

BECHAROF NATIONAL WILDLIFE REFUGE

King Salmon, Alaska

ANNUAL NARRATIVE REPORT

Calendar Year 1986

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

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REVIEW AND APPROVALS

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Ronald E. Hood
Refuge Manager

3/31/87
Date

Paul R. Schmidt
Refuge Supervisor Review

4/13/87
Date

Regional Office Approval

Date

TABLE OF CONTENTS

INTRODUCTION

A. HIGHLIGHTS.....4
B. CLIMATIC CONDITIONS.....5

C. LAND ACQUISITION

1. Fee Title.....8
2. Easements.....8
3. Other.....10

D. PLANNING

1. Master Plan.....11
2. Management Plan.....12
3. Public Participation.....NTR
4. Compliance with Environmental Mandates.....13
5. Research and Investigations.....13

E. ADMINISTRATION

1. Personnel.....17
2. Youth Programs.....22
3. Other Manpower Programs.....NTR
4. Volunteer Programs.....24
5. Funding.....31
6. Safety.....33
7. Technical Assistance.....NTR
8. Other Items.....NTR

F. HABITAT MANAGEMENT

1. General.....34
2. Wetlands.....36
3. Forests.....NTR
4. Croplands.....NTR
5. Grasslands.....NTR
6. Other Habitats.....37
7. Grazing.....NTR
8. Haying.....NTR
9. Fire Management.....38
10. Pest Control.....NTR
11. Water Rights.....38
12. Wilderness and Special Areas.....39
13. WPA Easement Monitoring.....NTR

NTR*--Nothing to Report

G. WILDLIFE

1. Wildlife Diversity.....	41
2. Endangered and/or Threatened Species.....	NTR
3. Waterfowl.....	41
4. Marsh and Water Birds.....	53
5. Shorebirds, Gulls, Terns, and Allied Species.....	55
6. Raptors.....	61
7. Other Migratory Birds.....	64
8. Game Mammals.....	68
9. Marine Mammals.....	83
10. Other Resident Wildlife.....	84
11. Fisheries Resources.....	NTR
12. Wildlife Propagation and Stocking.....	NTR
13. Surplus Animal Disposal.....	NTR
14. Scientific Collection.....	84
15. Animal Control.....	NTR
16. Marking and Banding.....	84
17. Disease Prevention and Control.....	NTR

H. PUBLIC USE

1. General.....	86
2. Outdoor Classrooms - Students.....	NTR
3. Outdoor Classrooms - Teachers.....	86
4. Interpretive Foot Trails.....	NTR
5. Interpretive Tour Trails.....	NTR
6. Interpretive Exhibits/Demonstrations.....	88
7. Other Interpretive Programs.....	89
8. Hunting.....	90
9. Fishing.....	94
10. Trapping.....	97
11. Wildlife Observation.....	97
12. Other Wildlife Oriented Recreation.....	97
13. Camping.....	NTR
14. Picnicking.....	NTR
15. Off-Road Vehicling.....	98
16. Other Non-Wildlife Oriented Recreation.....	NTR
17. Law Enforcement.....	99
18. Cooperating Associations.....	NTR
19. Concessions.....	NTR
20. Cabins.....	101
21. Guides and Outfitters.....	103

I. EQUIPMENT AND FACILITIES

1. New Construction.....	110
2. Rehabilitation.....	112
3. Major Maintenance.....	113
4. Equipment and Utilization and Replacement.....	NTR
5. Communications Systems.....	NTR
6. Computer Systems.....	114
7. Energy Conservation.....	115

8. Other.....118

J. OTHER ITEMS

1. Cooperative Programs.....NTR
2. Other Economic Uses.....118
3. Items of Interest.....118
4. Credits.....120

K. FEEDBACK.....120

INTRODUCTION

In 1978, the lands of Becharof Refuge were withdrawn under the Presidential Proclamation 4614 and established as the Becharof National Wildlife Monument. In 1980, the Alaska National Interest Lands Conservation Act (ANILCA) made the Monument part of the National Wildlife Refuge System. Becharof is one of only two wildlife monuments in the history of the National Wildlife Refuge System and one of 16 refuges in Alaska (Figure 1).

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 (NP) and Alaska Peninsula Refuge.

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 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 Kejulik River is the major drainage
in the Becharof Wilderness.

SHL

Figure 1. National Wildlife Refuges in Alaska.

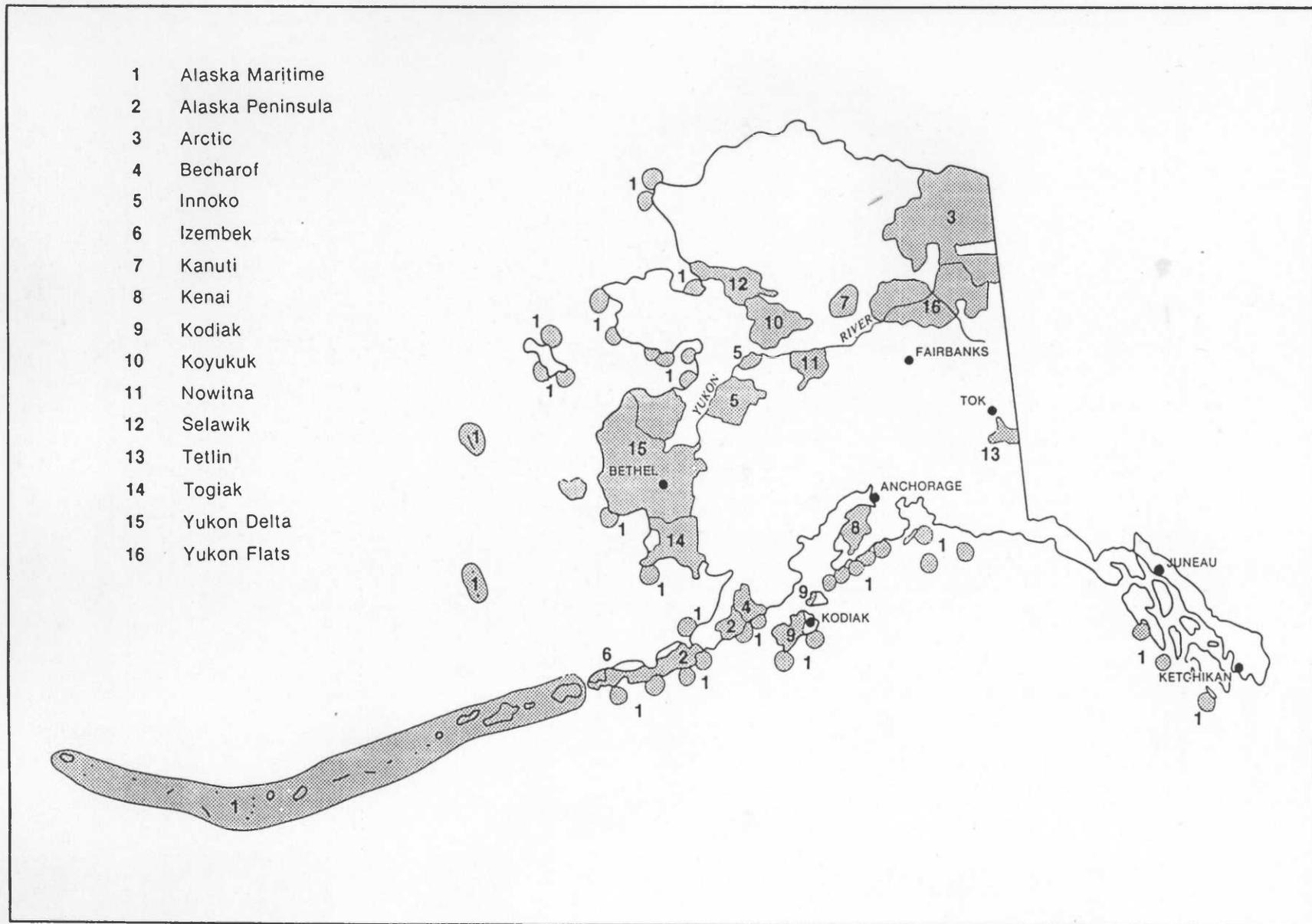
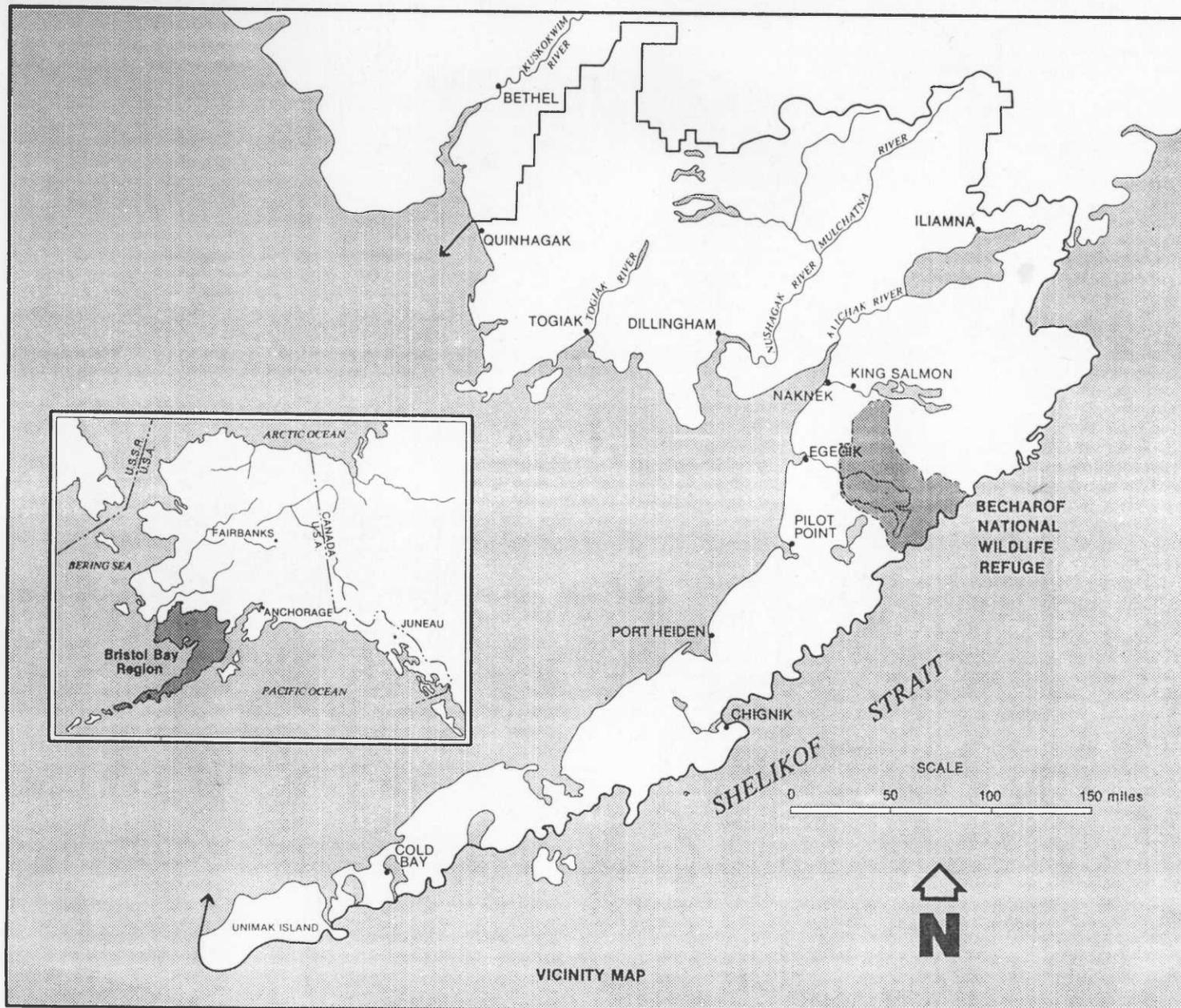


Figure 2. Vicinity map.



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 northeast of the refuge. The only travel routes of low topographical relief across the Aleutian Range are through Becharof Lake/Puale Bay and north of the refuge through Katmai Pass.

Becharof Lake is a nursery and its tributary streams provide important 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, all 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 10,000 caribou migrate through the area during fall and winter. Other animals found are wolves, foxes, wolverines and lynx; while 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.



A major purpose of the Becharof Refuge is to conserve the Alaska Peninsula caribou herd.

JFP

Section 302(2)(B) of ANILCA 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 Alaska 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;
- (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

- The Alaska Peninsula Corporation and Bristol Bay Native Corporation propose to enter into an Alaska Land Bank Agreement with the Service on approximately 400,000 acres (Section C.2.).
- The bunkhouse was accepted for beneficial occupancy on February 13, 1986 (Section I.2.).
- On February 22, 1986, the "Notice to Proceed" was issued on the construction of four new houses (Section I.1.).
- Heritage Research Associates conducted ARMM funded archeological study within Alaska Peninsula/Becharof refuges (Section D.4.).
- Seventeen brown bear were radio-collared this year (Section G.8.).
- The second year of the RPRP study to establish baseline data for compatibility evaluations for transportation corridors across the Alaska Peninsula was highly successful (Section G.).
- Deputy Assistant Secretary for Parks and Wildlife Susan Recce climaxed her visit to Alaska by seeing several moose on Becharof Refuge--something she was unable to do on other refuges (Section J.2.).

- A successful migration watch for emperor geese was conducted at Cinder River Lagoon (Section G.3.).
- The new hangar was accepted for beneficial occupancy in October (Section I.1.).

B. CLIMATIC CONDITIONS

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.

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 normal temperatures for the quarter except for February which exhibited a monthly average of 22 degrees F, 8 degrees above normal (Table 1). The low for the year was -21 degrees F which occurred on February 27th and 28th. Though frozen over at the first of the year, the Naknek River remained unsafe for crossing at King Salmon until lower temperatures towards the end of February produced enough ice to permit residents to cross for their winter meat supply of caribou. Higher temperatures in mid-March made the river unsafe for crossing again. A below normal amount of precipitation fell during the winter quarter, except for January which was normal. The year started off with good snowcover which provided excellent conditions for surveying moose. However, the snowcover had melted by February 7th and the ground remained relatively snow-free for the rest of the winter. The highest winds for the quarter were 70 mph on February 6th.

April-June

Spring quarter exhibited normal temperatures. The Naknek River was completely open by mid-April with waterfowl numbers peaking during the week of the 20th. Night time temperatures remained above freezing beginning May 23rd. A normal amount of precipitation fell during the quarter. The ground remained relatively snow-free during spring. A 4.4 inch snowfall occurred on April 10th however, it melted within two days. The highest winds for the quarter were 45 mph on June 12th.

July-September

Summer quarter exhibited normal temperatures. The high for the year was 76 degrees F, occurring July 28th. The first below freezing temperatures for the growing season occurred on August 11 when the low was 30 degrees F. The first below 30 degree temperatures for the season was 26 degrees F, occurring on September 25th. An above normal amount of precipitation fell during the quarter; however, no snow was recorded. There were only three days with clear skies and nine days with partly cloudy skies, as the remaining 80 days were cloudy. The winds were light, blowing to 45 mph on August 26th.

October-December

The fall quarter started off with normal temperatures; however, the year ended with December exhibiting extremely mild weather. December temperatures never dipped below 0 degrees F and averaged 31 degrees F--19 degrees above normal. The Naknek River froze bank-to-bank adjacent to refuge headquarters on November 25th, but reopened during the third week of December. Precipitation amounts for both the quarter and year were normal. The first measurable snowfall was on October 15th when 0.4 inches was recorded. No measurable amounts of snow remained on the ground for a period greater than five days. There were only three days with clear skies. The highest winds were 62 and 66 mph occurring on December 7th and 8th respectively.

Table 1. 1986 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	-19	17	13	1.33	1.04	13.2	11	10	40	2	3	26
Feb	54	-21	22	15	0.19	0.88	1.8	7	12	70	11	4	13
Mar	47	-15	22	19	0.24	1.13	2.5	1	11	61	12	8	11
Apr	54	-06	28	31	0.98	1.05	9.8	2	11	38	7	4	19
May	70	23	42	42	1.01	1.18	1.3		12	40	1	6	24
Jun	74	32	50	50	0.93	1.50			15	55		3	27
Jul	76	33	54	55	2.44	2.08			12	37	3	3	25
Aug	67	30	52	54	3.22	3.13			13	45		3	28
Sep	63	26	48	47	4.03	2.78			11	40		3	27
Oct	57	10	36	33	2.50	1.92	2.3	2	10	51	1	8	22
Nov	56	-11	26	23	1.91	1.40	2.5	1	13	60	1	3	26
Dec	45	04	31	12	0.65	1.24	4.8	3	13	66		7	24
Total					19.43	19.33	38.2				38	55	272

^a Sky cover: clear = 0 to .3 cloud cover; Partly cloudy = .4 to .7 cloud cover; and cloudy = .8 to 1.0 cloud cover.

C. LAND ACQUISITION

1. Fee Title

On December 1, 1978, President Carter established the Becharof National Wildlife Monument by Proclamation 4613. The Monument was set aside entirely from public domain. Legislation which affects land ownership includes the Alaska Statehood Act, the Alaska Native Claims Settlement Act (ANCSA), and the Alaska National Interest Lands Conservation Act (ANILCA). These laws transferred lands from Federal to State and Native ownership.

Since the passage of ANCSA and ANILCA the refuge has had a dynamic land status due to selection and conveyances of land both within and adjacent to refuge boundaries. The refuge land status (current) is summarized in Table 2 and located in Figure 3.

Table 2. Land status of Becharof Refuge.

Management Unit	Administration	Acres
Becharof	Federal	1,153 000
	Native Allotment Application	700
	Native Allotment Certificate	250
	Historical Place Selection	10
	State of Alaska Selections	16,800
	Private	200
Total		1,170,960

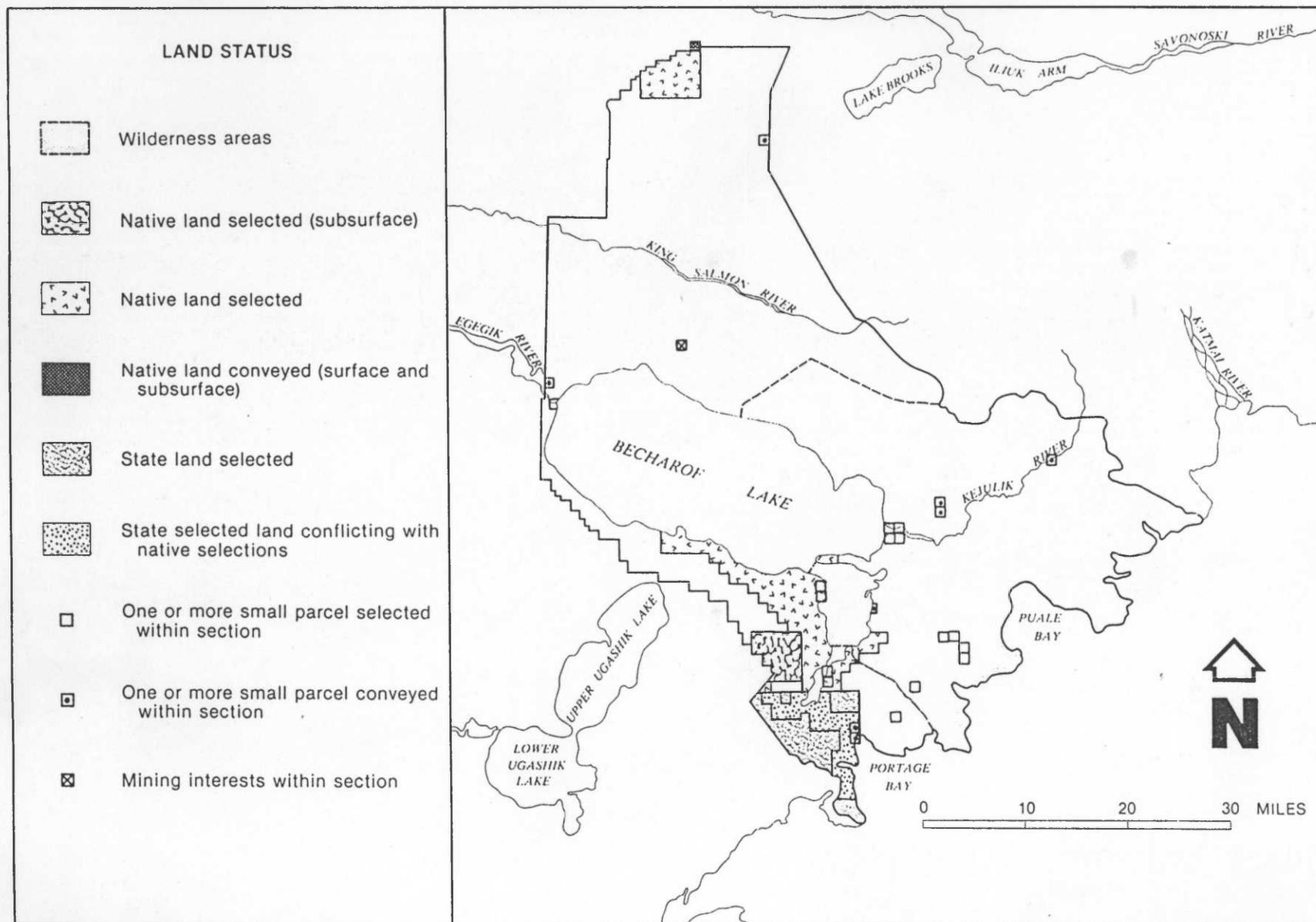
In April, Jay Hammond, owner of a 17 acre trade and manufacturing site on the Kejulik River wrote a letter to the Nature Conservancy offering his property. He suggested the Nature Conservancy purchase the 17 acres for the Service. Apparently, failing in his effort with the Nature Conservancy, he advertised the property in the December Alaska magazine for the bargain price of only \$170,000! No word on any takers yet.

2. Easements

The Alaska Land Bank Program (ALBP) was established by Section 907 of the ANILCA. Private landowners may participate in a Land Bank agreement if they consent to certain land use stipulations.

A major purpose of the ALBP is to provide a mechanism through which lands conveyed under the terms of the ANSCA could be retained in

Figure 3. Land status.



Native ownership. A goal of the Department of Interior is to encourage Land Bank agreements with Native Corporations. The Service is encouraged to pursue actively the execution of these agreements with the Native community.

The ALBP is also intended to induce compatible, low developmental uses of undeveloped private lands that adjoin, or would directly affect Federal and State lands in Alaska. The Program should also facilitate the coordinated management and protection of Federal, State, and other private lands.

The ALBP provides a means for seeking compatible uses of private lands. Because the program is intended to focus on undeveloped land, developed lands are not sought for inclusion in the Land Bank unless the development would be compatible with the purposes of the refuge and consistent with existing management plans, and would facilitate management and protection of Federal lands.

Another purpose of ALBP is to support subsistence and prevent lands from falling out of Native ownership and use because of court judgments, adverse possession, or taxation. Because subsistence activities are an integral part of Native land ownership and use, small scale development in support of subsistence life styles should generally be considered as compatible with the ALBP (e.g., fish racks, tent platforms and primitive cabins).

Landowners may sign a 10-year agreement with the Department placing their property in the Land Bank. The agreement may be extended for additional 5-year periods, if the landowner and Department agree.

On January 7th, RM Ronald Hood, ARD/WR John Rogers, and Chief of Realty Bill Mattice met with representatives of the Alaska Peninsula Corporation (APC) and the Bristol Bay Native Corporation (BBNC) to discuss their proposal to participate in the ALBP. Lands owned by the villages of Kokhanok, Newhalen, Port Heiden, South Naknek and Ugashik plus lands and mineral interests owned by BBNC totaling approximately 400,000 acres would come under this agreement. Some excellent waterfowl habitat would be protected as well as the fall staging area for cackling Canada geese.

At year's end, no further action had been taken in this matter.

3. Other

The final Bristol Bay Regional Management Plan (BBRMP), completed March 1985, contains several proposals that will affect the boundaries of the refuge. The BBRMP recommends that lands in the upper Kejulik drainage, presently within Katmai National Park (NP) be re-designated by Congress as part of the refuge. The boundary change would place virtually the entire drainage within the refuge. The proposal would provide visitors with additional opportunities for recreational hunting and would simplify management by placing the area under one administrative agency.

In addition, the BBRMP recommends that the three Alaska Peninsula refuges (Becharof, Alaska Peninsula, and Izembek) be reorganized into two refuges to provide better management of fish and wildlife resources. If Congress agrees to this recommendation Becharof Refuge would no longer exist as a separate refuge. The "Upper Peninsula" refuge would include what is now Becharof Refuge and the Ugashik and Chignik units of the Alaska Peninsula Refuge. The Pavlof Unit of Alaska Peninsula Refuge would become part of Izembek Refuge. Current administration reflects this strategy.

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 (ANILCA). Section 304 directs the Secretary of the Interior to prepare comprehensive conservation plans.

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 (ROD) 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 ROD 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 ANILCA 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 ROD and where adequate information on oil and gas potential is lacking, the Bureau of Land Management (BLM) would assess that potential.

A "draft" Oil and Gas Assessment was received on November 25th. 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. Comments on this "draft" were supplied to BLM in December.

2. Management Plan

An Alaska Interagency Fire Management Council (AIFMC) fire suppression plan was completed in 1985 for the area that includes the Alaska Peninsula/Becharof refuges. A review of fire history records during the AIFMC planning effort revealed a very low incidence of natural and man-caused fires. As a result, refuge lands were placed in the "limited" suppression category (no initial attack; let burn).

Based on the AIFMC fire suppression plan and the Alaska Peninsula fire history, an exemption from further fire management planning for Alaska Peninsula/Becharof refuges was signed by the Deputy Regional Director on March 4th (pursuant to 6 RM 7.7A).

The King Salmon Fisheries Assistance Office (FAO) has the lead in developing a Fishery Resource Management Plan (FRMP) for both Alaska Peninsula and Becharof refuges. On July 2nd, RM Hood and King Salmon FAO Project Leader Gary Sonnevil briefed Regional Office personnel on the status of the FRMP. A decision to combine the two plans was made at this meeting.

Scoping and Phase I presentations of the combined Alaska Peninsula and Becharof refuges FRMP were completed outlining goals and objectives for management of refuge fishery resources. Issues of concern include commercial, sport and subsistence utilization of fishery resources, oil and natural gas development, water quality, fishery law enforcement and providing adequate escapement levels of anadromous fish populations into refuge streams to insure maintenance of wildlife populations that depend on these resources (e.g., brown bears and bald eagles).

4. Compliance with Environmental Mandates

A contract, for a total value of \$97,460, was awarded in 1985 to Heritage Research Associates of Eugene, Oregon, for the preparation of a cultural resources overview and predictive model, with limited testing, on the Alaska Peninsula/Becharof, Izembek, and Togiak refuges.

The field work for this study was conducted during June, 1986. Principle Investigator Don Dumond advised us that 30-35 new archaeological sites were identified on Alaska Peninsula/Becharof refuges. A major village site was found on the Egegik River outlet of Becharof Lake. A draft report was reviewed in October.

5. Research and Investigations

Becharof NR86- "Island Denning and Seasonal Movement of Brown Bear within Becharof National Wildlife Refuge (74515-83-01)

In 1983, a study was initiated to identify the movements and "island denning" of brown bears in Becharof Refuge. Preliminary findings of this baseline study indicate that island denning is not a regular occurrence in the refuge. Most winter dens of bears have been generally located in the Aleutian Mountain Range NE of the Becharof Lake capture sites. Others occur in the mountains SE of the island arm of Becharof Lake. Preliminary summaries of some of the findings are found in Section G.

Alaska Peninsula NR86- "Wildlife and Vegetation Studies in Alaska Peninsula National Wildlife Refuge" (74515-101-BE3)

Refuge Resource Problem-Related Projects (RPRP) funds annual work planned to Becharof Refuge are providing monies for ongoing baseline wildlife and vegetation studies in the Alaska Peninsula Refuge. In 1986, field camps were set up in Braided Creek, Meshik River drainage; Dog Salmon River, Ugashik drainage; and Lawrence Valley, Herendeen

Bay. The Dog Salmon camp was new in 1986. Braided Creek and Lawrence Valley camps were initiated in 1985. The studies were established to gather data along "transportation corridors" which were proposed as land use alternatives in the Bristol Bay Regional Management Plan. Preliminary summaries of some of the findings from these studies are found in Section G.



Volunteer Maria Leung recording vegetation data in an upland plot at the Braided Creek study area. KIW

Alaska Peninsula/Becharof NR86- "Aerial Survey and Sampling Method for Tundra Swans in the Northern Alaska Peninsula (74510-85-02)

Since 1984 nesting data have been collected for tundra swans of the Bristol Bay population which occur in the wet coastal lowlands between Kvichak Bay and Port Moller of the northern Alaska Peninsula. The data obtained from 1984-1985 were so extensive that density indexes obtained enabled the establishment of stratified sampling plots based on the number of nesting swans observed per unit area. In 1986 the first random plots were flown based on this scheme. Preliminary summaries of some of the findings from these studies are found in Section G.

E. ADMINISTRATION

The Fish and Wildlife Service intends to reorganize the three Alaska Peninsula refuges (i.e., Becharof, Alaska Peninsula, and Izembek). To accomplish the reorganization, the Service will submit a proposal to Congress to adjust the boundaries. Boundaries would be altered by combining Becharof Refuge (1,461,000 acres) with the Ugashik and Chignik units (approximately 2,921,000 acres) of the existing Alaska Peninsula Refuge. The Pavlof Unit (the southern 1,535,000 acres of the present Alaska Peninsula Refuge) 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 west side and American Bay on the east side (Pacific Ocean). Becharof Refuge would no longer exist as a separate refuge. Figure 4 shows the proposed boundary changes; Figure 2 shows the existing boundary of Becharof Refuge.

The Service is proposing this action for both biological and administrative reasons. Biologically, it is impossible to adequately monitor wildlife populations without simultaneously working on both Alaska Peninsula and Izembek refuges or on Alaska Peninsula and Becharof refuges. The mountainous terrain around Port Moller geographically isolates the big game populations on the Alaska Peninsula. The State uses this physiographic barrier for distinguishing between State Game Management Units 9D and 9E. Two distinct herds of caribou are found on either side of this line: one herd uses lands in the Izembek Refuge and Pavlof Unit of the Alaska Peninsula Refuge; while another herd uses lands north of Port Moller, in the Chignik and Ugashik units of the Alaska Peninsula Refuge, and Becharof Refuge. Moose are relatively common north of Port Moller, but are rare in the Pavlof Unit and Izembek Refuge. A distinct, non-migratory subpopulation of tundra swans also nests in the Pavlof Unit and Izembek Refuge.

From an administrative viewpoint, it is impossible for the Service to manage the Pavlof Unit from King Salmon due to distance and frequent inclement weather. The refuge staff in Cold Bay is in a better logistical position to organize and perform biological programs and to handle the administrative responsibilities of the Pavlof Unit and Izembek Refuge, while the refuge staff in King Salmon is in the logical position to manage the Ugashik and Chigniks units of Alaska Peninsula Refuge and Becharof Refuge.

All of the management directions, staff, facilities, and other recommendations proposed in the Becharof Comprehensive Conservation Plan (CCP) would be incorporated into the Alaska Peninsula CCP after the change is made. Until that time, however, the three Alaska Peninsula Refuge plans will be implemented for the refuges as they are presently constituted.

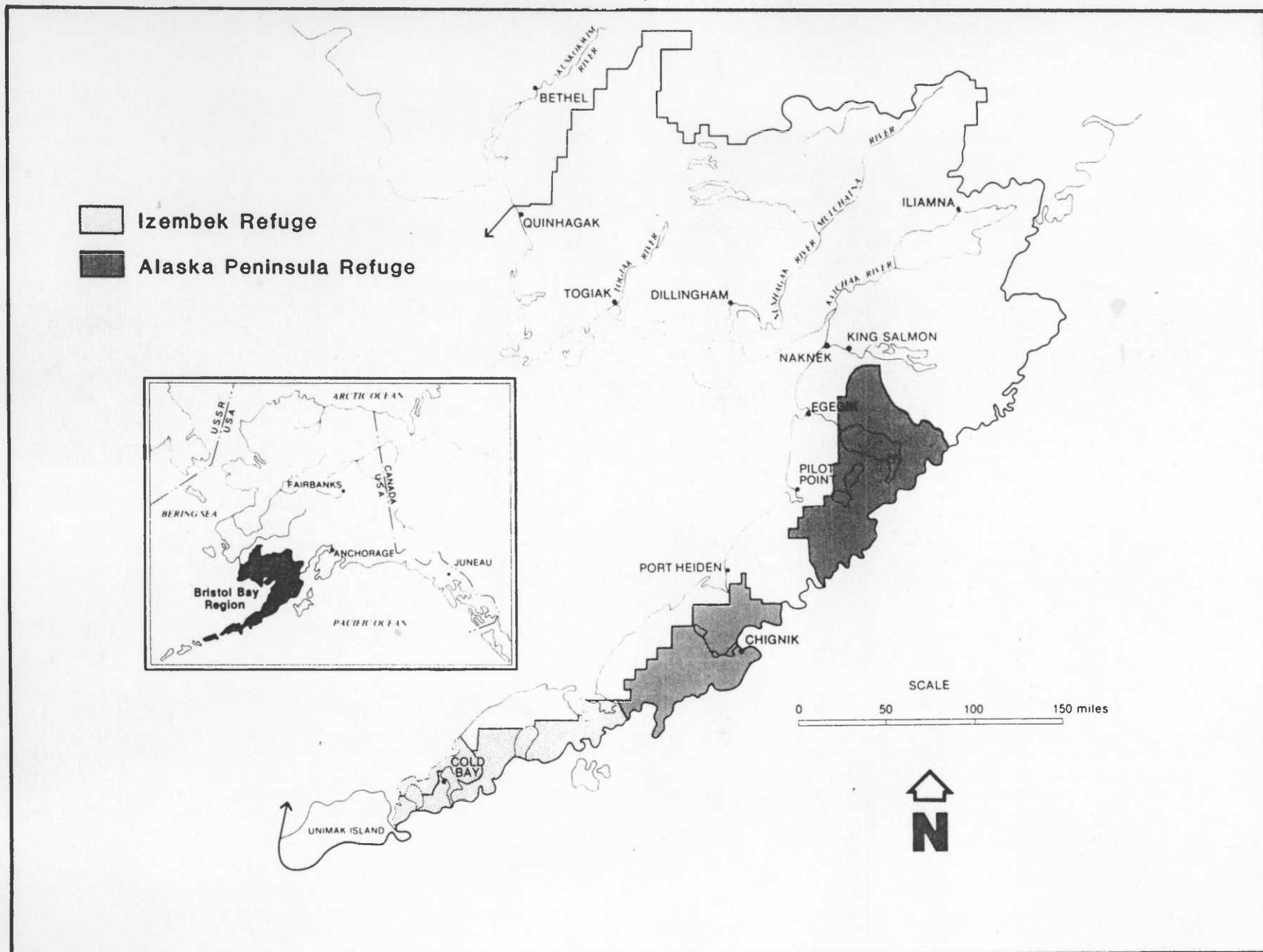


Fig. 4. Proposed boundary adjustments for the Alaska Peninsula refuges.

The Alaska Peninsula and Becharof refuges are currently being managed as one refuge under this administrative view point. However, funds and personnel ceilings (FTE's) are allocated by refuge. This creates quite an administrative challenge when tracking budgets, FTE's, and payroll.

1. Personnel



Front Row 3 5 8
Back Row 2 6 7 1 TAW

	<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	Dep. Refuge Manager	GS-485-11	09/29/85	Present	PFT
3.	C. Randall Arment	Asst. Refuge Manager/ Pilot	GS-485-12	10/03/82	Present	PFT
4.	John Payne	Asst. Refuge Manager/ Pilot	GS-485-12	09/29/85	Present	PFT
5.	Randall J. Wilk	Wildlife Biologist	GS-486-09	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	Present	PFT
8.	Janice Collins	Refuge Assistant	GS-303-05	06/11/84	Present	PFT
9.	Robert Kuntz	Biological Technician	GS-404-05	04/15/86	11/22/86	Temp
10.	Marta McWhorter	Biological Technician	GS-404-05	05/03/86	08/16/86	Temp
11.	Karen Wilk	Biological Technician	GS-404-05	05/05/86	10/25/86	Temp (local hire)
12.	Allison Banks	Biological Technician	GS-404-04	05/08/86	09/06/86	Temp
13.	Kristine Sowl	Biological Technician	GS-404-04	05/11/86	09/27/86	Temp
14.	Lee Elliott	Biological Technician	GS-404-04	06/02/86	08/30/86	Temp

Y.C.C.

Chimene Terry	YCC Enrollee	06/09/86	08/15/86
Von Terry	YCC Enrollee	06/09/86	08/01/86
David Rogers	YCC Enrollee	06/09/86	08/01/86
Chris Harding	YCC Enrollee	06/09/86	08/01/86
Michelle Ashby	YCC Enrollee	06/09/86	08/01/86

VOLUNTEERS

Tim Howard	06/15/86	08/12/86
Amy Webb-Frescoln	05/25/86	09/02/86
Timothy Folmer	05/26/86	09/27/86
Maria Leung	05/06/86	08/10/86
Dan Puddister	05/05/86	08/13/86
Michael Moeller	07/08/86	08/20/86

In 1986, there were no personnel changes. Highlights of the year included:

- ARM/P Randy Arment received his 10-year Length of Service Certificate on April 11th.



Randy Arment receives his 10-year Length of service Certificate from Ron Hood. DDM

- On June 19th, ARM/P John Payne and wife Valerie moved to King Salmon. John had been detailed to the Regional Office for nine months. During that time, he completed his flight training, attended the Federal Law Enforcement Training in Glynco, Georgia and worked as an Ascertainment Biologist for the Division of Realty.
- ARM/P John Payne received his 10-year Length of Service Certificate on August 24th.



John Payne receives his 10-year Length of Service Certificate from Ron Hood. DDM

- RM Ronald Hood received his 20-year Length of Service Certificate on December 10th.

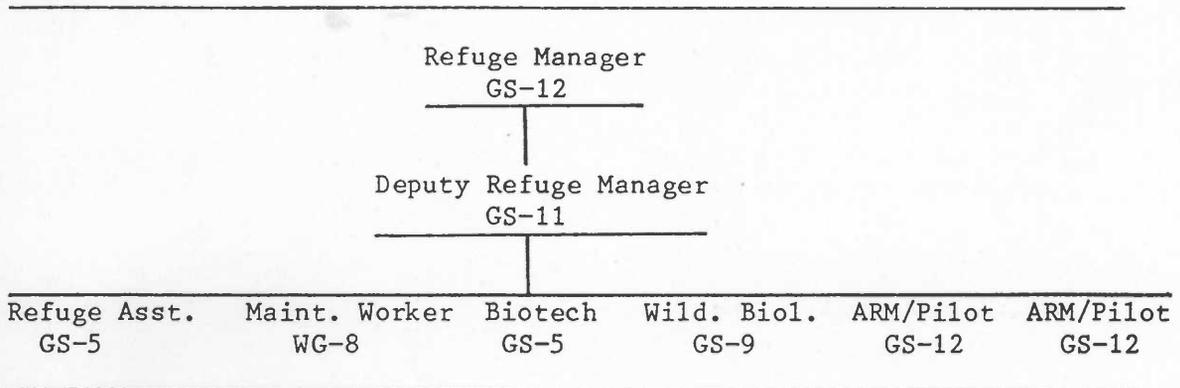
Construction Representative Walt Szelag spent so much time in King Salmon monitoring the construction of our hangar and four houses that we have designated him a defacto staff member. He has endeavored to assure that the contractor completed both projects within contract deadlines (without success).



Construction Inspector Walt Szelag documents another problem in the construction of the new residences. DDM

Alaska Peninsula/Becharof refuges have an approved staffing pattern as shown in Figure 5. Our Resource Problems-Related Project (RPRP) provided funding for six temporary Biological Technicians.

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



These positions require 6.8 FTE's. One position is local hire which does not count as a FTE. The FTE and funding for the maintenance position is shared with the King Salmon Fishery Assistance Office (FAO). The history of FTE allocations is shown in Table 3.

Table 3. Historic record of FTE allocation and use.

FY	FTE			USED
	AKP	BCH	TOTAL	
87	5.0	5.0	10.0	--
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
83	3.0	3.2	6.2	6.26

2. Youth Programs

The Refuge assisted the National Park Service (NPS) with establishing their YCC program by handling the recruiting and selecting process. All applications were submitted to the refuge office where a pool of enrollees was established. The NPS selected one applicant from this pool. The other applicants were then designated to work for the refuge. This process worked well and reduced the amount of confusion that applicants have between agencies and the amount of paper work.

The YCC program began on June 9th. Five enrollees participated: Work Leader, Chris Harding; Michele Ashby, David Rogers, Chimine and Von Terry. The program ran for eight weeks. Chimine Terry was extended for two weeks.



The YCC crew for 1986. Front row: Chimine Terry, Michele Ashby. Back row: Von Terry, David Rogers and Chris Harding. REH

One enrollee provided operational support to the refuge in the form of office help. Major duties included answering the telephone, filing reports and correspondence, using both typewriter and work processor, and distributing mail to various offices. The remaining four enrollees worked on general maintenance projects around headquarters. Most of these projects could not have been accomplished without YCC help. The projects included: painting window trims, boardwalks, fuel sheds and oil tanks; picking up scrap iron, landscaping and seeding the river front beach area; repairing the entire compound boundary fence and installing signs, general cleaning of the shop, warehouse, office and bunkhouse; washing and waxing vehicles; mowing the lawns and policing the grounds.

Environmental awareness programs were presented to the enrollees on a weekly basis by the refuge staff. The topics included an explanation of the National Wildlife Refuge System, the function and general description of the Alaska Peninsula/Becharof refuges and a description of the various wildlife and fisheries projects on the refuge. Overall this years program went very well.

On July 25th, Refuge and Fishery staff hosted a picnic for the YCC enrollees.

4. Volunteer Programs

In 1986, the refuge employed the services of six volunteers who assisted primarily in the collection of data in the field camps. The volunteers worked with six biological technicians and the refuge biologist. The length of duty contributed by the volunteers ranged from 4-14 weeks. Their names and homes of record were:

Amy Webb-Frescoln	Charlottesville, VA
Timothy L. "Fridge" Folmer	Luthersburg, PA
Maria C. Leung	Lindsay, Ontario, Canada
Michael Moeller	Green Isle, MN
Daniel J. Puddister	North Bay, Ontario, Canada
Tim Howard	Winchester, MA



Braided Creek field crew. A. Banks,
T. Folmer, K. Wilk, and M. Leung. REH

The volunteer Program made an important contribution to the success of our biological program in 1986. One of the interesting aspects of this program is the wealth of dedicated people who are willing to work under the most adverse conditions and turn out quality biological work. Each recruit presents a unique view point with a new set of needs that must be met.



Volunteers Tim Folmer and Maria Leung
writing up the days field notes. KIW

When Tim Folmer showed up in King Salmon on May 26th, we took one look at this gigantic Pennsylvania native and began to question whether we had made a good choice--we had! Tim's work ethic was as big as his body. He produced under some of the most adverse working conditions in Alaska.

We asked Tim to record his impression of his experience as a volunteer for the Fish and Wildlife Service in Alaska. His narrative follows:

The date of my departure is almost at hand. This exit will end my summer of volunteer service for Alaska Peninsula/Becharof refuges. I soon shall return to my home in Luthersburg, Pennsylvania. I leave behind me the Alaska Peninsula and a dream come true. I have many stories to tell and many memories to make me smile, and in the words of General MacArthur: "I shall return!"

I remember clearly the events from the day when I, trying to sound professional, called the Regional Office and said, "I am calling to determine the status of my volunteer application.", till today just a few days before my departure.



Timothy Folmer, volunteer
and author. KIW

I graduated in mid-May with an Associate of Science Degree in Wildlife Technology from the Pennsylvania State University DuBois Campus. After a week or so of frenzied activities such as packing, making travel arrangements, etc.; I was on my way to Alaska to fulfill a dream. After two hours of driving and 18 hours of flying, I finally ended up in King Salmon on May 26th. Boy! Was I proud! I stood there with my suitcase, duffel bag, and carry-on luggage looking like a lost puppy. At 6' 4" and 403 lbs., I was a big "CHEECHAKO" (greenhorn) who was hungry from eating three small air travel meals and had an anxious stomach from not knowing what to do or where to go. Refuge secretary Jan Collins picked me up shortly after I had made a call, helped me stow my gear and introduced me to the people I would be working with; Refuge Manager and horseshoe pitching shark Ron Hood, Deputy Refuge Manager

Jim Savery, Randy Wilk, Dwight "MOOSE" Mumma, Alan Rogers, and many others. Twenty hours later I was on my way to Braided Creek, the field camp where I was to be working and living with three others for the next 103 days.

Upon my arrival another volunteer and two paid Bio-Techs greeted me-- all women! A definite first for me. One of many firsts that this little adventure was going to lead me to or, more often than not, drag me through. My first great feat was to follow the ladies to get water. No big deal; it was a quarter of a mile walk to the stream but it looked pretty flat and easy walking and I didn't even have to carry back the water--should have been easy. Wrong! I hit that flat ground and sank to my knees. It slowly dawned upon me that this is what Randy called wet tundra. I made it over and back, but I thought I was going to die. The whole crew thought I was going to die (our first group consensus). Later I thought to myself, "I'll be dipped if I'm going to go through college, wrestle a job in Alaska and then die on the first day!"

To show you how much of a Cheechako I was, I actually changed my clothes six times in the first week. Later, I found out six times a month was quite acceptable. Besides, anymore than that and I would have to walk to the stream to do laundry. To fully appreciate just how green I was and how much I had to learn, let me relate an incident that I shall never forget (mind you I've tried but Karen won't let me). The first bird I tried to identify was a Lesser Sandhill Crane. What I called that bird made me glad that it didn't hear me because I dubbed it a "brown-phase Great Blue Heron". I can only imagine the thoughts running thru my camp partners' minds; but once Karen picked herself off the ground and controlled her laughter my Alaska wildlife education began. The crew leader, Karen, was in charge of teaching me what I had to know. This was no small task! Through repeated observations (and mistakes) and constant grilling from the crew leader and all the other crew personnel, I became a fairly decent birder (and all Moses did was part the Red Sea).

This summer was a character builder for me. During my summer there were trials and rewards, adventures and misadventures, happiness and sadness-- my summer would make a great story. During the summer I was tested by storms that blew for two to four days with winds of 40 to 60 miles per hour; and kept the weatherports slapping, moving, and shaking apart. I was tested by hunger and depression when the airplane could not get to camp with a resupply of food and mail from home because the weather prevented flying.



Home for two Biotechs and one Volunteer at
Herendeen Bay study area. RCK



Intertidal zone shorebird study area at
Herendeen Bay. RJW



The resupply flight didn't make it. KIW

I experienced a few minor misadventures such as startling a female moose on our last transect on the 20-hectare bird survey plot. As we left camp, Allison, another crew member, said, "say hello to the bears!" Karen and I had crossed a small beaver dam and proceeded to the willows where we were to take up positions and start our transect. I looked up and saw a large brown bear with a hump on its shoulder rising above the five-foot high willows. I swung the shotgun to ready as I lost control over all voluntary and involuntary body functions, and yelled, "look at that!!" The bear then raised its huge neck and I saw the face of a startled moose. It jumped and then ran off. I was relieved when I returned to camp and discovered that I did not have to do laundry--but it was very close.

Catching and losing my first "KING" salmon was another misadventure. I had been warned about the Kings but I had never seen one. Being a Pennsylvania "pan" fisherman I was stunned when I hooked into my first king salmon and it rolled on the surface of the river. I got the fish into about six-inches of water; hit it on top of the head with my walking stick; laid the stick down next to the fish and put my fishing rod down; noted the size of this beautiful

fish; grabbed hold of the 25-lb test monofilament line; and reached for him. He came alive! The line snapped like it wasn't even there and the king splashed me as he swam into the deep water. I almost cried. I returned to camp and related my story to my companions. Karen in an attempt to cheer me up said that I had lost a (probably) 40 to 45 pound King Salmon. Again, I almost cried.

Other memories bring smiles and sadness. A brown bear bent our barbeque grill by stepping on it one night just 50 feet from the back of my weatherport. Of course no Alaskan adventure would be complete without the true villain, millions of blood thirsty insects constantly circling me. Sad memories include a camp-mate and good friend leaving for home at the end of the season; or even breaking down what was your home and protector from the elements at the end of the season before you return to civilization.

Other memories come to mind such as a family of mallards swimming on a pond next to camp. Earlier in the season I found the female on her nest; and avoided her during the incubation period. Later on I checked the nest and found it empty and determined she had successfully produced a brood. While I was fishing at the pond, the female and now mother escorted her 10 ducklings into the water and then swam away--I felt like a proud father! I had great adventures with archaeologists and geologists and biologists and pilots and the list just kept growing. I have flown in helicopters and small planes like a Cessna 185, a medium size plane called a Caravan and large planes like 727's. I grow happy when I see a friend, meet new people, do something right or see the beauty of a wild flower. I have also killed over 2000 of those blood thirsty insects.

Of all the things that I have done this summer I feel that the best thing was that I learned about myself and grew up. I have met many people, done and learned many things. So much that I could not possibly relate all with so few words. Everything and everybody shall be remembered and considered a friend--a part of me. I have been wet, cold, tired, and hungry, but despite these I was always happy or at least having a lot of fun. I can look back and honestly say I had a good summer.

5. Funding

Table 4. Alaska Peninsula Refuge funding FY81 - FY83.

FY	1210	1220	1300	TOTAL
83	\$70K	\$210K	--	\$280K
82	\$70K	\$220K	--	\$290K
81	\$10K	\$ 20K	\$ 32K	\$ 62K

Table 5. Becharof Refuge funding FY81 - FY83.

FY	1210	1220	1300	TOTAL
83	\$96K	\$164K	--	\$260K
82	\$64K	\$119K ^a	\$104K	\$287K
81	--	\$ 82K	\$124K	\$206K

^aIncludes \$56K spent on Bristol Bay Cooperative Management Plan (BBCMP) mapping.

Table 6. Alaska Peninsula Refuge funding FY 84 to FY 87.

FY	1260			TOTAL	1360	TOTAL
	Base	ARMM	RPRP			
87	\$200.0K	\$ 85.0K ^a	--	\$285.0K	--	\$285.0K
86	\$180.6K	\$ 66.4K ^b	--	\$247.0K	--	\$247.0K
85	\$179.5K	\$235.5K ^b	--	\$415.0K	\$ 5.0K ^c	\$420.0K
84	\$285.0K	\$130.0K ^d	--	\$415.0K	\$10.0K ^c	\$425.0K

^aIncludes \$45K for large ARMM Projects.

^bIncludes \$180K for large ARMM Projects.

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

^dEarmarked for large ARMM Projects.

Table 7. Becharof Refuge funding FY 84 to FY 87.

FY	1260				1360	TOTAL
	Base	ARMM	RPRP	TOTAL		
87	\$214.0K	35.0K	\$ 45.0K	\$294.0K	--	\$294.0K
86	\$201.6K	\$ 56.4K	\$101.0K	\$359.0K	--	\$359.0K
85	\$216.0K	\$169.0K ^a	\$101.0K	\$486.0K	\$ 5.0K ^b	\$491.0K
84	\$240.0K	\$ 80.0K ^c	--	\$320.0K	\$10.0K ^d	\$330.0K

^a Includes \$132K for large ARMM Projects.

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

^c Earmarked for large ARMM projects.

Table 8. Base funding for Alaska Peninsula/Becharof refuges FY 81 to FY 87.

FY	AKP	BCH	TOTAL
87	\$200.0K	\$214.0K	\$414.0K
86	\$180.6K	\$210.6K	\$391.2K
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

The enactment of the ARMM program in FY 1984 and the RPRP program in FY 1985 created the opportunity (necessity?) to subsidize refuge operational budgets in Region 7. A review of the funding history for Alaska Peninsula and Becharof refuges (presented above) illustrates this point clearly. Operational funding for both refuges has declined rapidly from a high of \$577K in FY 1982 to \$391.2K in FY 1986--a loss of \$185.8K. In the funding allocation for FY 1987, we experienced a substantial reduction in small ARMM funding (\$47.8K) that was partially offset by an increase in operational funds of \$31.8K. However, operational funding still remains \$163.0K less in FY 1987 than in FY 1982. During this same time period staff costs, operational costs and our physical plant have increased significantly.

An overview of our budget analysis for FY 1987 is presented below.

	<u>BCH</u>	<u>AKP</u>	<u>Total</u>
Total Funds	\$294K	\$285K	\$579K
Small ARRM	- 35K	- 40K	- 75K
Large ARRM	---	- 45K	- 45K
RPRP	- 45K	---	- 45K
Base Funds	<u>214K</u>	<u>200K</u>	<u>414K</u>
Base Salaries	- <u>186K</u>	- <u>136K</u>	- <u>322K</u>
Operational Funds	\$ <u>28K</u>	\$ <u>64K</u>	\$ <u>92K</u>

Clearly both small ARRM and RPRP funds will have to be used to subsidize our operational budgets again in FY 1987.

The funding picture for FY 1987 has proven to be an emotional roller coaster. Our initial funding allocation was bleak. Then in early November word came that Congress passed a FY 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 (OMB) was proposing a recision package that included all supplementals and ARMM funds--back to the emotional depths. It appears that it will be mid-fiscal year before we know our funding status. What a way to run a government!

6. Safety

Field operations in bush Alaska are inherently hazardous. A number of small aircraft accidents on and around the refuge reinforced the obvious fact that the primary means of transportation is not without peril. Unpredictable weather, operation in remote areas and a healthy population of brown bears all add to the need for constant attention to safety.

Seasonal Biological Technicians and volunteers as well as our staff received training in many areas such as bear safety, hypothermia, sea survival, shore survival, and other safety topics covered in a safety reading packet provided by the Regional Safety Office.

Our field season was highly successful. The only accident was a minor foot injury to a volunteer wearing hipboots that were too large which caused a sore foot and ankle.

Our refuge demonstrates pertinacious support of the safety program. Monthly safety programs were held with staff members giving presentations related to present field operations and climatic hazards. A station safety committee has been established. The committee's contribution is a productive response to the requirement that safe and healthy working conditions, safe work habits and methods are established and maintained. Meetings were conducted on a quarterly basis.



Monthly safety meeting.

DDM

F. HABITAT MANAGEMENT

1. General

The Becharof Refuge lies in a transition zone between forest/tundra plant communities to the north and the generally treeless grass/sedge/low-shrub tundra typical of the peninsula to the south. The transition occurs between King Salmon River and a line running east-west of the lower arm of Naknek Lake.

Little documentation exists on the vegetation of the upper Alaska Peninsula. Most available data is from isolated studies, local descriptions or military needs. The most recent study is the 1981 Bristol Bay Land Cover Cooperative Mapping Project. The study used Landsat satellite imagery and computer technology to provide more accurate and detailed information than previously existed. Ten main cover types were identified on the refuge by the study. Acreage of the cover types are listed in Table 9.



Example of brown bear habitat. Bear Creek is Becharof Wilderness' southern boundary. REH

Table 9. Major Cover Types and Percentage of Total Cover on Becharof Refuge.^a

Cover Type	Approximate no. acres	Approximate Percent total cover
Deep clear water	299,169	20.5
Shallow sedimented water	17,054	1.2
Snow/cloud/light barren	21,799	1.5
Barren	119,585	8.2
Open low shrub/heath tundra	69,066	4.7
Marsh/very wet bog	22,171	1.5
Closed shrub/grass	89,618	6.1
Miscellaneous deciduous	70,905	4.9
Wet bog/wet meadow	17,363	1.2
Open low shrub/grass tundra	459,525	31.5
All other types	273,304	18.7
Total	1,459,286	100.0

^aData from Bristol Bay Land Cover Cooperative Mapping Project.

Vegetation on the refuge is generally limited to low-growing species that resist cool summer temperatures, strong winds, limited moisture, shallow soils and a short growing season. About 90 terrestrial species are known to occur on the refuge. At least 20 freshwater plant species (mostly algae) are found on the refuge, while more than 70 marine plant species (mostly algae) inhabit salt water adjacent to the refuge.



Brown bear fishing for sockeye salmon in
Bear Creek. JEP

2. Wetlands

The refuge has four significant drainage basins: a tributary of the Naknek River, the King Salmon River, the Egegik River and east slope coastal streams. The first three basins drain the western slopes of the mountains on the refuge and the Bristol Bay lowlands in the north and west. The estimated mean annual run-off for the refuge west of the mountains is two (2) cubic feet per second per square mile (cfs/mi^2). Freeze-up for the western part of the refuge usually begins between November 30th and December 15th; breakup occurs between March 25th and April 5th.

The Pacific side of the refuge, along the coast of the Shelikof Strait, contains many streams ranging from two to five miles in length. The streams flow east into the Pacific Ocean. Average annual run-off varies from 25 to 50 cfs/mi² and the average annual low monthly run-off is one cfs/mi². The refuge contains 173 lakes of over 25 acres, as well as numerous ponds and potholes (Table 10). Only 35 lakes are larger than 100 acres and a few lakes are glacially fed. Most of these lakes (79 %) are located below 500 feet elevation, while approximately 35 % of the lakes have inlets or outlets and 35 % have ocean access.

Table 10. Becharof Refuge lake summary.

Size, Surface Acreage	Quantity		Class Total Surface acreage
	Number	Percent	
25 to 100	138	79.8	8,600
101 to 500	32	18.5	9,600
501 to 1,000	2	1.2	1,500
1,001 to 5,000	0	0.0	0
5,000 plus	<u>1</u>	.5	<u>293,000</u>
Totals	173		312,700

There are two major lakes on the refuge. Becharof Lake, approximately 293,000 acres, is the second largest lake in Alaska. The discharge from Becharof Lake is unknown, but its large size stabilized the discharge of the Egegik River. Ruth Lake, about 1,000 acres is located a few miles south of Becharof Lake and feeds the Ruth River which flows into Becharof Lake.

6. Other Habitats.

Tundra is the major vegetation type on Alaska Peninsula Refuge and generally falls into three categories: wet tundra, moist tundra, and alpine tundra.

Wet tundra is found generally below the 200 feet elevation. Crowberry, willow and a variety of forbs characterize the vegetation of the area. Wet tundra is most common on the north side of the Alaska Peninsula with much of the habitat lying outside of the refuge.

Moist tundra, also referred to as heath, is common throughout the lowlands in moderately drained areas.

Alpine tundra occurs at higher elevations on slopes and ridges of the Aleutian Range and other well drained areas. Crowberry, lichens, and grasses are common in the alpine tundra.

Extensive areas of ice, snow, and bare ground occur in the Aleutian Range above 2,000 feet elevation. Acreage estimates of all cover types are listed in Table 9.



Moose in alpine tundra habitat.

DDM

9. Fire Management

Pursuant to 6 RM 7.7A, an exemption from fire management planning for Alaska Peninsula/Becharof refuges was signed by the Deputy Regional Director on March 4, 1986. During the spring brown bear hunting season one small, less than 10 acre, man-caused fire occurred in the Wide Bay area.

11. Water Rights

During 1986, the refuge staff developed a Federal Reserved Water Rights (FRWR) Inventory and a Stream Priority Matrix. The FRWR inventory was designed to provide basic information concerning each federal refuge in Alaska. The information included refuge location, hydrologic units, legal history, and primary purposes. The stream priority matrix rated prospective streams according to development pressure, management implications and resource values. The rating system will be used to prioritize refuge streams for instream flow studies. Both the FRWR inventory and stream priority matrix will be used to assist federal agencies and Alaska Department of Natural

Resources in determining what the existing and future water needs may be for each refuge.

12. Wilderness and Special Areas

Approximately 400,000 acres or one third of the refuge was established under ANILCA 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 association still intact. Wilderness designation will insure 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 an 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.



Three private inholdings exist within the Kejulik River drainage in the Becharof Wilderness area--all are for sale. RJW

Four private inholdings currently exist within the wilderness area. Three of the inholdings are owned by two registered guides, one being former Alaska Governor, Jay S. Hammond. Both guides are interested in selling and have approached the Service. Mr Hammond's 17-acre Trade and Manufacturing site is located near the mouth of the Kejulik River. Hammond wrote a letter to the Nature Conservancy dated April 6, offering his property to the Conservancy. He suggested that they purchase it for the Service. Late in April, Mr Eliot Marks of the Nature Conservancy, Seattle, Washington, discussed the proposal with RM Hood via the telephone.

An additional 347,00 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.

Designation of these additional lands as wilderness will depend on approval of the President and Congress. In accordance with ANILCA Section 1317 (b), the President must advise Congress of his wilderness recommendation by December 2, 1987.

G. WILDLIFE



Flurry of rock sandpipers along the Alaska Peninsula coast in September. KIW

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 foster a tremendously diverse environmental regime. At least 186 bird species, 30 land and 11 marine mammals occur in or adjacent to refuge habitats. Freshwater streams and lakes are home to at least 24 fish species, including five Pacific salmonids.

3. Waterfowl

The Alaska Peninsula's estuaries, bays and coastal wet tundra lowlands are important waterfowl habitats for major populations of ducks, geese, tundra swans and brant. Emperor, cackling Canada, and greater white-fronted geese stage in Bering Sea side estuaries during migration, as do brant, that winter in Izembek Lagoon at the peninsula's southern terminus. A large portion of the Bristol Bay tundra swan population nests in the northern peninsula's lowlands, with an estimated 10-15% of the swans occurring on refuge lands. Northern pintail, scoters, scaup, American wigeon, mallard, and red-breasted mergansers are among the more common nesting waterfowl in tundra habitats. Waterfowl occurring in study areas during 1985 and 1986 field studies are listed in Section 4.



Emperor geese at Cinder River Lagoon. KIW

Naknek River Survey

Each spring, since 1983, refuge staff have conducted aerial surveys of the Naknek River, to document the occurrence and estimated abundance of waterbirds. Approximately 15 miles of river are flown, from the mouth at Bristol Bay to the outlet of Naknek Lake in Katmai National Park and Preserve. The aerial survey provides fairly good estimates of the numbers of geese and swans, but numerous ducks and shorebirds are probably overlooked, especially when local concentrations of several species are in the thousands. In 1986, simultaneous ground counts were conducted to get an idea of the species that are not seen during the intensive aerial counts. Tables 11 and 12 provide summaries from recent surveys.

Table 11. Species composition and abundance from highest counts + 2 hours of low tide of common waterfowl observed during spring (April) aerial surveys of the Naknek River, 1984-1986.

	1984	1985	1986
Tundra swan	2625	2776	1965
Greater white-fronted goose	2453	1610	1129
Canada goose	182	846	234
Mallard	600	263	
Northern pintail		1638	1319
Goldeneye spp.	1102	733	
Merganser spp. (Common, Red-br.)	1558	1644	1126

Table 12. Species composition and abundance of waterbirds and associated avifauna observed during highest total counts from ground observations \pm 1 hour of low tide from two locations along the Naknek River, spring, 1986.

	18 April	24 April	2 May
Tundra swan	745	1145	387
Gr. white-front	70	758	
Canada goose		52	12 ^a
Green-winged teal		2	114
Mallard	27	44	27
N. pintail	463	1704	712
N. shoveler		46	75
Gadwall		4	
Eurasian wigeon		2	3
American wigeon		35	25
Redhead	1		
Greater scaup	15	45	40
Unid. scaup		8	
Com. goldeneye	134	171	12
Bufflehead		1	
Com. merganser	175	199	8
Red-br. merganser		3	1
Unid. duck	100		
Bald eagle	3	2	
Black-bellied plover		1	51
Greater yellowlegs		1	10
Unid. yellowlegs		2	
Dunlin			78
Sh.-billed dowitcher			26
Unid. shorebird			80
Bonaparte's gull			13
Mew gull		6	24
Gl.-winged gull	316	371	29
Unid. gull	300	250	65
Common raven		2	

^aAll totals from this point and below are from one location.

Tundra Swan Surveys

Since 1983, tundra swan aerial surveys have been conducted in peninsula and refuge wetlands. The early survey objectives were to document the distribution, abundance and productivity of swans summering between Kvichak Bay and Port Moller (Figure 6). After the 1985 field season, swan potential breeding pair (swans tallied as singles or pairs) densities were "stratified" by U. S. Geological Survey (USGS) 1:63,360 maps divided into quadrants (1/4 maps). The resultant 186 1/4 map sampling units formed the complex of high, medium and low swan density strata from which future random samples can be surveyed.

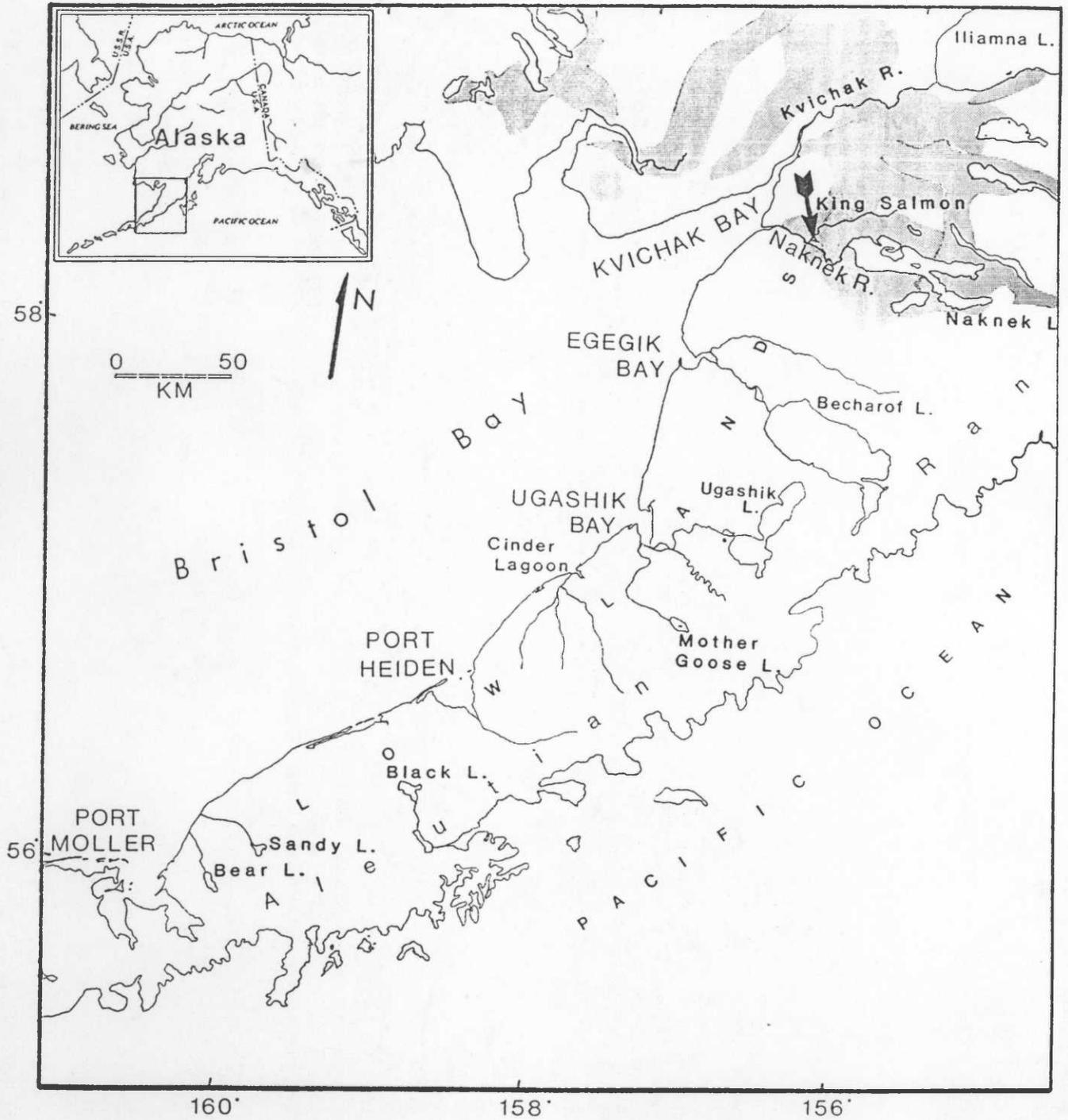


Figure 6. Northern Alaska Peninsula study area.

In 1986, random sample plots were flown for the first time, and were based on the optimum allocation of effort. Concurrent with the standard procedures used to survey plots, we implemented a more intensive search effort to estimate (if any) the number of swans not seen during standard searches. The sampling procedure and its development was presented in a paper to the Wildlife Inventory Workshop/Project Leaders meeting in Anchorage on December 8th - 11th. The method allows estimating swan numbers with confidence intervals (CI), with monitoring of individual units during interim years when valid population surveys are not conducted (population trend monitoring). The following pages present summary tables and figures with preliminary swan data related to our efforts in the northern Alaska Peninsula. In 1987, a report will be completed concerning tundra swans summering in the Bristol Bay lowlands of the northern Alaska Peninsula from aerial surveys. Preliminary results of these studies are in Tables 13 - 16 and Figures 7 - 8.

Table 13. Breeding pairs of tundra swans with broods or nest from aerial surveys in the northern Alaska Peninsula lowlands (1984-1986).

	Pairs observed ^a	Percent pairs with broods
1984	914.0	38.4
1985	465.0	35.3
1986	207.0	31.9

^aPotential breeding pairs = pairs + (singles/2).

Table 14. Population structure of tundra swans in the Bristol Bay lowlands, northern Alaska Peninsula.

	Percentage			Number (N)
	Paired and single swans	Swans in flocks	Young	
June				
1983	(72) ^a	(28)		1705
1984	64 (68)	31 (32)	5	3842
1985	59 (62)	36 (38)	5	3836
1986	75 (77)	22 (23)	3	779
July				
1983	(62)	(38)		1114
1984	45 (63)	26 (37)	29	4066
1985	45 (61)	30 (39)	23	1974
1986	50 (66)	25 (34)	25	824

^aPercentage less young in parentheses. 1983 data biased therefore not included.

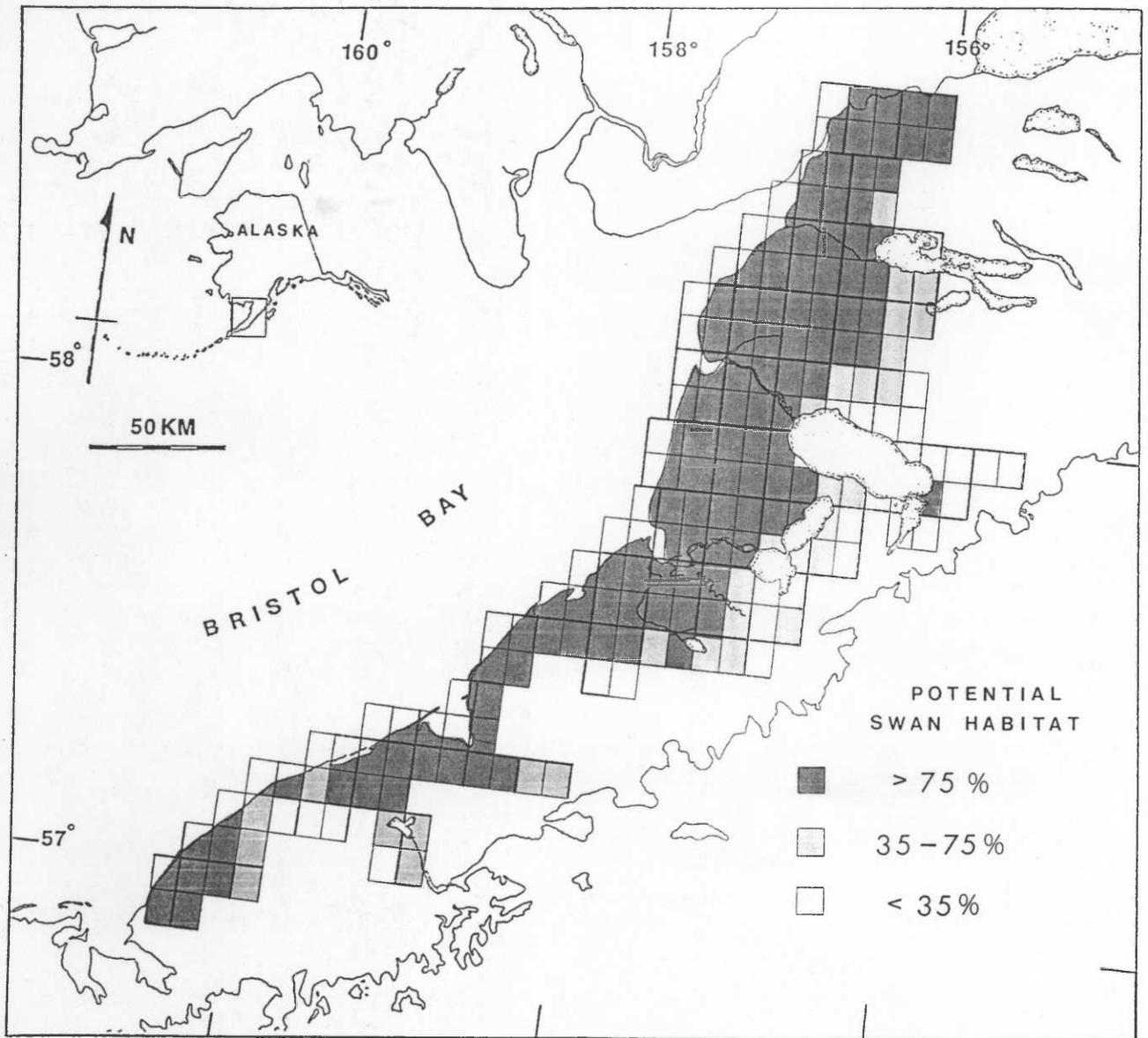


Figure 7. Sampling units and swan habitats in northern Alaska Peninsula survey area.

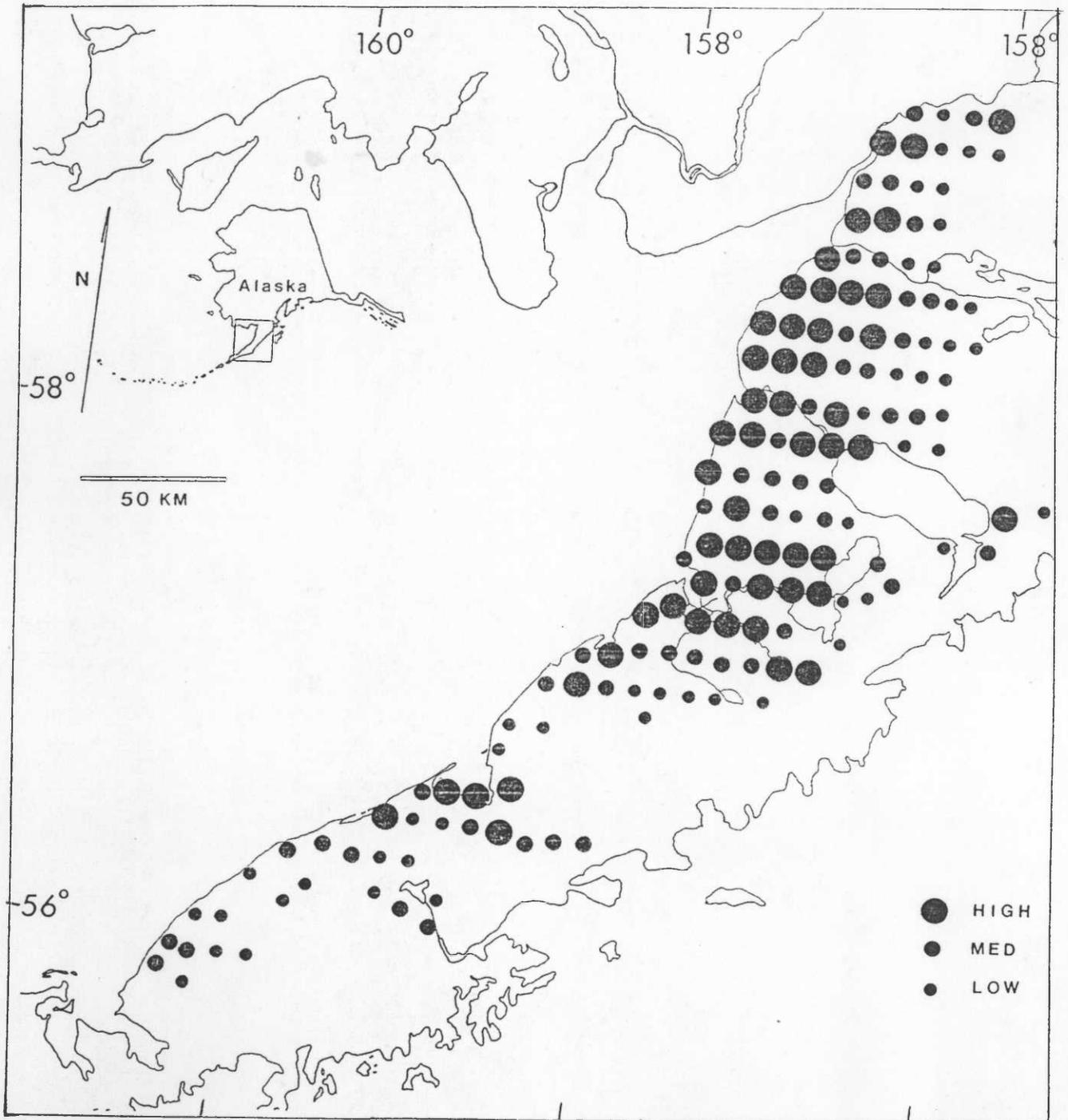


Figure 8. Preliminary densities of swans by survey sampling unit in the northern Alaska Peninsula.

Table 15. Update of Tundra swan flock and brood size from Northern Alaska Peninsula aerial surveys, Summer 1983-1986.

	Brood Size		Flock Size	
	N	Mean (+SE)	N	Mean (+SE)
1983				
June			31	15.4 + 2.5
July			93	4.6 + 0.2
1984				
June	65	3.1 + 0.1	65	18.2 + 4.4
July	355	3.4 + 0.1	159	6.6 + 0.6
1985				
June	68	2.9 + 0.1	75	18.3 + 3.5
July	157	3.0 + 0.1	76	7.7 + 1.4
1986				
June	19	3.1 + 0.2	22	21.5 + 5.5
July	58	3.5 + 0.2	94	6.0 + 0.5

Table 16. Update of tundra swan population data in the Bristol Bay lowlands, northern Alaska Peninsula, 1983-1986.

	Percent of study area sampled	Swans/km ²		cygnets	Population index(+SE)
		in singles/prs.	in flocks		
1983					
June	54.0	0.173	0.045		3849 + 156
July	24.8	0.153	0.096		
1984					
June	86.5	0.163	.076		4182 + 146
July	56.5	0.182	.104	0.115	6106 + 157
1985					
June	62.0	.204	.122		5082 + 459
July	28.1	.182	.116	.042	6361 + 400
1986					
June	17.7	.178	.166		3651 + 357
July	13.1	.173	.089	.089	6081 + 762

Emperor Goose Surveys

In recent years, refuge staff assisted the Office of Migratory Birds, (Anchorage and Fairbanks) and Izembek Refuge in conducting spring and fall emperor goose surveys along the Alaska Peninsula coasts. The emperor goose is a species of special emphasis, and is one of four arctic nesting geese that has recently experienced serious population declines (Table 17). The objective of these surveys was to provide secondary comparative estimates of populations with results from surveys conducted by the primary survey crews. In spring 1986, the

strategy changed. We conducted a preliminary reconnaissance of the Bristol Bay coast from Kvichak Bay to Port Moller to assess ice conditions and phenology of migration on April 25th. The primary survey was conducted between May 4th and 7th. Results of the spring survey showed a further decline in the spring population, but it was uncertain if the findings were attributed to winter mortality or advancement of spring migration (resulting in under estimates). We tallied 39,143 emperors during the April 25th survey (compare to Table 17). Results from the fall survey showed an increase over fall 1985.

Table 17. Spring and fall population data of emperor geese from aerial surveys.^a

	Population size		Percent young
	Spring	Fall	
1979	--	59,114	
1980	--	63,091	24.8
1981	91,267	--	31.7
1982	100,643	80,608	7.8
1983	79,155	72,551	27.1
1984	71,217	82,842	22.3
1985	58,833	59,792	17.4
1986	42,228	68,051	28.9

^aData from office of Office of Migratory Bird Management and/or Izembek Refuge.

In autumn, the refuge again assisted the Office of Migratory Bird Management (OMB) by establishing a field camp in Cinder River lagoon, to assess productivity and observe migration of emperors staging in the lagoon. Each day the field crew recorded geese by age and group size (assumed siblings in broods), and over the 24-day period, classified more than 40,000 geese and more than 850 broods (Table 18 - 19). The mean percent young was 41.4% with a 95% CI (confidence interval) of the median percent being 37.6-45.6% for samples of sizes of between 297 and 1855 geese. Our proportions were considerably higher than estimates (overall for AP=26.1%) obtained by OMB using samples obtained from aerial photography. Suggesting that use of different staging areas by geese, regulating of use and tidal stage could influence estimates.

Table 18. Summary statistics for daily age ratios of emperor geese from 41 counts in Cinder Lagoon, Alaska Peninsula, September 17 - October 10, 1986.

	Sample size			Totals
	297-503	504-1000	1001-1855	
Counts	9	14	18	41
Total Sample	3614	11705	24729	40048
Mean Sample size	401.6	836.1	1373.8	976.8
SD	77.0	150.2	229.5	422.8
Immature geese (%)	42.1	42.6	38.8	40.2
Mean %	42.8	43.2	39.4	41.4
Median %	44.0	42.5	38.6	41.8
95% CI (median %)				37.6 - 45.6
Range (%)				14.9 - 59.7



September sunset during emperor goose studies in Cinder River Lagoon. KIW

Table 19. Group sizes of emperor geese young with 1-2 adults observed from ground counts and incidental sightings in Cinder Lagoon, Alaska Peninsula, 17 September - 10 October 1986. Means are for number of young.

	Ground counts					Incidental observations				
	Number	Mean	SE	Mode	Range	Number	Mean	SE	Mode	Range
September										
17						25	3.96	0.47	3	1 - 10
18						21	3.57	0.33	3	1 - 7
19						40	3.30	0.22	3	1 - 6
20						92	3.60	0.17	3	1 - 8
21	12	4.00	0.48	5	1 - 7	21	4.38	0.41	2	1 - 8
22						15	3.33	0.37	3, 4	1 - 6
23	3	3.00	1.15		1 - 5	65	3.78	0.20	3	1 - 10
24						16	4.94	0.50	6	1 - 9
25	1	6.00				12	3.58	0.43	3, 5	1 - 6
26						3	4.67	0.33	5	4 - 5
27						13	3.54	0.37	4	1 - 6
28	50	3.56	0.20	4	1 - 7	4	4.50	0.50	5	3 - 5
29	78	3.71	0.15	4	1 - 8	4	3.25	0.25	3	3 - 4
30	68	3.35	0.13	3	1 - 6	6	3.83	0.65	2, 4	2 - 6
October										
01	61	3.11	0.18	2	1 - 6	7	4.29	0.68	3, 4	3 - 8
02						4	3.50	0.50	3	3 - 5
03	50	3.48	0.16	3	1 - 5	6	4.00	0.52	5	2 - 5
04	49	3.88	0.21	4	1 - 7					

Table 19. Continued.

	Ground counts					Incidental observations				
	Number	Mean	SE	Mode	Range	Number	Mean	SE	Mode	Range
October										
05	4	3.50	0.96	5	1 - 5	5	2.60	1.12	1, 2	1 - 7
06	15	3.33	0.45	4	1 - 6	9	4.33	0.67	4	2 - 9
07	10	3.00	0.47	2	1 - 6	11	3.00	0.56	3	1 - 7
08	31	3.13	0.28	2	1 - 8	1	5.00			
09	21	3.29	0.27	3, 4	1 - 6					
10	24	3.13	0.26	4	1 - 7					
Totals or means	477	3.45	0.06	3	1 - 8	379	3.74	0.09	3	1 - 10

4. Marsh and Waterbirds

A variety of waterbirds occur in the refuge during migration and the summer. Since 1985, we have gathered on-ground data for birds occurring in certain peninsula study locations. Comprehensive information is presently being compiled. Table 20 lists the species composition of birds recorded for freshwater or marine habitats during these studies. The number of known species occurring in the refuge is greater, of course.



Sandhill crane nest in sphagnum sedge
meadow in Dog Salmon study plot. KMS

Table 20. Species composition of waterfowl, marsh and waterbirds documented in three study areas in the Alaska Peninsula, spring-summer, 1985-1986.

	Study Area		
	Dog Salmon	Braided Creek	Herendeen Bay
Red-throated loon	X	X	X
Pacific loon			X
Common loon	X	X	X
Horned grebe			X
Red-necked grebe		X	X
Double-crested cormorant			X
Cormorant spp.			X
Tundra swan	X	X	X
Greater white-fronted goose	X		
Emperor goose		X	X
Brant			X
Canada goose		X	X
Green-winged teal	X	X	X
Mallard	X	X	X
N. Pintail	X	X	X
N. Shoveler		X	X
Gadwall		X	X
American wigeon	X	X	X
Greater scaup		X	X
Scaup spp.	X		
Common eider		X	
Harlequin duck	X	X	X
Black scoter	X		X
Surf scoter			X
White-winged scoter	X		X
Barrow's goldeneye	X		X
Goldeneye spp.	X		
Common merganser		X	
Red-breasted merganser	X	X	X
Merganser spp.	X		
Sandhill crane	X	X	X



Two races (light and dark) of rock sandpipers wait out a Bering Sea storm. KIW

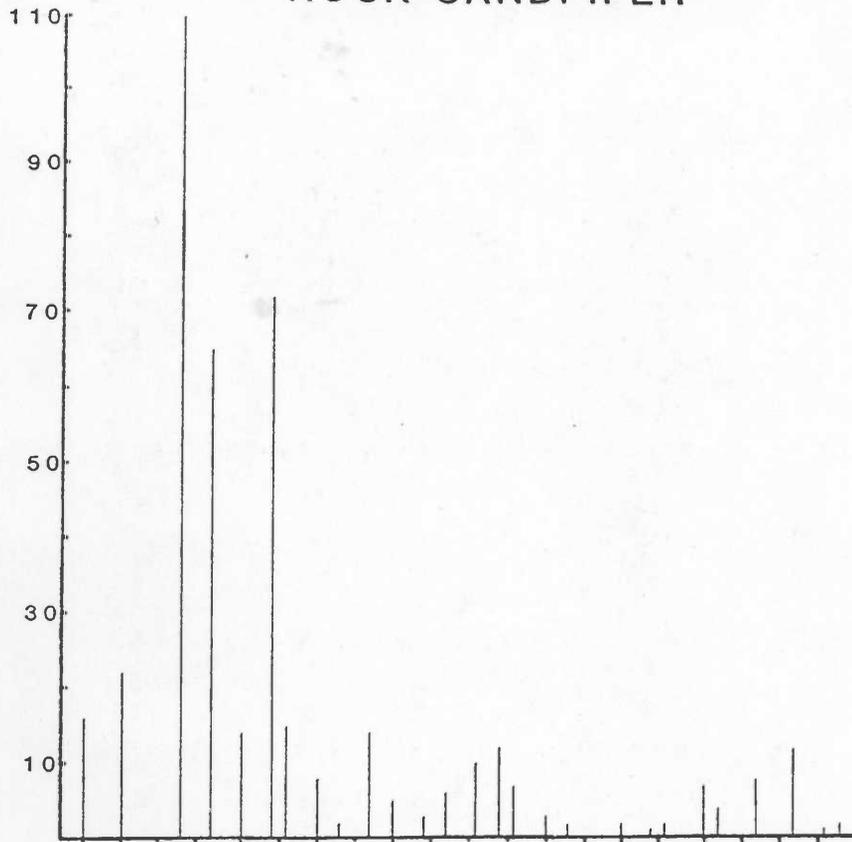
5. Shorebirds, Gulls, Terns and Allied Species

The Alaska Peninsula is among the great geographical landmasses strategically important to migrating and nesting shorebirds. Among the highest numbers of migrants include western and rock sandpipers, dunlins, short-billed dowitchers, and bar-tailed godwits, which number between 3000 and 10,000 individuals during peak fall migration. Seabirds flourish, particularly along the rocky habitats of the rugged Pacific coast where tens of thousands of colonial cliff nesters occur in some bays during the nesting season. The most common of these species include, common and thick-billed murre, black-legged kittiwakes, horned and tufted puffins, cormorants, pigeon guillemots and gulls. The current status of many of these species requires updating. Table 21 is a list of species recorded for three study areas in the Alaska Peninsula in 1985-1986, including marine environments around Herendeen Bay. Figures 9 - 11 show seasonal abundance indexes of several shorebird species observed in an intertidal zone study in Herendeen Bay.

ROCK SANDPIPER

56

LOW TIDE



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LEAST SANDPIPER

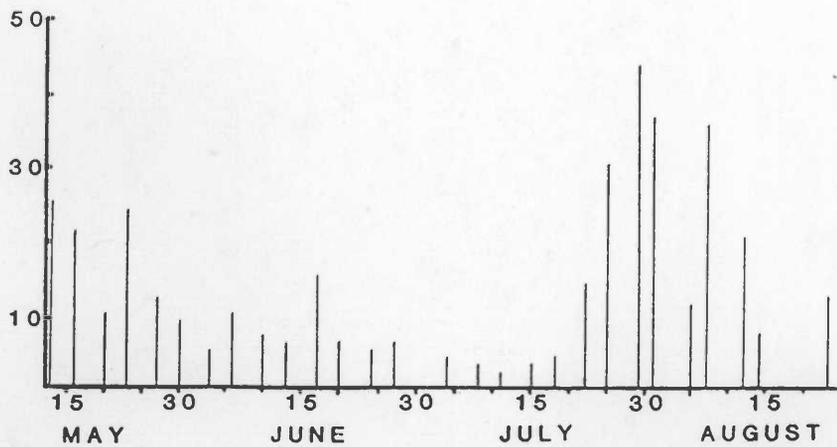
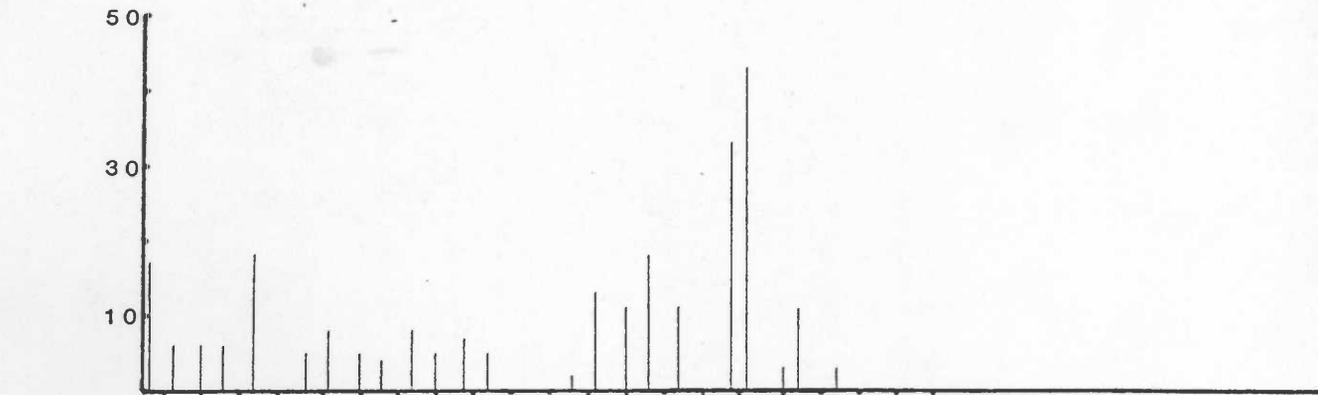


Figure 9. Abundance of rock and least sandpipers in Herendeen Bay study area, 1986.

SEMIPALMATED PLOVER



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RUDDY TURNSTONE

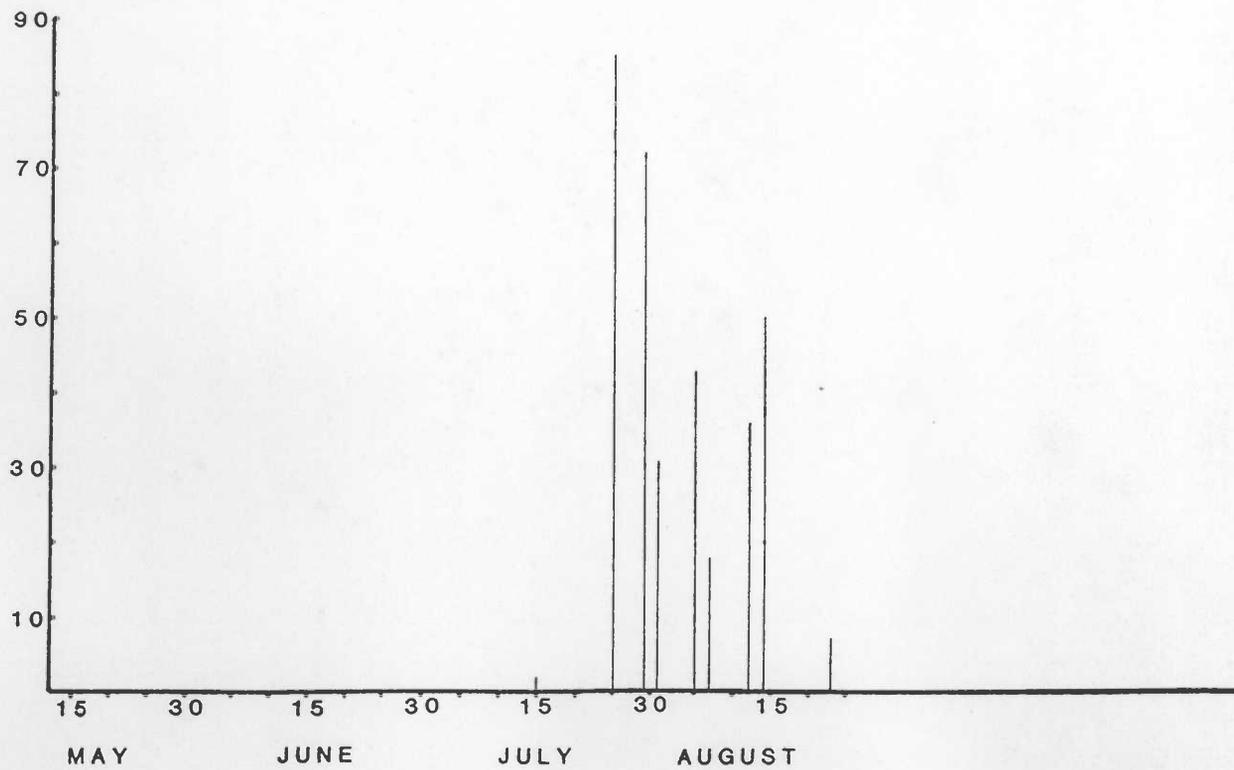
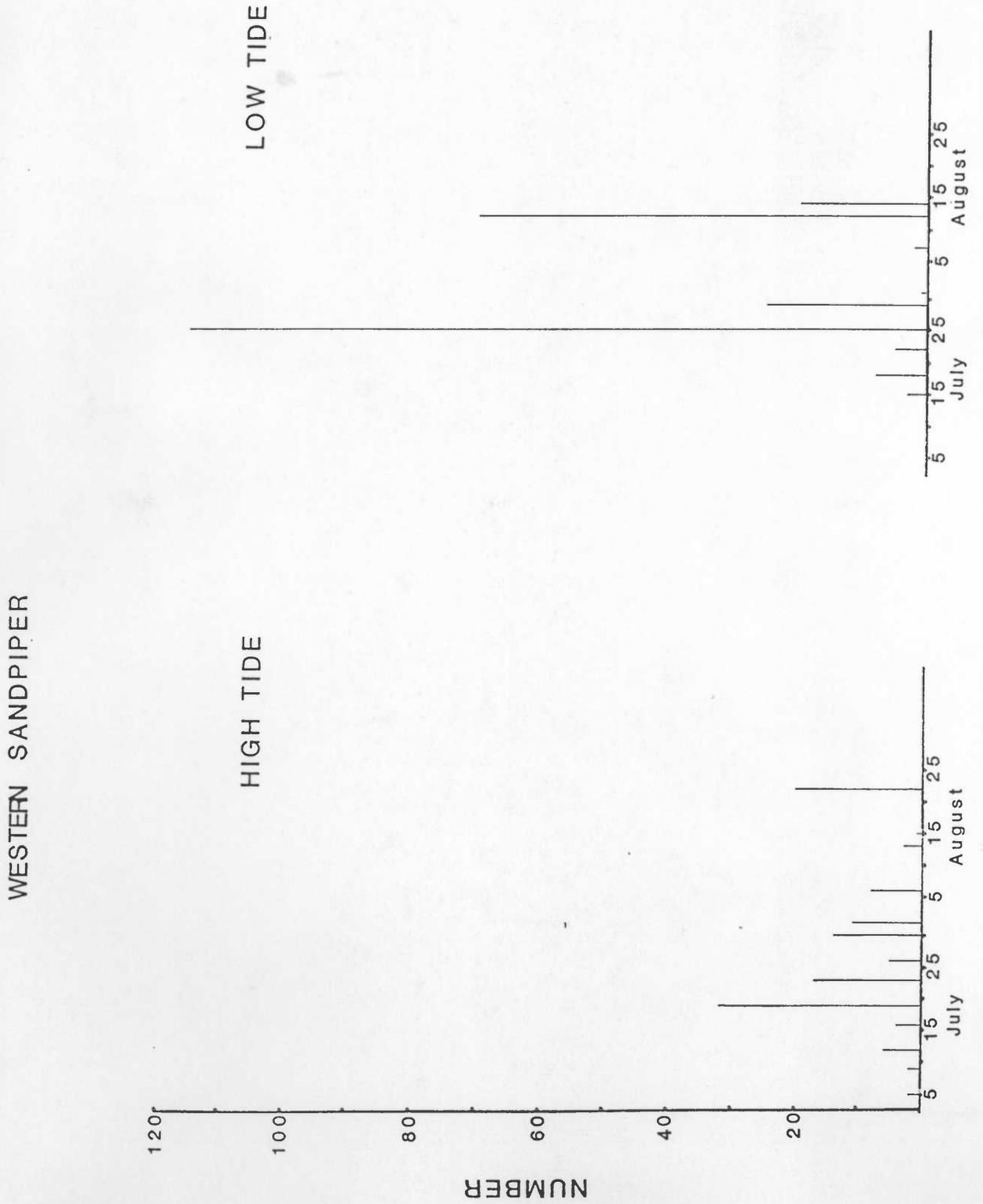


Figure 10. Abundance of semipalmated plovers and ruddy turnstones in Herendeen Bay study area, 1986.

Figure 11. Abundance of western sandpipers in Herendeen Bay study area, 1986.





Glaucous-winged gull chick in Herendeen Bay. RCK



Black-legged kittiwakes nesting in cliff habitat. RCK

Table 21. Species composition of shorebirds, gulls, terns and allied species documented in three study areas in the Alaska Peninsula, spring-summer, 1985-1986.

	Study Area		
	Dog Salmon	Braided Creek	Herendeen Bay
Northern fulmar			X
Shearwater spp.			X
Black-bellied plover			X
Lesser golden plover			X
Semipalmated plover		X	X
Greater yellowlegs		X	X
Lesser yellowlegs			X
Yellowlegs spp.	X		
Spotted sandpiper	X	X	
Wandering tattler		X	X
Whimbrel	X	X	X
Hudsonian godwit			X
Bar-tailed godwit			X
Ruddy turnstone			X
Sanderling			X
Western sandpiper			X
Least sandpiper	X	X	X
Pectoral sandpiper		X	
Rock sandpiper			X
Dunlin	X	X	X
Short-billed dowitcher	X	X	X
Common snipe	X	X	X
Red-necked phalarope		X	X
Red phalarope			X
Parasitic jaeger	X	X	X
Long-tailed jaeger	X	X	X
Bonaparte's gull			X
Mew gull	X	X	X
Glaucous-winged gull	X	X	X
Black-legged kittiwake			X
Kittiwake spp.	X		
Sabine's gull			X
Arctic tern	X	X	X
Aleutian tern			X
Pigeon guillemot			X
Marbled murrelet			X
Tufted puffin			X
Horned puffin			X



Fireweed accentuates fall at
Braided Creek study area. AHB

6. Raptors

Bald eagles are the most visible and most common birds of prey nesting in the refuge. Nests are constructed atop cliffs and seastacks, and are occasionally found in treetops on the tundra where trees are rare. In 1983, the Office of Raptor Management conducted a survey of bald eagles occurring along the Pacific coast during the summer. It was estimated that $1422 \pm 21\%$ (95% CI) adults and $418 \pm 38\%$ young were present. Eagles and other birds of prey are not regularly counted by the refuge, but observation data from 1985-1986 in three Alaska Peninsula study areas provides some information about the occurrence of some species (Table 22).



Bald eagle aerie along Bering Sea bay. RCK



Rare photograph of bald eagle aerie with apparently "adopted" rough-legged hawk (center). RCK

Table 22. Species composition of raptors documented in three study areas in the Alaska Peninsula, spring-summer, 1985-1986.

	Study Area		
	Dog Salmon	Braided Creek	Herendeen Bay
Bald eagle	X	X	X
Northern Harrier	X	X	
Rough-legged hawk	X	X	X
Golden eagle		X	
Merlin		X	
Peregrine falcon			X
Gyrfalcon			X



Gyrfalcon on cliff aerie.

RCK



Gyr Falcon. young about 23-24 days old.

RCK

7. Other Migratory Birds

In the past, perching birds have not been given much attention. However, in recent years, along with other nongame species, this variety of wildlife has become the focus of some studies. During censuses of ground plots studied in 1985 and 1986, several species have been documented in the refuge. Among the most unusual observations in 1986 was a white wagtail seen in Grass Valley, lower Herendeen Bay (June). This is the first record for the Alaska Peninsula. A list of "other migratory birds" (including resident species) documented in three Alaska Peninsula study areas is found in Table 23.



Omnipresent willow ptarmigan in peninsula
uplands in summer. RCK



View from Lawrence Valley cabin,
Herendeen Bay. RJW

Table 23. Species composition of "other migratory" and resident birds documented in three study areas in the Alaska Peninsula, spring-summer, 1985-1986.

	Study Area		
	Dog Salmon	Braided Creek	Herendeen Bay
Willow ptarmigan ^a	X	X	X
Rock ptarmigan ^a	X	X	
Belted kingfisher	X	X	X
Downy woodpecker	X		
Tree swallow	X	X	X
Violet-green swallow		X	
Bank swallow	X	X	X
Cliff swallow		X	
Black-billed magpie	X	X	X
Common raven	X	X	X
Black-capped chickadee ^a	X	X	X
American dipper ^a		X	X
Gray-cheeked thrush	X	X	X
Hermit thrush	X	X	X
American robin	X	X	X
Yellow wagtail		X	
White wagtail			X
Water pipit		X	X
Northern shrike	X	X	X
Orange-crowned warbler	X	X	X
Yellow warbler	X	X	X
Wilson's warbler	X	X	X
American tree sparrow	X	X	
Savannah sparrow	X	X	X
Fox sparrow	X	X	X
Golden-crowned sparrow	X	X	X
White-crowned sparrow	X	X	X
Lapland longspur	X	X	X
Snow bunting	X	X	X
Rusty blackbird		X	
Pine grosbeak			X
Common rosefinch ^b		X	
Common redpoll	X	X	X

^a Resident.

^b Unconfirmed.

On December 27th, refuge staff participated in the first annual King Salmon-Naknek Audubon Christmas Bird Count. Weather conditions were unusually mild during fall, extending into the count period. The Naknek River was perhaps 80-95 % open in most areas on count day. Preliminary results are listed in Table 24.

Table 24. Preliminary results from King Salmon-Naknek Audubon Christmas Bird Count, December 27, 1986.

	Individual No.
Goldeneye spp.	30
Common merganser	293
Merganser spp.	125
Bald eagle	
adult(s)	8
immature(s)	2
Peregrine falcon	1
Rock dove	1
Black-billed magpie	42
Common raven	231
Black-capped chickadee	20
Boreal chickadee	4
Northern shrike	1
White-crowned sparrow (juvenile)	1
Pine grosbeak	4
Common redpoll	19
Total 13 species	<u>782</u>



Cessna Caravan taking final load out of
the Braided Creek study area. KIW

8. Game Mammals

The Becharof Refuge is open both to sport trapping and subsistence harvest of game mammals. The Alaska Department of Fish and Game (ADF&G) divides the Alaska Peninsula into three game management units (GMU) (Figure 12).

Brown Bear

The refuge continues to make significant contributions to brown bear data collections. The radio telemetry program, begun in 1983, is beginning to indicate a strong tendency for the bears to move northward to seek denning sites. These same bears are sometimes located on the Alaska Peninsula Refuge, as much as 70 miles south of denning areas, especially during the red salmon runs. The telemetry data combined with stream survey data (Table 25) completed each August during the peak of the sockeye salmon runs will provide much of the information necessary for long term management of the species.

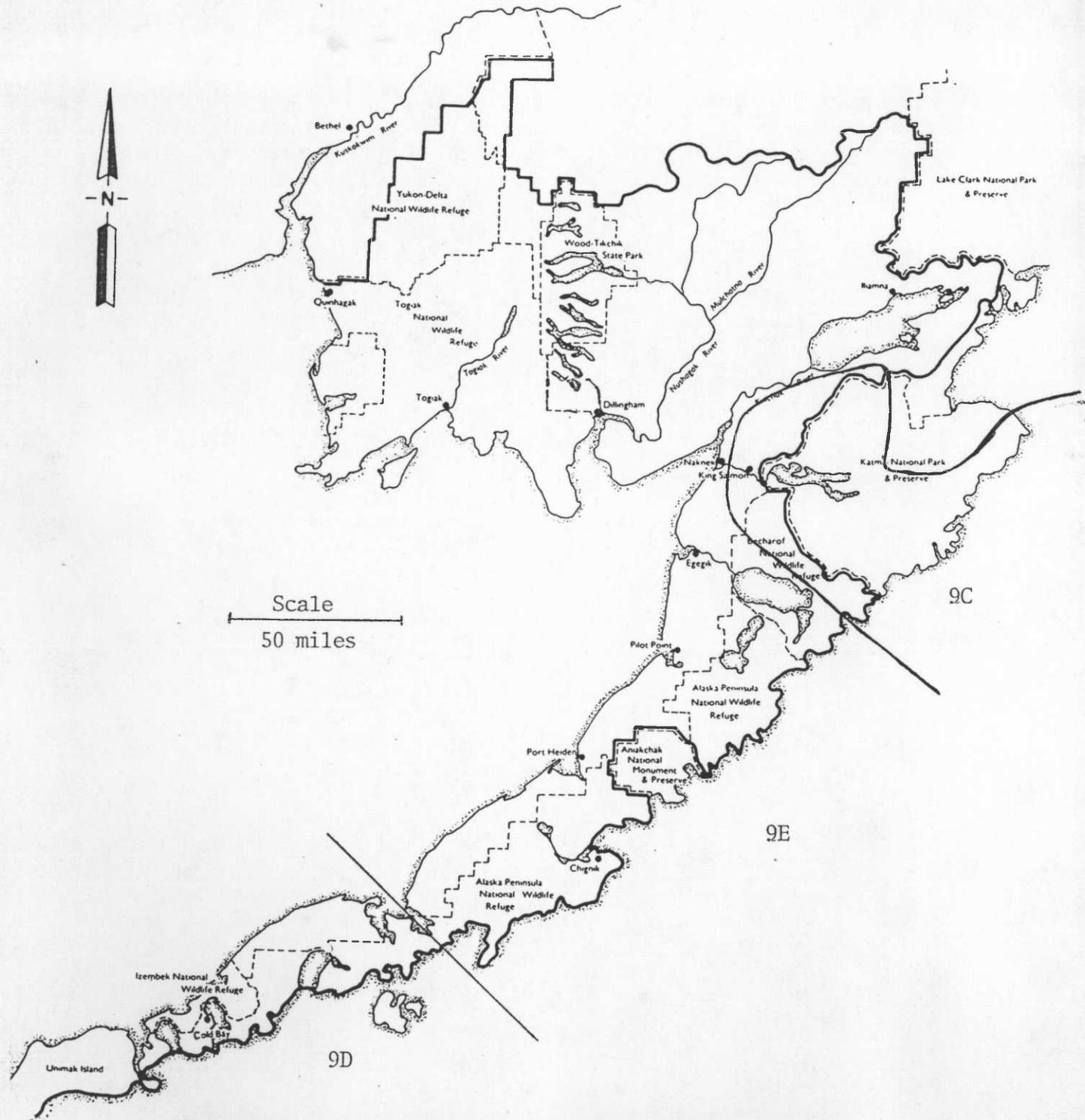


Figure 12. Becharof Refuge boundaries in relation to Alaska Department of Fish and Game Management Subunits.



Jim Savery recording data during brown bear radio collaring effort.

REH

Brown Bear Study

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

1. Determine the extent of island denning of brown bear on the refuge;
2. determine seasonal movement of brown bear within and out of refuge;
3. locate and describe winter denning sites; and
4. increase knowledge of brown bear use on the refuge and establish a data base.

Studies done in 1974 by National Park Service biologist Troyer indicated 14 dens on islands within Becharof Lake, while early studies on the Alaska Peninsula and Kodiak Island showed most dens mid-slope in mountains. Early findings of the refuge's radio telemetry contrast Troyer's observations with only one unconfirmed den on any island. By the end of 1986 five dens had been visually confirmed and 19 additional den sites had been placed in a general area by audio signals. All of these den sites have been at mid-slope and well above sea level. It also interesting to note all den sites thus far located are north of the original capture point.

In the summer of 1986 there were 17 bears collared (Figure 13). One of the 1984 bears was recaptured and fitted with a new collar. Since most collars have a transmitting life of about two years, the 1984 bear will yield four consecutive years of data. Including the bears collared in 1986 the refuge now has a total of 39 potentially transmitting collars on bears (Table 26 - 28).



Each bear received a lip tattoo.

JFP

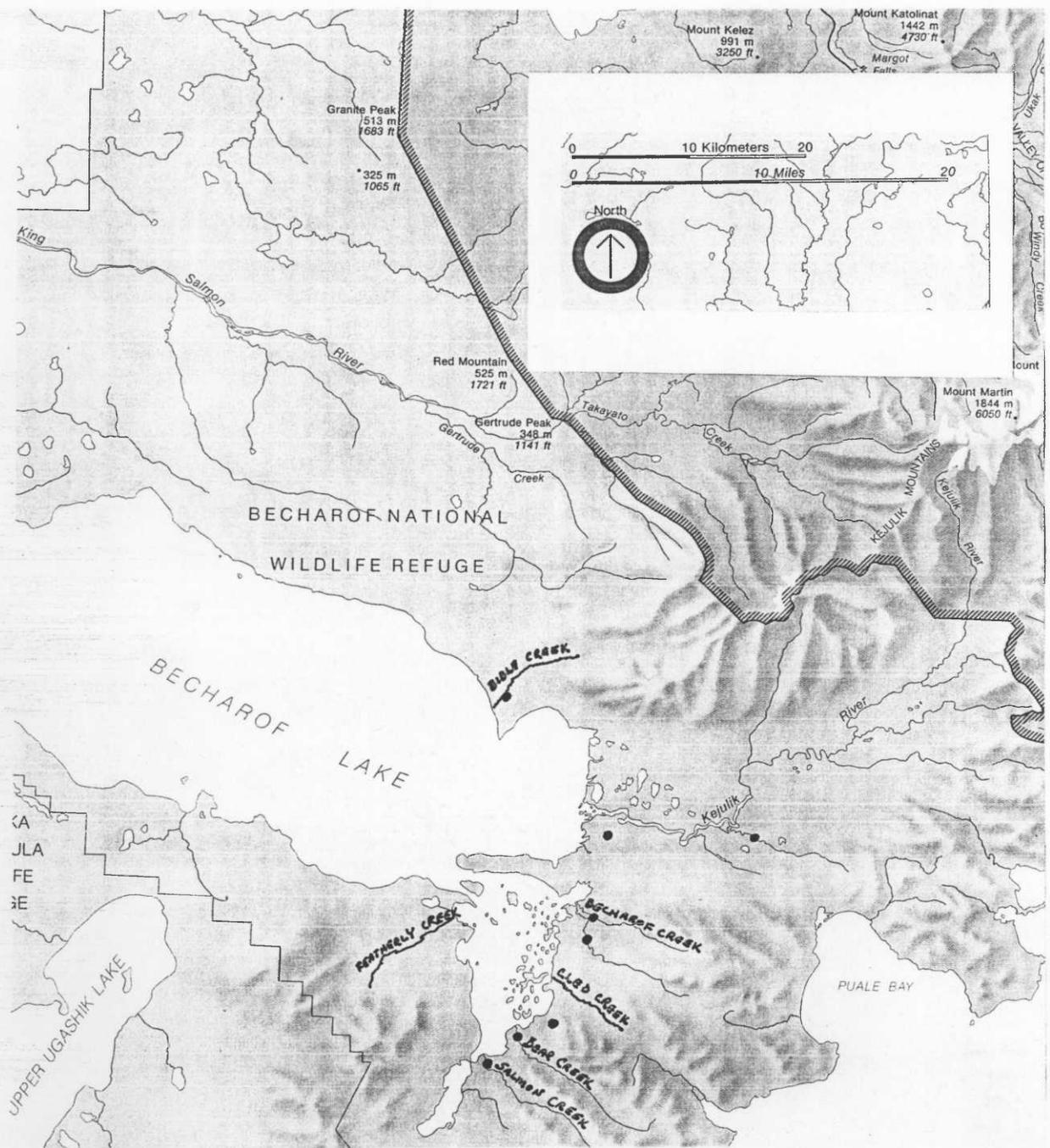


Figure 13. Dots represent general vicinities of captured bears in 1986.

Table 25. Becharof Lake brown bear salmon stream trend count, Becharof Refuge, 1985-86.^a

Date	Sow/w young		Cubs		Yrlgs.		Cubs & Yrlgs.		Singles		Total Sample	Mean ltr. sz.		Best Survey		Comments
	N ^b	% ^c	N	%	N	%	N	%	N	%		Cubs	Yrlgs.	Bears	Pr/hr	
1985	19	19	11	11	24	23	35	34	48	47	102	1.5	2.0	57	46.1	2 counts
1986	37	25	15	10	51	33	66	43	43	29	146	---	---	58	53.8	3 counts

a Survey date varied and are combined unless otherwise specified.

b Percent of total bears.

Table 26. Radio-collaring summary for 47 brown bears on the Island Arm, Becharof Lake, August 1984, 1985, and 1986.

	1984	1985	1986
Total Bears Collared (additive)	15 (15)	15 (30)	17 (47)
Collars lost (additive)	7 (7)	1 (8)	0 (8)
Recovered Collars (additive)	4 (4)	1 (5)	0 (5)
Collars recovered- reassigned (additive)	0 (0)	3 (3)	2 (5)
Confirmed denning site-visual (additive)	1 (1)	4 (5)	0 (5)
Probable denning site-audio (additive)	2 (2)	10 (12)	7 (19)
Recaptured bears new collar assigned (year recaptured)	1 (1986)	0	0
Probable active collars-Dec 1986 (additive)	8 (8)	14 (22)	17 (39)



Extracting first premolar for age data. JFP

Table 27. Status and radio-location summaries for 47 brown bears radio-collared on the Island Arm, Becharof Lake, August 1984, 1985 and 1986.

Number	Capture date	Status to December 1986
04-01	08-13-84	Sow w/2 cubs; probable den site located; observed w/2 yearlings in 1985; recaptured in 1986.
02	08-13-84	Sow w/1 yearling; recollared 05-14-86.
03	08-13-84	Sow w/2 yearlings; probably shed collar on or before 09-13-84; collar recovered 07-09-85; reassigned to bear 05-13.
04	08-13-84	Sow w/1 yearling; last observed as a single bear on 8-13-86.

Table 27. Continued.

05	08-13-84	Sow w/3 cubs; collar shed on or before 10-29-84; recovered 07-11-85; reassigned to bear 05-15.
06	08-13-84	Sow w/2 cubs; collar shed on or before 10-02-84; recovered 10-11-85; inactive.
07	08-13-84	Sow w/2 yearlings; last observed on 10-24-86.
08	08-13-84	Sow w/1 cub; last observed 10-19-84; probable shed collar.
09	08-13-84	Sow w/2 cubs; observed w/cubs on 10-02-84; observed as a single bear on 10-02-86.
10	08-14-84	Sow w/2 cubs; collar shed on or before 08-27-84; recovered on 10-28-84; reassigned to bear 05-14.
11	08-14-84	Sow w/1 yearling; probable shed collar, last audio signal 09-30-85.
12	08-14-84	Sow w/2 yearlings; possible den site located.
13	08-14-84	Sow w/3 cubs; last observed with 3 yearlings on 8-13-86; den site located winter 1986.
14	08-14-84	Sow w/2 yearlings; possible den site located winter 1986; last seen as a single bear 10-3-86.
15	08-14-84	Sow w/2 yearlings; audio signals last heard 08-13-86.
05-01	08-03-85	Sow w/1 cub or small yearling; probable den site located, winter 1986; last observed 09-18-86.
02	08-03-85	Sow w/2 large yearlings; den located winter 1986; last audio signal received 09-18-86.
03	08-03-85	Boar; visual observation of bear at den on 11-07-85; last audio signal received 11-21-86 near den site.
04	08-03-85	Sow w/1 cub; probable den site located 11-07-85; last audio signal received 10-24-86.
05	08-03-85	Sow w/2 cubs; general den location 11-21-86.

Table 27. Continued.

06	08-03-85	Sow w/3 cubs; den located winter 1986; last sighted 10-02-86 with 2 cubs.
07	08-03-85	Sow w/1 cub of year and 2 yearlings; probable den located winter 1986; last sighted 10-16-86 as a single bear.
08	08-03-85	Sow w/1 yearling; probable den located 12-19-85; last observed 10-01-86 with one cub.
09	08-03-85	Sow w/2 cubs; probable den area located winter 1986; recaptured 08-01-86 with 3 yearlings; not recollared.
10	08-03-85	Sow w/2 cubs; collar found buried in food cache near cabin, Upper Ugashik Lake; collar inactive.
11	08-04-85	Sow w/3 yearlings; probable den located winter 1986; last audio signal 11-21-86 near den location.
12	08-04-85	Sow w/2 yearlings; probable den site located 11-07-85; last audio signal 10-16-86.
13	08-04-85	Sow w/3 cubs; probable den site located 11-07-85; last audio signal heard 10-16-86.
14	08-04-85	Sow w/2 yearlings; probable den located winter 1986; last audio signal heard 11-21-86 near den location.
15	08-04-85	Sow w/2 large yearlings; den site located winter 1986; last observed as a single bear on 10-24-86.
06-01	07-31-86	Sow w/3 cubs; general den site located on 11-21-86.
02	07-31-86	Boar; general den site located on 11-21-86.
03	07-31-86	Boar; last observed on 10-24-86.
04	07-31-86	Sow w/2 cubs; last audio signal received on 10-02-86.
05	07-31-86	Sow w/1 yearling; last observed on 08-13-86.
06	07-31-86	Recapture; recollared; see 04-01.

Table 27. Continued.

07	08-01-86	Sow w/1 yearling; last audio signal received on 10-01-86.
08	08-01-86	Sow w/1 yearling; last audio signal received on 10-03-86.
09	08-01-86	Sow w/2 cubs; last audio signal received on 10-24-86.
10	08-01-86	Boar; general den site located on 11-21-86.
11	08-01-86	Sow w/2 yearlings; last observed on 08-11-86.
12	08-01-86	Sow w/2 yearlings; general den site located on 11-21-86.
13	08-01-86	Sow w/3 yearlings; last observed on 10-16-86.
14	08-02-86	Sow w/1 cub; general den site located on 11-21-86.
15	08-02-86	Sow; general den site located on 11-21-86.
16	08-02-86	Boar; general den site located on 11-21-86.
17	08-03-86	Sow w/2 yearlings and 1 cub; general den site located on 11-21-86.



Two yearling cubs watch mom get a new necklace. JFP

Table 28. General capture locations by stream, 1984-1986.

Stream Name	Numbers of Bears Captured ^a	Sex	
		Male	Female
Becharof Creek	6 (12.8) ^b	1	5
Cleo Creek	11 (23.4)	3	8
Bear Creek	18 (38.3)	0	18
Salmon Creek	6 (12.8)	0	6
Bible Creek	2 (4.2)	0	2
Kejulik River	4 (8.5)	1	3

^a Includes bears recaptured.

^b Percentage of total bear captured.

Barren-ground caribou

The Alaska Peninsula caribou herd is composed of the northern and southern herds. The northern herd extends from Port Moller, northward, to the Naknek River. The southern herd extends from Port Moller, southward, to Cold Bay. The northern herd is monitored by ADF&G and refuge personnel. ADF&G data suggests the northern herd population is stable (Table 29).



Members of the northern Alaska Peninsula
caribou herd.

JFP

Table 29. 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	--

^a Post calving photo count with aid of radio telemetry.

^b Spring counts not completed.

A considerable effort was initiated in cooperation with ADF&G on the monitoring of the northern herd. On April 5th-8th, WB Wilk worked with state biologist to radio collar nine caribou in the northern subherd. This was followed by refuge pilots and aircraft being utilized in the tracking of the collared caribou during August, September and October. Refuge personnel also participated in a composition survey in mid-October.

Moose

ADF&G continued its annual moose survey adjacent to the north boundary of the refuge, including the extreme northern border of Becharof Lake (Table 30). Refuge personnel began a systematic moose survey of Bible Creek and Kejulik River. Due to very poor flying weather and lack of snow cover the refuge surveys were completed in late January. Unfortunately, bull moose had begun dropping antlers, making sex and age composition determination impossible. The survey did have a very high total animal count of 264 moose. It is assumed the high count resulted from a severe winter storm, a few days prior to the survey, that moved the moose from higher elevations in greater than usual numbers. This, combined with new snow, made for ideal observation conditions.

Table 30. Moose Sex and Age Ratios From Fall Counts Conducted on Park Border area which includes the extreme northern Boundary of Becharof Lake. (ADF&G data).

Date	Tot.M ^a per 100 F ^a	Sm. M ^b per 100 F	Sm M % in Herd	Sm M per 100 m Calves	Calves per 100 F	Calves per 100 F > 2 yrs	Incidence of twins per 100 F w/calf	Calf % in herd	Animals per hour	Total sample
11/21/81	23.2	10.1	7.4	140.0	14.5	16.1	11.1	10.5	47.5	95
11/30/82	31.0	7.1	5.1	150.0	9.5	10.3	0	6.8	67.4	118
10/22/83	33.0	4.4	2.9	44.4	19.8	20.7	13.3	12.9	69.5	139
11/07/84	27.8	4.3	3.1	70.6	12.1	12.7	13.3	8.7	65.3	196
12/06/85	20.5	2.6	2.0	85.7	10.3	10.5	9.1	7.8	45.0	153
12/01/86	21.2	2.9	2.1	---	19.2	---	17.6	14.1	67.6	142

a M = Male F = Female

b Small = possible yearlings

c Raw data unavailable to check ratios.



Moose swimming across lake. DDM

9. Marine Mammals

Harbor seals, Steller's (northern) sea lions and sea otters are abundant on both coasts of the Alaska Peninsula. In the early 1970's, sea lion and sea otter populations were estimated at 50,000 and 30,000 animals, respectively. Many of these animals haul out or rest offshore islands and rocks beyond the refuge boundary. Harbor seals often follow salmon runs into bays and lagoons on the refuge. Walrus numbers on the Bering Sea coast have increased in recent years, and groups of up to 2,000 have been seen in the vicinity of Cape Seniavin, Port Moller, and Herendeen Bay.

Very little is known about the cetaceans that occur in the waters off the refuge. Gray whales migrate through the area and beluga whales follow salmon runs up the major tributaries. Killer and minke whales and harbor and Dall's porpoises are frequently sighted in Bristol Bay, north of the refuge.



Walrus at Cape Seniavin.

DDM

10. Other Resident Wildlife

Thirty species of land mammals occur on the refuge. Wolves range throughout the peninsula feeding on carrion, caribou, moose, and small game, but they are not abundant. Wolverine, river otter, beaver and red fox are widespread and are trapped on the refuge. Alaskan hares occur throughout the peninsula, but snowshoe hares occur only in the northeast portion. Arctic ground squirrels, hoary marmots, short-tailed and least weasels, porcupines, shrews, voles, and lemmings occur in suitable habitats throughout the refuge.

14. Scientific Collections

During 1985 and 1986 field studies, an attempt was made to collect refuge herbarium specimens in the three study areas. To date over 500 specimens have been gathered and are in the process of being labeled and archived in the refuge herbarium. Random bird and mammal mortalities, encountered in the field or in King Salmon have been collected and prepared as study skins or mounts.

16. Marking and Banding

The refuge banding program was initiated in 1983. The principal focus was banding of passerines on a year-round basis, and tundra swans during August.

A small banding station has been established on the refuge compound since late 1983. From this station, passerines are opportunistically captured and banded. In 1986, the field crew at Braided creek also banded passerines. At this writing, returns of three birds have been reported from a total of 215 marked individuals (Table 31). A fox sparrow and common redpoll--both banded in King Salmon, were returned as local "cat-kills". A third bird--a female redpoll banded in 1985, was found dead in Homer, Alaska during January, 1986.

Table 31. Species composition, and total numbers of passerines banded on Service compound, King Salmon, Alaska, 1984-1985.

	Total banded		
	1984 Returns	1985 returns	1986 returns
Tree swallow	2		
Black-billed magpie			2
Black-capped chickadee		6	4
Boreal chickadee			3
American robin	2		
Yellow warbler			1
American tree swallow	5	1	5
Savannah sparrow			1
Fox sparrow	10	7	1
Golden-crowned sparrow	2	1	9
White-crowned sparrow	22	5	6
Dark-eyed junco	1		
Snow bunting		1	
Common redpoll	8	1	14
Totals	55	1	93
			2
			114

Tundra swan banding started out as a fairly successful enterprise in 1983, but has since diminished, due primarily to staff commitments to other field projects. At this writing, 58 swans have been banded in the northern peninsula lowlands. Of these 58, all but one were cygnets captured and banded in early August. One adult was marked in 1983. Table 32 list a chronology of tundra swan banding by the refuge on the Alaska Peninsula.

Table 32. Chronology of tundra swan banding and observations.

	Neck collar number	Date	Location marked/observed
1983	P001-P039	August	Dog Salmon drainage, Alaska Peninsula Refuge
	P005	Nov 1	Serpentine Fen, B.C.
	P002	Nov 12	Summer Lake, OR (dead)
	P008	Nov 22	Whatcom Co, WA
1984	P012	April 12	12 m SE Calgary, Alta.
	P040-P056	August	Becharof Refuge
	P004	Fall	Malheur Lake, OR (dead)
	P005	Sep 19	S. Kenai Peninsula, AK
	P053	Oct 28	Sauvie Island, OR
1985	P057-P058	August	King Salmon, AK
1986	P052	Jan 13	Sauvie Island, OR
	P018	Nov 29-	
		Jan 3, 87	Conway, WA

H. PUBLIC USE

1. General

The relative distance from King Salmon makes the Becharof Refuge convenient for use by residents of King Salmon, Naknek, South Naknek and Egegik as well as personnel stationed at King Salmon Air Force Station (Figure 14). Although locals frequent the refuge often, the majority of use is from non-locals and non-residents.

Historically, recreational use by local residents is nearly inseparable from subsistence use by local residents. The two activities have long meshed as residents have hunted, fished, trapped and gathered berries. However, recreational public use by out-of-state visitors and non-locals is easily distinguishable from subsistence use. An increase in air-taxi use, outfitters, and guides indicate a continuing increase in recreational use. Access to refuge lands is primarily by aircraft, but Big Creek and Egegik River are well used corridors for boat access and act as winter trails for all-terrain vehicles (ATV's) for subsistence hunting of moose and caribou.

3. Outdoor Classrooms - Teachers

RM Hood participated in "Career Day" activities for Bristol Bay School District and Lake and Peninsula School District in May. Seventeen students were counselled by the team of Dave Morris, Katmai National Park Superintendent, and RM Hood.

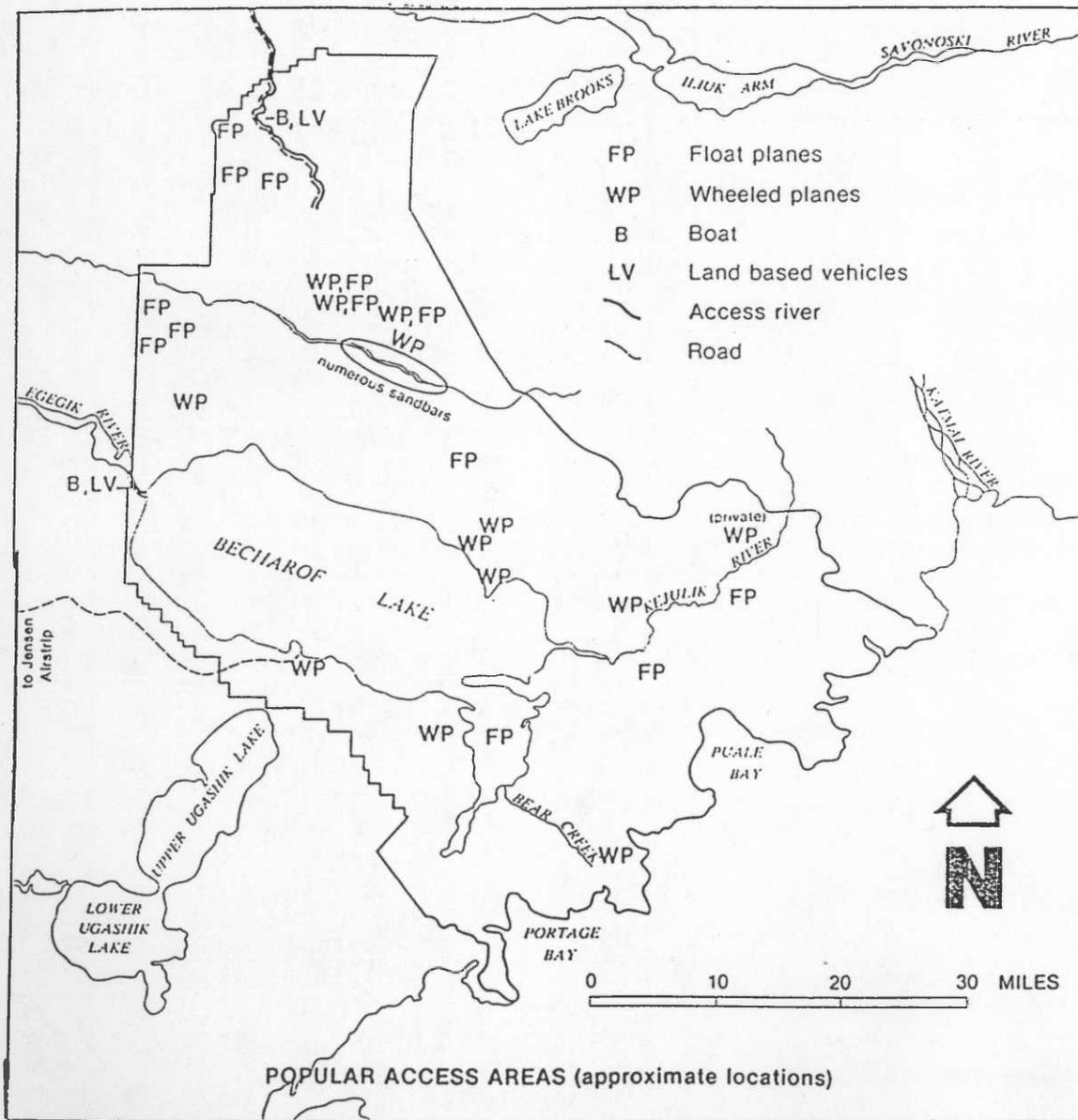


Figure 14. Popular access areas (approximate locations).

In August, Janet Ady, Regional Office Public Use and Information Specialist, and DRM Savery presented a conservation awareness training program to the Bristol Bay High School and Elementary teachers. The program was part of the teachers' "inservice training" and included a refuge slide program, activity training in "Project Wild" and an introduction to various wildlife education materials. There were 20 teachers participating. The session was so successful that a three day program was planned for January, 1987.



Janet Ady, Environmental Education Specialist, conducting an environmental "inservice training" program for Bristol Bay High School teachers. JES

6. Interpretive Exhibits/Demonstrations

Alaska Peninsula/Becharof Refuges and Katmai National Park and Preserve entered into a cooperative effort to develop a visitor facility at the King Salmon airport. On September 8th, the initial meeting between Regional Office (RO) and field staff was held at the Park Service office in King Salmon. Planning has moved forward at a brisk rate. By end of the year design specifications for six interpretive panels were being assembled by our RO Public Use and Information Section. We have established a goal of June 1, 1987, for having a kiosk-type facility in place.



BT "Moose" Mumma conducting wildlife presentation to elementary school children. RCK

7. Other Interpretive Programs

The annual work plan advice for Fiscal Year (FY) 1986 directed the development of two refuge brochures. The first was a general refuge brochure--the first since the establishment of Alaska Peninsula/Becharof refuges by the Alaska National Interest Land Conservation Act (ANILCA). Public Use and Information (PUI) Regional Office staff (namely Bev Grafel) developed a draft text for the brochure. This draft then underwent a number of reviews by refuge staff. The text reached its final version near the end of April.

The next step was to let a contract for the brochure artwork. This was accomplished in early May. The artwork was developed from concepts presented by refuge staff. Next a contract for typesetting and layout was awarded. The brochure was ready for publishing by early June and was published in late July. A copy is found in the information packet in the back of the narrative report.

Work began on the second brochure in late August. This brochure is on fishing opportunities on the Alaska Peninsula/Becharof refuges. The draft text underwent several revisions during September. The artwork contract was also awarded in September. The text was completed in October. However, the artwork became a major stumbling block since the artist's translation of concepts to drawings left much to be

desired. Finally we rejected the artwork. It was agreed that PUI's Patti Gallagher would redo the artwork as she had time. The brochure was not completed by year's end.

8. Hunting

The availability of trophy class brown bear, moose and caribou support numerous commercial guiding operations on the Becharof Refuge. The majority of hunters utilizing commercial guiding operations are non-residents; however, a non-resident hunter may utilize refuge lands without the benefit of a licensed guide for hunting all but brown bear. A non-resident or non-local would be wise to gather information about the area and facilities to insure a quality Alaska hunting experience.



Float plane (C-206) arriving to pick up hunters at end of successful hunt. DDM

For the Becharof Refuge, King Salmon is the termination point for commercial air service. At King Salmon air-taxi service is available to most remote areas on the peninsula. Commercial outfitters are also available to provide camping gear, boats and other basics as necessary for the situation. Fees for guides and outfitters are highly variable depending on length of hunt, equipment provided, type of hunt and area of hunt. 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. Alaska Department of Fish and Game (ADF&G) sets non-resident license and tag fees each year (Table 33).



The commercial guide gets \$2500 to \$3500 for a caribou hunt. JFP

Table 33. Alaska non-resident license and tag fees for 1986 (ADF&G).

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

ADF&G requires hunters to submit hunt information and harvest records at the close of the hunting season. This information is summarized during the spring following the season's closure and thus lag a year behind the current records (Tables 34 and 35).



One shot and then the work begins. DDM

Table 34. Caribou and moose harvest for the Alaska Peninsula Game Management Units (GMU's) 9C and 9E, 1985 (ADF&G).

Species	Bulls	Cows	Unknown	Total
Caribou	612	133	6	751
Moose	140	16	0	156



A successful hunt for caribou and moose. DDM

Table 35. Brown bear harvest for the Alaska Peninsula, 1975-1986, GMU's 9C and 9E (ADF&G).

Date	Total Bears	Percent Boar	Mean Age		Percent 5 Yr. Old	
			Boar	Sow	Boar	Sow
1975-76	261	62	6.4	6.8	48.7	51.3
1977-78	311	64	5.9	7.1	45.3	54.7
1979-80	316	68	6.1	6.2	46.7	53.3
1981-82	339	59	5.9	6.4	47.0	53.0
1983-84	268	63	6.2	6.8	51.3	46.1
1985-86	146 ^a	61	6.1	7.5	46.5	46.4

^aTotal includes four bears of unknown age and/or sex. Out of the total harvest, 77 bears were taken on the refuge.

Waterfowl and other small game hunting on the refuge generally occurs in conjunction with big game hunts. The Bristol Bay coastal areas, adjacent to the refuge provide important nesting and staging sites for

migratory waterfowl. Therefore, these areas receive varying degrees of hunting pressure. Most waterfowl hunting occurs on the Naknek River near King Salmon.



The commercial guide gets \$5,000 to \$10,000
for a brown bear hunt. RCK

Hunting activity estimates on the Becharof Refuge during 1986 include 351 individual visits yielding 8,744 hours spent in the field hunting.

9. Fishing

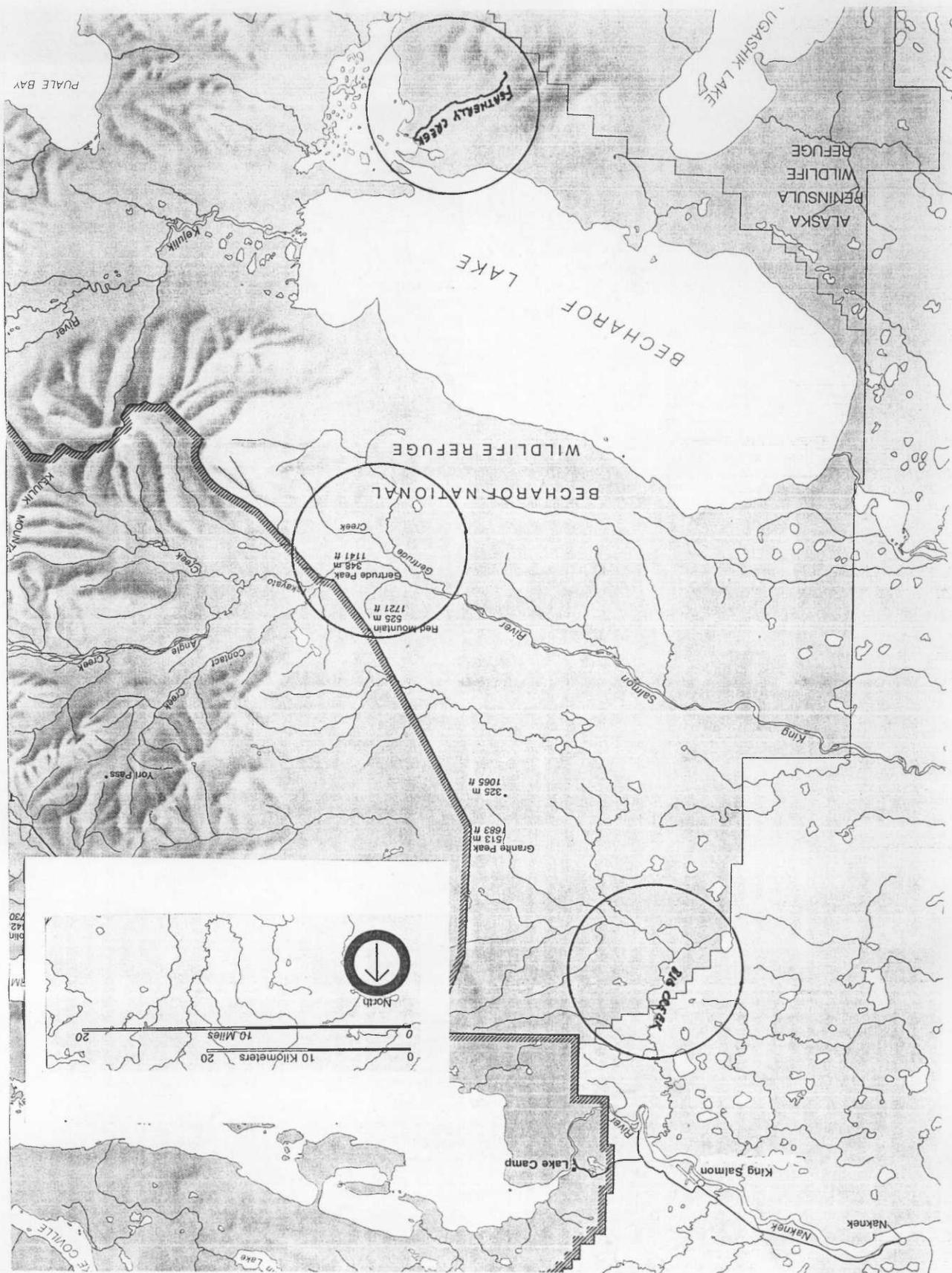
The rivers and lakes within the Becharof Refuge provide some of the best fishing in the state. Game fish include burbot, dolly varden/arctic char, arctic grayling and five species of Pacific salmon. In large lakes, pike and lake trout abound.

Access to the numerous fishing areas is generally limited to float equipped aircraft, although boat access is possible by navigating the Egegik River and Big Creek. The areas most utilized for sport fishing are the King Salmon River, Big, Gertrude and Featherly Creeks (Figure 15).

Several private fishing lodges transport clients to remote areas for a wilderness fishing experience. Most operators of these lodges promote catch and release angling for resident fish species.

Estimates of refuge fishing activity included 303 individual visits during 1986 resulting in 3,462 activity hours.

Figure 15. Popular fishing access points.





Angler with grayling.

JFP



Dolly varden.

GMS

10. Trapping

Trapping fur bearing mammals, historically, was a full-time winter endeavor on the Alaska Peninsula. Fox, mink, ermine, and beaver are commonly trapped. To a lesser extent, coyote, wolf, wolverine lynx and otter are caught. ADF&G requires trapped wolverine, wolf, lynx, otter and beaver to be tagged. This provides a means to monitor numbers of animals taken (Table 36).

Table 36. Furbearer harvest in GMU's 9C and 9E, winter 1985-1986 (ADF&G).

Species	Total
Beaver	166
Otter	25
Lynx	23
Wolverine	20
Wolf	15

The relative high numbers of beaver trapped is indicative of the abundance of the animal in most drainages. However, the high cost and effort required to actively pursue full-time winter trapping reflects in the low catch of other species.

11. Wildlife Observation

The vast size, remoteness, high cost of travel, lack of support facilities and Alaska Peninsula weather combine to serve as a deterrent to visitors interested exclusively in wildlife observation. Most visitors with an interest in this activity choose to go to Katmai National Park due to the park's reputation for excellent bear observation opportunities.

12. Other Wildlife Oriented Recreation

Photography of wildlife usually occurs in conjunction with hunting and fishing outings. Most individuals carry a camera to record their experience in Alaska and in 1986 an estimated 5.3 hours per person were spent in the pursuing this activity.

Camping is generally associated with a hunting and/or fishing experience. Tent camping is primarily done by non-guided hunters and fishermen. Most guiding operations have cabins on the refuge with an occasional spike camp. The average stay, in a camping situation is three to four nights.



Camping on the Alaska Peninsula. UKN

15. Off-Road Vehicling

ANILCA modified the way we manage off-road vehicles (ORV's) 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, ORV's 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 (ATV) and more recently, the four-wheeled ATV, have become the mainstay method of transportation for peninsula residents.

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

17. Law Enforcement

Law enforcement (LE) took on a visible and positive action mode on the Alaska Peninsula in 1986. ARM/P's Arment and Payne utilized the refuge aircraft in a variety of LE activities. Perhaps the most unique and rewarding was the clean-up of abandoned mining material near Braided Creek.

On August 4th, RM Hood, DRM Savery and ARM/P Payne impounded mining camp equipment and supplies apparently abandoned by Anaconda Minerals Co. at their Braided Creek camp site (Special Use Permit [SUP] AP-114-84 and AP-104-85). The procedures outlined in 50 CFR 28.41 were followed. A Bell-206 Ranger helicopter, chartered from Kenai Air, was used to ferry the camp equipment to the Braided Creek air strip. This equipment was then ferried to King Salmon. Shortly afterward, Anaconda's parent company, ARCO Alaska, Inc. suddenly



Refuge Officers semi-annual pistol qualifications.

REH

became aware of our action and their negligence in dealing with SUP requirements to remove the field camp in a timely manner (Note: ARCO had dissolved Anaconda and sold its assets). To ARCO's credit, once they became aware of the problem, they agreed to clean up the camp and pay impoundment costs. On September 15th, a SUP was issued for the removal of the mining camp. ARCO Alaska paid the Service's costs incurred in impounding the camp material (\$6,687.37) and hired Alaska Mineral Evaluation Services (AMES) to clean up the camp. On September 21st, RM Hood and DRM Savery inspected the cleanup activities. AMES completely removed all evidence of the camp. We were pleased with the results.

On August 21st, the refuge hosted the semi-annual law enforcement pistol qualifications for Alaska Peninsula/Becharof, Izembek, and Togiak refuges. Special Agent Saroka conducted the event with Refuge Officers Savery, Payne, Arment, Sarvis, Blendon, and Fisher all qualifying.

Special Agent Parker worked during May with local fish and wildlife protection and refuge officers near Port Heiden during the spring bear hunt.

On September 16th, DRM Savery and ARM/P Arment observed the illegal use of a hunting cabin located on Mother Goose Lake. The cabin was constructed for recreational use by the Mother Goose Lake Association from Kodiak, Alaska before the passage of ANILCA. The Association's permit for the cabin was denied on June 9, 1983. Since that date, they have appealed the case to the Regional Director and the Office of Hearing and Appeals. On both occasions, the denial was upheld. The case is now under civil litigation in the U. S. District Court, Anchorage, Alaska.

On the date that the illegal cabin use was observed, members of the Mother Goose Lake Association were using the cabin for moose hunting. After checking with the Solicitor's office concerning the status of the case, a citation was issued to the Association for violation of 16 USC 668 dd, 50 CFR 27.92; unlawful occupation/trespass in a refuge cabin. A mandatory appearance was scheduled for the violation. At the hearing, the Judge postponed his ruling on this case pending the outcome of the civil case in U.S. District Court.

On October 1st ARM/P Payne, RM Hood, and DRM Savery investigated the disappearance of the refuges' Boston Whaler skiff from the Becharof Lake administrative cabin. Using savvy and LE techniques the skiff was located ten miles southeast, complete with a 40 HP outboard (that did not belong to the refuge) and various other additions. Detailed interrogation of the suspects found in the skiff's presence revealed:

1. suspects claimed they found the boat on the southeast shore;
2. suspects said the boat apparently washed up during a severe southeaster' er (odd, since a southeaster' er would blow the boat to the northwest shore);

3. suspects just happened to need a boat of this size to move some materials from the refuge to the Native allotment and just happened to bring along an extra outboard to use on a skiff they were sure to find!



Refuge Officer Jim Savery interviewing suspect.

REH

All ended well with the suspects returning the "borrowed" skiff to its original position at the administrative cabin.

Refuge LE officers registered marine mammal parts for six people during 1986.

The parts included:

4 walrus tusks
1 walrus skull
1 whale vertebrae
1 seal skull

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 [ANILCA 304(d), 1303 (b), 1315 and 1316].



A typical cabin used by an Alaska Peninsula
brown bear guide.

REH

It is the policy of the Service to limit new cabins to those essential for the continuation of an ongoing activity or the use allowed with the refuge [ANILCA 304 (d), 1303 (b), 1315 and 1316].

These two policy statements form the heart of a draft Regional release to the Refuge Manual developed by a cabin management work group. This work group consisting of Paul Schmidt, Resource Support; Clay Hardy, Refuge Planning; Bob Delaney, Refuge Supervisor; Mike Nunn, Koyukuk Refuge; Ronald Hood, Alaska Peninsula/Becharof refuges; and Kevin Ryan, Kodiak Refuge first met on May 14th - 16th. Several meetings and versions of the release followed. At year's end, we were nearing a version that could be submitted for public review.

The Becharof Refuge currently has 8 known cabin sites. Current status of these cabins is: four have been permitted; one is being handled by Bureau of Land Management; two are designated for administrative purposes; and one application has been denied. One trespass cabin was removed onto a private inholding by the owner during September.

Becharof Refuge currently has five private inholding with associated cabins.

21. Guides and Outfitters

Between Alaska Peninsula and Becharof refuges a total of 42 SUP's were issued for commercial guiding and outfitting activities this year (Table 37). The number of SUP's 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 SUP requirements by outfitters who have been working the area in past years without our knowledge. The latter reason is due in part to the relative newness of the refuges. As more people are made aware of the refuge, more of the outfitters will come under permit. It is expected that by the end of 1987 almost all outfitters using the refuges will be under permit.

Table 37. Special Use Permits issued for Guides/Outfitters 1982-1986.

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

Table 38. Special Use Permits issued for guiding, outfitting and transporting (air taxi) on Alaska Peninsula/Becharof refuges in 1986.

Refuge	Permit No.	Name Address	State Guide Area No.	General Refuge Location
		<u>Big Game Guides^a</u>		
AKP ^b	01-86	Edward King Box 26 Naknek, AK 99633 (907) 246-4414	9-42 9-43	Meshik River drainage
AKP	04-86	Ken Oldham Box 220343 Anchorage, AK 99522 (907) 248-3466	9-62	Wide Bay

Table 38 Continued.

Refuge	Permit No.	Name Address	State Guide area No.	General Refuge Location
BCH ^b	05-86	Jim Cann Box 100926 Anchorage, AK 99510 (907) 333-7137	9-4	North and east of Becharof Lake
AKP	07-86	Ray McNutt Wrangell "R" Ranch Box 10 Sterling, AK 99672 (907) 262-4678	9-53	Cape Kuyuyukak
AKP	08-86	Jay Frazier Box 1331 Delta Junction, AK 99737 (907) 895-4740	9-48	Kujulik Bay
AKP	10-86	John McLay McLay's Guide Service Box 745 Homer, AK 99603 (907) 235-8762	9-51	Lower Ugashik Lake
AKP	12-86	Brad Langvardt Mountain Enterprises Box 4127 Soldotna, AK 99669 (907) 262-3991	9-46	Painter Creek
AKP	13-86	Frenchy Lamoureux Box 90444 Anchorage, AK 99509 (907) 248-5012 (907) 248-4971	9-45	Upper Ugashik Lake
BCH	14-86	Mario Cerami Alaska Trophy Outfitters Box 92012 Anchorage, AK 99509 (907) 344-7464	9-6 9-7	Alinchak Bay
BCH	15-86	Robert Myers Box 56 Egegik, AK 99579 (907) 233-2207	9-59 9-60	Becharof Lake

Table 38 Continued.

Refuge	Permit No.	Name Address	State Guide area No.	General Refuge Location
BCH	16-86	Jerry Meredith Alaskan Wilderness Hunts 12141 Galena Circle Anchorage, AK 99516 (907) 345-0751	9-54	Alinchak Bay
AKP	18-86	Howard Flynn 4203 Minnesota Dr. Anchorage, AK 99503 (907) 562-4541 or (907) 349-5752	9-18	Mother Goose Lake
AKP	19-86	Butch Hautanen 3157 W. 67th Ave. Anchorage, AK 99502 (907) 243-5683	9-65	Dog Salmon drainage
BCH	21-86	Jay Hammond General Delivery Port Alsworth, AK 99653 No phone	9-30	Kejulik River
AKP	25-86	Keith Johnson 3646 N. Point Dr. Anchorage, AK 99515 (907) 243-5087	9-33	Mount Veniaminof
AKP	26-86	Andy Runyan Exclusive Alaskan Hunts RY-C Box 8860 Palmer, AK 99645 (907) 822-3335	9-69	Wolf Lake
AKP	27-86	Donald Flynn Box 623 Homer, AK 99603 (907) 235-8619	9-17	Dog Salmon River
AKP	28-86	Mel Gillis Alaska Trophy Hunting Box 220247 Anchorage, AK 99522 (907) 344-8589	9-24	Sandy River

Table 38. Continued.

Refuge	Permit No.	Name Address	State Guide Area No.	General Refuge Location
AKP	30-86	Harry Pederson Box 190504 Anchorage, AK 99519 (907) 243-4867	9-67	Amber Bay
AKP/ BCH	35-86	Tracy Vrem Box 520623 Big Lake, AK 99652 (907) 892-7999	9-61	Becharof Lake
AKP	36-86	John Swiss 129 F Street Anchorage, AK 99501 (907) 272-1725	9-73	Black Lake/ Cub Lake
AKP/ BCH	37-86	Joe Klutsch Katmai Guide Service Box 313 King Salmon, AK 99613 (907) 246-3030	9-49 9-10	Meshik River/ Big Creek
BCH	38-86	Jack Myers Box 70125 South Naknek, AK 99670 (907) 246-6518	9-58	Becharof Lake
AKP/ BCH	39-86	Lee Hancock Bar X Ranch Nebesna Road Slana, AK 99586 (907) 822-5871	9-31	Upper Ugashik Lake
AKP	40-86	Joe Hendricks Fair Chase Hunts Box 102104 Anchorage, AK 99510 (907) 274-3996	9-35	Amber Bay
		<u>Big Game Outfitters^a</u>		
AKP	06-86	Ronnie Aldridge Box 3028 Sodotna, AK 99669 (907) 262-7585	N/A	Needle Lake

Table 38. Continued.

Refuge	Permit No.	Name Address	State Guide area No.	General Refuge Location
BCH	17-86	John Gaudet Jake's Alaska Wilderness Outfitters Box 104179 Anchorage, AK 99510 (907) 248-0509	N/A	King Salmon River
BCH	34-86	Mike Lucia Big Creek Outfitters 12130 Division St. Anchorage, AK 99515 (907) 344-0080	N/A	Big Creek
BCH	44-86	Willie Comfort Comfort Alaskan Hunts Box 16391 Colorado Springs, CO 80935 (303) 591-1305	N/A	Southwest Becharof Lake
AKP/ BCH	45-86	David L. Lazer SRA Box 6877 Palmer, AK 99645 (907) 745-4504	N/A	East and South of Mount Peulik
<u>Fishing Guides/Outfitters^c</u>				
AKP	03-86	Win Condict Box 2 Naknek, AK 99633 (907) 246-7444	N/A	Ugashik Lakes/ Wide Bay
AKP/ BCH	09-86	Ray Loesche Rainbow King Lodge, Inc Box 106 Iliamna, AK 99606 (907) 571-1277	N/A	Upper Ugashik/ Island Arm, Becharof Lake
AKP	11-86	Dick Matthews Enchanted Lake Lodge Box 97 King Salmon, AK 99613 (907) 345-1160	N/A	Ugashik Narrows
	Summer			
	Winter	3222 W. Lake Sammamish NE Belevue, WA 98008 (206) 643-2172		

Table 38. Continued.

Refuge	Permit No.	Name Address	State Guide area No.	General Refuge Location
AKP/ BCH	20-86	Van Hartley Branch River Air Ser. 4540 Edinburgh Dr. Anchorage, AK 99515 (907) 246-3372	N/A	All areas of the refuges.
AKP	23-86	Ed Grasser Arctic Guide and Outfitters Box 1350 Palmer, AK 99645	N/A	Amber Bay
AKP/ BCH	24-86	Joe Maxey Painter Creek Lodge 7111 Spruce St. Anchorage, AK 99507 (907) 344-5181	N/A	All areas of the refuges.
AKP/ BCH	31-86	Mike Cusack Cusack's King Salmon Lodge 3300 Providence Dr. Suite 309 Anchorage, AK 99508 (907) 562-2275 or (907) 277-3033	N/A	All areas of the refuges.
AKP/ BCH	42-86	Bill Martin Fish Alaska, Inc. Box 1887 Anchorage, AK 99510 (907) 346-2595 or (907) 346-3733	N/A	All areas of the refuges.
<u>Transporters (air taxi)</u>				
AKP/ BCH	02-86	Edward King King Flying Service Box 26 Naknek, AK 99633 (907) 246-4414	N/A	All areas of the refuges.
AKP/ BCH	20-86	Van Hartley Branch River Air Ser. 4540 Edinburgh Dr. Anchorage, AK 99515 (907) 248-3539 (907) 745-3772	N/A	All areas of the refuges.

Table 38. Continued.

Refuge	Permit No.	Name Address	State Guide area No.	General Refuge Location
AKP/ BCH	32-86	Orin Seybert Peninsula Airways Box 36 King Salmon, AK 99613 (907) 246-3372 or (907) 246-3373	N/A	All areas of the refuges.
AKP/ BCH	33-86	Raymond Petersen Katmailand, Inc. Katmai Air 4700 Aircraft Dr. Anchorage, AK 99502 (907) 243-5448	N/A	All areas of the refuges.

^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

Construction work on the new joint use (Fish and Wildlife Service and National Park Service) aircraft hangar continued after spring break-up arrived. The contract was originally awarded to Alaska Corporation of Anchorage in 1985 under contract No. 14-15-007-85-6524. This company then subcontracted the work to Unlimited Construction Company of King Salmon. Work progressed at a slow rate during most of the summer. The concrete floor was rejected by engineering and finally removed and re-poured the last week of August. This cost the contractor an estimated \$24,000. The deadline of the contract was extended to September 12th from the original completion date of August 21st. However, the hangar was not accepted on the 12th and a long punch list was developed for the contractor to complete. Finally, on October 3rd, the hangar was accepted for beneficial occupancy. This facility sure beats removing wing covers from aircraft on cold windy mornings and pre-heating engines. It is a welcome addition.



Joint use (Service and NPS) aircraft
hangar.

JFP

In October, refuge and Katmai National Park Service staff met to develop a draft Annual Work Plan (AWP) for joint operation of the hangar. The AWP will be finalized and submitted to the respective Regional Office for approval.

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 is scheduled for January 22, 1987. Site work and foundations began the first week of June. Work progressed rapidly on the subfloors and other rough carpentry work. However, the wallboard and other interior work slowed to a snail's pace. As fall approached, the contractor encountered major problems with trying to keep all four houses heated during the colder weather and maintaining adequate quantities of specified building materials on hand at the house sites.



Rear view of refuge house under construction. REH

Regional Office Construction Inspector Walt Szelag made weekly trips to King Salmon to monitor the construction progress. By years end, the houses were only 80% complete. With only 22 days remaining on the contract, it is doubtful whether the contractor will finish in the allotted time. The refuge staff is anxiously awaiting the final inspection date so we can move out of the house trailers into the new houses.



Front view of refuge house just prior to completion.

DDM

During January, four new 12-foot by 12-foot storage areas were built in the warehouse. These units will provide extra storage space for refuge and fisheries personnel to store their personal equipment and supplies. They are only semi-permanent and can be disassembled readily.

2. Rehabilitation

The contract for rehabilitation of the bunkhouse was issued to Unlimited Construction Company of King Salmon in 1984. The original completion date was set for November 1, 1985. Due to several unforeseen construction problems encountered during the project, the completion date was extended to February 13, 1986. However, the contractor needed to get his bond released so that he could use it on the contract for the four new houses. He called for an early final inspection date of January 27th. But, due to several scheduling and construction problems, that completion date could not be met. Regional Engineer Rudy Berus and Contracting Officer Jan Henning, who were already on station for the inspection, had to return to Anchorage. On February 13th, the long awaited final inspection of the bunkhouse was made by Regional Office Engineer Ron Rhodehamel and Construction Inspector Walt Szelag. Despite a number of serious discrepancies, the building was accepted by the Contracting Officer for "beneficial occupancy". However, a long punch

list still remained for the contractor to complete. All items on this list were not finished until the first week of May.

In January, Badger Electric Company from Eagle River, Alaska, completed the electrical rehabilitation project in the shop and warehouse. This will increase the lighting capacity in both buildings and make the operation of power tools safer in the shop. After that project was completed, Badger was also issued a purchase order to correct electrical deficiencies in residence No. 8. Several serious electrical problems were encountered including a short in the wiring that charred wood completely around a light fixture. Junction boxes were installed with cover plates at all wire splice locations and all burned wires were replaced. The electrical system now meets National Safety Code (NSC) standards.

3. Major Maintenance

In February, a major electrical fire was averted in quarters No. 9 by the responsiveness of BT Mumma and MW Rogers. The aluminum service wire to the main breaker box deteriorated at the connections and caused a melt-down of a portion of the box. Repairs were made to the circuit breaker box and new copper service wire was installed. The service wire to the other cabins was inspected and all connections coated with deoxidizing compound. All other residences were checked for this condition and were found to have copper wire.



Part of the 325 cubic yards of gravel for the headquarters parking area being delivered. REH

In October, Earthmovers Equipment Co. delivered 325 cubic yards of gravel for the headquarters parking lot and driveway. The U.S. Air Force assisted by supplying a road grader and operator to level the gravel. This is certainly an asset to the refuge compound area.

MW Rogers constructed a new wall in the front conference room dividing the large room in half. The new room will serve as the Computer Room and the Refuge Assistant's office.

MW Rogers conducted routine maintenance on refuge furnaces and boilers, leaking pipes, and other small equipment. He also spent several days cleaning the warehouse, stacking lumber, and storing supplies. Several loads of trash and junk were hauled to the borough landfill. All materials and supplies are now better organized and we have much more storage space.

All buildings were inspected and evaluated according to specifications in the Maintenance Management System (MMS). Basic inspection sheets were completed and submitted to the Regional Office to fulfill the first phase of this new maintenance system. The data sheets will be used as a basis for prioritizing and funding all maintenance related work on refuge buildings.

6. Computer Systems

In 1984, a Data General 10 SP micro-computer, purchased by the Fishery Resource Station, was installed by Information Resource Management (IRM) personnel at refuge headquarters. This system was jointly shared by refuges and fisheries staff. At that time, it was a simple unit with only one other terminal and two printers (one dot matrix and one letter quality). During 1985, the staff outgrew the small system and two more terminals, another letter quality printer and a tape drive unit were added.

The computer was used primarily for administration, i.e. word processing. A budget tracking program was added making it possible to track refuge funds. This program was replaced late in the year by an updated program developed by IRM.

During 1985, IRM had held several workshops with refuge and fisheries staffs in a scoping effort to develop a financial tracking system that would be more compatible with the one the Regional Office used. The program took almost a year to develop before it was finally delivered to the field stations. A very complex tracking system resulted; it is best compared to a computer game called "Dungeons and Dragons".

During the year a major conflict developed between administrative and scientific use of the system. There are many scientific software programs available for the Data General. We attempted to utilize some of these programs but we were unable to use them to their fullest potential. The computer simply did not have the capability to handle both administrative and scientific work loads produced by two stations.

We had to unload or "dump" programs from the computer that were not being used regularly to make room for the ones that were used frequently.

By mid-year severe problems with the computer system were experienced. The best solution was for the refuge to purchase our own system. 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 IRM traveled to King Salmon and installed the new system.



RA Collins working with the Data General
10-SP micro-computer. DDM

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.

7. Energy Conservation

In February, 1985, Eneritech Alaska installed a replacement 5 KW wind generator.

This was the first time that our Eneritech wind generating system was operational for the entire year since it was installed in 1982. The

system produced 5,505 KW for the year (Table 39). It supplied 10% to 25% of monthly power required for our office.



Lately our wind generator has proven to be less reliable than a standard Nebraska windmill. REH

Table 39. Wind generating system output (KWH) for 1986.

Month	Generator Output (KWH)	Metered use (KWH)	Total (KWH)	Percent Generated
January	498	2790	3288	15.1%
February	505	2840	3345	15.1%
March	365	2970	3345	10.9%
April	338	3050	3388	10.0%
May	432	2680	3112	13.9%
June	691	2670	3361	20.6%
July	342	2120	2462	13.9%
August	574	2250	2824	20.3%
September	433	2220	2653	16.3%
October	372	2360	2732	13.6%
November	674	1970	2644	25.5%
December	281	2210	2491	11.3%
Total	5505			

Excessive wind speeds tripped the generator out-of-service on 10 occasions for a total of 26 days (Table 40). This safety feature causes a loss of generated electricity that can be significant.

Table 40. Number of times and days wind generator tripped out of service, 1986.

Month	Number of Times off	Number of Days off
January	0	0
February	1	4
March	2	4
April	0	0
May	1	2
June	0	0
July	0	0
August	1	2
September	0	0
October	0	0
November	1	4
December	3	10
Total	10	26

8. Other

In March, CGS awarded a rental contract for private residential quarters for ARM/P John Payne. The duplex is located in Eskimo Creek subdivision, Block 1, Unit 5A in King Salmon.

Smoke alarms were installed in trailers 14, 15, 16, cabins 9, 10, and 11, and residence 8. Some of these residences had been protected by heat sensing devices alone.

J. OTHER ITEMS

2. Other Economic Uses

In the previous years the refuge has normally issued four to six special use permits (SUP) to oil companies and other federal agencies such as Bureau of Land Management and U.S. Geological Survey for conducting seismic activities and geologic studies. However, oil companies have not been interested in conducting additional seismic and geologic studies on the refuge this year. We attribute this lack of interest to falling oil prices. In fact, one company applied for a SUP to conduct seismic studies, but when oil prices dropped, they withdrew their application. This year only two SUP's were issued to other federal agencies to conduct geologic studies. One permit was issued to U.S. Geological Survey for work on Becharof Refuge while the other permit was issued to BLM for work on Becharof and Alaska Peninsula refuges.

3. Items of Interest

The National Park Service (NPS) held their annual subsistence meeting in the refuge conference room on March 12th. Sixteen people attended this lively session.

Jo Gorder, Contracting and General Services (CGS), completed an administrative review of the refuges on May 7th-8th. She couldn't find anything to send RM Hood to jail over.

On August 23rd, and again on September 30th, RM Hood, DRM Savery and ARM/P Payne met with Dr. Barry Gilbert from Utah State University to discuss brown bear research on the refuges. Dr. Gilbert is conducting brown bear behavioral studies in Katmai National Park.

At our July 4th picnic, we enjoyed hosting Dr. Donald O'Dowd, President, University of Alaska and his wife, Jan; Dr. Beverly Beton, Vice-Chandler for Academic Affairs, Juneau Campus; and Dr. Ole Mathisen, Dean, School of Fisheries and Science, Juneau Campus. Everyone enjoyed watermelon, hot dogs and home-made ice cream.

Regional Program Coordinator Lynn Fisher assisted our Braided Creek field camp on August 14th - 17th while volunteer Tim Folmer took a break in King Salmon.

On August 3rd, a Bell-206 Ranger helicopter under Service charter from Kenai Air assisted the Bristol Bay Borough Police in the rescue of two airmen from the King Salmon Air Force Station. They had hiked up King Salmon Creek to go fishing and had gotten lost.

Deputy Regional Director Dave Olsen visited us on August 21st and 22nd. He was scheduled to meet with Mr. Frank Risso, Assistant Secretary for Budget and Policy, to discuss and inspect joint use facilities between Fish and Wildlife Service and National Park Service. Due to inclement weather, Mr. Risso did not make it.

The Secretary of Interior Don Hodel, and his party (Barbara Hodel, Bill Horn, Bobby Williams, Vern Wiggins, Joe Kyrillos, and Bob Gilmore) used our bunkhouse as a staging area for their field inspection of the Kanektok River on Togiak Refuge on August 31st. Secretary Hodel and party used the bunkhouse again on September 4th as a rest stop. We heard several compliments on the hospitality of the King Salmon Fishery Assistance Office (FAO) and Togiak Refuge personnel.

Deputy Assistant Secretary for Parks and Wildlife Susan Recce and Deputy Assistant Regional Director Joe Mazzoni visited the refuge on September 19th. We were able to show Susan a wide variety of wildlife and scenery.

Regional Fire Management Coordinator Red Sheldon and Bureau of Land Management Fire Coordinator Art Latterell were at the refuge on September 23rd - 24th to present National Interagency Incident Management System training. The training was attended by one King Salmon FAO and five refuge staff members.

Becharof Refuge was selected by the General Accounting Office (GAO) as a representative refuge in their review of possible contamination sites on National Wildlife Refuges. This review was requested by Congressman John Dingell, Chairman of the Oversight and Investigations Subcommittee of the House Committee on Energy and Commerce. On October 29th, Terry Painter (GAO) conducted a telephone interview of RM Hood concerning our original report.

On October 6th and 7th, Migratory Bird Coordinator Richard Pospahala visited the Cinder River Lagoon field camp and participated in all aspects of the emperor goose study (including glass ball collecting).

4. Credits

Hood	Introduction; Sections A; C. 1, 3; D. 1, 3, 4; E. 1, 5; H. 6, 7, 15; J. 4; K. and editing.
Savery	Sections F. 11; H. 3; I. i, 2, 3; J. 4 and editing.
Arment	Sections E. 2; F. 9, 12; H. 20, 21; I. 7; J. 2.
Payne	Sections C. 2; G. 8, 9, 10; H. 1, 8, 9, 17; J. 1.
Wilk	Sections D. 5; E. 4; G. 1, 3, 4, 5, 6, 7, 14, 16.
Collins	Section I. 6, typing, editing and compiling.
Mumma	Sections E. 6; F. 1, 2; H. 10, 11, 12.
FAO	Section G. 11.



Another Alaska employee gets an "offer" for their home from the relocation service. JES

K. FEEDBACK

Relocation Assistance Program--A good idea that has gone sour! When the Fish and Wildlife Service opted to participate in this program, it appeared that someone was finally looking out after Service employees. But when reality took over, the program had turned into a monster that devoured the employee. One that created a disgruntled, morale destroyed employee at best; and a bankrupt one at worst.

At Alaska Peninsula/Becharof refuges, two of us participated in the program. Both employees were made offers that bordered on fraud.

Example:

Initial purchase price	\$92,000
Currently owe	\$82,000
Relocation Service offer	<u>\$51,500</u>
Difference	\$31,500

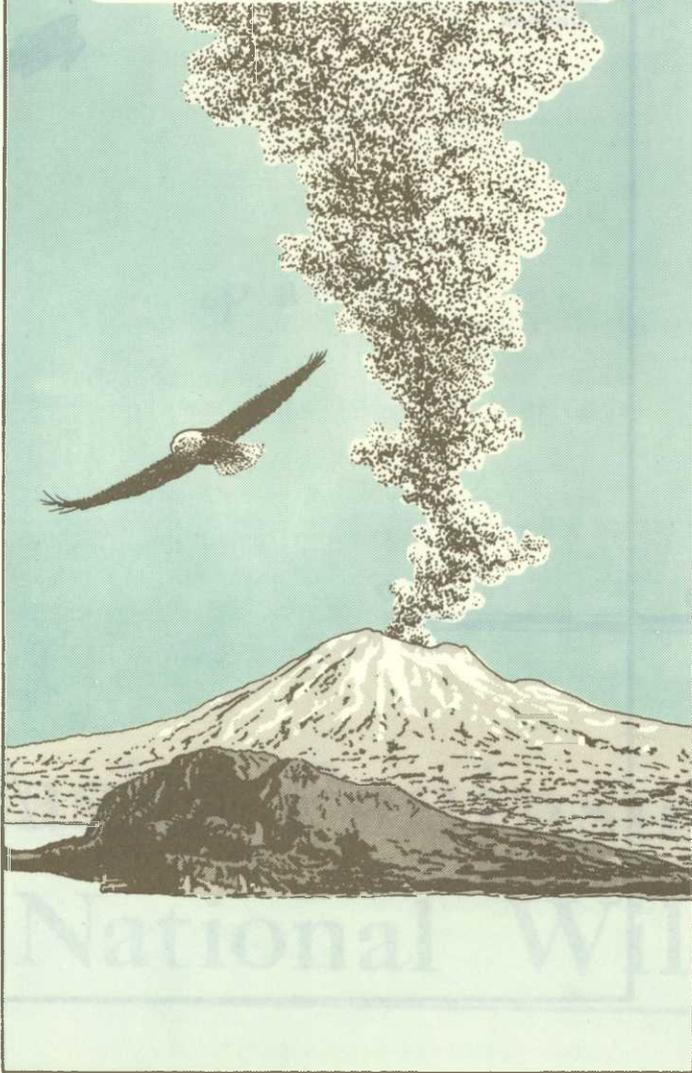
If the employee accepts the offer, then he gets to pay the relocation service \$31,500 to take the house off his hands. Otherwise he can just walk away from the house payment and loose \$9,000 in equity plus his credit rating; declare personal bankruptcy; or try to turn the house into a rental property in a market that is already overrun with rental properties.

Why were the offers so low? Simple, the relocation service has a nice gambit. They required that the appraisal be based on a 120-day sale period--fire sale prices result! Three appraisals were used to determine the offer. The nine comparative sales used averaged \$83,400. If this had been the offer, then the employee could have walked away from the house having only lost his equity.

Clearly the solution to the problem is to cancel the relocation service contract and advertise for a new one that requires that the sale be based on real world time periods.

In the meantime, the Service employees who participated in this program have essentially been shafted. Oh Yes! One can go back to the original Government wide system, but with substantially less or no benefits since all costs incurred by the relocation will be deducted! What an effective way to curb employee mobility, moving costs and morale!

**Alaska Peninsula and
Becharof National
Wildlife Refuges**



Alaska Peninsula and Becharof National Wildlife Refuges

A RUGGED SETTING

The Alaska Peninsula is a land of impressive beauty. Its lands include towering mountains, broad valleys, misty fjords, tundra, and glacial lakes. The peninsula offers spectacular scenery including volcanoes, steep cliffs, sparkling bays, and sweeping beaches. Its southern coastline (Pacific) is rocky and heavily fjorded. The refuge lands center on the Pacific side of the Aleutian Range (about half of the 8 million acres of the peninsula). It is land dominated by volcanoes — part of the "Ring of Fire" that rims the Pacific Ocean. Fourteen major volcanoes are located on refuge lands including nine that are active.

WILDLIFE OF THE PENINSULA

The Alaska Peninsula and Becharof refuges provide habitat for 222 species of resident and migratory wildlife (30 terrestrial and 11 marine mammals; 146 bird; and 35 species of fish). Sea lions, seabirds, and waterfowl use the coastal areas. Bald eagles, hawks, falcons, and owls nest on the rock pinnacles and spires along the coast. The tundra lowlands are host to caribou, moose, brown bear, wolves, tundra swans, and other waterfowl.

Brown bear use nearly all the refuge lands from mountain tops to the coast. These awe-inspiring bears symbolize the wildness of Alaska. They roam the tundra searching for roots, berries, ground squirrels, and other burrowing animals when salmon are not available. About 25 percent of the brown bear harvested in Alaska are taken from these two refuges. Forty-six of the top 100 brown bear (Boone and Crockett, 1981) were taken on the peninsula.

Thousands of caribou (northern Alaska Peninsula herd) migrate between King Salmon and Port Moller each year as their ancestors have for centuries. Unlike most species of deer these animals spend their entire lives on the move. Thirty-seven of the top 100 barren-ground caribou (including the largest trophy) were taken on the peninsula (Boone and Crockett, 1981).



NURSERY FOR SALMON

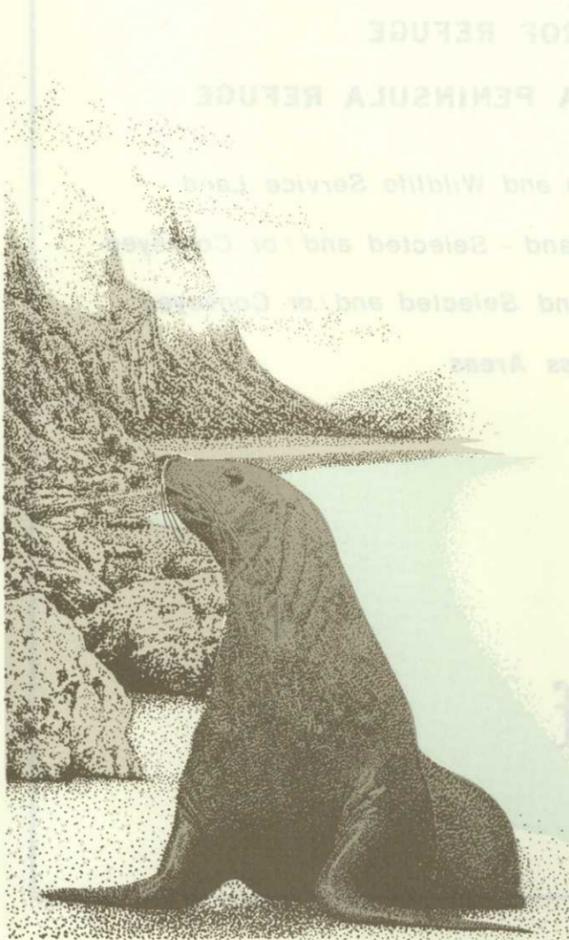
Most of the salmon from the world's most valuable and pristine fishery (Bristol Bay) spawn within the streams that originate on refuge lands. The Pacific drainages are short and straight with few collecting pools while the streams leading into Bristol Bay are longer with more tributaries, ripples, and pools. The ecosystem of the refuges is fueled by massive runs of salmon that enrich freshwater streams and lakes with nutrients from the ocean. All five species of Pacific salmon spawn in the streams and lakes on both refuges. The salmon runs begin in June and continue into August and September.

WILDERNESS

Approximately one-third (400,000 acres) of Becharof Refuge is nationally designated wilderness. These wilderness lands encompass the enchanting Kejulik Mountains, Kejulik River, and Puale Bay (Pacific side). Thousands of Steller's sea lions haul out on Puale Bay. The bay is also host to two large colonies of seabirds. These wilderness lands provide space, food, and isolation that are crucial to nesting seabirds, caribou, brown bear, wolves, and moose.

SPECIAL VALUES

- Becharof Lake - The second largest lake in Alaska (35 miles by 15 miles in size) is the nursery for the world's second largest run of salmon. This lake dominates Becharof Refuge and is fed by two rivers and 14 major creeks. Brown bear in this area exhibit behavior not found anywhere else—denning on lake islands of elevations of less than 200 feet. (Becharof Refuge)
- Mt. Peulik/Ukinrek Marris/Gas Rocks - Mt. Peulik volcano (depicted on the cover) is the most prominent mountain on Becharof Refuge. The Gas Rocks in the foreground of the illustration display an unusual activity—gases continuously seeping through cracks in granite. The geologically active Ukinrek Marris (craters) bears the scar of a recent (1977) violent eruption. (Becharof Refuge)
- Ugashik Lakes - Ugashik lakes are pristine lakes famous for salmon, trophy grayling, and bears. Hundreds of brown bear with huge appetites appear along the lakeshore in July and August to feed on fish. The world record grayling was taken at Ugashik Narrows. An ancient village existed about nine thousand years ago on the narrows between these lakes. (Alaska Peninsula Refuge)
- Castle Cape - A landmark cape (fjord area) with contrasting rock layers so distinctive it serves as a navigational aid for sailors. (Alaska Peninsula Refuge)



- Black and Chignik lakes - These tranquil waters are a series of glacial-fed lakes that support large salmon runs. Each summer hundred of bears congregate along the lakeshores. (Alaska Peninsula Refuge)
- Mt. Veniaminof - A smoldering volcano that is a nationally designated natural landmark. Its base is about 30 miles wide with a summit crater of 20 miles in circumference. Mt. Veniaminof last erupted in 1983. (Alaska Peninsula Refuge)
- Pacific Coastline - A stunning coastline that offers pristine scenery—steep cliffs, clear water bays, and sweeping beaches, and fjords. The Pacific coastline of the peninsula, however, is often fog-shrouded and curtained with bad weather. (Alaska Peninsula and Becharof refuges)

VISITING THE REFUGE

Recreation on these refuge lands include observing and photographing wildlife, hiking, boating, camping, hunting and fishing. The small community of King Salmon has lodging, recreational supplies, guiding, and air-taxi services. Check with refuge personnel prior to a visit to determine which activities are allowed and what regulations apply.

- Large acreages within the refuges have been conveyed to Native corporations and individuals. *If you use private lands be sure you have permission.*
- Precautions should be taken to avoid unwanted encounters with bears. Make noise when hiking or walking, keep campsites clean, and store food outside of your tent away from camp. Do not bury garbage or debris because buried garbage encourages bears to dig and then seek other campsites.
- Take pride in America! Pack out what you pack in and take care of other litter someone else may have left. Dispose of refuse by burning combustible items and pack out the rest. Fill in firepits and latrines.
- Boil water before drinking. Giardiasis—a waterborne intestinal parasite is common in Alaska.
- Be prepared with warm clothing and dependable rain gear. Campers should also take extra food as a precaution against inclement weather.

Information on topographic maps is available from U.S. Geological Survey—Telephone: 907-271-4307 (Anchorage). Information on hunting and fishing is available from the refuge office in King Salmon or the Alaska Department of Fish and Game (Address: P.O. Box 37, King Salmon, AK 99613, Telephone: (907) 246-3340).

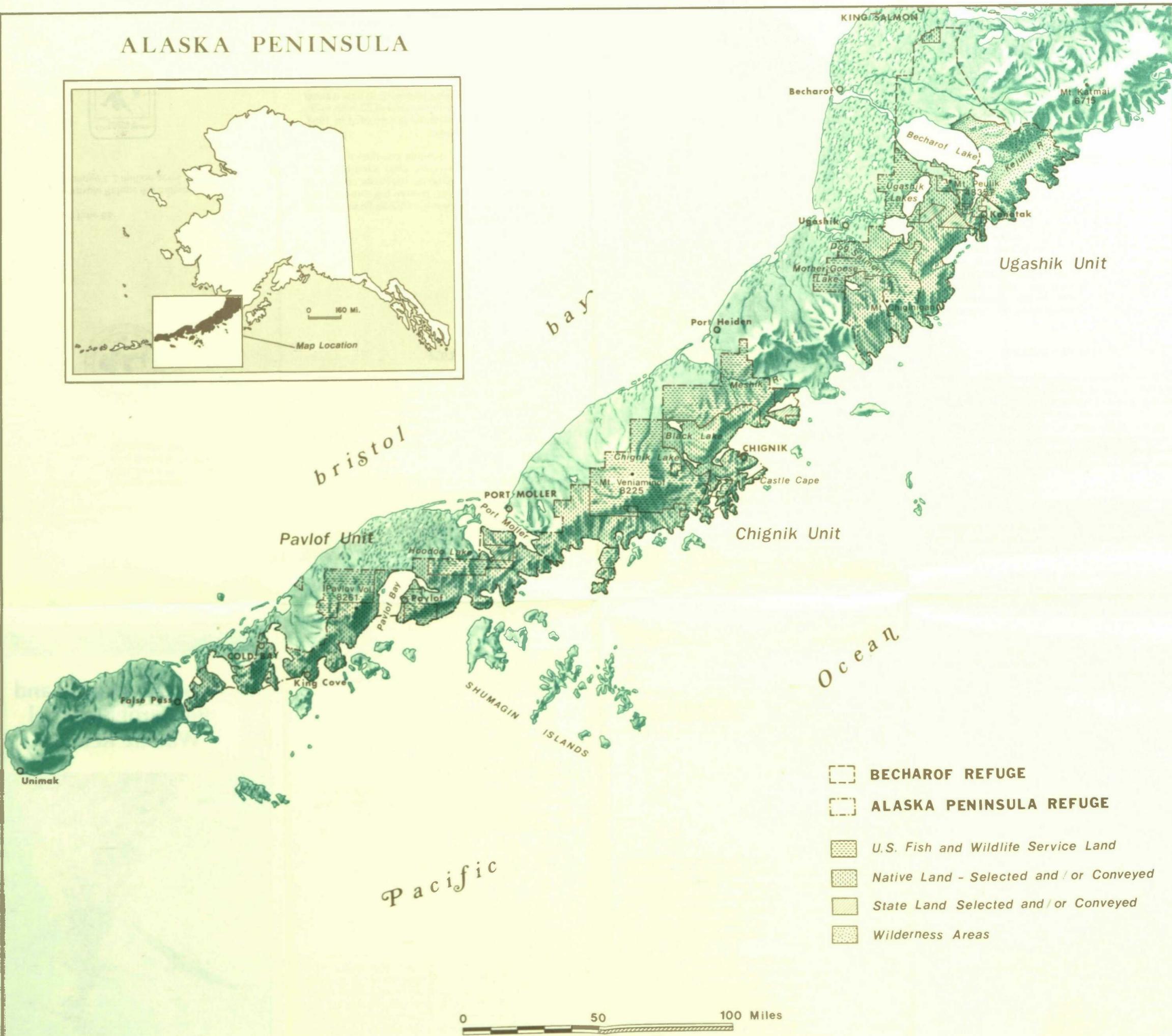
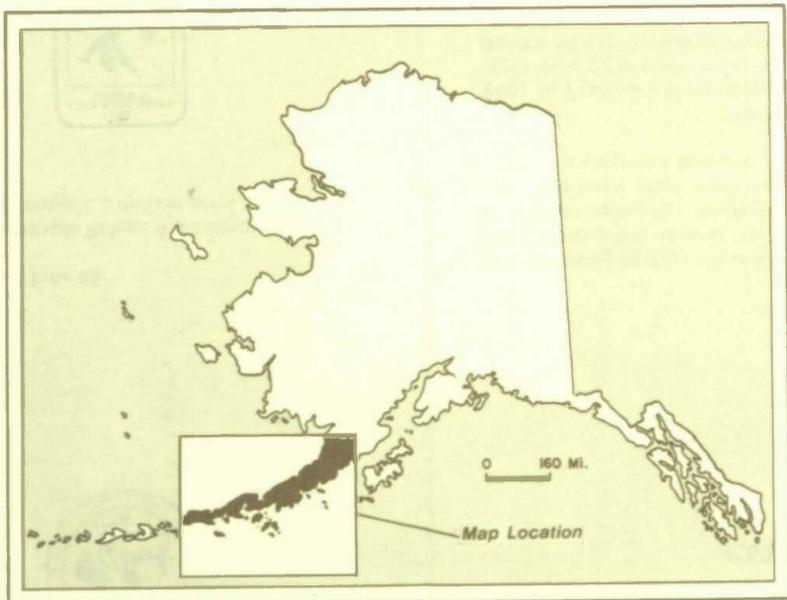
WEATHER

The summer temperature on the peninsula ranges from 34° F to 72° F. Fog, drizzle, and ceaseless winds are common. Severe storms (rain, snow, and cold winds) can occur year-round. The lightest precipitation falls on the Bristol Bay side while the heaviest rain occurs on the Pacific side of the peninsula (20 inches per year at Port Moller and 160 inches at Chignik).

TAKE PRIDE IN AMERICA

The National Wildlife Refuge System in Alaska comprises 16 units which together cover a wide spectrum of scenic, scientific, cultural, and recreational values. Alaska's lands are a vast but delicate habitat—its protection is essential to wildlife of national and international interests. Be careful your actions do not alter the character of the landscape or disturb biological processes.

ALASKA PENINSULA



-  BECHAROF REFUGE
-  ALASKA PENINSULA REFUGE
-  U.S. Fish and Wildlife Service Land
-  Native Land - Selected and / or Conveyed
-  State Land Selected and / or Conveyed
-  Wilderness Areas

Alaska Peninsula and Becharof National Wildlife Refuges

Department of Interior
U.S. Fish and Wildlife Service

For further information: Refuge Manager
P.O. Box 277
King Salmon, AK 99613
Telephone: (907) 246-3339



AK 102-1-1 June 86

Alaska Peninsula Refuge 4.3 million acres
Becharof Refuge 1.2 million acres

