/86	UKN 1500'	Fishing Travel Den Den
05-12 Sow	08/04/85 Capture - Freq. .459 08/24/85 (A) 09/04/85 (A) 10/03/85 (V) 11/01/85 (A) 11/07/85 (A) 08/13/86 (V) 10/16/86 (A) 03/31/87 (A) 04/20/87 (A) 08/12/87 (A)	11/07/85	UKN 1350'	Fishing Travel Den Travel Den Den
05-13 Sow	08/04/85 Capture - Freq. .280 09/04/85 (A) 10/04/85 (A) 11/01/85 (A) 11/07/85 (A)			Fishing

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
05-13 Cont'd	04/18/86 (A)	11/07/85	UKN	Den
	05/22/86 (A)			
	08/13/86 (A)			
	10/16/86 (A)			
	03/13/87 (A)	03/13/87	800'	Den
	04/20/87 (A)			Den
	08/12/87 (A)			
05-14 Sow	08/04/85 Capture - Freq. .100			Fishing
	08/24/85 (V)			Fishing
	10/01/85 (A)			
	10/03/85 (V)			Browsing
	01/02/86 (A)	01/02/86	2500'	Den
	04/28/86 (A)			Den
	08/13/86 (V)			Fishing
	09/18/86 (A)			
	11/21/86 (A)			
	03/11/87 (A)	03/11/87	2700'	Den
	04/20/87 (A)			Den
	08/12/87 (A)			
05-15 Sow	08/04/85 Capture - Freq. .260			Sunning
	09/04/85 (V)			Fishing
	10/03/85 (V)			Browsing
	12/20/85 (A)	12/20/85	UKN	Den
	02/13/86 (A)			
	04/18/86 (V)			Emerge
	08/07/86 (V)			Fishing
	08/13/86 (V)			Sunning
	10/02/86 (V)			Travel
	10/24/86 (V)			Sunning
	04/07/87 (A)			Den
	04/20/87 (A)			Den
	08/12/87 (A)			
06-01 Sow	07/31/86 Capture - Freq. .837			
	08/13/86 (V)			Fishing
	11/21/86 (A)			

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
06-02 Boar	07/31/86 Capture - Freq. .963 08/13/86 (A) 09/18/86 (A) 10/01/86 (A) 10/24/86 (A) 11/21/86 (A)			Fishing
	02/10/87 (A) 04/20/87 (A) 08/10/87 (A)	02/10/87	2000'	Den Den
06-03 Boar	07/31/86 Capture - Freq. .088 08/09/86 (V) 08/13/86 (V) 09/18/86 (A) 10/02/86 (A) 10/24/86 (V)			Fishing Fishing Travel
	03/04/87 (A) 03/11/87 (A) 04/20/87 (A) 07/08/87 (A) 08/10/87 (A)	03/04/87	3200'	Den Den Den
06-04 Sow	07/31/86 Capture - Freq. .887 08/13/86 (V) 10/02/86 (A)			Fishing
	03/26/87 (A) 04/20/87 (A) 08/12/87 (A)	03/26/87	1350'	Den Den
06-05 Sow	07/31/86 Capture - Freq. .987 08/13/86 (V)			Fishing
	03/12/87 (A) 04/20/87 (A)	03/12/87	2700'	Den Den
06-06 Sow	08/13/84 recaptured, was 04-01, new collar assigned - Freq. .913 08/27/84 (A)			Fishing

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
06-06	09/04/85 (V)			Fishing
Cont'd	10/11/85 (V)			Travel
	11/01/85 (A)			
	11/07/85 (A)	11/07/85		Den
	07/31/86	Recaptured and released		
	08/13/86 (A)			
	09/18/86 (A)			
	11/21/86 (A)			
	03/12/87 (A)	03/12/87	2200'	Den
	04/20/87 (A)			Den
	07/08/87 (V)			Sunning
	08/12/87 (A)			
06-07	08/01/86	Capture - Freq. .813		
Sow	08/11/86 (A)			
	08/13/86 (A)			
	09/18/86 (A)			
	10/01/86 (A)			
	03/12/87 (A)	03/12/87	2100'	Den
	04/20/87 (A)			Den
	08/10/87 (A)			
06-08	08/01/86	Capture - Freq. .788		
Sow	10/02/86 (A)			
	10/03/86 (A)			
	03/04/87 (A)	03/04/87	2500'	Den
	04/20/87 (A)			Den
	08/12/87 (A)			
06-09	08/01/86	Capture - Freq. .862		
Sow	08/13/86 (A)			
	08/20/86 (A)			
	10/24/86 (A)			
	02/09/86 (A)	02/09/87	1800'	Den
	04/20/87 (A)			Den
	08/13/87 (A)			

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
06-10 Boar	08/01/86 Capture - Freq. 1.138 10/02/86 (A) 11/21/86 (A)			
	02/09/87 (A)	02/09/87	1500'	Den
	04/20/87 (A)			Den
	08/21/87 (A)			
06-11 Sow	08/02/86 Capture - Freq. 1.165 08/11/86 (V) 08/13/86 (A)			Travel
06-12 Sow	08/02/86 Capture - Freq. .739 08/11/86 (A) 08/13/86 (A) 09/18/86 (A) 10/16/86 (A) 10/24/86 (A)			
	02/09/87 Dropped collar (not retrieved)			
06-13 Sow	08/01/86 Capture - Freq. 1.113 08/07/86 (V) 08/13/86 (A) 10/16/86 (V)			Sunning
				Sunning
	03/12/87 (A)	03/12/87	900'	Den
	04/20/87 (A)			Den
	08/12/87 (A)			
06-14 Sow	08/02/86 Capture - Freq. .938 08/13/86 (A) 10/02/86 (A) 11/21/86 (A)			Fishing
	03/11/87 (A)	03/11/87	2500'	Den
	04/20/87 (A)			Den
	07/08/87 (A)			
	08/10/87 (A)			
	10/01/87 - Killed by hunter, collar retrieved.			

Table 27 continued.

Bear	Signal Date (A) or (V) ^a	Date Den Located	Elevation	Activity
06-15 Sow	08/02/86 Capture - Freq. .762 08/13/86 (V) 08/20/86 (A) 11/21/86 (A)			Fishing
	03/11/87 (A) 04/20/87 (A) 08/10/87 (A)	03/11/87	2500'	Den Den
06-16 Sow	08/02/86 Capture - Freq. .199 08/13/86 (A) 11/21/86 (A)			
	03/11/87 (A) 04/20/87 (A)	03/11/87	2400'	Den Den
06-17 Sow	08/02/86 Capture - Freq. .441 08/13/87 (A) 09/18/86 (A) 10/02/86 (A) 11/21/86 (A)			Fishing
	03/11/87 (A) 04/20/87 07/08/87	03/11/87	2750'	Den Den

^a A = Audio contact, V = visual contact.

The Alaska Peninsula is on a "rest-rotation" hunting system for brown bear hunting. The seasons are established beginning with a fall hunt, followed by a spring hunt, followed by 18 months free from hunting. During the period of the Island Arm study there will have been two complete hunting cycles (fall 1985, spring 1986, fall 1987 and spring 1988). The fall hunt of 1987 brought an end to three (all sows) of the collared bears. All bears were harvested in the general vicinity of the Island Arm of Becharof Lake, all at elevation between 1000-1500 feet. None of the hunters involved in the taking of these bears were aware the animals were collared until after the kill. All of the hunters were supplied with the basic biological information on the bears and all cooperated by offering specific information as to the location, elevation, bears behavior and condition.

Plans were finalized in 1987 for an Interagency Brown Bear Study in conjunction with the National Park Service, Alaska Department of Fish and Game (Fish and Game) and the Fish and Wildlife Service. The study plan calls for the radio collaring of 60 brown bears around the Black Lake area of the Alaska Peninsula Refuge. The intent is to continue this study for 10 years. Objectives include estimating productivity of the Black Lake bears, estimate hunting mortality and estimate population trends. The refuge will be heavily involved in all phases of the project.

Barren-ground caribou

The Alaska Peninsula caribou herd is composed of the northern and southern herds. The northern herd, between 15,000-20,000 animals (Table 28), utilizes both the Alaska Peninsula and Becharof refuges. The animals migrate from traditional calving areas near Port Moller to fall and winter feeding grounds near King Salmon. The southern herd remains south of Port Moller and ranges to Cold Bay. The northern herd is monitored by refuge staff and Alaska Fish and Game personnel, while the southern herd is monitored by Izembek Refuge and Alaska Fish and Game.

Table 28. Sex and age composition of the northern Alaska Peninsula caribou herd.

Year	Season	Bull:Cow Ratio	Calf:Cow Ratio	Percent Calves	Population Estimate
1970	Fall	48.3:100	46.1:100	22.9	
1975	Fall	33.0:100	44.6:100	25.1	10,340
1976	Spring	--	--	--	11,368
1978	Fall	48.3:100	55.2:100	25.0	--
1980	Fall	52.8:100	56.5:100	27.0	--
1981	Spring	--	--	27.8	16,600 ^a
1981	Fall	33.6:100	39.2:100	22.7	--
1982	Spring	52.5:100	55.4:100	26.7	16,800 ^a
1982	Fall	43.1:100	51.6:100	26.5	--
1983	Spring	--	--	28.5	18,000 ^a
1983	Fall	39.2:100	26.7:100	16.1	--
1984	Spring	--	--	24.5	19,000 ^a
1984	Fall	39.0:100	39.0:100	22.0	--
1985	Spring	--	--	27.0	18,978 ^a
1985	Fall	--	--	--	--
1986	Spring	--	--	28.0	15,300 ^b
1986	Fall	50.8:100	34.3:100	18.5	-- ^b
1987	Spring	--	--	--	-- ^b
1987	Fall	54.0:100	51.5:100	25.0	18,800

^aPost calving photo count with aid of radio telemetry.

^bSpring counts not complete.

Refuge staff and pilots are becoming more and more involved with Fish and Game in the monitoring of the northern herd. In April Assistant Refuge Manager/Pilot Payne assisted in the capture and radio collaring of 12 northern herd animals. This was followed by refuge pilots, using refuge aircraft, and an Alaska Fish and Game biologist to track the collared caribou several time during the year. The tracking flights help State biologists to estimate population numbers with greater accuracy than was previously possible without the telemetry equipment.

Moose

Refuge personnel continued the annual moose survey of Bible Creek and Kejulik River on the Becharof Refuge (Table 29). These annual aerial surveys are done to supplement moose surveys done since 1981 by Fish and Game (Table 30). The Fish and Game surveys are done at the extreme northern boundary of the refuge, while the refuge surveys are well with refuge boundaries.

Table 29. Moose sex and age ratios for the Bible Creek and Kejulik River area of Becharof Refuge.

Year	Total Bulls per 100 cows	Yrlg. Bulls per 100 cows	Yrlg. Bulls/ % of herd	Calves/ 100 cows	Calf % of Herd	Total Count
1986 ^a	---	---	---	---	--	264 ^b
1987	89.3	16	8.1	8.0	4.1	148

^aPoor flying weather and lack of snow cover forced the delay of counts until late January 1987. Bull moose had already dropped antlers, making sex and age determination impossible.

^bTotal count was inordinately high due to a severe winter storm that moved animals from higher elevations in greater than usual numbers.

Table 30. Moose sex and age ratios from fall counts conducted on the northern boundary of Becharof Refuge (Fish & Game data).

Year	Total Bulls/ 100 Cows	Yrlg. Bulls/ 100 Cows	Yrlg. Bulls Herd	Calves/ 100 Cows	Calf % of herd	Total Sample
1981	23.2	10.1	7.4	14.5	10.5	95
1982	31.0	7.1	5.1	9.5	6.8	118
1983	33.0	4.4	2.9	19.8	12.9	139
1984	27.8	4.3	3.1	12.18	8.7	196
1985	20.5	2.6	2.0	10.3	7.8	153
1986	21.2	2.9	2.16	19.2	14.1	142
1987	20.2	4.8	3.5	14.3	14.7	113

Alaska Fish and Game also monitors moose populations on the Ugashik Unit of the Alaska Peninsula Refuge. The area around the Dog Salmon River drainage has been monitored with some consistency since 1962 (Table 31). A rapid population decline in the mid-1960's to the early 1970's was attributed to poor browse conditions. Beginning in the early 1970's Fish and Game liberalized moose hunting season to bring the population in line with the grazing capacity of the range. The liberalized seasons resulted in a composition disparity of many older animals but few younger replacement animals. This was attributed to younger animals being more susceptible to the gun. As a result, the population decline continued, compounded by the loss of additional replacement animals to predation by brown bear, especially on moose calves. In the late 1970's Fish and Game placed trophy-only (bulls with 50 inch or greater antler spread or three brow tines) restriction on hunter take. With hunting restrictions in place, the population began to stabilize and finally, in 1986, the management goal of 40 bulls per 100 cows was reached.

Table 31. Moose sex and age ratios for surveys conducted in the Dog Salmon drainage, Alaska Peninsula Refuge (Fish & Game data).

Year	Total Bulls/ 100 Cows	Yrlg. Bulls/ 100 Cows	Yrlg. Bulls Herd	Calves/ 100 Cows	Calf % of herd	Total Sample
1962	118.8	10.9	10.1	16.8	7.1	238
1963	--	--	--	--	17.4	213
1964	77.2	15.2	8.2	7.0	3.8	291
1966	88.7	16.9	7.6	29.8	13.5	275
1967	44.4	13.3	8.3	15.5	9.7	72
1970	62.2	14.9	8.6	10.1	5.9	324
1971	56.9	17.5	10.0	19.0	10.8	241
1974	22.0	11.0	8.6	5.5	4.3	139
1976	34.4	11.4	7.4	19.7	12.8	94
1979	26.3	15.8	10.0	23.7	15.0	60
1981	60.0	16.0	8.5	28.0	14.9	47
1982	56.4	17.9	10.9	7.7	4.7	64
1983	56.9	6.9	4.0	18.1	10.3	126
1984	60.9	12.1	7.1	9.1	5.4	112
1987	52.8	7.5	4.3	22.6	12.9	93

9. Marine Mammals

The coasts of both refuges provide important and key habitat for a wide variety of marine mammals. Harbor seals, Steller's sea lions and sea otters are abundant on both the Pacific and Bering Sea coasts. Walrus numbers have increased in recent years and groups of up to 3,500 have been seen in the vicinity of Cape Seniavin, Port Moller and Herendeen Bay.

Little is known about the cetaceans occurring in the coastal waters off the refuges. Gray whales migrate through the area and killer and minke whales, along with Dall's and harbor porpoises are frequently sighted in Bristol Bay. Beluga whales follow smelt runs and salmon smolt up major tributaries.



Walrus at Cape Seniavin.

REH

10. Other Resident Wildlife

Thirty species of land mammals occur on the refuges. Wolves, although not abundant, range throughout the peninsula feeding on carrion, caribou, moose, and small game. Wolverine, otter, beaver are widespread and are commonly trapped. Snowshoe hares occur on the northeast portion of Becharof refuge and Alaskan hares are found throughout the peninsula. Where habitats are suitable, arctic ground squirrels, hoary marmots, short-tailed and least weasels, porcupines, shrews, voles, and lemmings occur.

11. Fisheries Resources

During the summer of 1987, refuge volunteer personnel conducted a creel survey of anglers at Ugashik Narrows to estimate the amount of effort, catch and harvest by species. Survey design, data compilation and catch and harvest estimates were provided by the Area Management Biologist, Sport Fish Division, Alaska Department of Fish and Game, Dillingham, Alaska.

The survey period was stratified into three time periods between June 22, 1987 and August 30, 1987 (Table 32). Periods one and two were both 25 days in duration while period three was 21 days in length. A total

Table 32. Ugashik Narrows Creel survey results, 1987.

Period/ Date	Effort Ang.-hrs.	Coho Salmon			Sockeye Salmon			Lake Trout			Dolly Varden			Grayling		
		CPUE	Catch	Harvest	CPUE	Catch	Harvest	CPUE	Catch	Harvest	CPUE	Catch	Harvest	CPUE	Catch	Harvest
Period I 6/22-7/16	393.4	0	0	0	0.0381	14	2	0.0254	9	2	0.3521	130	7	0.0826	30	5
Period II 7/17-8/10	865.2	0.0032	3	3	0.3613	408	108	0.0539	43	8	0.1458	115	10	0.13	105	10
Period III 8/11-8/30	766.8	0.0805	60	50	0.5414	480	4	0.00083	6	0	0.9745	784	10	0.2971	242	4
Season	2027.4	0.0311	63	53	0.4449	902	114	0.0285	58	10	0.5075	1029	27	0.185	377	19

effort of 2,027.4 angler hours were estimated with 19% occurring in period one, 43% in period two and 38% in period three.

The five species reported caught by the anglers included the following: Dolly Varden, lake trout, Arctic grayling, coho and sockeye salmon. Dolly Varden, Arctic grayling, sockeye salmon and lake trout were primarily caught and released with estimated harvest ranging from 3%, 5%, 13% and 17% of the respective estimated catches. Coho salmon were primarily retained by the anglers with 84% of the estimated catch harvested.

Arctic grayling were caught throughout the survey but the majority (64%) were caught during period three. The angler catch rate varied from 0.08 grayling per angler hour in period one to 0.3 fish per angler hour in period three. These catch rates are lower than anyone anticipated. Fish and Game has planned additional work in the 1988 season to monitor the response of the grayling population to increased exploitation and develop management strategies to maintain the resource.

Dolly Varden were also caught in all three survey periods but the greatest catch (70%) occurred in period three with an angler catch rate of 0.97 fish per hour. The occurrence of such a high catch rate corresponds with the return of anadromous Dolly Varden to the lake system in the late summer prior to spawning.

Lake trout were reported by anglers during all three periods as well, but the best catches (74%) occurred during period two with an angler catch rate of 0.05 fish per angler hour.

Sockeye salmon were primarily caught during periods two and three with 48% and 53% of the catch respectively. Harvest occurred almost exclusively in period two when the fish were still fresh from saltwater. The angler catch rate was highest in period three with a catch of 0.6 fish per angler hour.

Coho salmon catches reflect the availability of these fish with 95% of the catch reported in period three. The desirability of these fish is indicated by the 84% harvest rate.

14. Scientific Collections

No serious attempt has been made to organize and build a scientific collection of study skins of birds and mammals. Specimens found in the field are frozen and are later put up as study skins whenever possible, but the refuge presently has no facility to maintain such a collection.

H. PUBLIC USE

1. General

Historically, recreational and subsistence use by local residents are nearly inseparable. The two activities have long meshed as residents have hunted, fished, trapped and gathered berries. However, recreational use by out-of-state visitors and non-locals is easily distinguishable from subsistence use. Most subsistence use comes from twelve villages in and around the boundaries of the refuges. These include Naknek, South Naknek, King Salmon, Egegik, Pilot Point, Ugashik, Port Heiden, Ivanof Bay, Perryville, Chignik Bay, Chignik Lake and Chignik Lagoon. Most out-of-state and non-local recreational use begins in King Salmon since this is the major terminal for commercial jet service from Anchorage. Access to refuge lands is primarily by aircraft, however, Big Creek, the Egegik, Ugashik and Dog Salmon rivers are well used corridors by non-locals and subsistence users alike. The streams also serve as winter trails for all-terrain vehicles for subsistence hunting of moose and caribou by locals.



Subsistence use on Becharof Lake.

REH

An increase in air-taxi use and outfitters, indicate a continuing increase in recreational use by non-locals. This is evidenced by the fact that the number of Special Use Permits issued by the refuges for guides, outfitters and air taxi operators has increased from 33 in 1982 to 54 (64%) in 1987. The relatively short distance from King Salmon to the Becharof Refuge and Ugashik unit of the Alaska Peninsula Refuge makes it very convenient for non-locals to access world class caribou and moose hunting and sport fishing. It is now estimated that 70% of the moose, 50% of the caribou harvested on the refuges and 90% of the sport fishing is by non-locals.



Chum salmon from the Dog Salmon River.

KIW



Sport fishing on the Dog Salmon River.

KIW

6. Interpretive Exhibits/Demonstrations

Alaska Peninsula/Becharof refuges, Katmai National Park and Preserve, and the Alaska Department of Fish and Game joined in a cooperative effort to develop a public information kiosk at the King Salmon Airport. The Service assumed funding and design responsibility for the kiosk panels while the Park Service took the funding, design, and construction responsibility for the kiosk. Markair Airlines gave us permission to construct the kiosk at their terminal.

Draft panel designs (six) were received from our Public Use and Information division in January. Park Service, Fish and Game and refuge personnel reviewed and commented on the panel design. Concept design was finalized at a meeting at the Park Service's Anchorage office on January 30th. A contract for graphic design for the six panels was awarded to Ken Wray's Printing on April 15th. The six 3-foot by 5-foot panels were received on July 23rd.



Construction of public information kiosk at King Salmon airport.

JES

The construction of the kiosk for the Interagency Visitor Information station was initiated on October 5th. Katmai National Park purchased the materials and supplied a carpenter. Maintenance Worker Gallup assisted in the construction. Work was proceeding rapidly when the State Department of Transportation Airport Leasing Office issued a cease-and-desist order on the 9th. Work stopped while a tangle of red tape was cut through. The basic problem was a long-term dispute between Mark Air and the State. Approval to proceed was granted on the 23rd. The kiosk was completed except for panel frames. At year's end, Maintenance Worker Gallup was working on these.

Each year the Bristol Bay Borough celebrates the end of the commercial fishing season with a "Fishtival" held in the village of Naknek. This year, the refuges participated in these activities for the first time. A static display with three of the kiosk panels was used. Also exhibited were the winners in the 1986 duck stamp design contest. The exhibit was then moved to the Naknek Library and later to the King Salmon Air Force Station Library for display.

8. Hunting

The Alaska Peninsula is host to an increasing number of non-local and non-resident sport hunters. An examination of the Boone and Crockett record book gives a clear indication of why. Forty-six of the top 100 brown bear, 37 of the top 100 caribou, including number one, and 22 of the top 100 moose were taken on the Alaska Peninsula.



Trophy moose are common on both refuges.

JFP

Regular public use patrol flights began on the Becharof Refuge on August 7th with the first hunting camp observation. As weather permitted, the patrol flights continued. A much higher than expected use of dry lake beds, sand blow-outs, gravel bars and small lakes was documented (Table 33). From the air it is difficult to ascertain whether the camps were set up by guides/outfitters or by private hunters. Fortunately, as the patrol flights continued through August, September and October, it became clear that some camps (especially those with large wall tents) were remaining on site for extended period of time. This made it somewhat easier to identify commercially set-up camps. Perhaps the most interesting information gathered during the patrol flights was the need for some regulation to prevent guides and outfitters from dominating a desirable camping area by leaving their equipment and tents set-up even though not being used. This practice very effectively restricts other potential users of the same area and forces users into areas that may not be safe for aircraft operations.



Tent camp on Becharof Lake in Island Arm area.

REH

Table 33. Public use on Becharof Refuge, August through October 1987.

Month	Number and Type of Camp		Total Camps
	Commercial	Private	
August	16	9	25
September	15	8	23
October	3	1	4

For both the Alaska Peninsula and Becharof refuges, King Salmon is the termination point for commercial air service. Once a hunting party arrives in King Salmon, air taxi and charter service is available to most areas on the refuges. King Salmon is also the base of operation for numerous guides and outfitters operating on the Alaska Peninsula. Those hunters wishing to hire the services of an outfitter or guide find fees are costly and highly variable, dependent upon the length of

the hunt, equipment provided, type of animal hunted and the area to be hunted. Commercial guide fees for moose or caribou may range from \$2,500 to \$3,500 while a brown bear hunt may cost \$5,000 to \$10,000.

An individual wishing to provide privately owned equipment without the benefit of a guide or outfitter will find the fees set by the Alaska Department of Fish and Game for non-resident license and tags to be just the beginning (Table 34). Once the proper license and tags are obtained, the cost of a charter flight can range from \$150 to \$625 per hour of aircraft operation with most camp placement and pick-up requiring three or more hours of aircraft time.

Table 34. Alaska non-resident license and tag fees for 1987 (Fish and Game data).

Type of License	Cost
Hunting	\$ 60.00
Sport fishing and hunting	\$ 96.00
Caribou/moose tag	\$300.00
Brown bear tag	\$350.00

Hunters are required to submit a hunt report to Fish and Game at the close of the hunting season. The report includes information on harvest success. Due to the long hunting seasons, Fish and Game lags behind one year in processing of the harvest reports, thus hunter success in calendar year 1986 is shown in Tables 35 and 36.

Table 35. Caribou and moose harvest for the Alaska Peninsula Game Management Units 9C and 9E, 1986 (Fish and Game data).^a

Species	Bulls	Cows	Total
Caribou	600	117	717
Moose	138	10	148

^aHarvest reports include both Alaska Peninsula and Becharof refuges.

Table 36. Brown bear harvest for the Alaska Peninsula, 1975-1986, Game Management Units 9C and 9E (Fish and Game data).

Date ^a	Total Bears	Percent Boar	Mean Age		Percent Harvest	
			Boar	Sow	Boar	Sow
1975-76	261	62	6	7	49	51
1977-78	311	64	6	7	45	55
1979-80	316	68	6	6	47	53
1981-82	339	59	6	6	47	53
1983-84 ^b	268	61	6	8	53	46
1985-86 ^b	263	64	7.	8	60	37

^aBrown bear hunting season on the peninsula is on a rest-rotation schedule, e.g., the fall of 1985 was open, followed by a season in the spring of 1986. There was no other open season until the fall of 1987, essentially an 18 month cycle.

^bIncludes seven bears of unknown age and/or sex. Drainages listed on harvest reports indicate 144 (55%) of the total harvest was taken either on Alaska Peninsula or the Becharof refuges.

Waterfowl and upland game hunting, on refuge lands, usually occurs in conjunction with big game hunts. Off refuge, the main waterfowl hunting areas are the Naknek River, adjacent to King Salmon, the Pilot Point and the Port Heiden areas.



Combined hunts are common.

DDM

9. Fishing

The rivers and lakes within the Alaska Peninsula/Becharof Refuges provide world-class fishing opportunities. Game fish include burbot, Dolly Varden/Arctic char, Arctic grayling, rainbow trout and five species of Pacific salmon. In large lakes, northern pike and lake trout are common. In 1981, the world record Arctic grayling was caught in the "Narrows", between Upper and Lower Ugashik Lake, Ugashik Unit.



Large grayling from Alaska Peninsula waters.

FWS

Access to the numerous fishing areas on the refuges is generally limited to float equipped aircraft. The areas most utilized for sport fishing are Upper and Lower King Salmon Rivers, Big, Gertrude, Featherly and Painter Creeks and Upper and Lower Ugashik Lakes including the Narrows.

Over 36 outfitters and commercial lodges, which offer fishing packages, are permitted on the refuges and promote wilderness fishing experiences. Most operators of these lodges promote catch and release angling for resident fish species. They offer a variety of package programs that include lodging and air transportation to the fishing areas. These package deals may range in price from \$1500 to \$5000 depending on the length of stay and quality of amenities offered by the lodge.

Even though estimates indicate that over 90 percent of all sportfishing is by non-locals, very little information is available concerning the numbers of recreationists that use site specific areas on the refuges. The information that is available was generated by staff knowledgeable about public use patterns on the refuges and from random observations by aircraft. No actual studies or surveys have ever been conducted. Concern has been expressed by refuge staff, Alaska State Department of Fish and Game personnel and local fishing guides that historical "hot spots" such as the river between Upper and Lower Ugashik Lakes (Narrows) and Gertrude Creek have been getting too much fishing pressure and that trophy-size fish are on the decline.

In the summer of 1987, a public-use field camp was established at the Ugashik Narrows to collect site specific creel and public-use data. This site was chosen because it received the most concern from local fishing guides about over crowding. The Narrows is located on the Alaska Peninsula Refuge, 78 miles south of King Salmon (Figure 18). It is a 0.4 mile long river between Upper and Lower Ugashik lakes. The upper lake is approximately 85 square miles in size and the lower lake is 72 square miles in size. Both lakes are drained by the Ugashik River that flows west to Bristol Bay.

Two private commercial fishing lodges are located at the Narrows. One actively operates, on a seasonal basis and the other was sold to a Japanese firm that has lodges on Lake Iliamna, but is not yet in operation at the Narrows. Both lodges have Special Use Permits to operate on the refuges. One outfitter also has a cabin under permit on the west side of the Narrows near the entrance to Lower Ugashik Lake.



Volunteers conducting field activities at Ugashik Narrows public use field camp.

FWS

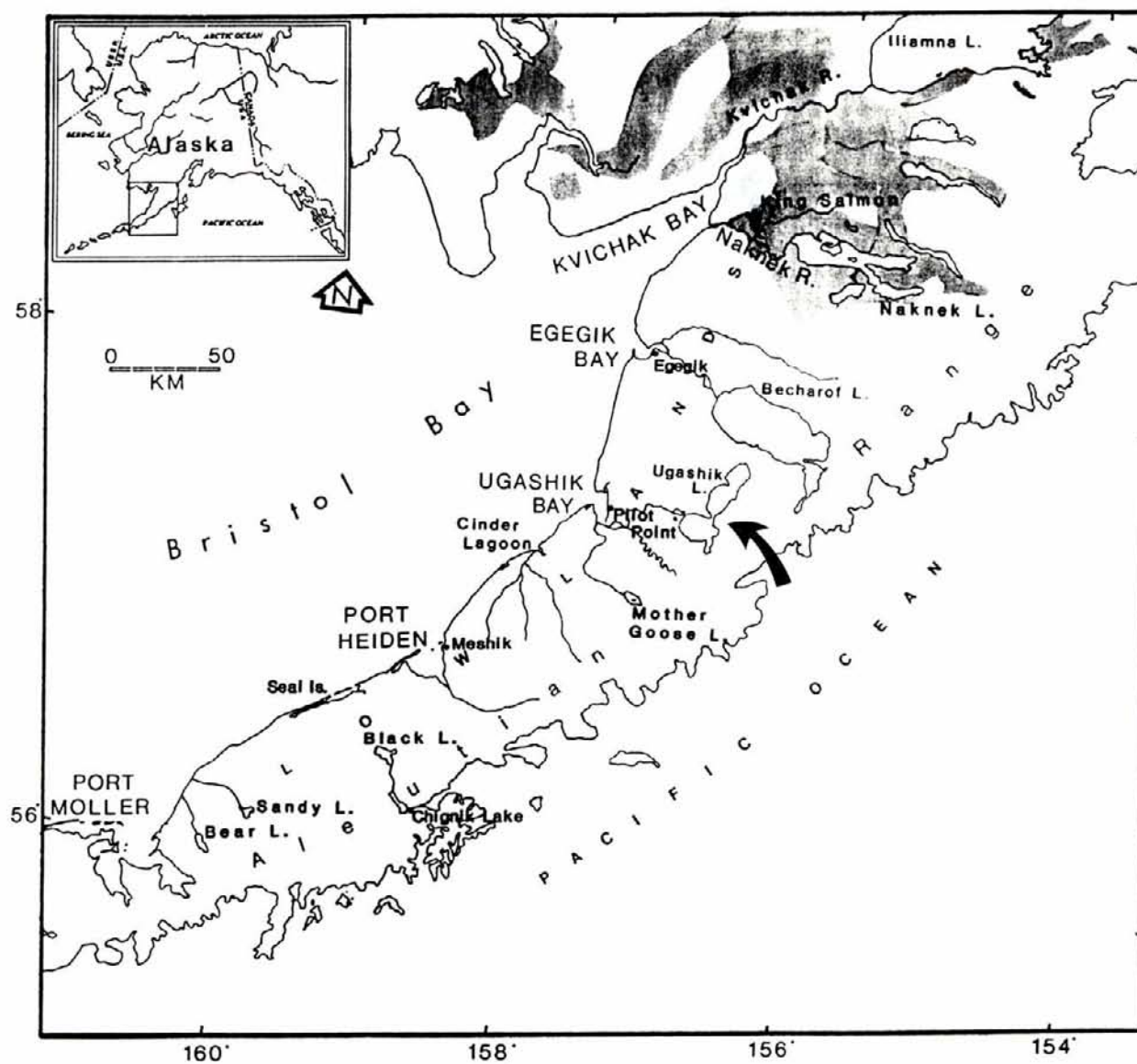
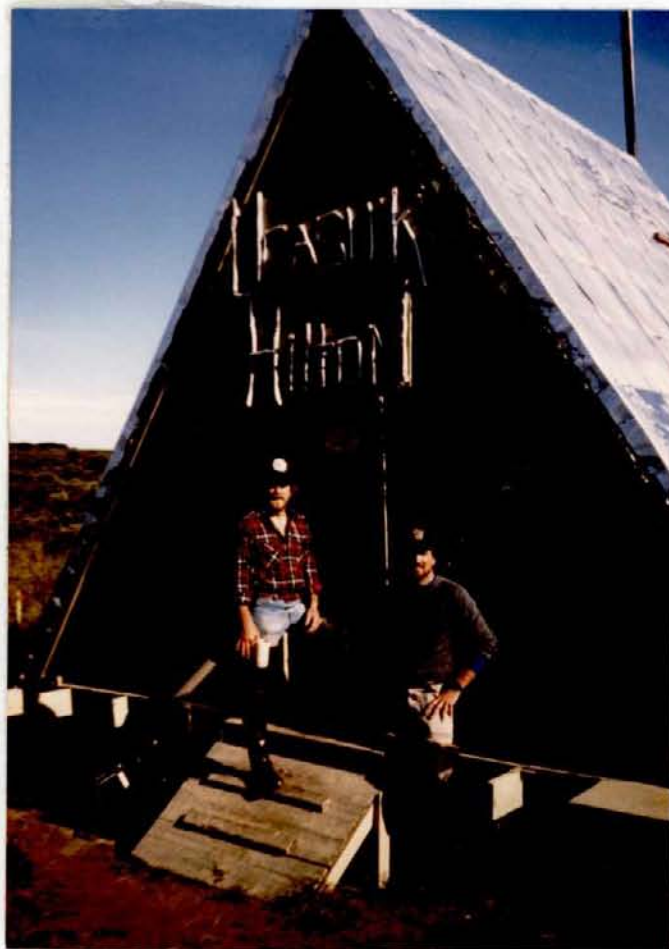


Figure 18. Location of Ugashik Narrows

The refugees obtained permission from the outfitter to utilize the A-frame cabin as a headquarters for the camp. The camp was manned by two volunteers and two Biological Technicians at various times depending on what type of work was scheduled. The camp was in operation from June 19th to September 2nd. All parties or individuals that visited the Narrows were interviewed by the staff to determine party purpose, length of time spent at the site, transportation method, whether they were guided or not and what state or country they were from. In addition to public use data, the team recorded daily weather information, daily bird observations, and they participated in the waterfowl brood surveys. Also, in cooperation with the Alaska Department of Fish and Game (Fish and Game), detailed creel census data was collected four days per week from all fishermen utilizing the Narrows. All creel data was recorded on "Mark sense forms" and is presently being summarized by Fish and Game.



Ugashik Narrows field camp headquarters.

JFP

During the 74 day survey period, 83 visiting parties were contacted and interviewed for public use details. Fifty-one of the parties flew in by float equipped aircraft, and 32 arrived by boat. Sixty-seven (81%) of the 83 parties utilized the Narrows on a day-use basis. Only 16 parties (20%) camped or stayed overnight. Fishing was the overwhelming activity of all the groups. Seventy-four (89%) indicated that fishing was the primary reason they visited the Narrows. Other than lodge resupply trips and one party that spent the night due to bad weather, only two groups visited the Narrows with siteseeing as their primary purpose.

The 83 parties spent a total of 565 use days visiting the Narrows (Table 37). Of the 57 guided parties, 93% utilized the Narrows on a one day fly-in basis. Their one day trips averaged 4.1 hours use. Whereas only 45% of the unguided parties were one day fly-in trips. Their trips averaged only 2.8 hours use. All unguided parties averaged 3.2 days use and ranged from one to nine days. The guided parties constituted 276 (78%) of the clients but only 287 (52%) of the use days (compared with unguided party use). This disparity between the number of clients and use days in the guided and unguided segment again relates directly to the fact that the guided parties were primarily one day fly in use and the unguided parties were overnight campers staying multiple days.

Table 37. Total client and guide usage, Ugashik Narrows, June to August 1987.

	Number Parties	Number Clients	Number Guides	Total Number People	Trip Length Days ^a	Client Use Days	Guide Use Days	Total Use Days
Guided ^b	57	191	85	276	1.1	193	94	287
Unguided ^b	20	78	--	78	3.2	267	--	267
Resupply	3	1	2	3	1.3	--	4	4
Unknown	3	7	--	7	1.0	7	--	7
Totals	83	277	87	364		467	98	565
Percent guided	69	71	--	76	--	42	--	52
Percent Unguided	31	29		24		58		48

^aUse during any part of a day was considered one day use.

^bMt. Peulik Lodge clients included in this category.

The average number of clients per guide was 2.3 and the number of clients per guided party was 3.4. In the unguided segment, the number of people per party was 3.9. The size of all parties (guided/unguided) ranged from 1.0 to 11.0 and the number of clients per guide ranged from 0.5 to 7.0.



Fishermen utilizing the outlet of the Ugashik Narrows,
Lower Ugashik Lake.

FWS

The peak use days for number of parties and number of people occurred on four days in July (Table 38). The most parties that utilized the Narrows on any one day was seven and occurred on July 7th. Four of these parties arrived by boat and three arrived by aircraft. Most fishing takes place on the west fork of the Narrows (west side of the island).

Table 38. Peak use days at Ugashik Narrows, June-August 1987.

Date	Number Parties	Number People
July 6	4	19
July 7	7	23
July 20	5	27
July 25	5	22

The guides all try to park float planes on the east side of the island (East fork) because of the slack water and to keep the planes away from the best fishing area. There is only room for three aircraft at that location. Aircraft that come in when that area is full, usually park out of the Narrows on the north shore of Lower Ugashik Lake. The

preferred fishing area in the Narrows is only 2,000 feet long and part of that area includes the rapids that extends into Lower Ugashik Lake.

A total of 12 different fishing lodges/outfitters utilized the Narrows in the 74-day survey period (Table 39).

Table 39. Total client and guide use by commercial fishing lodges, Ugashik Narrows, 1987.

Lodge Name	Total Parties	Total Clients	Total Guides	Total People
Bear's Den Lodge	21	76	33	109
King Salmon Lodge	8	36	12	48
Mt. Peulik Lodge	7	29	2	31
Iliamna Lake Resort	11	15	13	28
Frenchy Lamoureux	5	16	6	22
No-See-Um Lodge	4	15	5	20
Enchanted Lake Lodge	3	13	5	18
Kulik Lodge	3	11	4	15
Point Adventure	2	9	2	11
Brooks Lodge-Katmai	1	2	2	4
King Ko Inn	1	3	2	5
Kodiak Outfitters	1	0	1	1
Non-lodge related	13	45	0	45
Unknown	3	7	0	7
Totals	83	277	87	364

Bear's Den Lodge accounted for 21 (25.3%) of the parties and 109 (30.0%) of the total people. This lodge is located at the outlet of Lower Ugashik Lake on the Ugashik River on private property. All of their parties were transported to the Narrows by boat.

Mt. Peulik Lodge is also privately owned and located a half mile above the Narrows on Upper Ugashik Lake. This lodge caters to German clients and is very selective concerning the numbers of parties and clients it entertains. It only accounted for 7 (8.4%) of the parties and 31 (8.5%) of the clients.

All but two of the lodges were under Special Use Permit to utilize the refuges. One of those (No-See-Um Lodge) has since secured a Special Use Permit. The clients that visited the Narrows this year were from 19 different states, the District of Columbia and four foreign countries, which included Germany, Switzerland, France and Italy.

The information gathered during the 1987 field season indicates that the Narrows is one of the most heavily used areas by the public on both the Alaska Peninsula/Becharof refuges. The study should be continued in 1988 to adequately monitor the characteristics and magnitude of

use. Thresholds for the numbers of aircraft and people should be developed to protect the aquatic and terrestrial resources.

The camp and data gathering should begin near June 20, 1988 since this is when the guides begin to use the Narrows. The data gathering should continue through the month of September. The 1987 study ended on August 31st.. However, there was a significant amount of use during September that included hunters and fishermen. Over 21 parties (75 individuals) were contacted between September 7th and the 16th while refuge staff were conducting law enforcement patrols. This segment of use must be included in the survey.

The refuge established a public use field camp at Gertrude Lake, Becharof Refuge, to monitor hunting and fishing activity. Gertrude Lake has traditionally been used as an access point by float planes for fishermen to float Gertrude Creek for rainbow trout fishing and for hunters access to good caribou and moose hunting. The camp was established on July 27th and ended on August 18th. It was manned by a Biological Technician and a volunteer. No contacts were made with the public at Gertrude Lake. The few parties that did fish Gertrude Creek landed and fished at the point where it enters the King Salmon River. All caribou hunters established camps on othe lakes away from Gertrude Lake. After the field camp was terminated, several outfitters moved to Gertrude Lake. Public use in this area should be monitored by aircraft in other seasons.

10. Trapping

Historically, the trapping of fur bearing mammals was a full-time winter endeavor on the Alaska Peninsula. Today, trapping still takes place but is highly variable due to the price fluctuation of raw hides. Fox, mink, ermine and beaver are commonly trapped. To a lessor extent, coyote, wolf, wolverine, lynx and otter are caught. Fish and Game requires, as a method of monitoring take, a sealing tag be placed on wolverine, wolf, lynx, otter and beaver. Data from the sealing records is in Table 40. No records are available on fox, mink, ermine or coyote.

Table 40. Furbearer harvest in Game Management Units 9C and 9E (Fish and Game data).

Year (winter)	Species	Number Harvested
1984-85	Beaver	--- ^a
	Otter	24
	Lynx	4
	Wolverine	14
	Wolf	14
1985-86	Beaver	166
	Otter	25
	Lynx	23
	Wolverine	20
	Wolf	10 ^b
1986-87	Beaver	240 ^b
	Otter	112 ^b
	Lynx	27
	Wolverine	22
	Wolf	10

^aNo data available.

^bIndicative of increasing prices for short-hair furs.

11. Wildlife Observation

The vast size of the refuges, remoteness, high travel costs, lack of support facilities and the infamous Alaska Peninsula weather combine to serve as a deterrent to visitors interested exclusively in wildlife observation. Katmai National Park, with its relative easy access, beckons visitors with its excellent opportunities for observing the Alaska brown bear.

12. Other Wildlife Oriented Recreation

Photography of wildlife usually occurs in conjunction with hunting and fishing outings. Nearly every fisherman and hunter carries a camera to record their experience in Alaska. In 1987, an estimated five hours per person were spent in the pursuing this activity.

13. Camping

Camping on the refuges is generally associated with a hunting and/or fishing experience. Tent camping is primarily done by non-guided hunters and fishermen. Several lodges operate cabins on the refuges and, occasionally a spike camp. The average camping stay is three to four nights.

15. Off-Road Vehicling

The Lands Act modified the way we manage off-road vehicles in Alaska. When a person is in pursuit of traditional activities on refuge lands (including wilderness) they may use snowmachines, motorboats, airplanes and non-motorized surface transportation. When rural residents are involved in the pursuit of subsistence activities they may use snowmobiles, motorboats, off-road vehicles and other means of surface transportation traditionally employed.

The Alaska Peninsula's ever-changing weather prevents a long term snow cover in winter. Thus snow machines cannot be relied upon for surface transportation. As a result, the three-wheeled all-terrain-vehicle and more recently, the four-wheeled all-terrain vehicle, have become the mainstay method of transportation for peninsula residents.

Some commercial big game guides used tracked all-terrain vehicles before the passage of the Lands Act. Refuge policy is to limit this use to trails between camps or for access to inholdings (43 CFR Part 36.10 and 36.11). Four Special Use Permits are issued to guides for use of tracked all-terrain vehicles.

17. Law Enforcement

Law enforcement activities continued to progress with increased visibility, visitor contact and cooperative efforts with State law enforcement personnel. During the moose and bear hunting seasons, Special Agent Roger Parker provided much needed help in the refuges' patrol efforts. Between the two hunting seasons an unprecedented number of hunting camps (55) and individuals (65) were contacted. Most persons contacted were surprised at having a "game warden" fly-in to their camp. A few individuals were less than enthusiastic about the visits, especially when violations brought citations!

During an August telemetry flight, tracking bears, a radio contact was made with a collared bear on Kodiak Island (more than 30 miles of deep, cold salt water separate Kodiak Island from the Alaska Peninsula). The contact was recorded as a fluke, possibly a bounced signal. After the bear hunt in October a radio collar was turned into State officials on Kodiak Island. The sealing official made a note that the hide seemed very dry for having been harvested in early October. The hunter recorded the location of the kill as near Becharof Lake on the Becharof

Refuge. Coincidentally, the radio contact made on Kodiak Island in August was the same bear as the hunter killed. Further checks showed the collared bear was not heard from on subsequent tracking flights between August and October. Additionally, the hunter had also flown into the Becharof Lake area, in early August, for a caribou hunt. State wildlife officers, Special Agent Parker and refuge officers from Kodiak and Becharof refuges are continuing the investigation.

Several bald eagles, both dead and alive were turned into refuge officers this year. Some were found in traps set by local residents for fur bearers, others were either turned in as an unknown kill or found shot. One of the alleged shooting incidents turned out to be a neighborhood dispute between residents. It seems the uncle of one teenager turned in a teenager of another family for shooting a bald eagle. When the boys were questioned (in the presence of their parents) by refuge officers an underlying neighborhood dispute became apparent. This led to a telephone call from one of the parent to Refuge Manager Hood alleging a refuge officer was mishandling the investigation. Allegations, both against the refuge officer and teenagers, were unfounded.

Another incident brought to mind the political nature of some Alaska residents. During the bald eagle inventory in June a supercub was spotted on the beach near a dead walrus. One individual was sighted chopping the tusks from the walrus. The aircraft number was noted for future investigation. About two hours later, while at a refueling stop with the refuge aircraft, the supercub seen on the beach also came in to refuel. Assistant Refuge Manager/Pilot Payne questioned the supercub pilot and looked at the walrus tusk taken from the dead walrus. The pilot was informed of the walrus parts registration process and given a business card by Payne. A few weeks later the employer of the pilot contacted the Regional Director and complained of "gestapo" tactics employed by Payne in the questioning of the pilot and of the refuge aircraft "flying within 10 feet of his employee when he was on the beach." Fortunately, Payne had a witness, which independently verified the safe manner in refuge aircraft pilotage and was present during the interviewing of the pilot of the supercub. Oh well, all in a days work as a law enforcement officer in Alaska!

Cooperative enforcement efforts with the Fish and Game Protection Officers increased with dual patrolling and the sharing of information being the order of the year. Cooperative investigations led to state citations being issued to six caribou hunters; two for same day airborne hunting, two for failure to remove meat from the field and two for illegal fox hunting (out of season). Interestingly enough, the two individuals cited for the same day airborne have been around King Salmon for some time as contractors on the new refuge housing.

A particularly good example of cooperative investigation with the State led to a Federal citation being issued to a caribou hunter that killed a moose after the moose season closed. It seems the son of the individual who killed the moose was sneaking through the brush to take pictures of the animal. The son approached within 10 yards of a trophy bull, fell down and yelled. The father at this point thought the moose

was charging his son and made a 200 yard killing shot. The defense of the parties involved was one of "defense of life and property". State Fish and Wildlife Protection Officer Dick Dykema required the moose be field dressed and transported to King Salmon where the rack and meat were forfeited to the State of Alaska. A Federal citation was issued to the son for causing the moose to be killed.

The annual law enforcement refresher course, held in Anchorage, was more than a refresher! Refuge Officers were told to bring uniforms for the taping of the course for use at the Federal Law Enforcement Academy in Glynnco, Georgia. The third day of the week long course brought a total surprise. All the refuge officers would be used in serving search and arrest warrants as part of a world-wide sting operation. At precisely 0700 hours on January 15th, Special Agents and Refuge Officers began serving the warrants throughout the Anchorage, Kenai, Palmer and Fairbanks areas. The law enforcement office at Region 7 Headquarters, became a storage area, stacked from floor to ceiling with polar bear hides, stuffed eagles, ivory, whale bone and menagerie of other seized evidence, including several pounds of cocaine! The experience, for all of us involved, was much appreciated. What will next year bring?

On August 26th, Refuge officers Arment, Payne and Savery completed the semi-annual firearms qualifications at the local firing range. The range master was Hal Grovert of the National Park Service.

During 1987, Refuge officers registered two walrus skulls, complete with tusks, one sea otter skull and two gray whale vertebrae.

20. Cabins

It is the policy of the Service to allow the continued customary and traditional uses of existing cabins (constructed prior to December 2, 1980), provided that the uses are consistent with existing laws and regulations and compatible with the purposes for which the refuge was established (Lands Act 304(d), 1303 (b), 1315 and 1316).

It is the policy of the Service to limit new cabins to those essential for the continuation of an "ongoing activity" or use allowed within the refuge (Lands Act 304 (d), 1303 (b)).

On September 8th, the "draft" cabin policy for all Alaska National Wildlife Refuges was made available for public review and comments. We are still waiting for the final policy to be issued.

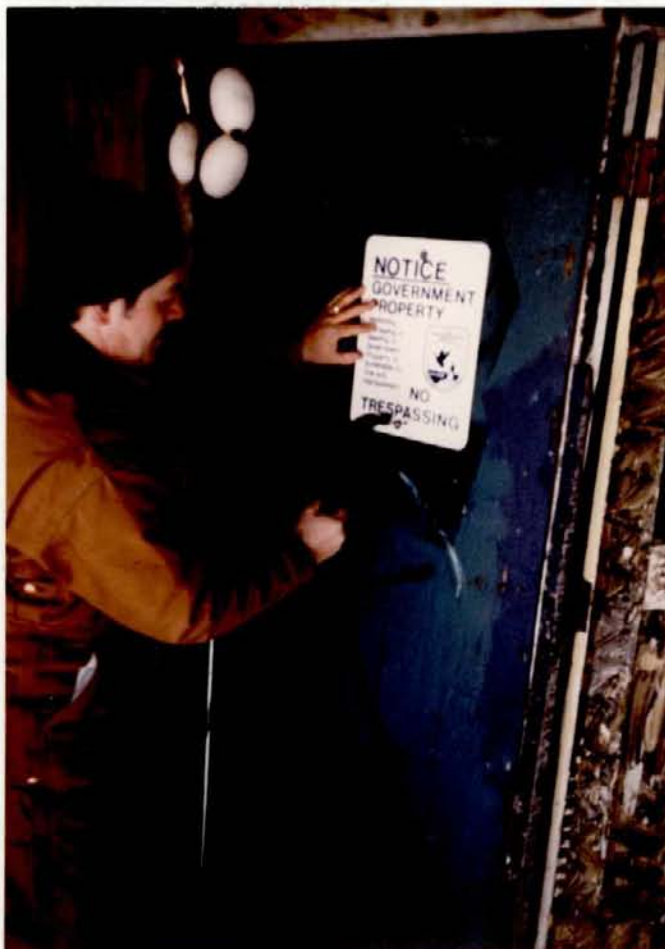
The Becharof Refuge currently has seven cabin sites with usable structures. Current status of these cabins is: four have been permitted; one is being handled by Bureau of and Management; and two are designated for administrative purposes. The Becharof Refuge has six private inholdings with associated cabins.

The Ugashik Unit of the Alaska Peninsula Refuge currently has 15 cabin sites with usable structures. Current status of these cabins is:

eleven have been permitted; one applications is pending; two are designated for administrative purposes; and one application has been denied. The Ugashik Unit has ten inholdings with associated cabins.

The Chignik Unit currently has 13 cabin sites with usable structures. Current status of these cabins is : nine have been permitted; three applications are pending; and one is designated for administrative purposes. The Chignik unit has three inholdings with associated cabins.

On April 5th - 7th, Refuge Manager Hood, Deputy Refuge Manager Savery, and Assistant Refuge Manager/Pilot Arment conducted the second annual cabin inspection. Transportation was via a Bell-206 Jet Ranger helicopter, using Port Heiden as a base camp. Thirteen sites were inspected from Chignik River to Ugashik Narrows. The inspections included photo documentation, cabin dimensions, land ownership status, Special Use Permit compliance/non-compliance, inspection sign posting, etc. (Eight of the sites exhibited trash problems -- two of which were extremely displeasing. Both sites has dozens of five gallon cans and several 55-gallon drums.)



As part of the cabin program, cabins determined to be Service property are posted.

REH

Between the 13 cabins inspected in April, 1986 and the 11 cabin sites inspected in 1987, a total of 24 cabin sites have been checked. This leaves approximately 11 cabin sites to be inspected in the future. Of the remaining sites; three are located in the Becharof Unit; six are in the Ugashik Unit, and two are in the Chignik Unit.

In September, as a result of the inspections, and in conjunction with the "Take Pride in America" program, an information letter was sent to all cabin users and associated guides and outfitters who have Special Use Permits. The letter described the "Take Pride in America" and "Federal Lands Cleanup Day" programs and requested assistance in cleaning trash from cabin sites and other public use areas.



Several guides with cabins have built up quite a collection of garbage over the years ranging from: 55-gallon drums...

REH



...to 5-gallon cans...

REH



...to beer cans...

REH



...to general garbage dumps.

REH

21. Guides and Outfitters

Between Alaska Peninsula and Becharof refuges a total of 60 Special Use Permits were issued. Of this total, 53 permits were issued for commercial guiding and outfitting activities (Tables 41 and 42). The number of permits issued have increased over the past few years due primarily to two reasons: 1) an increase in the number of outfitters wanting to use the refuges; and 2) an increased awareness of the refuges and permit requirements by outfitters who have been working the area in past years without our knowledge. As more people are made aware of the refuge, more of the outfitters are coming under permit. By the end of 1987, an estimated 90-95% of the outfitters using the refuges were under permit.

Table 41. Special Use Permits issued for Guides/Outfitters
1982-1987.

Year	Number
1982	33
1983	30
1984	35
1985	40
1986	42
1987	54



Typical refuge cabin site with an original home-made
airboat in foreground.

REH



Typical outfitter camp with tent frame.

JFP

Table 42. Special Use Permits issued for guiding, outfitting and transporting (air taxi) on Alaska Peninsula/Becharof refuges in 1987.

Refuge	Permit No.	Name Address	State Guide Area No.	General Refuge Location
<u>Big Game Guides^a</u>				
BCH ^b	04-87	Mike Munsey Munsey's Bear Camp Amook Pass Kodiak, AK 99615 (907) 847-2203	9-56	Becharof Lake- Island Arm
AKP ^b	06-87	Jay Frazier Box 1331 Anchorage, AK 99522 (907) 895-4740	9-48	Kujulik Bay
BCH	07-87	Robert L. Myers P.O. Box 56 Egegik, AK 99579 (907) 233-2207	9-59 9-60	King Salmon River and Becharof Lake- Island Arm

Table 42 continued.

Refuge	Permit No.	Name Address	State Guide Area No.	General Refuge Location
AKP	08-87	Andy Runyan HC 01 Box 1702 Glenallen, AK 99588-9602 (907) 822-3335 pause 2 seconds then Dial 13	9-69	Wolf Lake
AKP	09-87	Donald E. Flynn P.O. Box 623 Homer, AK 99603 (907) 235-8619	9-17	Dog Salmon River
AKP	10-87	Howard Flynn 4203 Minnesota Dr. Anchorage, AK 99503 (907) 562-4541	9-18	King Salmon River and Mother Goose & Needle Lakes
AKP	11-87	Butch Hautanen 3157 W. 64th Ave. Anchorage, AK 99502 (907) 243-5683	9-65	Dog Salmon River
AKP	15-87	John Mclay P.O. Box 754 Homer, AK 99603 (907) 235-8816	9-51	South side Lower Ugashik Lake
AKP/ BCH	16-87	Tracy Vrem P.O. Box 520623 Big Lake, AK 99562 (907) 688-2419 - winter (907) 892-7999 - summer	9-61	Gertrude Lake
AKP	18-87	Mel Gillis Alaska Trophy Hunting P.O. Box 220247 Anchorage, AK 99522 (907) 344-8589	9-23 9-85	Sandy River and Stepovak Bay
AKP	20-87	Harry Pederson P.O. Box 190504 Anchorage, AK 99519-0504	9-67	Yantarni Bay
AKP	21-87	John Swiss 129 F Street Anchorage, AK 99501 (907) 272-1725	9-73	Black and Mother Goose Lakes

Table 42 continued.

Refuge	Permit No.	Name Address	State Guide Area No.	General Refuge Location
AKP	22-87	Ray McNutt Wrangell "R" Ranch P.O. Box 10 Sterling, AK 99672 (907) 262-4678	9-53	Nakalilok Bay
AKP	25-87	Brad Langvardt Mountain Enterprises P.O. Box 4127 Soldotna, AK 99669 (907) 262-3991	9-46	Painter Creek
AKP/ BCH	26-87	Joe Klutsch P.O. Box 313 King Salmon, AK 99613 (907) 246-3030	9-49 9-103	Long Lake, and Big, Braided, and Plenty Bear Creeks.
AKP	29-87	Keith Johnson 3646 N. Point Dr. Anchorage, AK 99515 (907) 243-5087 or (907) 243-0535	9-33	Mt. Veniaminof
BCH	31-87	Jerry Meredith 12141 Galena Circle Anchorage, AK 99516 (907) 345-0751	9-54	Alinchak Bay
AKP/ BCH	37-87	Alec Pederson General Delivery Chignik Lagoon, AK 99565 (907) 235-8619	9-104	Chignik Lagoon
BCH	38-87	Jack Myers P.O. Box 70125 South Naknek, AK 99670 (907) 246-6518	9-58	Featherly Creek
AKP/ BCH	40-87	Ed Grasser Painter Creek Lodge P.O. Box 1350 Palmer, AK 99645 (907) 745-3772 or (907) 745-6944	9-26	Painter Creek

Table 42 continued.

Refuge	Permit No.	Name Address	State Guide Area No.	General Refuge Location
AKP	43-87	Frenchy Lamoureux P.O. Box 90-444 Anchorage, AK 99509 (907) 248-4971 or (907) 248-3012	9-45	Lorraine Lake
AKP	44-87	Ken and Mary Oldham P.O. Box 220343 Anchorage, AK 99522 (907) 248-3466	9-62	Dog Salmon River & Big Creek
BCH	47-87	Philip Shoemaker General Delivery King Salmon, AK 99613 (907) 376-2234	9-4	Kejulik River
BCH	52-87	Mario Cerami P.O. Box 92012 Anchorage, AK 99509-2012 (907) 344-7464	9-6	Alinchak Bay
BCH	54-87	Jim Cann P.O. Box 100926 Anchorage, AK 99510 (907) 333-7137	9-4	Kejulik River
AKP/ BCH	57-87	Lee & John Hancock P.O. Box 481 Kodiak, AK 99615 (907) 486-5644	9-31	Northeast Upper Ugashik Lake
<u>Big Game Outfitters^a</u>				
AKP/ BCH	13-87	David L. Lazer Lazer's Guide Service SRA Box 6877 Soldotna, AK 99669 (907) 745-4504	N/A	Featherly and Crooked Creeks
AKP	14-87	Ron Aldridge P.O. Box 3028 Soldotna, AK 99669 (907) 262-7585	N/A	Needle Lake
AKP/ BCH	17-87	Win Condict P.O. Box 2 Naknek, AK 99633 (907) 246-7444	N/A	Big Creek and Dog Salmon River

Table 42 continued.

Refuge	Permit No.	Name Address	State Guide Area No.	General Refuge Location
AKP/ BCH	33-87	Bob Cusack P.O. Box 194 Iliamna, AK 99606 (907) 571-1202	N/A	Becharof and Ugashik Lakes
BCH	42-87	Denny Thompson Bristol Outfitters P.O. Box 198 Naknek, AK 99633 (907) 246-6152	N/A	Big Creek
BCH	45-87	Jim P. Blue P.O. Box 3427 Homer, AK 99603 (907) 235-5655	N/A	Becharof Lake
BCH	46-87	Brett Huber P.O. Box 124 King Salmon, AK 99613 (907) 246-4456	N/A	King Salmon River
AKP/ BCH	48-87	John Gaudet Jake's Alaska Wilderness Outfitters P.O. Box 104179 Anchorage, AK 99510 (907) 248-0509	N/A	King Salmon and Kejulik Rivers
AKP/ BCH	49-87	Wilmer Comfort Comfort Alaska Hunts P.O. Box 16391 Colorado Springs, CO 80935 (303) 597-1323	N/A	Becharof Lake and Blue Mountain
AKP/ BCH	53-87	Rich Dykema Alaska Wild Sport Outfitters P.O. Box 81 King Salmon, AK 99613 (907) 246-7441	N/A	King Salmon River, Ugashik Lakes and Feathery, Shosky & Big Creeks
<u>Fishing Guides/Outfitters^c</u>				
AKP/ BCH	02-87	Ron Hayes Alaska Rainbow Loege P.O. Box 101711 Anchorage, AK 99510-1711	N/A	Various Lakes and Rivers

Table 42 continued.

Refuge	Permit No.	Name Address	State Guide Area No.	General Refuge Location
AKP/ BCH	03-87	Ken & Lorane Owischek's Fishing Unlimited. P.O. Box 190301 Anchorage, AK 99519-0301 (907) 243-5899	N/A	Various Lakes and Rivers
AKP/ BCH	05-87	Ugashik Narrows Lodge A&P American & Pacific Tours, Inc. P.O. Box 101068 Anchorage, AK 99510 (907) 272-9401	N/A	Ugashik Lakes and Narrows
AKP/ BCH	12-87	Iliamna Lake Resort Alaska Frontier Resort, Inc. P.O. Box 103984 Anchorage, AK 99510 (907) 276-4504	N/A	Various lakes and Rivers
AKP/ BCH	19-87	Mike Cusack's King Salmon Lodge 3300 Providence Dr. Suite 309 Anchorage, AK 99508 (907) 562-2275 or 277-3033	N/A	Various lakes and rivers
AKP	24-86	Bill Martin Fish Alaska, Inc P.O. Box 1887 Anchorage, AK 99507 (907) 842-2725 - Summer (907) 346-2595 or (907) 346-3733 - Winter	N/A	Various lakes and rivers
AKP	30-87	Dick Matthews Enchanted Lake Lodge P.O. Box 97 King Salmon, AK 99613 (907) 345-1160 ask for WBS 92	N/A	Ugashik Lakes and Narrows
AKP/ BCH	32-87	Tony Sarp Katmai Lodge, Inc. 2825 90th St. S.E. Everett, WA 98208 (208) 337-0326	N/A	Various lakes and rivers

Table 42 continued.

Refuge	Permit No.	Name Address	State Guide Area No.	General Refuge Location
AKP/ BCH	34-87	Ray Loesche Rainbow King Lodge, Inc. P.O. Box 106 Iliamna, AK 99606 (907) 571-1277	N/A	Various lakes and rivers
AKP	39-87	Jim Kubitz King Ko Inn P.O. Box 346 King Salmon, AK 99613 (907) 246-3378	N/A	Lower Ugashik Lake
AKP/ BCH	41-87	Bill Sims Newhalen Lodge P.O. Box 10521 Anchorage, AK 99510 (907) 279-4236 or 294-2233	N/A	Various lakes and rivers
AKP	50-87	Ludwig Brod Mt. Peulik Lodge 550 W. 7th Ave. Ste. 1530 Anchorage, AK 99501 (907) 272-8401	N/A	Ugashik Lakes and Narrows
AKP/ BCH	51-87	Michael Branham Adventure Unlimited P.O. Box 533 King Salmon, AK 99613 (907) 243-3070	N/A	Various lakes and rivers
<u>Transporters (air taxi)</u>				
AKP/ BCH	24-87	Raymond Peterson Katmai Air 4700 Aircraft Dr. Anchorage, AK 99502 (907) 243-5448	N/A	Various lakes and rivers
AKP/ BCH	27-87	Van Hartley Branch River Air Service 4540 Edinburgh Dr. Anchorage, AK 99515 (907) 248-3539	N/A	Various lakes and rivers
AKP/ BCH	28-87	Phil Bingman Yute Air Alaska, Inc. P.O. Box 890 Dillingham, AK 99576 (907) 842-5333	N/A	Various lakes and rivers

Refuge	Permit No.	Name Address	State Guide Area No.	General Refuge Location
AKP/ BCH	36-87	Starflight, Inc DBA Manokotak Air P.O. Box 2824 Dillingham, AK 99576 (907) 842-2487	N/A	Various lakes and rivers

^aFishing trips may also be provided.

^bAKP = Alaska Peninsula Refuge. BCH = Becharof Refuge.

^cOutfitted hunting trips may also be provided

I. EQUIPMENT AND FACILITIES

1. New Construction

On January 9, 1986, the contract for the four new refuge houses was awarded to Unlimited Construction Company for \$710,000. On February 27, 1986, a pre-construction conference was held in the Regional Office and a "Notice to Proceed" issued. The contractor was given 330 days to complete the project. Completion was scheduled for January 22, 1987. During the construction period the contractor encountered major problems with his cash flow, disgruntled employees, and maintaining adequate quantities of specified building materials on hand at the house sites. Work not only slowed to a snail's pace, it stopped altogether for a 2-month period. Regional Construction Inspector Walt Szelag made weekly trips to King Salmon to monitor construction progress, arbitrate contractor, sub-contractor disputes and generally act as site superintendant. It was no surprise to anyone that the January 22nd completion date was not met. Somehow, even with all the contractor problems and disputes, a contract extension was given until the end of February. As was expected, the February deadline was not met. Liquidated damages of \$250 per day were charged to the contractor from January 22nd until the houses were completed.

At last, on May 6th, a final inspection for the four residences was held by the team of Jan Henning, Contract Specialist; Ron Rhodehamel, Civil Engineer; Walt Szelag, Construction Representative; Paul Schmidt, Refuge Supervisor; and Ron Hood, Refuge Manager. The residences were rejected. A long punch list was supplied to the contractor's bonding agent. He called for another final inspection on May 12th. This inspection was conducted by Jan Henning, Walt Szelag and Ron Hood. On May 13th, Jan Henning notified Refuge Manager Hood that three (3) of the houses had been accepted for inside work only. Major problems

would have to be corrected before outside work was accepted. For example, all concrete work must be replaced at two of the residences. The only reason any of the residences were accepted was the desire of refuge staff and their wives to get into decent housing. A date of June 30th was given to contractor's bonding agent to complete the punch list items.

This date was supposed to be an absolute deadline for defaulting the contract if punch list items were not completed. Of course, no one worked until about June 25th, when a minor flurry of work started. Then on June 29th, a sudden effort sprang into life at residence No. 4. The driveway was dug up and regravelled. Forms for the concrete pad were built. Concrete actually arrived on the afternoon of the 30th. This was followed by the Contracting Officer's decision to allow the contractor to proceed on a day-to day basis to complete the remaining work.

At long last a final "final inspection" of the residential construction contract was conducted on July 8th. All four residences were accepted. All punch list items will be completed under a separate contract or force account.

The contractor was assessed a total of \$28,263 in liquidated damages. This cost was deducted from the final payoff of the contract. Finally contract No. 14-16-0007-86-6606 was complete (or better stated it was in the Refugees' hands so we could complete it).

On May 25th, three of the residences (No.'s 26, 27 and 28) were occupied by refuge staff. On July 13th, residence No. 29 was occupied.

Nineteen months after the contract was awarded, the saga of the King Salmon residences was drawing to a close. Other than a few design and construction "glices", the residences are first class. Most of them are located in picturesque Alaskan scenery, they are spacious and have heated car and a half garages. Sure beats the used trailers on the headquarters compound!

A representative from "The Whole Nine Yards", an Anchorage drapery company, was in King Salmon on August 24th to measure the four new residences for draperies. The custom made draperies were received on station September 1st. Maintenance Worker Gallup installed all brackets and rods in the residences. The contract total was \$6,500.

2. Rehabilitation

A contract for the Accelerated Refuge Maintenance Management project for a new domestic water well and rehabilitation of the water system was awarded on July 11th to Martin Construction Company of Juneau, Alaska. The contract No. 14-16-0007-87-6722, for \$98,257.39 was an 8(a) contract award. On August 24th, a preconstruction meeting was held with the contractor at the refuge bunkhouse. Rudy Berus, Michael Milhollin and Walt Szelag represented Engineering and Refuge Manager Ron Hood represented the refuge. Construction began on September 5th.

The contract included a new domestic water well (80 feet deep), new water lines and pressure tanks, and a sink and hot water heater in the shop.

Water tests from the new water well found the water to be very turbid and high in hydrogen sulfide. As a result, a search for another water well location began. The search proved to be difficult because Alaska Department of Environmental Conservation regulations required a 100-foot set-back from sewage system lines. Several days were spent inspecting and measuring the area. It appeared that there were no locations that met the set-back requirement and a variance would have to be requested for the new location. However an appropriate site was finally agreed upon. The second water well was completed on October 13th.



Martin Construction Company installing the new refuge water system. DDM

After cutting several telephone, electrical and sewer lines in the compound area with his ditching equipment, the contractor had the new water pipes and pressure tanks installed. The final inspection was completed on November 23rd.

A contract for the Accelerated Refuge Maintenance Management project to replace the fuel building, rehabilitate the shop and replace overhead doors on Building 5 was awarded to Titan Construction on

September 30th. The contract, No. 14-16-0007-87-6735, was for the amount of \$98,400. Work on the fuels shed began on October 14th. The foundation, pump and tank were all completed prior to the end of the year. Work on the shop and overhead doors to Building 5 will be completed in 1988.

In August, representatives from the Regional Office engineering staff inspected residence No. 8. The entire water, electrical and heat systems and structure were inspected. An evaluation will be completed to see if it is cheaper to rehabilitate the house or build a new one.

3. Major Maintenance

D.R. Lax Construction Company hauled and tailgate spread 775 cubic yards of D-1 gravel in the compound area. The Air Force brought a roadgrader over and leveled the entire area and installed grades where necessary. Gravel was also hauled and spread on the driveways at the four new residences. This was a combination of Accelerated Refuge Maintenance Management funds and end-of-year purchase.



U.S. Air Force grading new gravel in the Refuge Office parking area.

DDM

In June, the double (fail safe) lift pump sewage system failed. This happened after the maintenance worker had gone on extended sick leave and just as all the seasonals and volunteers arrived at the refuge. All electrical and pump repair people were gearing up for the commercial salmon fishing and not available for repairs. For two weeks

we had to pump the holding tanks every two to three days. Two valves that were designed to prevent back flow from the upper manhole and septic field jammed open and caused the overloaded pumps to burn out their wiring. We had to replace the wiring harness; clean and flush out the valves. Management staff became a lot more familiar with the system than we preferred.

At this same time, the wires on the submerged pump in the compound well shorted out. The area well contractor was called off his salmon boat long enough to pull the pump and replace the entire wiring system.

In September, an old buried fuel oil tank was discovered leaking next to residence No. 8. This tank was apparently left over from the National Marine Fisheries occupation of the compound. The oil had leaked through the soil into an old hand-dug well in the basement of the residence. The reclamation of the site was coordinated through Engineering and the Alaska Department of Environmental Conservation. The tank was pumped and dug out of the ground. The resulting hole next to the house foundation measured 20' x 15' and 12' deep. All fuel saturated soil was removed and spread to a depth of 15 inches so the diesel would evaporate. Clean soil was then dumped into the hole. The old well in the basement was pumped, filled with sand and capped with concrete.



Excavation site after the leaking fuel tank was removed.

DDM

During the same time period, engineering had samples of water from the old compound well tested. The test was positive for grease and oil. As a precaution, human consumption of water was prohibited. Due to problems associated with laboratory testing procedures and equipment failure, three different samples has to be submitted to the lab. Approximately four weeks later the water tested okay for human consumption. (Note: We strongly suspect that the initial samples were really from the hand dug well in the basement of residence No. 8.)

5. Communications Systems

The Alaska Peninsula/Becharof refuges currently uses a high frequency (HF) radio system. This system has proven to be extremely unreliable. Field camps have gone for days without being able to contact refuge headquarters. Therefore we proposed to replace it with a very high frequency (VHF)/ultra high frequency (UHF) system based upon the one currently being used by the Alaska Fire Service. Their system has proven to be highly reliable. The new system was funded to the tune of \$115,000 this year.

To assist us in this effort, Regional Fire Management Coordinator Red Sheldon arranged for Kim Peterson, Boise Interagency Fire Center, Bureau of Land Management, to travel to King Salmon and evaluate refuge lands for the proper placement of repeater sites in order to insure adequate radio coverage of both refuges. Because of the mountainous terrain and its configuration, the evaluation had to be intensive and inovative. A Bell 206 helicopter was used to visit every proposed field camp location and various mountain peaks in the effort to determine the best method to obtain the needed radio coverge. Mr. Peterson prepared an evaluation and made recommendations a for configuration that best meets our needs.

The report provided the system specifications for the invitation for bids that was issued by Contracting. Awards totaling \$105,000 were made in late September. We await the arrival of system components.

In May, a new 55-foot pole was installed by Naknek Electric Association to raise the height of the High Frequency radio antenna at the headquarters. The new alignment and increased height of the antenna should provide better radio reception with the field camps.

6. Computer Systems

In 1986, a Data General 10 SP Computer was purchased for the refuge from year-end money. The computer arrived in November and Computer Specialist Gretchen Bostick of Information and Resource Management traveled to King Salmon and installed the new system.

The new system was a welcome addition for the refuge. It consisted of the main computer, console, two terminals and one letter quality

printer (NEC 8800). In December, a Data General 4434 dot matrix printer and a Radial Vac Modem were added.

In January, 1987, severe problems were experienced with the NEC 8800 printer and it was sent to the Regional Office for repair. The printer would not duplicate the trouble for the technicians. Eventually it was traded with Contracting and we were sent another printer to take its place. The replacement printer caused minor problems that we decided that we could live with until a new letter quality printer could be purchased.

An acquisition request was prepared for a replacement letter quality printer and a tape drive for our computer system. It took considerable time for these items to be purchased as the requests had to be approved in Washington, D.C. Finally, in September the 15 MB cartridge tape module arrived on station. It should have been a simple procedure to add this module, but unfortunately it was not. This unit was faulty and had to be replaced.

In September the new letter quality printer arrived on station without the tractor feed. After many phone calls to the vendor we discovered that the tractor feed was omitted from the order. It was December before the tractor feed arrived and the printer was put on line with the computer system. But our luck with computer components continued to hold, the tractor feed was defective and another one had to be sent. Finally at long last it all came together and the printer worked. We hope that it will continue to do so! It took a lot of phone calls to Data General and Information Resource Management to get it configured and working properly with the system. At year's end the refuge seems to have a somewhat complete computer system.

An Epic AT personal computer was received on station in September for use in the biological program. The Epic computer allows for more versatility in the programs for the biological program.

7. Energy Conservation

In February, 1985, Enertech Alaska installed a replacement 5 KW wind generator. This was the first time that our Enertech wind generating system was operational for the entire year (almost) since it was installed in 1982. In 1985, the system produced 5,505 KW, suppling 10 to 25% of monthly power required for our office.

This year the generator only produced 879 KW. A serious problem with the trip brakes developed (Table 43). Excessive winds tripped the generator out-of-service on eight occasions for a total of 86 days until repairs were made on April 29th (Table 44). The repairs proved only to be temporary and the generator had to be shut down on June 23rd. In the interium we have been attempting to order parts; however, Enertech has since gone out of business. Late in December a small firm in Vermont was found that could supply the parts needed to repair the generator. A purchase order was immediately cut and we are awaiting the arrival of the parts.

Table 43. Wind generating system output (KWH) for 1987.

Month	Generator Output (KWH)	Metered use (KWH)	Total (KWH)	Percent Generated
January	136	2550	2686	5.1
February	230	2030	2260	10.2
March	79	3150	3229	2.4
April	SD ^a	3250	3250	---
May	346	2560	2906	11.9
June	88	2490	2578	3.4
July	SD	2490	2490	---
August	SD	2450	2450	---
September	SD	2510	2510	---
October	SD	2930	2930	---
November	SD	3650	3650	---
December	SD	5220	5220	---
Total	879			

^a SD = Shut down.

Table 44. Number of times and days wind generator tripped out of service, 1987.

Month	Number of Times off	Number of Days off
January	2	21
February	3	16
March	2	20
April	1	29
May	1	4
June	2	9
July	SD ^a	--
August	SD	--
September	SD	--
October	SD	--
November	SD	--
December	SD	--
Total	11	99

^a SD = Shut down.

J. OTHER ITEMS

1. Cooperative Programs

The Alaska Peninsula/Becharof refuges provided funding for a subsistence study for three villages of the northern Alaska Peninsula -- Pilot Point, Ugashik and Port Heiden. Migratory Bird Management also provided funds and technical guidance. The study was conducted by the Division of Subsistence, Alaska Department of Fish and Game, in May 1987.

A major purpose of the project was to collect information on local harvest of migratory waterfowl, including those harvests which occur in spring. Using a standardized questionnaire, Subsistence Division researchers interviewed 17 households in Pilot Point (94.4% of the year-round households in the community), five households in Ugashik (100%), and 37 households in Port Heiden (100%). The results of the interviews include information on community demography; employment; monetary income; involvement in commercial fishing; percentage of the sampled households using, attempting to harvest, harvesting, receiving, and giving away wild resources; harvest quantities; timing of harvest; and harvest areas. The study period included June 1986 through May 1987.

Pilot Point's population in May 1987 was 64; of this, 88.5% had Alaska Native ancestry. During the study period, 82.5% of the adults in the Pilot Point sample were employed for an average of 8.5 months. The largest number of jobs (34.6%) in the community were in commercial fishing, which provided 74.8% the mean household income. Ugashik had ten residents in May 1987, 80% with some Alaska Native ancestry. Like Pilot Point, most of the sources of earned income in Ugashik were with commercial salmon fishing, providing 79.4% of the mean household income. For Port Heiden, the year-round population was 103 in May 1987; of these, 72.8% had Alaska Native ancestry. About 79% of the adults in the community had jobs during the study period; they worked for an average of 9.5 months. As in the other two study communities, commercial fishing for salmon was the major source of cash incomes, contributing 62.1% of the household mean. In all three communities, most other sources of earned income were short term and seasonal.

Residents of Pilot Point, Ugashik, and Port Heiden followed a similar seasonal round of resource harvesting activities. These harvest played prominent roles in the economy and social life of the communities. All of the sampled households in the three villages used wild resources during the study year and 98.3% harvested at least one kind of wild resource. In pounds edible weight, the wild resource harvest was 394 pounds per capita in Pilot Point, 814 pounds per capita in Ugashik, and 408 pounds per capita in Port Heiden. Land mammals were the dominant resource category in all three communities, contributing 62.0% of Pilot Point's harvest in pounds edible weight, 50.6% at Ugashik, and 55.4% at Port Heiden.

Harvest of birds, including ptarmigan, waterfowl, and eggs, made a notable contribution to the resource harvests in all three communities. Bird harvests made up 4.4% of the total take of wild resources in Pilot Point, 3.1% at Ugashik, and 3.3% at Port Heiden. Overall the sampled households took seven types of ducks, five types of geese, four types of eggs, a few swans, snipe and cranes. Spring harvests accounted for 35.4% of the waterfowl take (excluding eggs) in Pilot Point, 34.7% in Ugashik, and 27.3% in Port Heiden. About 47% of the Pilot Point households participated in spring harvests, as did 60.0% in Ugashik, and 18.9% in Port Heiden. The report includes maps showing, by subarea, areas where hunters from the three communities have ever hunted waterfowl, usually hunt waterfowl, and hunted for waterfowl during the study period.

The report's final chapter includes comparison of the study communities' harvest during the study period with data for the three villages for 1973, and comparisons with other Alaska Peninsula and Bristol Bay communities. The composition of the 1973 and 1986-87 harvests appear similar for all three communities. The size of the harvest also appear stable for Pilot Point and Ugashik, but may have increased at Port Heiden. The size of the resource harvest and composition of these harvest are very similar in other Alaska Peninsula communities, including Egegik, South Naknek, Naknek, and King Salmon. These harvest are much larger than in more densely populated communities along Alaska's road system. It is concluded that the communities of the northern Alaska Peninsula, including the three study communities, make up a subarea within the Bristol Bay region with a distinct pattern of fish and game harvest, with per capita harvest at about 400 pounds per person, game harvests exceeding those of salmon, and spring and fall waterfowl harvests contributing between 2.5 and 4.0% of the annual take of wild resources.

2. Other Economic Uses

In addition to 53 Special Use Permits issued for cabins, guides, outfitters and transporters, seven (7) Permits were issued for other uses (Table 45). Only two of the seven permits were issued for other economic uses. Several permits have required site specific Compatibility Determinations and Section 810 (Lands Act) evaluations.

Table 45. Special use permits issued for other economic use, etc.

Year	Other Economic Uses		Sub Total	Non-Economic Uses			Sub Total	Total
	Oil/Gas	Mineral		Federal	State	Other		
1984	9	1	10	4	2	1	7	17
1985	5	1	6	3	2		5	11
1986		1	1	2	2	1 ^a	5	6
1987	1	1	2	4	1		5	7

^aPrivate firm contracted by Service using Accelerated Refuge Maintenance Management funds acquired from Alaska Peninsula/Becharof, Izembek and Togiak Refuges.

3. Items of Interest

Nineteen eighty-seven was a year of discovery on both the Alaska Peninsula and the Becharof refuges. On June 22nd, a World War II aircraft crash site was confirmed. Investigation of the site revealed a moment of sheer terror. The aircraft was a U.S. Navy PBY-5A, apparently flying toward Kodiak Island. As it flew across Becharof Lake, it must have lost an engine. The crew attempted to cross the Aleutian range by way of the Kejulik valley (a low point leading to Shelikof Strait). The plane flew up the wrong valley, realized the error and attempted to gain enough altitude to clear the box canyon in which the pilot found himself. The aircraft impacted at the 1,700 foot level of the mountain, with the main fuselage coming to rest at the 1,900 foot level, just a few hundred feet of clearing the 2,000 foot mountain. Most of the aircraft burned, with only a few larger pieces of the fuselage and wings remaining. Molten drops of aluminum were found on top of the mountain. Bits and pieces of Navy uniforms were everywhere. Live ammo, 30 and 50 caliber, was scattered about. Two machine guns, rusted, but intact remained at the crash site.

Investigation revealed the aircraft crashed in the early years of World War II. It was located in 1954, human remains removed and a mail bag recovered. The mail bag was still intact and its contents were delivered. The crash site, hidden from view in the box canyon, remained undisturbed until refuge personnel discovered it in June.



Remains of U.S. Navy PBY that crashed during World War II.
The box canyon that trapped the aircraft opens onto Becharof
Lake in the distance.

REH



Regional Archeologist Chuck Ditters recording observations
about the crash site.

REH

Another aircraft was discovered on August 26th when Biological Technician Mumma and Assistant Refuge Manager/Pilot Payne were tracking telemetry equipped brown bears near the southern reaches of the Ugashik Unit, Alaska Peninsula Refuge (Figure 19). The discovery generated significant interest nationwide. Emotions among all involved in the discovery and recovery were high, leading Assistant Refuge Manager/Pilot Payne to write an article which will appear in 1988 in an issue of Fish and Wildlife News. That article follows:

Forty-Four Years Later

by

John F. Payne

Assistant Refuge Manager/Pilot

Alaska Peninsula/Becharof

National Wildlife Refuges

The Alaska Peninsula and the Aleutian Islands have often been called the "Mother" of North American weather. The influence of the North Pacific Ocean, Bristol Bay and the Bering Sea combine to create weather patterns affecting the entire continent. High winds and low clouds often obscure mountain passes and hide peaks. Somewhere, in the hundreds of glaciers, thousands of perennial snowfields and hidden, inaccessible canyons of the Aleutian Range lie 17 missing civilian and military aircraft (the U.S. Coast Guard on Kodiak Island, along with the U.S. Air Force Rescue Coordination Center at Elmendorf Air Force Base, maintain the unsolved case files on each of the missing aircraft). On August 26, 1987, near the glaciated and snow covered slopes of the steam venting Mount Chiginagak, on a barren, steep talus slope of an unnamed mountain, the story of one of those 17 missing aircraft began to unfold--44 years after disappearing.

It was 3:30 P.M., August 26, 1987. Biological Technician Dwight "Moose" Mumma and I were trying to locate several "lost" radio collared brown bears on the Alaska Peninsula National Wildlife Refuge. The day was unusually warm and sunny. Even more unusual was the lack of turbulence and erratic winds as I maneuvered the refuge's Cessna 206 up and down rugged canyons of the Aleutian Mountains in an attempt to locate the elusive bears. This remote area southwest of Mount Chiginagak volcano is rarely traversed by aircraft and probably never by foot.

A shiny object at the 2500-foot level of a 3600-foot mountain caught my attention. The object lay among several large snow fields. As we drew closer, the object took the shape of an

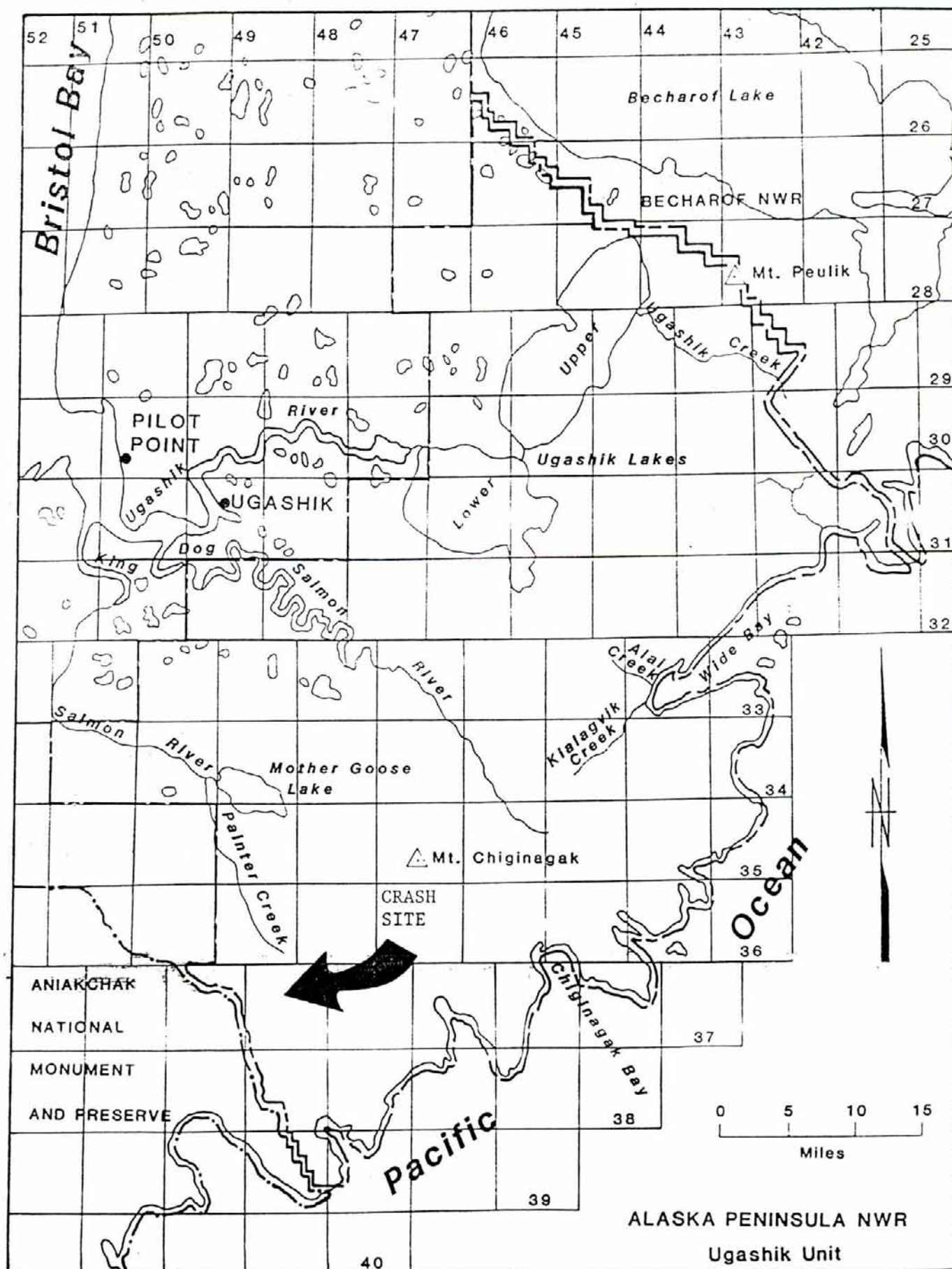


Figure 19. 1944 Grumman Goose crash site.

aircraft wing, lying on a very steep talus slope. Moose and I made several close passes, noted the Loran coordinates and headed back to King Salmon.

A quick stop was made at the King Salmon Flight Service Station to report the downed aircraft. Less than 30 minutes later I received a telephone call from the U.S. Coast Guard at Kodiak. I was questioned at length about the twin engine aircraft we had spotted. The Coast Guard then requested that we return to the site the same evening and photograph the wreckage. Coast Guard records showed no overdue or recently downed aircraft within 100 miles of the site. Refuge Manager Ronald Hood and I returned to the site that evening and took the requested photographs.

The next morning the Coast Guard asked if the refuge could use an available NOAA helicopter to investigate the crash. As luck would have it, the Alaska Peninsula weather cooperated with another fantastic day and the helicopter was able to land on the ridge top a half-mile from the crash.

After an arduous effort, I made my way along a knife-ridge and across the 45 degree talus slope to the crash site. Leather flight suits, military uniforms, toothbrushes, flare pistols and a very antique electric razor were found. It was readily apparent that this was an old crash site. How old, I didn't know. A name on a uniform, Bull, C.W., and a bone in an arm of another uniform--this crash site had not been found before! I left the crash site undisturbed, but my thoughts wondered to how, when and who was aboard the aircraft.

The next morning (Friday, August 28th), minutes after notifying the Coast Guard of our findings, the phone began to ring at the refuge office. The Coast Guard had issued a press release. For several hours the telephone rang: United Press International, Associated Press, a news radio station in the lower 48 and local radio stations.

What had we found? A Gruman Goose, manufactured in 1943. The Rescue Coordination Center at Elmendorf Air Force Base in Anchorage had the flight manifest. It had crashed November 9, 1943 with three persons on board. Why hadn't it been found? The Air Force reports are sketchy but apparently the crash was "briefly" located in 1949 by an Alaska bush pilot. The U.S. Army, with new helicopters, disassembled a machine at Fort Richardson in Anchorage and transported it to Port Heiden for re-assembly. The helicopter navigated to the crash site in a snow storm, landed briefly, and then attempted to return to Port Heiden. The helicopter crashed. Seven days later the helicopter crew showed up, uninjured in Port Heiden after an exhausting hike. No bodies were noted and no proof of the crash or aircraft identification was retrieved.

The winter snows continued. Locations were lost. The crash remained covered by snow and ice for another 38 years until the warm summer of 1987.

The military worked quickly. The Armed Services Pacific Identification Lab in Honolulu dispatched nine forensic experts to base out of Kodiak Coast Guard Station. On Friday, September 4, 1987, the forensic experts, a Coast Guard rescue helicopter and I went to the site.

The team was professional and well equipped for the task at hand. Throughout the day personal effects, uniforms and skeletal remains were marked, photographed, cataloged and collected. With the team leader's instruction I participated in the initial sweep of the site. An undeniable emotional experience! What's this? A bottle, full of a clear liquid. I can't read the writing, but I think its French. Carefully I opened the bottle, French Cologne! Forty-four years and still sweet smelling. I sat near the wing, along with the Coast Guard Mission Commander. He was looking for the aircraft manufactures plate. Together we lifted part of the instrument panel to gain better access. There was the navigators table with pencil notes that could have been made yesterday. The route of flight: Attu, 108.2 gals. fuel, 5.4 gals. oil; Adak, fuel, oil; Dutch Harbor, 102.8 gals. fuel, 4.7 gals oil; Cold Bay, 101.1 gals. fuel, 5.3 gals. oil. Cold Bay was the final fuel point. Where was the Goose going? The compass was broken and locked on a heading of 060 degrees, an almost direct heading from Port Heiden to Kodiak Island. What happened? Damage to the left engine indicated it was developing full power, but the right engine was not running. This was confirmed by the stuck oil pressure guages. A Gruman Goose on one engine does not fair well. Follow the engine failure with a descent through the ever present clouds of the Alaska Peninsula, with an unsure position over some of the most unforgiving, remote terrain in the world--the end came quickly for Mr. Bennett, the pilot; Mr. Cole, the co-pilot; and Mr. Bull the navigator.

For nearly a week bits and pieces were collected. Mr. Bennett's wallet contained a picture of a young girl, perhaps a daughter. Mr. Bull's intact wrist watch was engraved with his name. The French cologne and a pair of gold wire-rimmed glasses, we will never know to whom they belonged. But to all of us involved and to many readers our thoughts go to the crew's families. After 44 years, the war and wondering has ended. What does the daughter and wife feel today? Their memories are private as are their thoughts. We can only speculate about what we would feel after so many years. However, the Alaska Peninsula Refuge staff does have the satisfaction of knowing that we played a part in ending the mystery of the disappearance of this Coast Guard aircraft.

During the year aviation mishaps occurred with the vicinity of the refuges which were reported to the Federal Aviation Administration. This includes mishaps reported by certified air taxi operators. It should be noted that many accidents/incidents occurring within the refuges are never reported. A brief summary is included for each mishap.

On January 19th, an experienced Peninsula Airways pilot, flying one of the company's Piper Navajos skidded off a runway at the Naknek airport and demolished a Supercub owned by an Federal Aviation Administration employee. No one was injured in the mishap.

On February 1st, a Supercub had the landing gear knocked out from underneath and the prop destroyed during a landing attempt 15 miles up Big Creek. The creek is located on the north end of Becharof Refuge. No injuries were reported.

On July 2nd, a Piper Saratoga was apparently attempting to depart the Becharof Lake Bible Camp and crashed on take-off. Only the pilot was onboard and he was not injured. The aircraft sustained major damage.

On July 10th, a Cessna 206 carrying fish, broke a nose gear on take-off and made a sans nose gear landing on a dirt road adjacent to runway 18-36. Little damage occurred to the aircraft and the pilot escaped injury.

On July 18th, a Cessna 185 lost control on take-off from the Naknek River and collided with a small boat and a dock before finally sinking. Although no physical injuries occurred in the accident, the boat driver was treated for shock and three of the four aircraft passengers were treated for hypothermia.

On September 20th, A Cessna 206 on amphib with engine problems overshot a lake adjacent to Mother Goose Lake in the Ugashik Unit and flipped, sustaining severe airframe and gear damage. Deputy Refuge Manager Savery and Assistant Refuge Manager/Pilot Arment inspected the crash site. No injuries were reported.



Scenes like this occur an average of two to three times a month on the Alaska Peninsula during the hunting and fishing season.

JES

On October 11th, a Cessna 170 on wheels crashed on take-off from a dry lake bed approximately 20 miles south of King Salmon on the Becharof Refuge. The aircraft was severely damaged, however no major injuries were reported.

On October 21st, a Cessna 185 on wheels, operated by Armstrong Air, Dillingham, crashed during take-off from the beach at Portage Bay on the Becharof Refuge. The aircraft, with Alaska Department of Fish and Game personnel aboard, was substantially damaged; no major injuries were reported.

On May 3rd, Refuge Manager Hood and Assistant Refuge Manager/Pilot Arment provided logistical support to the Division of Migratory Birds for the spring emperor goose survey. Three observers from the Association of Village Council Presidents, the Waterfowl Conservation Committee, and the United Village of Nelson Island (Johnny Hawk, Paul Angiak, and attorney Larry Landry) were provided an overview of the emperor goose migration and staging areas used on the Alaska Peninsula. The 7 hour and 54 minute flight route included much of the Bristol Bay coastal area from King Salmon to Cold Bay, and on the Pacific side from Cold Bay to the Chignik area.



Assistant Refuge Manager/Pilot Randy Arment with Native observers, Johnny Hawk, Paul Angiak and Larry Landry. REH

A refuge inspection was conducted by the team of Joe Mazzoni, Deputy Assistant Regional Director, Refuge and Wildlife; Lynn Fisher, Program Coordinator; and Paul Schmidt, Refuge Supervisor-South on May 11th through 13th.

On June 25th, we assisted the Aniakchak National Monument by flying a team of cultural resource specialists to a cabin site at the mouth of Aniakchak River. This exchange of services of the National Park Service cultural resource specialists for use of the Fish and Wildlife Service contracted helicopter was a great idea the mutually benefited both agencies.

The National Park Service used our bunkhouse on September 14th to conduct a subsistence meeting with Alaska Peninsula Native groups.

On December 23rd, Assistant Refuge Manager/Pilot Payne's wife Valerie gave birth to an 8 pound 2 1/2 ounce baby boy. This is the first "Refuge baby" since 1982.

An informal meeting of the local land resource managers was held at the Fish and Wildlife Service bunkhouse on December 29th. Despite the holiday season, the meeting was well attended. Fourteen people representing ten agencies and/or organizations were present. Refuge Manager Ron Hood, and Park Superintendent Ray Bane sponsored the

meeting and led the discussions. A wide range of topics were discussed. Everyone agreed that the meeting was extremely useful and should be perpetuated. A quarterly format was agreed to and meeting dates set for 1988. Meeting will be on the last Tuesday of the months of April, July and October.

4. Credits

Arment	Sections B.; E. 2; H. 20, 21; I. 7; J. 2, 3; and editing.
Collins	Section I. 6, typing, editing and compiling.
Hood	Introduction, Sections A.; D. 1, 2, 4; E. 1, 5; F. 12; H. 6, 15; I. 5.; J. 1, 3 and editing.
Mumma	Section H. 8, 10, 11, 13.
Payne	Sections C.; E. 6.; F. 1, 2, 6; G. 6, 8, 9, 10.; H. 8, 10, 11, 13, 17; J. 3. and editing.
Savery	Sections E. 3, 4; H. 1, 9; I. 1, 2, 3, and editing.
Wilk, R.	Sections D. 5; G. 1, 3, 4, 5, 7, 14; I. 6 and editing.
King Salmon Fishery Assistance Office	Section G. 9.

Photograph credits:

CRA	C. Randall Arment
REH	Ronald E. Hood
DDM	Dwight "Moose" Mumma
JFP	John F. Payne
JES	Jim Savery
JWS	John W. Solberg
KIW	Karen I. Wilk
RJW	Randall J. Wilk
FWS	Photographer unknown
USGS	U.S. Geological Survey

RECORD OF DECISION
BECHAROF NATIONAL WILDLIFE REFUGE
Comprehensive Conservation Plan,
Environment Impact Statement, and Wilderness Review


This Record of Decision (ROD) is based upon the Final Comprehensive Conservation Plan, Environmental Impact Statement, and Wilderness Review (CCP) for the Becharof National Wildlife Refuge (NWR) dated April, 1985. It also considers the comments from the public received during the public review period on the draft CCP and the comments received on the final CCP. The CCP described five alternatives for long range management of the refuge including one that would continue current management (Alternative A, the No-Action Alternative). The other four alternatives (Alternative B, The Preferred Alternative, Alternative C, Alternative D, and Alternative E) cover a broad spectrum of management emphasis ranging from maximum to minimum use of refuge resources.

Alternatives A and B offer the highest degree of resource protection; however, Alternative B provides the greatest opportunity for achieving the Alaska National Interest Lands Conservation Act (ANILCA) purposes, balancing conservation of fish and wildlife habitats and populations without precluding opportunities for compatible oil and gas exploration at a later date.

It is, therefore, my decision to select Alternative B, the Preferred Alternative, as described in the Becharof NWR CCP, for implementation with the following modification. Appendix A (attached) further clarifies certain aspects of the Becharof NWR CCP, especially as they relate to the Service's relationship with the State of Alaska. The determination of impacts on subsistence is found in Section IX of the CCP and is in accordance with Chapter 810 of ANILCA. In order to implement some aspects of this ROD, the Service will commence preparation of regulations governing resource protection on Becharof Refuge for public review. The regulations will be published in a proposed form and public hearings will be conducted in the vicinity of the refuge to solicit public comment prior to their finalization.

AUG 1 1985

Date


Regional Director

Attachments:

Appendix - Clarification of issues raised by the State of Alaska

APPENDIX
To the Record of Decision for the
Becharof National Wildlife Refuge (NWR)
Comprehensive Conservation Plan (CCP)

To address the State of Alaska's concerns about the final Becharof NWR CCP. The following clarifications are hereby made a part of the Record of Decision.

Oil and Gas Exploration

Oil and gas exploration may be allowed in the minimal management area in the northwestern and southwestern part of the refuge (see attached map 1) under three conditions;

- 1.) Applicants must indicate a need to explore on refuge lands to fully assess the potential of off-refuge oil and gas resources. The continuation or discontinuation of this exploration program will be determined by the public report discussed in item #3 below.
- 2.) Seismic data obtained on refuge lands or other information relating to oil and gas potential obtained as a result of such exploration will be made available to the U.S. Fish and Wildlife Service and other Department of Interior agencies. Data will be used by the Department of the Interior for land management decisions and for the purposes described in Section 1008 of the Alaska National Interest Lands Conservation Act. Data may, upon request, be disclosed to the Congress and any committee or subcommittee of the Congress evaluating the refuge or refuge resources. The data also may be used in the event of litigation concerning resource values.
- 3.) The U.S. Fish and Wildlife Service, in conjunction with other Department of Interior agencies, will prepare additional studies investigating the oil and gas potential as well as national need to develop such resources. A public report will be prepared within two years after issuance of this Record of Decision. This report will include the following;
 - a.) a geological and geophysical assessment; including a high, moderate and low potential map;
 - b.) a description of potential development scenarios and an engineering analyses;
 - c.) an economic assessment discussing the feasibility of developing in place resources; national need and present viability of development will be addressed.

Decisions related to the future need for oil and gas exploration and leasing on Becharof NWR will be made at that time.

Wilderness

As required under Section 1317 of ANILCA, the Service studied all of the non-wilderness lands in the refuge and made recommendations, as part of the CCP, regarding areas considered suitable for wilderness designation. Each alternative identified lands suitable for wilderness designation. These suitable lands constitute the Service's wilderness proposals associated with each alternative. Opportunities were provided for the public to comment on the Service's proposals in the draft plan, including a public hearing in Anchorage. The Service's new preferred Alternative B includes a well-defined wilderness proposal that reflects public input received on the areas identified as suitable wilderness in the draft CCP.

One could infer from the draft plan that the areas suitable for wilderness designation would constitute the Service's wilderness proposal and in fact that was clearly stated in all public meetings. We do not believe that the actions taken by the Service justify the need for a new wilderness proposal review process. The public was given 60 days, not 30 days, to comment on the Final CCP, including the wilderness proposal. The public will have additional opportunities to provide input as the Secretary, President, and Congress review the wilderness proposal.

The Bristol Bay Native Corporation (BBNC) noted that the Service's wilderness proposal was not included in the Bristol Bay Cooperative Management Plan and therefore was not sanctioned. However, the BBCMP and the Bristol Bay Regional Management Plan specifically avoid making recommendations on additional wilderness proposals, and state that the Fish and Wildlife Service will review non-wilderness refuge lands for possible addition to the National Wilderness Preservation System as part of its refuge comprehensive conservation planning process.

We believe the Big Creek area has values that merit wilderness designation such as important salmon spawning areas, and key moose, caribou and brown bear habitats. The Granite Peaks area have excellent scenic qualities and are a key brown bear denning area. The Gertrude Creek drainage has a significant population of rainbow trout.

Access

The Service will allow all traditional modes of access when utilized for subsistence activities under all management classifications including Congressionally designated wilderness areas. Service regulations prohibit the use of off-road vehicles ("other motorized vehicles") on refuges except in designated areas. We recognize the historic use of off-road vehicles in the Big Creek area and will proceed with the regulatory process to designate this area for off-road vehicle use.

The State noted that there are additional inconsistencies throughout the plan, but did not specify where. We will work with the State to clarify any specific inconsistencies that may be identified.

Land Status

We recognize the presence of non-federal lands within the boundary of Becharof NWR (see pages 68-69 of the CCP), and have stated that classifications and associated management directions applies only to refuge or Service lands.

Fish and Wildlife Management Techniques

The options to use the best fisheries and wildlife management techniques will remain available to both the State and the Service subject to their compatibility with refuge purposes. There is a discrepancy between Tables 18 and 19 in the CCP as relates to certain techniques of wildlife management.

Table 19 currently indicates, wildlife stocking, pest control, disease prevention and control generally would not be permitted in the refuge except in special conditions; predator control may be permitted where biologically justified. Table 18 is incorrect. The Service recognizes the Master Memorandum of Understanding between the Alaska Department of Fish and Game and the Service relating to fish and wildlife management relationships.

Fisheries Enhancement

Fisheries improvement activities may be permitted in special situations with cooperative agreements, subject to compatibility with refuge purposes.

Cabins and Support Facilities

We continue to support the position described in the Becharof Final CCP/EIS which states the following;

Section 304(d) of ANILCA mandates that the Secretary shall permit the exercise of valid commercial fishing rights or privileges obtained pursuant to the existing law unless he finds their exercise to be inconsistent with the purposes of a refuge. Prior to 1979 there were no onshore commercial fishing support facilities on lands now part of Becharof Refuge. To ensure that the level of use remains the same as at the time of creation of the refuge, the Service is restricting development of new facilities. Because there are no valid pre-ANILCA commercial fishing rights, this prohibition is not contrary to Section 304(d).

According to Section 1303 of ANILCA, the construction of new cabins for private recreational use on Becharof Refuge is prohibited. Non-transferable, five-year special use permits may be issued by the Service for a new cabin if a determination is made that the proposed use, construction, and maintenance of the cabin is compatible with the purposes for which the refuge was established, and that the use of the cabin is either directly related to the administration of the refuge or is necessary to provide for the continuation of an ongoing activity or use.

Navigable Waters and the Water Column

The Service acknowledges State ownership of the water column and submerged lands under navigable waters in the refuge. The lands and waters are not the subject of the CCP or the ROD. The Service will acknowledge all adjudicated claims to lands or waters. The Service may seek, where appropriate, cooperative agreements on State waters within or adjacent to the refuge.

RS 2477 Rights-of-Way

The State and FWS will be developing mutually acceptable language to address RS 2477 claims in national wildlife refuges. FWS currently has the following policy:

The FWS will work cooperatively with the State and other adjacent landowners to identify all rights-of-way claims made pursuant to RS 2477 within the Becharof NWR for administrative purposes only. The validity of any claims can only be determined in a court of competent jurisdiction.

This policy is currently undergoing joint review and substitute language may be proposed

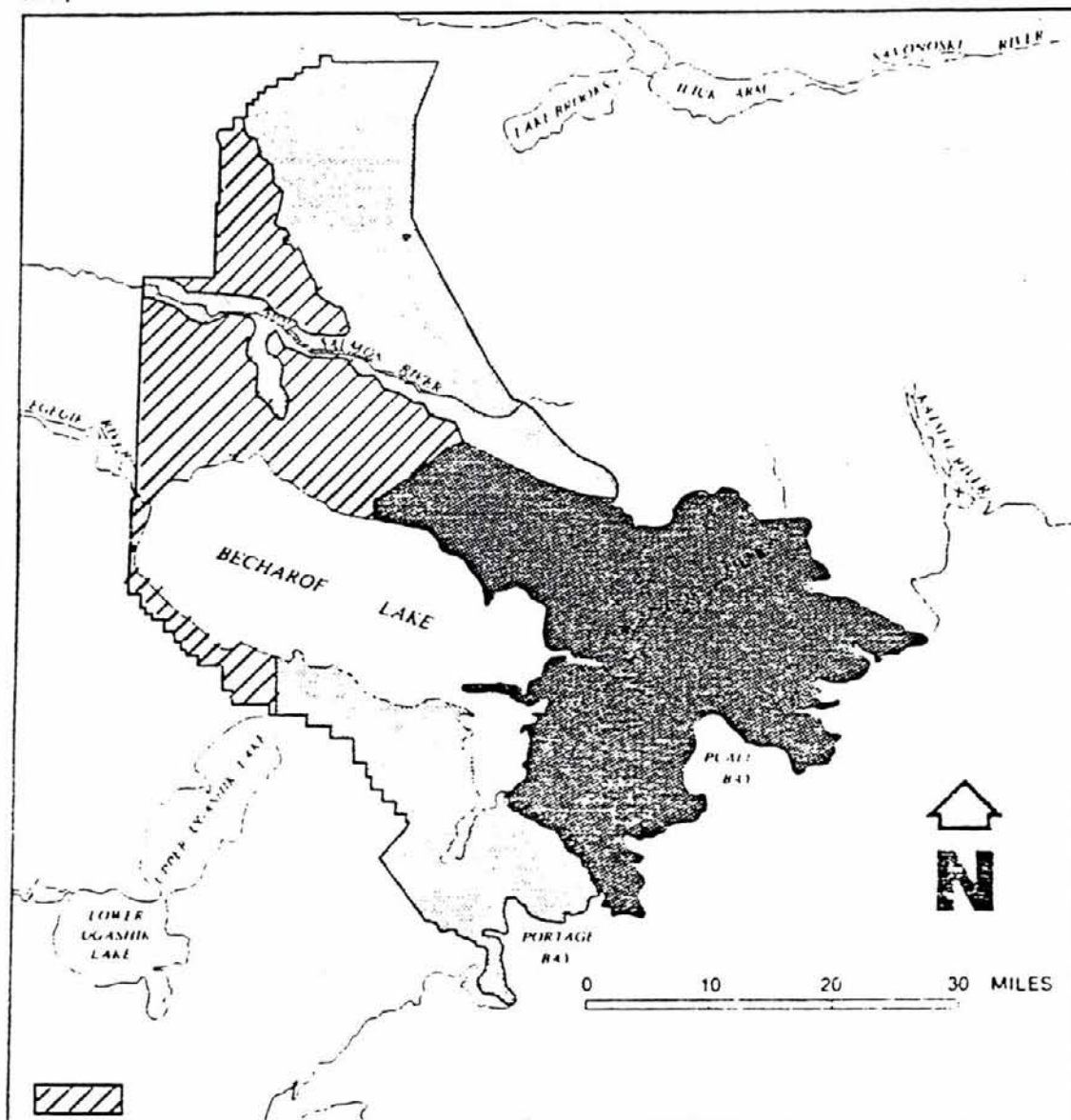
17(b) Easements, Non-exclusive Use Easements and Native Allotments

The Becharof National Wildlife Comprehensive Conservation Plan does not provide policy guidance for the management of 17(b) easements, the use of non-exclusive use easements, or the resolution of conflicts with Native allotments when the allotment conflicts with public use values. The FWS will address these management concerns as part of the development of a land protection plan and prior to taking specific action affecting the use of 17(b) easements or areas where public use areas conflict with private inholdings. The State of Alaska and other interested parties will be involved in the development of these policies.

Tide and Submerged Lands

We recognize the State's ownership and management authority over all tide and submerged lands in the refuge conveyed to the State pursuant to Section 6(m) of the Alaska Statehood Act.

Map No. 1



Areas that may be available for oil and gas exploration activities

RECORD OF DECISION
ALASKA PENINSULA NATIONAL WILDLIFE REFUGE
Comprehensive Conservation Plan,
Environmental Impact Statement, and Wilderness Review

This Record of Decision is based upon the Final Comprehensive Conservation Plan/Environmental Impact Statement and Wilderness Review (Plan) for the Alaska Peninsula National Wildlife Refuge dated April, 1985. It also considers the comments from the public received during the public review period on the draft Plan and the comments received on the Final Plan. The final document described five alternatives for long range management of the refuge, including one that would continue current management (Alternative A, the No-Action Alternative). The other four alternatives [Alternative B (the Preferred Alternative), Alternative C, Alternative D, and Alternative E] cover a broad spectrum of management emphasis.

As a result of public comments on the Final Alaska Peninsula Plan and new information regarding oil and gas potential within the refuge, the Service has reconsidered the Preferred Alternative presented in the the Final Plan. On that basis, it is my decision to modify the Preferred Alternative, Alternative B.

The modification, shown in attached Figure 1, is based on a combination of Alternatives B (found on pages 164-169) and E (found on pages 180-185) described in the Final Alaska Peninsula Plan. The major difference between this modification and the Preferred Alternative in the Final Plan is a reduction in the amount of land proposed for wilderness designation. While the modification reduces the amount of land proposed for wilderness designation from 1.9 million acres to approximately 640,000 acres, it places the land removed from the Service's wilderness recommendation into the minimal management category.

This Record of Decision will implement the Comprehensive Conservation Plan with the attached changes. The wilderness review will not be final until a Supplemental Environmental Impact Statement is completed, including an opportunity for public review and comment.

To ensure compliance with Section 1008 of Alaska National Interest Lands Conservation Act (Lands Act) and the Refuge Administration Act, the Service will do detailed oil and gas compatibility analyses of those areas redesignated to minimal management by this record of decision; these final compatibility determinations will not be made until the national need for oil and gas from refuge lands has been established by consulting with the Department of Energy.

If the analyses and resulting compatibility determination indicate that there are areas where oil and gas development and production are compatible with the purposes for which the refuge was established, and if it were determined to be in the national interest to open these lands to oil and gas leasing, the Plan would be revised. Affected areas would be placed in moderate or intensive management categories. Such a plan revision would be subject to the requirements of the National Environmental Policy Act, and would entail full public participation.

Attachment A discusses current Service oil and gas policy and the new oil and gas potential information that was provided to the Service in June of 1987. Attachment B presents revised wording and an updated Management Categories table. Attachment C incorporates revised wording for several sections of the Alaska Peninsula Plan; these changes address the concerns of the State of Alaska and were negotiated in the interim between the Final Plan and this Record of Decision. The determination of impacts on subsistence is found in Chapter IX of the Plan and is in accordance with Section 810 of the Lands Act. In order to implement some aspects of this Record of Decision, the Service may prepare regulations governing resource protection on Alaska Peninsula Refuge for public review. If this occurs, the regulations will be published in a proposed form and public hearings will be conducted in the vicinity of the refuge to solicit public comment prior to their finalization.

The Service believes that the requirements of the National Environmental Policy Act needed to implement the Plan, have been met by this Record of Decision. The wilderness review will also meet National Environmental Policy Act requirements through the completion of a supplemental Environmental Impact Statement. Although the Alaska Land Use Council did not formally endorse this Plan, the statutory December 2, 1987, deadline for the Alaska Peninsula Plan compels me to sign this Record of Decision.

12/2/87

Date

Walter D. Stieglitz

Regional Director

Attachments

LEGEND

















-  NATIONAL WILDLIFE REFUGE BOUNDARY
-  USFWS LAND - MINIMAL MANAGEMENT
-  WILDERNESS AREA
-  STATE LAND SELECTED
-  STATE LAND SELECTED CONFLICTING WITH NATIVE SELECTIONS
-  STATE LAND CONVEYED
-  STATE SUBMERGED LAND JURISDICTION
-  MINING INTERESTS WITHIN SECTION
-  NATIVE LAND SELECTED
-  NATIVE LAND SELECTED - SUBSURFACE ONLY
-  NATIVE LAND CONVEYED - SUBSURFACE ONLY
-  NATIVE LAND CONVEYED - SURFACE AND SUBSURFACE
-  ONE OR MORE SMALL PARCELS CLAIMED OR SELECTED WITHIN SECTION
-  ONE OR MORE SMALL PARCELS CONVEYED WITHIN SECTION
-  USFWS - WILDERNESS RECOMMENDATION
-  ENHANCED PUBLIC USE

Figure 1. Modified Preferred Alternative (includes land status and proposed wilderness areas).

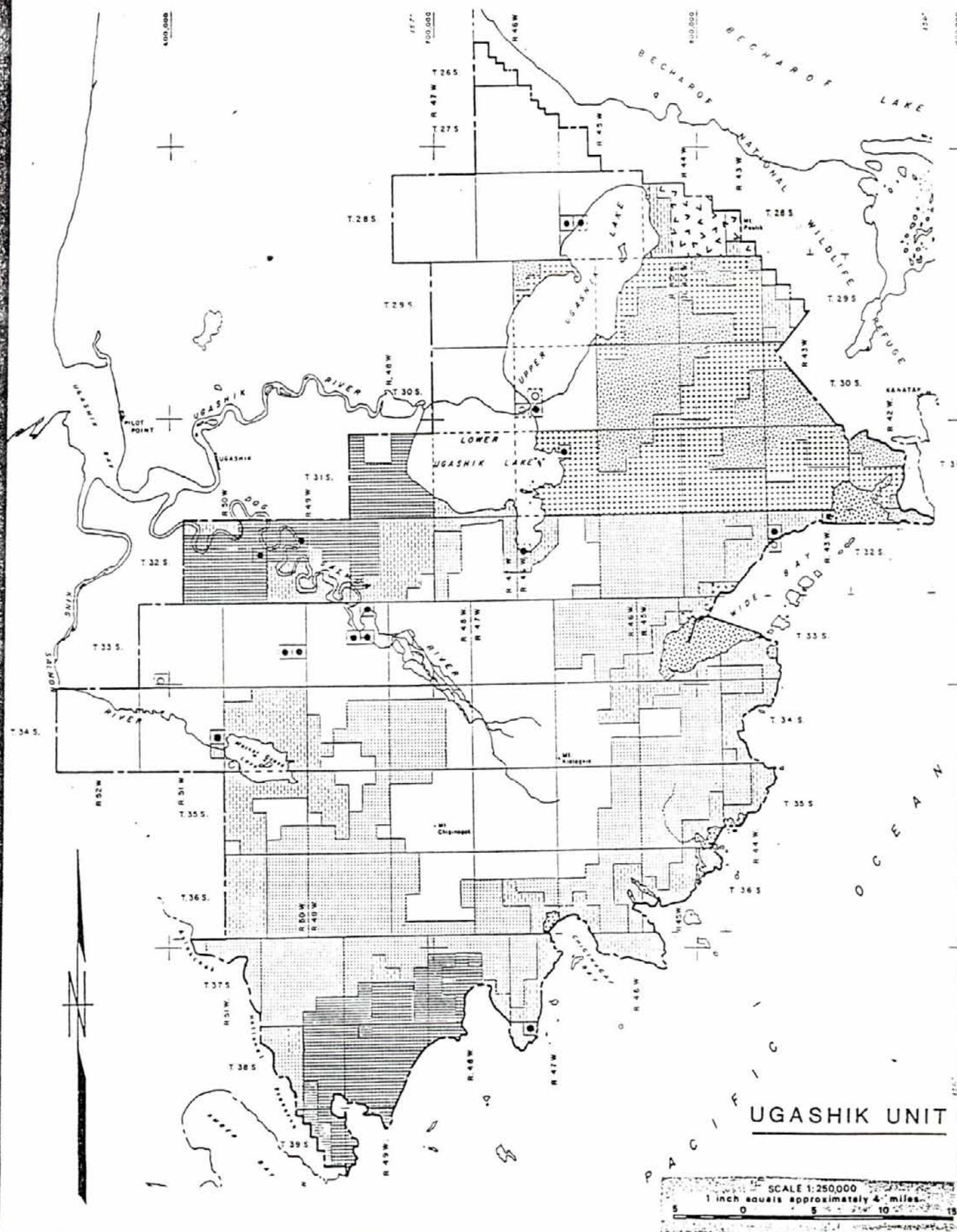


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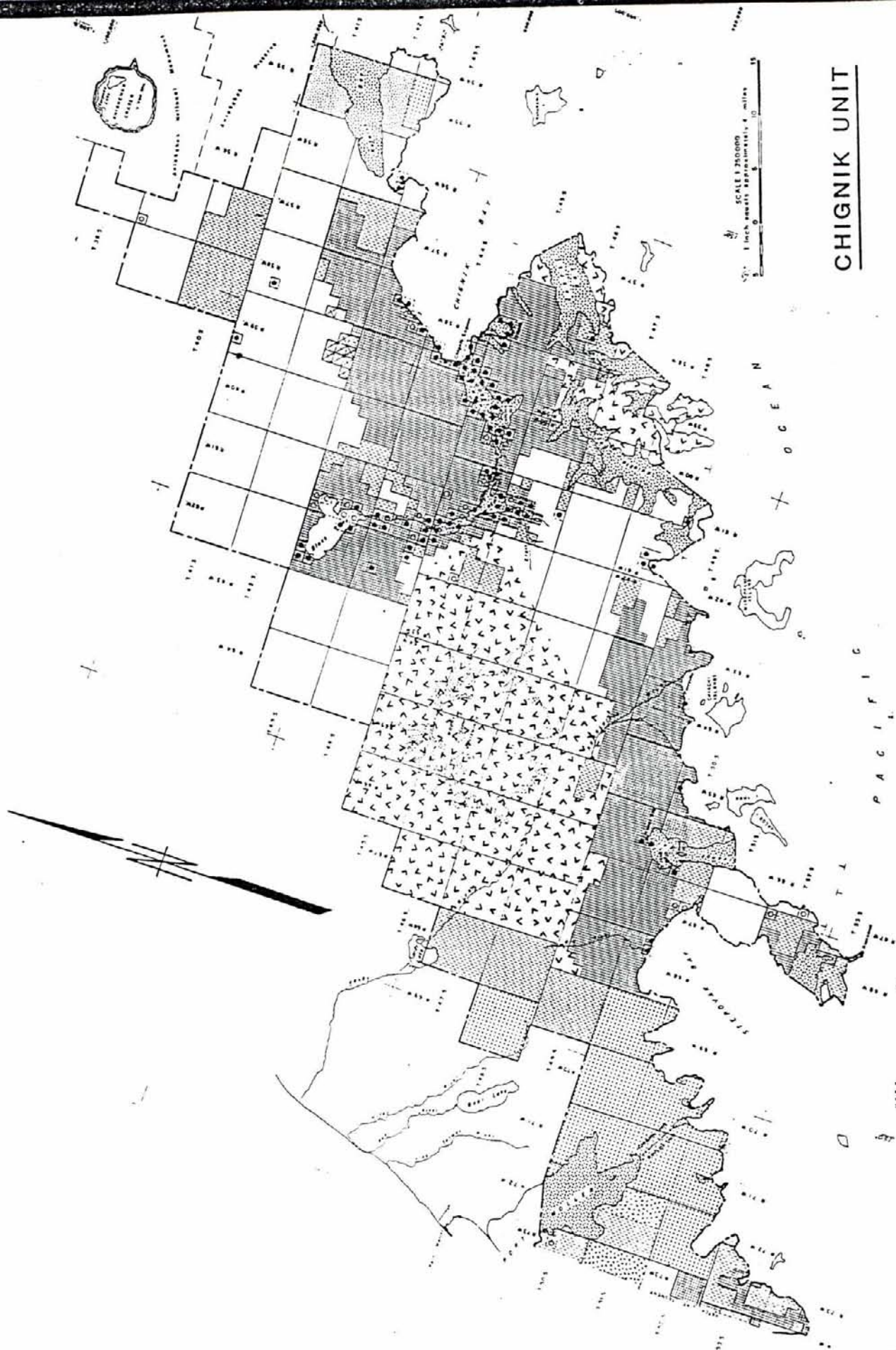
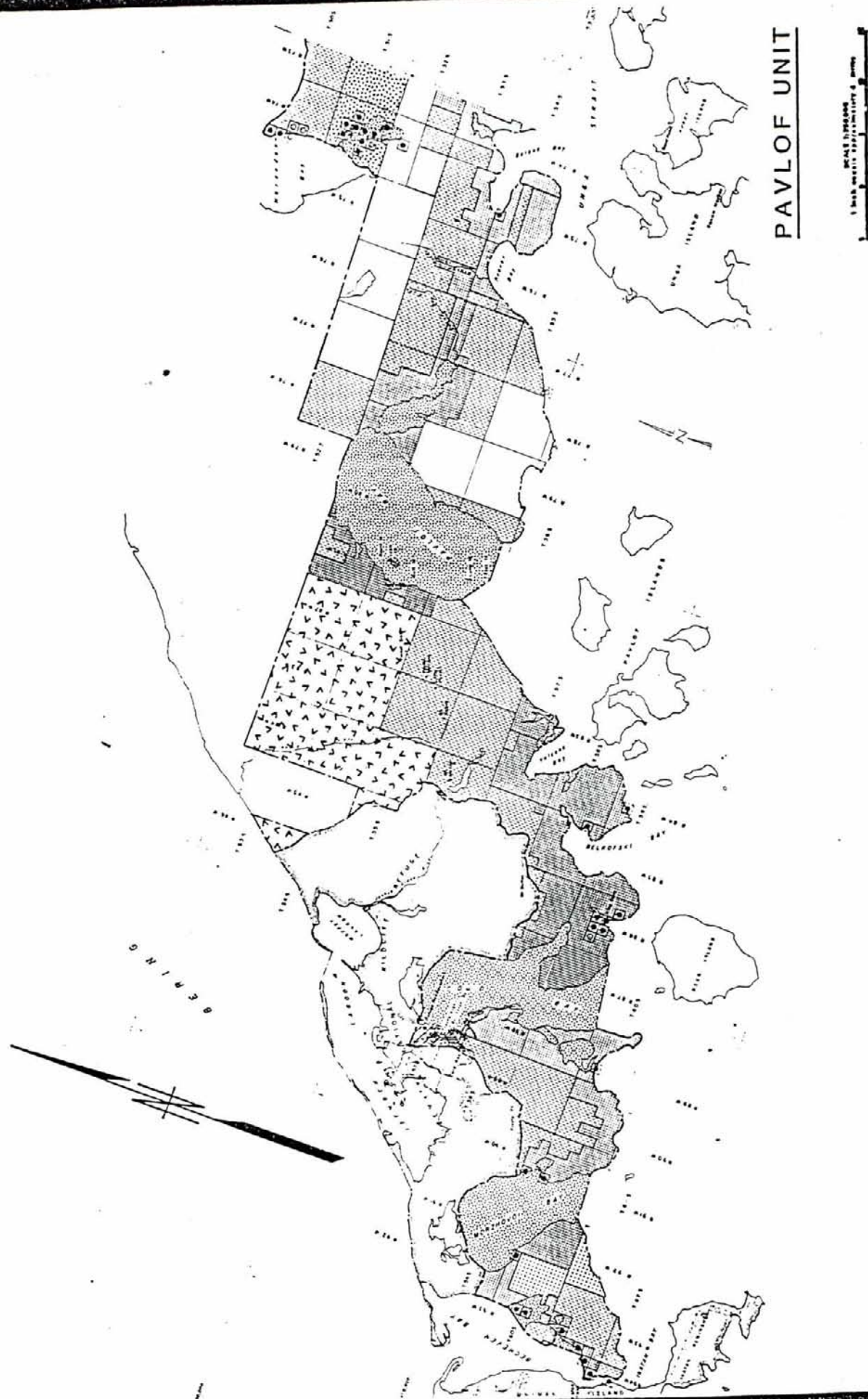


Figure 1. Modified Preferred Alternative (Includes land status and proposed wilderness areas).



ATTACHMENT A
To the Record of Decision for the
Alaska Peninsula National Wildlife Refuge
Comprehensive Conservation Plan

To address provisions of Section 1008 of the Alaska National Interest Lands Conservation Act (Lands Act) in the Final Alaska Peninsula Refuge Plan, the following clarifications of current Service policy are hereby made a part of the Record of Decision and replace the common management direction found on page 154.

Oil and Gas Exploration

Oil and gas exploration includes surface geology studies, subsurface core sampling, seismic exploration, and other geological and geophysical exploration. All oil and gas exploration will require a Special Use Permit with site-specific stipulations designed to ensure compatibility with the refuge purposes and consistency with management objectives set forth in the Final Plan.

Seismic exploration could take place in minimal management areas, subject to National Environmental Policy Act requirements and a Service determination that any proposals for surface disturbing exploration could be made compatible with the purposes of the refuge. In areas which are designated wilderness, seismic exploration, core sampling, and other exploratory activities involving mechanized surface transportation or motorized equipment will not be allowed unless conducted by an Interior Department agency (or contractor) in accordance with Section 1010 of the Lands Act and the 1964 Wilderness Act.

Oil and Gas Leasing

According to current Service policy, oil and gas leasing will not be permitted on the refuge until completion of 1) an assessment of potential; 2) a national interest determination; and 3) a compatibility determination. An assessment of the oil and gas potential of the refuge and the viability of development was completed and made available to the Service in June of 1987.

According to the assessment of potential provided by the Bureau of Land Management, most of the Pacific side of the refuge from the Becharof Refuge boundary to Ivanof Bay has high oil and gas potential (Figure 2). The Pacific side from Ivanof Bay to the south boundary of the refuge has moderate to low potential.

Upon completion of the assessment of potential, the Secretary of the Interior sent a letter, dated June 16, 1987, requesting the Secretary of Energy's view regarding the national interest in developing oil and gas on refuge lands. A response has not yet been received.

ATTACHMENT A
To the Record of Decision for the
Alaska Peninsula National Wildlife Refuge
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Seismic exploration could take place in minimal management areas, subject to National Environmental Policy Act requirements and a Service determination that any proposals for surface disturbing exploration could be made compatible with the purposes of the refuge. In areas which are designated wilderness, seismic exploration, core sampling, and other exploratory activities involving mechanized surface transportation or motorized equipment will not be allowed unless conducted by an Interior Department agency (or contractor) in accordance with Section 1010 of the Lands Act and the 1964 Wilderness Act.

Oil and Gas Leasing

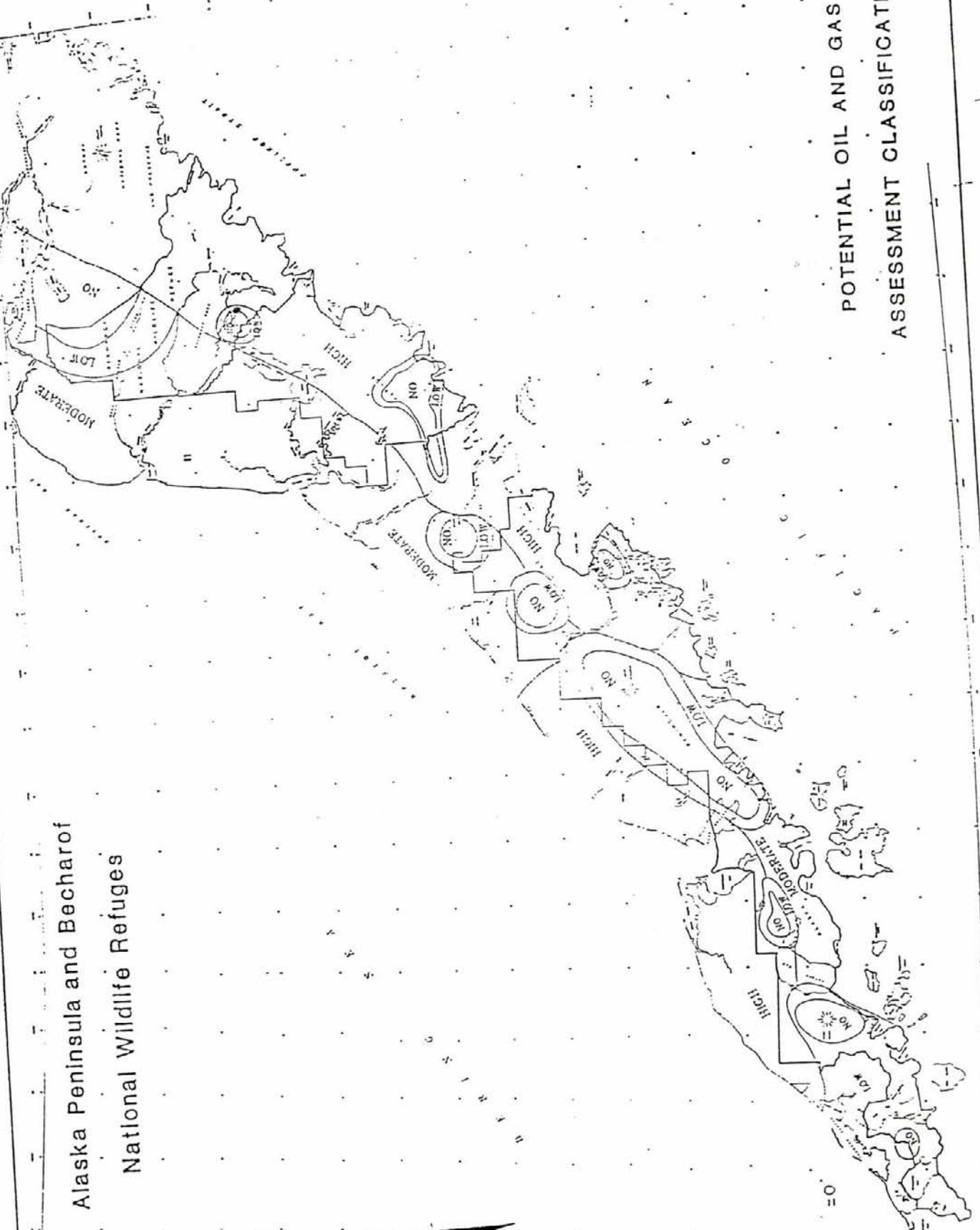
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Alaska Peninsula and Becharof
National Wildlife Refuges

POTENTIAL OIL AND GAS
ASSESSMENT CLASSIFICATION



Throughout this process of preparing the Plan, assessing oil and gas potential, and considering the national interest, the Service will:

seek the views of the Governor of the State of Alaska, Alaskan local governments, Native Regional and Village Corporations, the Alaska Land Use Council, representatives of the oil and gas industry, conservation groups, and other interested groups and individuals in determining which land should be studied and/or leased for the exploration and development of oil and gas, [the Lands Act, section 1008(b)(2)].

After having considered the national interest in producing oil and gas, the Department will determine if oil and gas leasing and development in any portion of the refuge would be compatible with the purposes for which Alaska Peninsula Refuge was established. These purposes were defined by the Alaska National Interest Lands Conservation Act (Alaska Lands Act) and are listed in the summary chapter.

The process described above will not be completed until after this record of decision is issued. A determination that oil and gas development would be in the national interest and would be compatible with refuge purposes could cause this plan to be modified. If this occurs, the Service would revise the plan in compliance with the National Environmental Policy Act, providing opportunities for public involvement.

In minimal management areas where: 1) it is later determined that it would be in the national interest to open those lands to oil and gas leasing and development, and 2) it is also determined that oil and gas development can be made compatible with the purposes for which the refuge was established, the area would be reclassified (i.e., taken out of minimal management and placed in moderate or intensive management) before leasing is permitted. This would require an amendment of the plan, including public review of the proposed amendment.

ATTACHMENT B
To the Record of Decision for the
Alaska Peninsula National Wildlife Refuge
Comprehensive Conservation Plan

To address concerns about the Final Alaska Peninsula Refuge Plan raised by the State of Alaska, the following revisions or additions to the Management Categories on pages 123, 133, and 134 are hereby made a part of the Alaska Peninsula Record of Decision. Table 1 reflects current wording devised in consultation with the State of Alaska and replaces Tables 17 and 18 on pages 124-132 of the Final Plan.

MANAGEMENT CATEGORIES

According to the Lands Act the comprehensive plan for the Alaska Peninsula Refuge must: (1) designate areas within the refuge according to their respective resources and values, (2) specify management programs to conserve fish and wildlife resources in each area, and (3) specify uses within each area that may be compatible with refuge purposes. Comprehensive planning must also comply with the National Environmental Policy Act, which requires that reasonable alternatives be considered.

To develop management alternatives that meet the requirements of ANILCA six management categories were identified for the Alaska Peninsula Refuge. Each management category provides overall direction for managing a given area in light of its resources and existing and potential uses. Table 1 summarizes what management activities, public uses and economic uses would be permitted in each management category and under what conditions. All references to access on the refuge are subject to the provisions of Sections 811 and 1110(a) of the Lands Act (see the "public access common management direction").

The six management categories used in developing management alternatives for the Alaska Peninsula Refuge are as follows:

Intensive Management (I)

This category is designed to accommodate compatible economic development and a wide variety of resource management techniques while protecting key refuge resource values. Resource management activities will focus on ensuring that fish and wildlife populations and their habitats are afforded adequate short-term and long-term protection. Natural processes may be modified and the influence of human activities may be evident in intensive management areas. Permitted management practices allowed under this category may include highly manipulative techniques, such as mechanical manipulation of vegetation, construction of artificial impoundments and dikes, and the construction of permanent fish weirs and hatcheries. Public use facilities, administrative sites, transmission lines, pipelines, and transportation systems may be permitted. Oil and gas studies may be permitted subject to site-specific compatibility determinations. Sand and gravel removal also may be permitted, subject to site-specific stipulations to minimize impacts to fish and wildlife, under this category. Increased public use may be encouraged in

Table 1. Summary of management activities, public uses, and economic uses permitted in management categories.

HABITAT/POPULATION MANAGEMENT ACTIVITIES						
	Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
Research and Management Studies Collection of data necessary for refuge management decisions or to further science. Priority will be given to studies that contribute to the use and management of native fish and wildlife populations and their habitats. Studies may be conducted by the Service, ADF&G, or by other researchers under Service guidance.	Will be routinely practiced as long as the studies do not conflict with refuge purposes	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Ecological Monitoring Activities or studies that examine how fish and wildlife and their habitats are changing due to either natural or human causes.	Will be routinely practiced	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Fish and Wildlife Inventories Using management techniques to obtain information on species distributions, habitats, and population dynamics to meet refuge objectives.	Will be routinely practiced	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Marking and Banding To contribute information on population trends, survival, and movements necessary for the overall management of the species. Cooperation with ADF&G and other institutions will be stressed.	Will be routinely practiced as long as the activities do not conflict with refuge purposes	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)

Notes: A site-specific compatibility determination will be required for all permitted activities or uses.
Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited.
Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

ble 1. Summary of management activities, public uses, and economic uses permitted in management categories (continued2).

HABITAT/POPULATION MANAGEMENT ACTIVITIES						
	Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
Habitat Improvements						
Mechanical manipulation, such as large scale tree crushing, and water diversions, impoundments, etc.	May be permitted on a case-by-case basis subject to provisions of NEPA and a compatibility determination	Same as (I)	May be considered subject to appropriate plan revision	Not permitted	Not permitted	Same as (I)
Prescribed burning	May be permitted on a case-by-case basis subject to provisions of NEPA, a compatibility determination, and an approved fire management plan	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Minor habitat improvements including nesting devices, temporary actions to protect habitat, beaver dam removal, etc.	May be permitted subject to provisions of NEPA and a compatibility determination	Same as (I)	Same as (I)	Same as (I)	Same as (I), subject to the minimal tool concept	Same as (I)
Timber Management						
May of maintaining a sustained yield for long-range subsistence needs, for house logs and firewood. May entail designation of areas for cutting and the issue of special use permits.	May be permitted, subject to reasonable regulations	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Not applicable to Ugashik Lakes
Exotic Wildlife Species Introduction	Not permitted	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Introduction of species not native to North America.						
Native Wildlife Species Introduction	May be permitted where biologically justified and implemented in accordance with the NEPA process and a compatibility determination	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Introduction of species native to North America outside their original range.						

Notes: A site-specific compatibility determination will be required for all permitted activities or uses.
Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited.
Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

1. Summary of management activities, public uses, and economic uses permitted in management categories (continued).

AT/POPULATION MANAGEMENT ACTIVITIES						
	Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
<u>Life Stocking</u> restocking, augmenting, or maintaining the species within their original breed- range. Specific policies apply for one wildlife groups.	May be permitted	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
<u>Control</u> control or removal of pests that affect human health and property or vital of native fish and wildlife species.	Normally will not occur except to control exotic species; native species may be controlled where severe resource danger is likely or where public health or safety is jeopardized	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
<u>Predator Control</u> location or removal of predators to favor other wildlife populations or to protect reintroduced, threatened or endangered species.	May be permitted where bio- logically justified, sub- ject to the provisions of NEPA and a compatibility determination	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
<u>Disease Prevention and Control</u> management practices directed at controlling pathogens that threaten fish, wildlife, and people. Includes rabies control and parasite control.	Normally will not occur except where severe resource damage is likely or where public health or safety is jeopardized	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
<u>Fire Management</u> actions taken to suppress wild fires, in accordance with the interagency fire management plan.	Natural fires may be permitted to burn when the fire danger is low, except where they threaten human life and property or reach excessive size; prescribed burning will be used for hazardous fuel reduction or restoration of natural vegetation patterns	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Not applicable to Ugashik Lakes

Notes: A site-specific compatibility determination will be required for all permitted activities or uses.
Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited.
Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

Summary of management activities, public uses, and economic uses permitted in management categories (continued).

Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
<p>ality and quantity of water quality and quantity to the Service to propose mitigation of effects that originate on or off the</p>	<p>Will be routinely practiced Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>
<p>ative Facilities to be built for administrative use, y to facilitate field work is; available for emergency use public.</p>	<p>Permitted Same as (I)</p>	<p>Same as (I)</p>	<p>May be built if needed for the protection of public health and safety</p>	<p>Same as (IV)</p>	<p>Not applicable to Ugashik Lakes</p>
<p>ES DEVELOPMENT</p>	<p>on of data and information on fish populations and their habitats, modification of fish habitat, fish hatchery programs and related activities, regulation, supplemental production, and other activities designed to meet management goals and objectives.</p>				
<p>Structure or installation of a fish or removal of a barrier (e.g., beaver or other activity to enable fish to t a natural or man-made barrier and inaccessible habitat; the fish pass may or temporary or permanent.</p>	<p>May be permitted on a case-by-case basis subject to the provisions of NEPA and a compatibility determination</p>	<p>Same as (I)</p>	<p>Same as (I) except permanent facilities will normally not be permitted</p>	<p>Same as (IV)</p>	<p>Same as (IV)</p>
<p>Structure and installation of an fish counting facility. Weirs may be permanent or temporary. Permanent or temporary in-stream anchoring while temporary weirs do not. The water structure for both types of could be removed after the season</p>	<p>May be permitted on a case-by-case basis subject to provisions of NEPA and a compatibility determination</p>	<p>Same as (I)</p>	<p>Same as (I) except permanent facilities will not normally be permitted</p>	<p>Same as (IV)</p>	<p>Same as (I)</p>
<p>Channels struction and maintenance of an al gravel laden channel where quality and quantity is controlled litate spawning by fish.</p>	<p>May be permitted on a case-by-case basis subject to provisions of NEPA and a compatibility determination</p>	<p>Same as (I)</p>	<p>Same as (I) except permanent facilities will normally not be permitted</p>	<p>Same as (IV)</p>	<p>Same as (IV)</p>

es: A site-specific compatibility determination will be required for all permitted activities or uses.
Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited.
Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

Summary of management activities, public uses, and economic uses permitted in management categories (continued).

Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
<p><u>Habitat Modifications</u></p> <p>May be permitted on a case-by-case basis subject to NEPA provisions and a compatibility determination</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I) except permanent facilities will normally not be permitted</p>	<p>Same as (IV)</p>	<p>Same as (I)</p>
<p><u>Habitat Modifications</u></p> <p>May be permitted on a case-by-case basis subject to NEPA provisions and a compatibility determination</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I) except permanent facilities will normally not be permitted</p>	<p>Same as (IV)</p>	<p>Same as (I)</p>
<p><u>Fish Introductions</u></p> <p>May be permitted on a case-by-case basis</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>
<p><u>Fish Introductions</u></p> <p>Not permitted</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>
<p><u>Rearing Ponds</u></p> <p>May be permitted on a case-by-case basis subject to the provisions of NEPA and a compatibility determination</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I)</p>
<p><u>Hatcheries</u></p> <p>May be permitted on a case-by-case basis subject to the provisions of NEPA and a compatibility determination</p>	<p>Same as (I)</p>	<p>Same as (I)</p>	<p>Same as (I) except permanent facilities will normally not be permitted</p>	<p>Same as (IV)</p>	<p>Same as (I)</p>

Notes: A site-specific compatibility determination will be required for all permitted activities or uses. Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited. Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

1. Summary of management activities, public uses, and economic uses permitted in management categories (continued7).

Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
Permitted, subject to reasonable regulation and the provisions of Section 811 of ANILCA	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
<p>of snowmobiles, motorboats, and other surface transportation traditionally used for subsistence purposes.</p> <p>Permitted; access may be restricted at certain times for resource protection or public safety</p> <p>Permitted for traditional activities, subject to reasonable regulation</p> <p>Permitted for traditional activities, subject to reasonable regulation</p> <p>Permitted for traditional activities, subject to reasonable regulation</p> <p>May be permitted, but only by special use permit</p>	<p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p>	<p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p>	<p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p>	<p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p>	<p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p>

Notes: A site-specific compatibility determination will be required for all permitted activities or uses. Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited. Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

Summary of management activities, public uses, and economic uses permitted in management categories (continued).

	Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
CESS (Restrictions subject to Sections B11 and 110(n) of MLLCA)						
such machines weighing under 1,000 pounds an overall width of less than 8 feet, driven by tracks and steered by a contact with the snow.	Permitted for traditional activities, on or off designated trails, in periods of adequate snow cover, subject to reasonable regulation	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
motorized vehicles (e.g., 4s, tracked vehicles, off-road vehicles, airboats and air-cushion boats) are not permitted	Permitted only on designated routes or areas; airboats and air-cushion boats are not permitted	Same as (I)	Not permitted for public use	Same as (III)	Same as (III)	Same as (III)
Fishing and Trapping	Permitted; pertinent state and federal regulations apply	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Camping	Permitted	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Observation	Permitted	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Education and Environmental Education	Facilities and materials may be provided, including pointed nature trails, wildlife/wildland related signs, visitor facilities, and wildlife displays	Materials may be provided; facilities not provided	Same as (II)	Same as (II)	Same as (II)	Same as (II)

Notes: A site-specific compatibility determination will be required for all permitted activities or uses. Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited. Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

Summary of management activities, public uses, and economic uses permitted in management categories (continued).

	Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
<u>ACTIVITIES (subject to provisions of Title XI)</u>						
contact facilities of staffed or unstaffed structures public can obtain information on and its resources.	May be provided	Not provided	Same as (II)	Same as (II)	Same as (II)	Same as (II)
<u>Campsites</u> sites that may include fire shelters, and sanitary facilities.	The Service may provide or permit improved campsites if needed to limit resource degradation	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
<u>Temporary Facilities</u> tent and use of tent platforms, and other temporary facilities present directly related to the taking and wildlife.	May be permitted, subject to reasonable regulations, under the provisions of Section 1316; tent platforms require a special use permit	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
<u>Launch Sites</u> access sites where boats can be launched into lakes and rivers. May vary from clearings to permanent ramps.	May be permitted	Same as (I)	Not permitted	Same as (III)	Same as (III)	Same as (I)
<u>Wildlife</u> restricted routes that are restricted to . . . Not cleared or maintained.	May be provided	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
dedicated, maintained corridors that access for motorized vehicles. asphalt roads, gravel roads, cleared strips.	Not provided; may be permitted subject to Title XI of ANILCA	Same as (I)	Not permitted, except according to the provisions of Title XI of ANILCA	Same as (III)	Same as (III)	Same as (III)
<u>Strips</u> sites that provide access for . . . Includes cleared strips, asphalt construction allowed	Primitive airstrips may be designated; no new construction allowed	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)

Notes: A site-specific compatibility determination will be required for all permitted activities or uses. Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited. Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

1. Summary of management activities, public uses, and economic uses permitted in management categories (continued).

C. FACILITIES (subject to provisions of Title XI)						
	Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
Navigation Aids/Communication Aids/Weather Stations Aids for air and water navigation aids, facilities to provide communication capabilities, facilities for national defense, and facilities for weather, climate, and other research and monitoring.	Permitted on a site-specific basis, subject to reasonable regulations	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
OHIC USES*						
Geological Studies Surface rock collecting, and optical mapping activities for (includes helicopter or fixed-wing access)	May be permitted subject to refuge special use permit conditions	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Sampling Collection of subsurface rock samples using small portable (usually helicopter supported) drill rigs. Does not include statutory drilling for oil and gas.	May be permitted subject to refuge special use permit conditions	Same as (I)	Same as (I)	Not permitted unless conducted by or for a Department of Interior agency under Section 1010 of ANILCA	Same as (IV)	Same as (I)
Geophysical Studies Seismic (Geophysical) Studies Investigation of subsurface rock formations using devices that set off and record vibrations in the earth. Usually involves mechanized surface transportation, but may be helicopter supported.	May be permitted subject to refuge special use permit conditions	Same as (I)	Same as (I)	Same as (I)	Not permitted unless conducted under the provisions of Section 1010 of ANILCA	Same as (I)
Geophysical Studies Computer-supported gravity and magnetic surveys and other minimal impact activities do not require mechanized surface transportation.	May be permitted subject to refuge special use permit conditions	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)

Notes: A site-specific compatibility determination will be required for all permitted activities of management. Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited. Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

Summary of management activities, public uses, and economic uses permitted in management categories (continued 11).

Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
<p><u>Leasing</u> Extraction of oil and gas for purposes. Includes all associated below ground facilities.</p> <p><u>Support Facility</u> Developments necessary to offshore production platform. include pipelines, storage yard, facilities, processing facilities, ops, housing, roads, airstrip, treatment plants.</p> <p><u>Gravel Removal</u> Removal of sand and gravel for commercial</p> <p><u>Electric Power Development</u> Utilities full commercial development (a dam, impoundment area, powerhouse, tailrace, and other facilities).</p> <p><u>Ion Lines/Pipelines</u> Telephone and electrical power lines and gas pipelines, and other related facilities. Does not include facilities associated with on-refuge as development.</p> <p><u>Outfitting, Transporting</u> Guides, outfitters, sport fishing river guides, air-taxi operators, other commercial operators provide services to recreationists on land. Includes all activities of the operator and facilities used by the operator (e.g., tent camps and methods).</p>	<p>May be permitted if compatible with refuge purposes, subject to special use permit</p> <p>Not permitted</p> <p>May be permitted subject to refuge special use permit conditions</p> <p>Not permitted</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p>	<p>Same as (I)</p> <p>Same as (II)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p> <p>Same as (I)</p>	<p>Permitted, subject to provisions of Section 1010 of ANILCA</p> <p>Same as (II)</p> <p>Same as (II)</p> <p>Same as (II)</p> <p>Same as (I)</p> <p>Same as (III)</p> <p>Same as (I)</p>	<p>Same as (IV)</p> <p>Same as (II)</p> <p>Same as (II)</p> <p>Same as (II)</p> <p>Same as (III)</p> <p>Same as (I)</p> <p>Same as (I)</p>	<p>Same as (VI)</p> <p>Same as (II)</p> <p>Same as (II)</p> <p>Same as (II)</p> <p>Same as (III)</p> <p>Same as (I)</p> <p>Same as (I)</p>

Notes:
 1. A site-specific compatibility determination will be required for all permitted activities, or uses.
 2. Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited.
 Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

Table 1. Summary of management activities, public uses, and economic uses permitted in management categories (continued 12).

	Intensive Management (I)	Moderate Management (II)	Minimal Management (III)	Wilderness Management (IV)	Enhanced Public Use Management (V)	Cooperative Management (VI)
MANAGEMENT USES						
Commercial Timber Harvest	May be permitted on a site-specific basis, subject to reasonable regulation.	Same as (I)	Not permitted	Same as (III)	Same as (III)	Same as (III)
Removal of timber from the refuge for commercial purposes, including house logs or firewood.	Not permitted	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Feeding and housing of domesticated animals for commercial purposes.	May be permitted on a case-by-case basis if compatible with refuge purposes.	Not permitted	Same as (II)	Same as (II)	Same as (II)	Same as (II)
Agriculture	May be permitted subject to reasonable regulations in accordance with the provisions of ANILCA.	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Commercial Fishing (Onshore Facilities)	May be permitted subject to reasonable regulations in accordance with the provisions of ANILCA.	Same as (I)	Same as (I)	Same as (I)	Same as (I)	Same as (I)
Includes all land-based sites, activities, and facilities on the refuge (e.g., campsites, cabins, motorized vehicles, landing strips, etc.).						

Notes: A site-specific compatibility determination will be required for all permitted activities or uses. Should management emergencies occur on the refuge, it may be necessary to allow actions which would otherwise be prohibited. Management of activities occurring on navigable waters will be coordinated with appropriate State agencies.

intensive management areas, except in areas where potential conflicts with economic uses may occur.

Moderate Management (II)

Moderate management areas are intended to provide opportunities for public use and limited commercial development, while protecting fish and wildlife populations and habitats. Hunting, fishing and trapping are permitted, subject to regulation. Motorized access for traditional activities would be permitted, subject to reasonable regulations. Public use facilities, such as cabins and campsites, could be provided. Moderate management areas could therefore provide increased opportunities for public use, including hunting, fishing, and trapping. Guiding and outfitting services and related temporary support facilities would be permitted. Other commercial activities that could be permitted, with stipulations to protect fish and wildlife populations and habitats, include oil and gas studies, and commercial timber harvests. Management practices that may be permitted in this category, if compatible with refuge purposes, include mechanical manipulation of vegetation, construction of water impoundments and dikes, and construction of permanent fish weirs and hatcheries. The Service would focus its efforts on monitoring uses and developments to minimize impacts on the area's resource values.

Minimal Management (III)

Management under this category is directed at maintaining the existing conditions of areas that have high fish and wildlife values or other resource values. Minimal management areas are suitable for wilderness designation, although the Service's wilderness proposals do not necessarily include all lands in the minimal management category. Areas proposed for wilderness designation would be placed in minimal management until actually designated by Congress. Opportunities for public use and access would be available for subsistence purposes and for traditional activities such as hunting, fishing, and trapping. Traditional motorized access via floatplanes, snowmachines, and motorboats would be permitted. Guiding and outfitting would be permitted in minimal management areas. Oil and gas studies would be permitted where compatible with refuge purposes. Prescribed burning and minor habitat improvements could be permitted in minimal management areas where compatible with refuge purposes. Fishery development facilities may be built in these areas if they are compatible with the purposes of the refuge and it can be demonstrated that they are necessary to achieve management objectives. The Service would focus its efforts primarily on management studies and survey/inventory programs to increase the refuge's resource data base, and examine refuge management techniques.

Wilderness Management (IV)

This category only applies to lands which become designated Wilderness. At this time, 0% of Alaska Peninsula Refuge is designated wilderness. The Service will manage Wilderness lands in accordance with the provisions of the Wilderness Act of 1964, the Lands Act, and the guidelines of the Service's Refuge Manual (6 RM 8). In accordance with the Wilderness Act, the Service will manage those areas to maintain wilderness resources and values, preserve the wilderness character of the biological and physical features, and

provide opportunities for research, subsistence, and wildlife-oriented recreation. Prescribed burning and minor habitat improvements (subject to the minimum tool concept) could be permitted in the wilderness area where compatible with refuge purposes. Hunting, fishing and trapping will be allowed. Access by foot, aircraft, motorboat, and snowmachine will be permitted. Generally commercial activities will be precluded from the wilderness area; however, traditional commercial recreational activities (i.e., guiding and outfitting) will continue to be permitted. Seismic studies, core sampling, and other oil and gas activities involving mechanized surface transportation or motorized equipment are not allowed unless conducted by an Interior Department agency or contractor in accordance with Section 1010 of the Alaska Lands Act. New cabins will be permitted only if required for administrative, public safety or subsistence purposes. Chain saws may be used only for subsistence purposes. Other motorized equipment, such as generators and water pumps, will not be permitted unless it is a minimum tool for administrative purposes. (Minimum tool is defined as the minimum action or instrument necessary to successfully, safely, and economically accomplish wilderness management objectives.)

Enhanced Public Use (V)

Refuge lands in this category would be managed to provide opportunities for hunting, fishing, trapping, wildlife observation, and associated guiding and outfitting services. All types of motorized access, including off-road vehicles, would be permitted in designated areas. Permanent public use facilities, such as campsites, trails, and boat docks, may be provided to serve visitors. Resource management activities would be directed at ensuring adequate protection of fish and wildlife populations. Emphasis would be placed on monitoring resources and the effects of public uses on fish and wildlife.

Cooperative Management (VI)

The cooperative management category is applicable to those areas within or adjacent to refuge boundaries where the State of Alaska has primary management responsibility, but where the Service shares a special management interest. For example, the state has primary responsibility for managing navigable waterways (e.g., the Dog Salmon, Meshik, and Alec rivers within the refuge). For those waterways, the Service has a common interest with the State and would coordinate with the State in all matters relating to managing the waterbodies.

The Ugashik Lakes are of special importance to both the Service and the State because of the fish and wildlife populations they support. Cooperative management would strengthen the protection of these valuable resources. The Service would coordinate with appropriate State agencies, such as the Alaska Department of Fish and Game, the Alaska Department of Environmental Conservation, and the Alaska Department of Natural Resources to maintain existing fish and wildlife populations and water quality and quantity. Management efforts would focus primarily on research studies and other scientific programs to increase biological information about fish, wildlife, and their habitats. Aircraft, motorboats, and snowmobiles used for recreational and subsistence purposes would continue to be permitted on the lakes.

ATTACHMENT C
To the Record of Decision for the
Alaska Peninsula National Wildlife Refuge
Comprehensive Conservation Plan

To address concerns about the Final Alaska Peninsula Refuge Plan raised by the State of Alaska, the following revision is made to Figure 3, The Alaska Peninsula Refuge planning process, found on page 11 of the final document:

Step 8 PERIODIC UPDATING OF THE PLAN

- o Every three to five years solicit public comments
- o Review all public comments, local, state and federal recommendations, scientific data, and other information to update plan as needed
- o Make minor changes as an appendix to the plan after appropriate public review and approval of the regional director, with notification of affected agencies and individuals
- o Make major changes by going through the planning process

The following definition of a temporary facility is to be added as a footnote to the Fisheries Development section of the Management Categories table:

Any structure or man-made improvement which can be readily and completely dismantled and removed from the site when the period of authorized use terminates.

To address concerns about the Final Alaska Peninsula Refuge Plan raised by the State of Alaska, the following revisions or additions to the Common Management Directions on pages 123-159 are hereby made a part of the Alaska Peninsula Record of Decision.

Shorelands, Tidelands, and Submerged Lands

The Submerged Lands Act of 1953, the Alaska Statehood Act of 1958, and the state constitution provide for state ownership of water (subject to the reservation doctrine discussed under the water rights section), shorelands (the beds of navigable waters) tidelands (lands subject to tidal influence), and submerged lands (lands seaward from tidelands).

Determination of what waters are navigable is an ongoing process in Alaska at both the administrative and judicial levels. Within Alaska Peninsula Refuge, the Bureau of Land Management has determined the navigability of the portions of streams and lakes that are within lands selected by Native corporations or by the State of Alaska. Pursuant to section 901(g) of the Alaska National Interest Lands Conservation Act, those determinations are for the purpose of determining title to lands beneath navigable waters as between the United States and the State of Alaska. Within the boundaries of Alaska Peninsula Refuge, portions of Upper and Lower Ugashik Lakes and Ugashik River, Caribou

River, David River, Sapsuk River, Dog Salmon River, Ocean River, King Salmon River, Birthday Creek, Dago Creek, Dago Lake, Bear Lake, and Black Lake have been determined by the Bureau of Land Management to be navigable. Other water bodies may be determined to be navigable in the future.

The Service will work cooperatively with the state to ensure that existing and future activities occurring on shorelands, tidelands, and submerged lands are compatible with the purposes for which the refuge was established. In the future, the Service may propose management actions to the state for these areas. The Service will manage the refuge uplands adjacent to shorelands, tidelands, and submerged lands to protect their natural character.

Management of Water Columns

The Service has authority to regulate certain activities on watercolumns to protect refuge lands, and for conservation purposes. These authorities stem from two provisions of the the United States Constitution (the Property Clause and the Commerce Clause), the Alaska National Interest Lands Conservation Act, and other authorities including the National Wildlife Refuge Administration Act of 1966, the 1899 Rivers and Harbors Act, the Fish and Wildlife Coordination Act of 1958, and the Migratory Bird Treaty Act. The State of Alaska also has authority to manage water based on the laws cited in the section on shorelands, tidelands, and submerged lands above. These laws provide for water management by both the state and the Service.

The Service will pursue cooperative management agreements with the State of Alaska regarding public uses on waterways in the refuge. Agreements will be pursued only if a case-by-case resolution of management issues proves unacceptable to the Service and the State.

Water Rights

The water resources of Alaskas Peninsula Refuge will be managed to maintain the primary purposes of the refuge, as stated in Section 303(6)(B) of the Lands Act, and other statutory mandates. Specific water resource requirements for the primary purposes of the refuge will be identified and the reasonable amount of water necessary to maintain these purposes will be quantified in cooperation with the State of Alaska. Once Federal Reserved Water Rights have been quantified, the Service will file this information with the Alaska Department of Natural Resources State in accordance with State law. Water for secondary purposes and all other uses within the refuge will be applied for under Alaska Statutes (AS) 46.15.

Historic Roads and Trails

Revised Statute (RS) 2477, formally codified as 43 USC 932 and enacted in 1866, provides that: "The right-of-way for the construction of highways over public lands, not reserved for public uses, is hereby granted." The Act was repealed by Public Law 94.570 as of October 21, 1976, subject to valid existing rights, including rights-of-way established under RS 2477. The validity of these rights-of-way will be determined on a case-by-case basis.

A map illustrating the rights-of-way that the state contends may be valid under RS 2477 for Alaska Peninsula Refuge was not provided to the Service for inclusion in the Final Plan. Private parties or the State of Alaska may

identify and seek recognition of additional RS 2477 rights-of-way within the refuge. Supporting material regarding those rights-of-way identified by the State may be obtained through the Alaska Department of Transportation and Public Facilities or the Alaska Department of Natural Resources.

Identification of potential rights-of-way on a map does not establish the validity of the RS 2477 rights-of-way and does not necessarily provide the public the right to travel over them. All RS 2477 rights-of-way within the refuge shall be subject to appropriate state and federal laws and regulations.

The various types of access routes discussed in the plan and record of decision may overlap. For example, a valid RS 2477 right-of-way may overlap an easement conveyed under section 17(b) of the Alaska Native Claims Settlement Act. Management strategies, where this occurs, will reflect valid existing rights and other considerations unique to the situation. The Service will work cooperatively with interested parties to assure that management is compatible with the purposes of the refuge. Overlap situations will be dealt with on a case-by-case basis in conformance with the management policies outlined in other sections of the Alaska Peninsula Refuge plan.

Alaska Native Claims Settlement Act Section 17(b) Easements

Sites and linear access easements may be reserved on Native corporation lands that are within or adjoin Alaska Peninsula Refuge, as authorized by section 17(b) of the Alaska Native Claims Settlement Act. The Service will be responsible for management of the public easements inside the refuge and for those assigned to the Service outside the refuge. Pursuant to Part 601 of the Department of the Interior Departmental Manual (601 DM 4.2), where these easements access, or are part of the access to, a conservation system unit, the easement shall become part of that unit and be administered accordingly. The purpose of 17(b) easements is to provide access to public lands. The routes and location of these easements are identified on maps contained in the conveyance documents. The conveyance documents also specify the terms and conditions of use, including periods and methods of public access.

The Service will work cooperatively with the affected Native corporations and other interested parties, including the State of Alaska, to develop management strategies for easements. Management of these easements will be in accord with specific terms and conditions of the individual easement and applicable refuge regulations. As easements are reserved and the Service assumes management responsibility for them, the locations, mileages, and acreages will be compiled, and management strategies will be formulated. This information will be maintained at refuge headquarters.

As authorized in 601 DM 4.3G, the physical location of an easement may be adjusted to rectify a usability problem or to accommodate the surface and/or subsurface landowner's development of the lands, if both the Service and the landowner agree to the relocation. Easements also may be expanded, if an acceptable alternate easement or benefit is offered by the landowner and the exchange would be in the public interest. An easement may be relinquished to the landowner if an alternative easement has been offered by the landowner or termination of the easement is required by law.

The Service may also propose to place additional restrictions (to those authorized in the conveyance document) on the use of an easement, if existing uses are in conflict with the purposes of the refuge.

In all cases where a change is proposed in authorized uses or location from the original conveyance, the Service will give adequate public notice and opportunity to participate and comment to the affected Native corporation and other interested parties, including the state of Alaska. Service proposals for changing the terms and conditions of 17(b) easements will include justification for the proposed change, an evaluation of alternatives considered, if any, and an evaluation of potential impacts of the proposed action.

Pack Animals

The general use of pack animals as a traditionally employed means of surface transportation is authorized in the Lands Act in sections 811 and 1110(a). Also, Chapter 50 of the Code of Federal Regulations (50 CFR 36.21b) authorizes use of:

* * * surface transportation methods such as domestic dogs, horses, and other pack or saddle animals * * * except where such use is prohibited or otherwise restricted by the refuge manager in accordance with the provisions of 50 CFR 36.42.

At this time, there is no known use of "pack animals" in Alaska Peninsula Refuge. There are no special restrictions on use of pack animals on the refuge.

Waterfowl Population Estimates

The waterfowl population estimates on page 67 of the Final Plan are in error. The plan states there are estimated to be 100,000 emperor geese and 40,000 cackling Canada geese using the refuge; the numbers should be 71,000 emperor geese and 14,000 cackling Canada geese.

Future Resource Management Studies

The Service recognizes the Master Memorandum of Understanding between the Alaska Department of Fish and Game and the Service relating to responsibilities for managing fish and wildlife resources on the refuge. The Service will work cooperatively with the Alaska Department of Fish & Game to identify and assign priorities for fish and wildlife habitat and population studies in Alaska Peninsula Refuge.

Cooperative Management of the Ugashik Lakes

The Final Alaska Peninsula Refuge Plan states erroneously on page 134 that the Bristol Bay Regional Management Plan (Bristol Bay Plan) calls for the prohibition of surface entry for oil and gas in Ugashik Lakes. The Bristol Bay Plan recommends that the state take this action. However, Alaska Statutes [AS 38.05.140(f)] already established this prohibition; the State of Alaska's approved Bristol Bay Area Plan is consistent with this statute.

State Relinquishment of 11(a)(3) Lands

The Final Plan erroneously states on page 138 that the state will relinquish selections in the Port Moller/Balboa Bay area. The Bristol Bay Plan recommended that the state relinquish these selections, but they are not 11(a)(3) selected lands. The state has not relinquished any of these contested selections.

Refuge Acreage Figures

There was some confusion in the refuge acreage figures in the Final Plan. Acreage figures for each of the three wilderness review units were also omitted. The following paragraphs should answer these questions.

Of the 4,359,000 acres (1,764,000 ha) of land within the refuge boundary, excluding navigable waters, 2,964,000 acres (1,200,000 ha) or 68% of the land is under jurisdiction of the federal government. The total refuge acreage for all management categories shown in Tables 20 through 24 (pages 161-183 of the final document) is 3,523,000 acres (1,480,000 ha). This figure was used for planning purposes as it represents the best projected estimate of total refuge acreage following land conveyances. This figure also represents the approximate refuge acreage envisioned by Congress at the time the Lands Act was enacted on December 2, 1980. It is recognized that the 3.5 million acre figure will be adjusted as land settlement issues are finalized. Future plan updates/revisions will reflect those changes.

The size of the wilderness review units are listed below. It should be noted that only portions of each of these units are being recommended for wilderness designation under the modified preferred alternative. All acreage figures cover only lands under federal jurisdiction.

- o Ugashik Wilderness Review Unit: 843,000 acres
Approximate area proposed for wilderness designation: 14,000 acres
- o Chignik Wilderness Review Unit: 1,040,000 acres
Approximate area proposed for wilderness designation: 460,000 acres
- o Pavlof Wilderness Review Unit: 546,000 acres
Approximate area proposed for wilderness designation: 166,000 acres

ATTACHMENT D
To the Record of Decision for the
Alaska Peninsula National Wildlife Refuge
Comprehensive Conservation Plan

To address concerns about the Final Alaska Peninsula Refuge Plan raised by the State of Alaska, the following letter is hereby made a part of the Alaska Peninsula Record of Decision. The letter was the result of coordination efforts between the Alaska Department of Fish and Game and the Service regarding the process by which a final plan could be revised.

Don W. Collinsworth, Commissioner
Alaska Department of Fish and Game
1255 West 8th Office
P.O. Box 3-2000
Juneau, Alaska 99811

Dear Commissioner Collinsworth:

At recent meetings with members of your staff to discuss various aspects of the comprehensive conservation plans, it was apparent that there is a misunderstanding about the process for modification of a completed plan. This was discussed in relation to mechanical manipulation under the minimal management category where it states, "May be considered subject to appropriate plan revision."

The Service position is that when there is an instance during the life of a plan where it is mutually agreed that mechanical manipulation or other large scale management action is necessary this process would be followed:

- o The action would require National Environmental Policy Act compliance (this means the Service would have to do, at a minimum, an environmental assessment).
- o If a full Environmental Impact Statement was necessary, we would do one.
- o Either way, public participation is necessary. If an Environmental Impact Statement was needed, the preferred alternative would assess the impact of the operation and redesignate the area to be impacted to a management category that would accommodate such activities.
- o If after public participation only an Environmental Impact Analysis was needed, the Service would advise the public that:
 - the area where the management activity was to occur was being changed to a management category that would permit it; and
 - the Service was proceeding with the management activity.

- o This action would be appended to the individual plan, and when a major revision of the plan was executed it would adequately incorporate the management activity.

This process is available to the Department of Fish and Game through our joint fish and wildlife management responsibilities as reflected in the Memorandum of Understanding and 43 Code of Federal Regulations 24.

Sincerely,

Walter O. Stieglitz

Regional Director