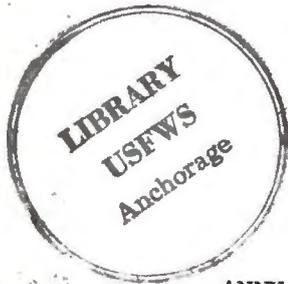


ALASKA PENINSULA/BECHAROF NATIONAL WILDLIFE REFUGES

King Salmon, Alaska



ANNUAL NARRATIVE REPORT

Calendar Year 1989

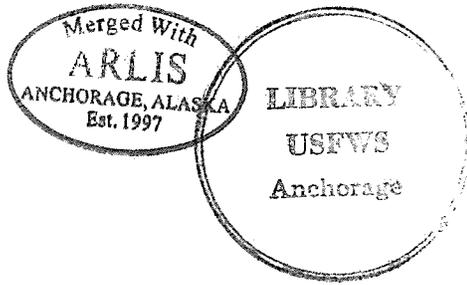
U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

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US FISH & WILDLIFE SERVICE--ALASKA



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Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEWS AND APPROVALS

ALASKA PENINSULA/BECHAROF NATIONAL WILDLIFE REFUGES
King Salmon, Alaska

ANNUAL NARRATIVE REPORT

Calendar Year 1989

Ronald E. Hood 2/28/90 [Signature] 6/10/90
Refuge Manager Date Associate Manager Review Date

Paul R. Schmidt 12/31/90 _____
Regional Office Approval Date



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INTRODUCTION

The Alaska Peninsula splits Bristol Bay and the Bering Sea on the north and west from the Pacific Ocean on the south and east. This rugged peninsula juts out in a southwesterly crescent from the mainland beginning at the 59th parallel of latitude and running nearly 400 miles to about the 54th parallel. The southwestward crescent is continued for another 1,500 miles by the Aleutian Islands. The backbone of the Alaska Peninsula is the Aleutian Mountain Range. This volcanic mountain range lies along the Pacific coast on the east side of the peninsula. Numerous peaks rise above 6,000 feet elevation. This creates a Pacific coast that is rocky and heavily fjorded. The Aleutian Range, including the Aleutian Islands, contains nearly 50 volcanoes known to have erupted or vented steam since 1760. They are part of a chain of volcanoes that rim the Pacific Ocean known as the "Ring of Fire". The Alaska Peninsula and Becharof National Wildlife Refuges are superimposed over this rugged range of mountains (Figure 1).

On December 1, 1978 President Jimmy Carter established the **Becharof National Wildlife Monument** by Proclamation 4613. Two years later, on December 2, 1980 the Becharof Monument became extinct and was reincarnated as the **Becharof National Wildlife Refuge**. This was the date on which President Jimmy Carter signed into law the Alaska National Interest Lands Conservation Act (Alaska Lands Act). This act also created the **Alaska Peninsula National Wildlife Refuge**.



Puale Bay received major impact from the Exxon Valdez oil spill. 8/89, DAD

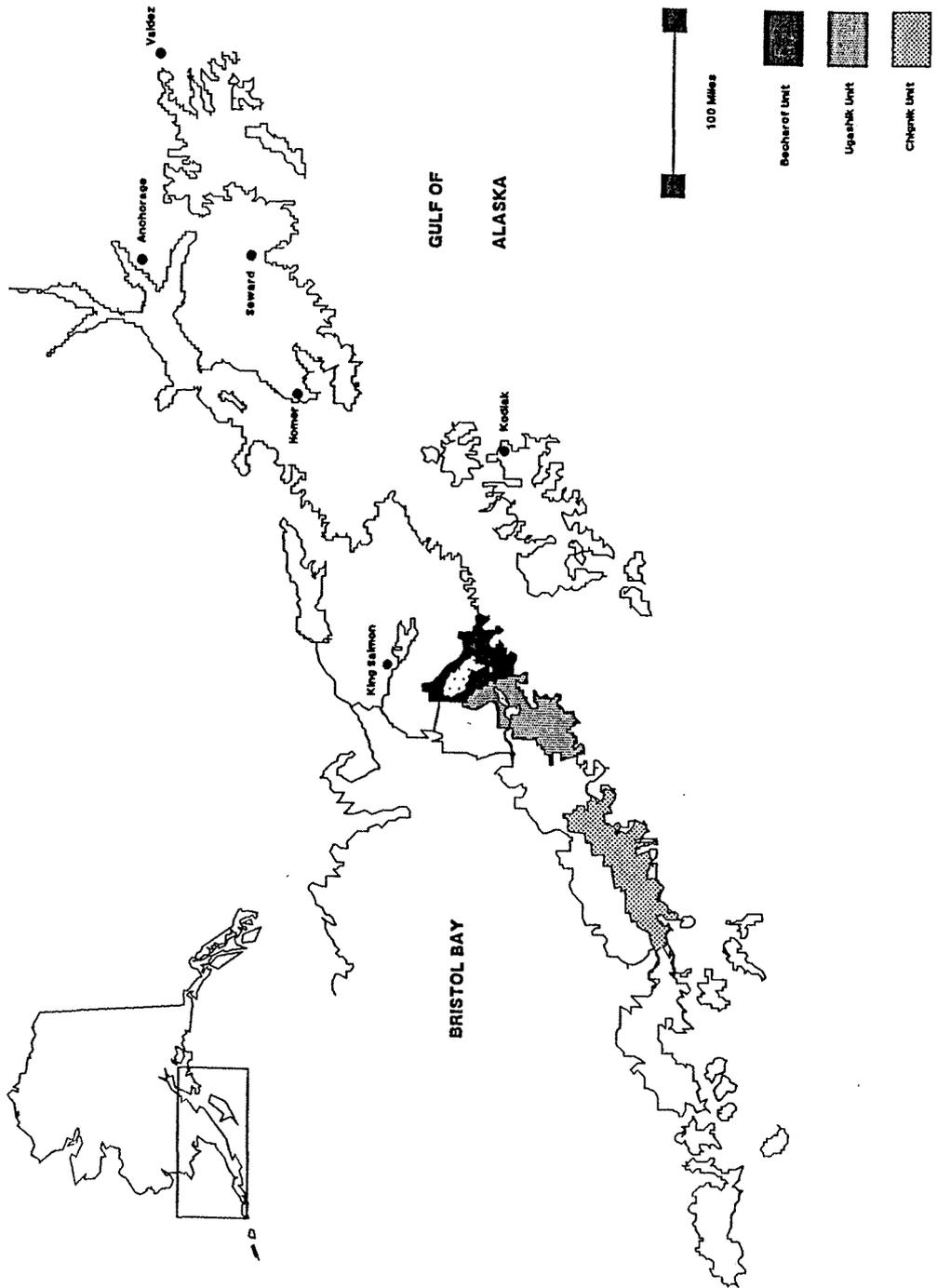


Figure 1. Location of the Becharof and Alaska Peninsula National Wildlife Refuges.

The **Becharof Refuge** contains approximately 1.2 million acres. It is 10 miles south of King Salmon and 295 miles southwest of Anchorage (Figure 2). The refuge lies between Katmai National Park and Alaska Peninsula Refuge. 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 lowest elevation on the west side of the refuge is about 50 feet above sea level. The highest elevations on the refuge are about 5,000 feet where the northern boundary crosses the Kejulik Mountains. The Kejulik River Valley, about six miles wide at Becharof Lake, splits the main trend of the Aleutian Range, separating the rugged Kejulik Mountains from the coastal range. A few glaciers are on slopes and upper valleys of higher peaks on the northeast boundary of the refuge.

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

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

Section 302(2)(B) of Alaska Lands Act set forth the following major purposes for which Becharof Refuge was established and shall be managed:

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, brown bears, salmon, migratory birds, the Alaskan Peninsula caribou herd and marine birds and mammals;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.

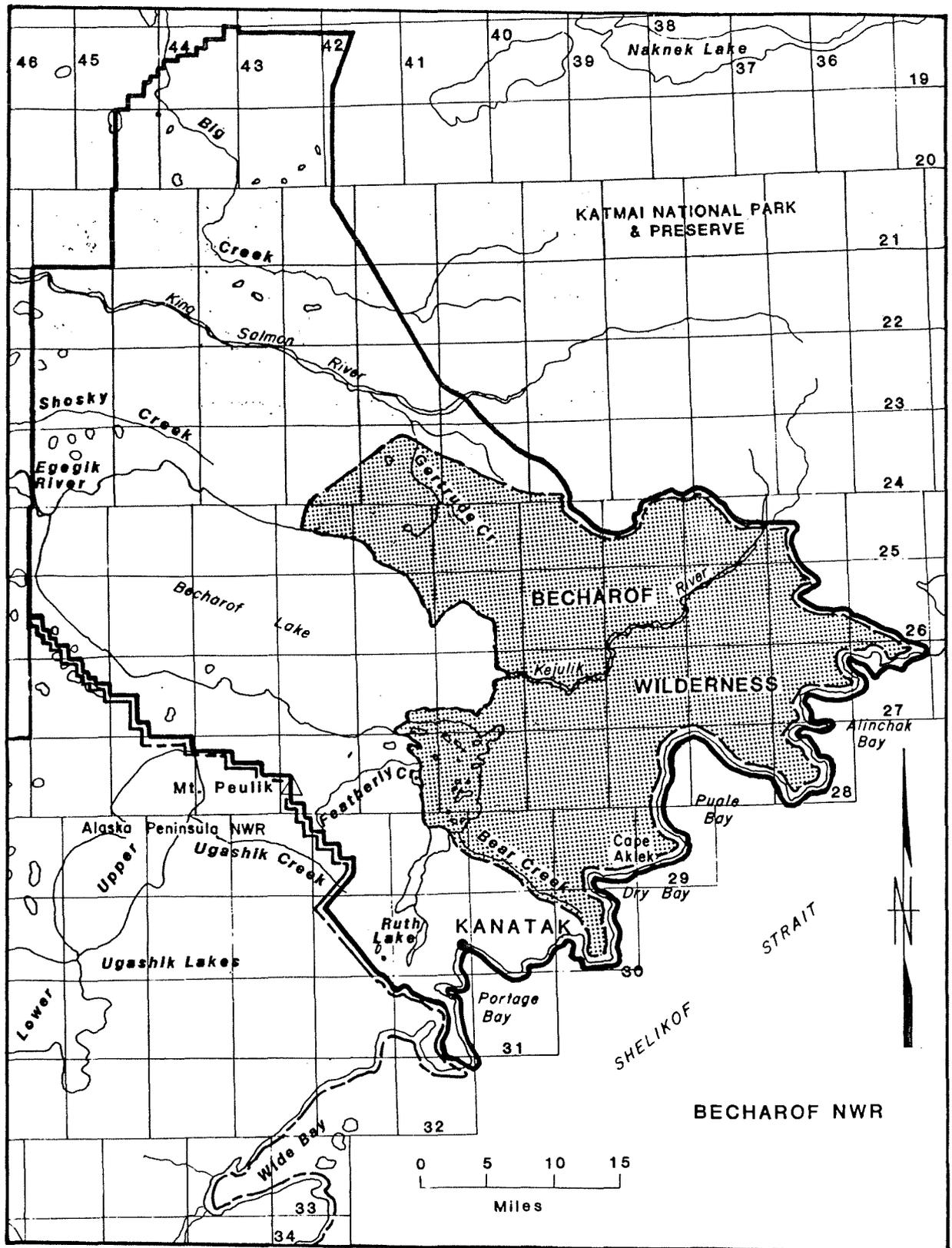


Figure 2. Becharof Refuge.

The **Alaska Peninsula Refuge** boundaries encompass about 4.3 million acres of land -- an area bigger than the State of Connecticut (Figure 3). Stretching for nearly 340 miles along the Alaska Peninsula, the refuge is subdivided into three units: the Ugashik, Chignik, and Pavlof units. The Ugashik Unit's northeastern boundary is about 60 miles south of the refuge headquarters at King Salmon and 360 air miles southwest of Anchorage. It is bounded on the north by the Becharof Refuge and on the south by the Aniakchak National Monument and Preserve. The Chignik Unit bounds the Monument's southern boundary with the Pavlof Unit occupying the southwestern end of the Alaska Peninsula crescent. Izembek Refuge adjoins the unit's southwest corner.



A steam vent on Mount Chiginagak - an active volcano on the Ugashik Unit of the Alaska Peninsula Refuge.

11/89, DAD

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

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

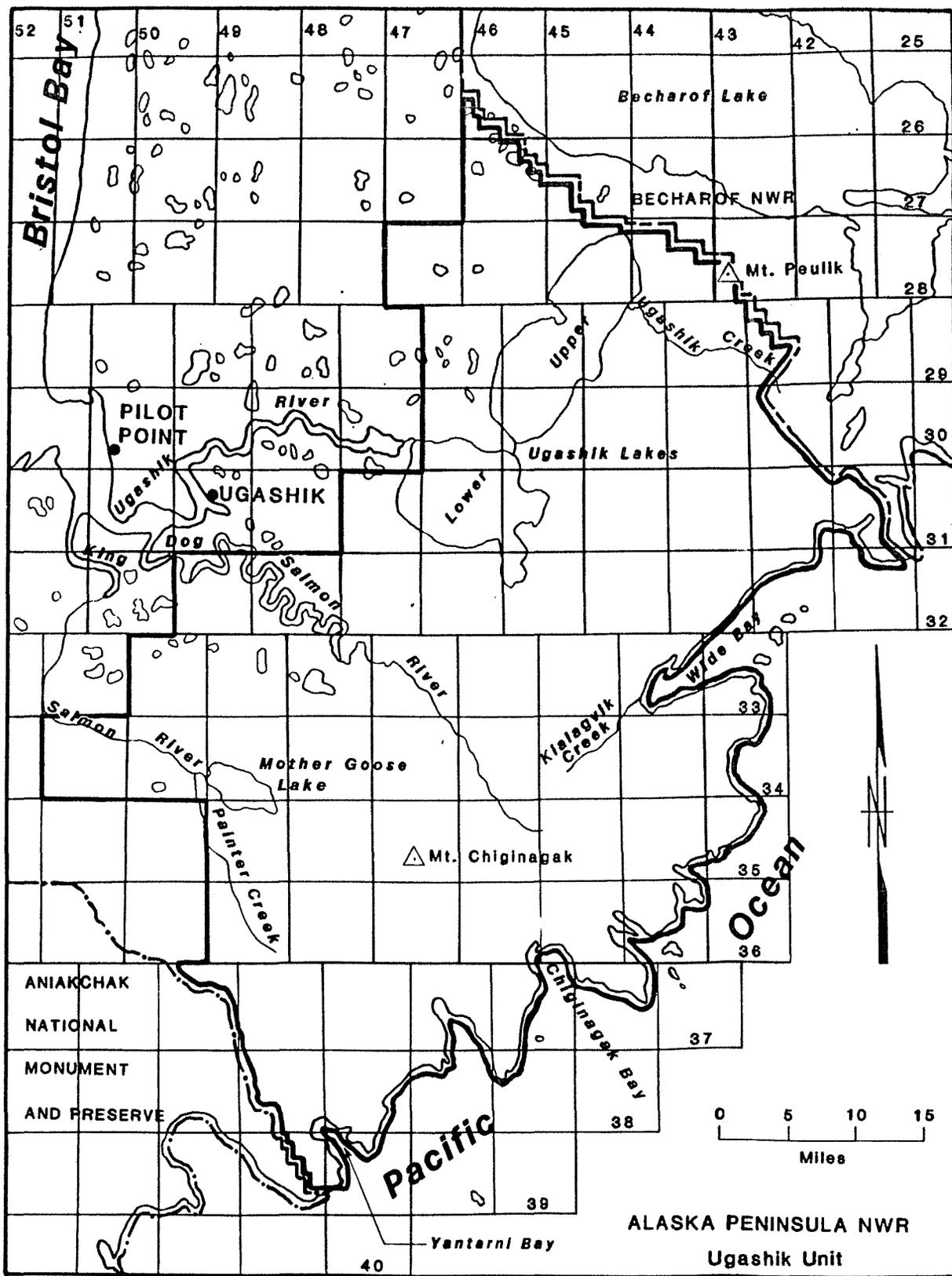
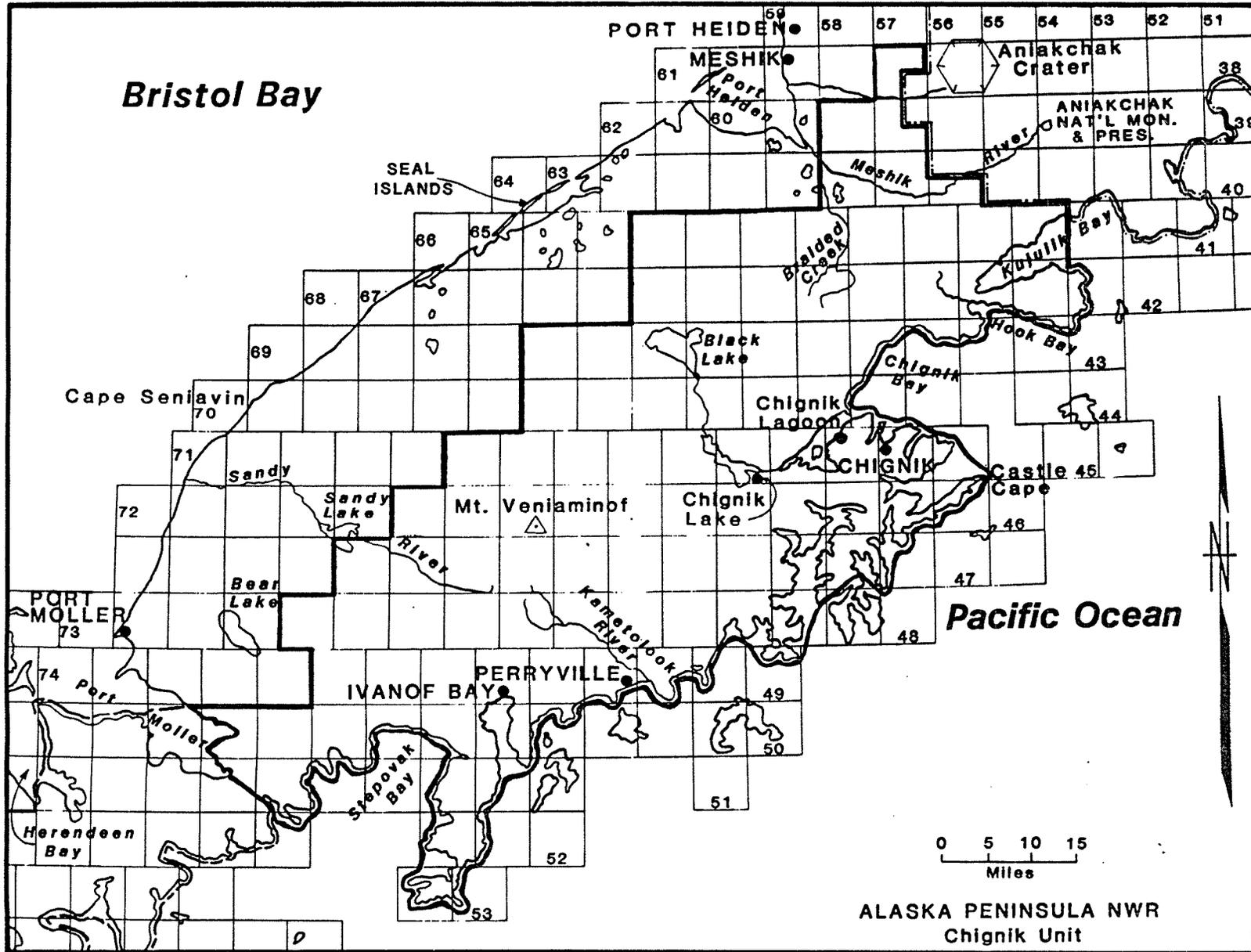


Figure 3. Alaska Peninsula Refuge.

Figure 3. Continued.



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

Section 302(1)(B) of the Alaska Lands Act sets forth the following major purposes for which the Alaska Peninsula Refuge was established and shall be managed:

(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, brown bears, the Alaska Peninsula caribou herd, moose, sea otters and other marine mammals, shorebirds and other migratory birds, raptors, including bald eagles and peregrine falcons, and salmonids and other fish;

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

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

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

A. HIGHLIGHTS

- Record low temperatures were recorded in January (Section B.). Maintenance worker Gary Terry had his hands full trying to keep refuge structural heating systems alive (Section I.).
- A major change in the migration pattern of the northern Alaska Peninsula caribou herd occurred. Thousands of caribou crossed the Naknek River and moved as far north as Lake Iliamna and mixed with the Mulchatna caribou herd for the first time (Section G.).
- Development of a Public Use Management Plan was initiated (Section D.).
- Exxon Valdez oil spill slided Becharof Refuge on April 29th. The impacted coastline extended from Cape Kubugakli (Katmai National Park boundary) to Cape Igvak (Alaska Peninsula Refuge boundary). Puale Bay sustained major impacts (Section F.).



One of the 1,010 sea otter carcasses recovered during the Exxon Valdez oil spill. This adult otter was found on a beach within Becharof Refuge with oil visible on its head and back. 6/26/89, GLT

- The refuge staff worked in cooperation with Alaska Department of Fish and Game staff on the Black Lake brown bear tagging and survey project (Section G.).
- Field studies on bald eagles, sea bird production and beached birds conducted in response to Exxon Valdez oil spill (Sections F. and G.).
- Participants in the Challenge Grant program cleaned up the Mother Goose Lake area (Section H.).
- Exxon conducted extensive clean-up of Puale Bay during June to August (Section F.).
- A station visit was conducted by Assistant Regional Director John Rogers and Deputy Associate Manager Ted Heuer on August 1-3 (Section J.).
- The U.S. Fish and Wildlife Service bought the Myers Lodge at the Ugashik Narrows. On September 8th, Robert Rice, Supervisory Appraiser, Division of Realty, held a closing with Paige and James Myers in Anchorage. A refuge "bon-fire" was held at the Narrows on October 12th (Section C.).

B. CLIMATIC CONDITIONS

1. General

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

Large atmospheric differences between interior Alaska and the Pacific Ocean and Bering Sea are the dominate influences on weather. Pacific Ocean and Bering Sea winds with high moisture content blow frequently across the upper peninsula forming fog and clouds which 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. The Bering Sea side enjoys more clear weather but lower average temperatures. From fall to spring, the skies are clear to partly cloudy 40 percent of the time. In summer this occurs only 20 percent of the time. King Salmon averages 50 clear days per year.



Typical ominous weather associated with the Alaska Peninsula -- Jute Bay, Becharof Refuge. 8/89, DAD

Precipitation varies with elevation and distance from coasts. Less than 20 inches of precipitation falls annually on 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 °F in December, the coldest month, and 54 °F in July, the warmest month. Extremes range from -48 °F to 88 °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 °F.

January - March

The year started off with record setting low temperatures, extreme variations in temperatures and barometric pressures, and dangerously low wind chill effects. The average January temperature was 16 °F below normal (Table 1). January's temperatures varied 90 degrees, from a high of 42 °F on the 5th and 6th to a record low of -48 °F on the 28th. The former record low was -46 °F set January 3, 1975. This year temperatures dropped below 0 °F on January 15th and remained there until February 1st (another record). The past record was set from December 19, 1957 to January 2, 1958. This year Becharof Lake, Alaska's second largest, was observed completely frozen over by the end of January. The highest and lowest barometric pressures for the year also occurred in January. The low of 28.74 inches occurred on the 11th, while the record high of 31.09 inches occurred on the 31st. During the -48 °F weather, the winds blew to 18 miles-per-hour making the wind chill effect -100 °F. However on January 27th, with a low of -43 °F, the winds blew in excess of 30 miles-per-hour making the wind chill effect of -115 °F. We found out quickly that at these extreme temperatures, like the human flesh, building freeze-up is more closely correlated to wind chill than ambient temperatures alone. The Naknek River remained frozen over and safe for crossing through mid-February. By the end of February the upper end of Naknek River opened and was unsafe for crossing. Precipitation was below normal for the quarter. Approximately two feet of snowfall occurred during the quarter, however, ground cover was usually less than two inches. The maximum snow cover was six inches observed on January 14th. The ground remained free of measurable snow cover after March 22nd. There were 30 clear days recorded for the quarter. This is one more than the total number of clear days reported for all of 1988. The winds blew in excess of 40 miles-per-hour on 11 days. Peak winds were on March 3rd, when 62 miles-per-hour gusts were recorded.

Table 1. 1989 climatological data - National Weather Service, King Salmon, Alaska.

Month	Temperature (degrees F)				Precipitation (inches)			Max. Snow on Ground	Wind (mph)		Sky Cover ^a (days)		
	High	Low	Avg.	Norm.	Total	Norm.	Snow	(inches)	Avg.	Peak	Clear	Pt. Cldy.	Cldy.
Jan	42	-48	-03	13	0.84	1.04	14.9	6	12	49	16	4	11
Feb	46	-15	29	15	0.93	0.88	3.7	3	11	45	5	4	19
Mar	46	-01	24	19	0.19	1.13	5.1	2	10	62	9	8	14
Apr	56	18	36	31	0.99	1.05	1.5		11	45	3	9	18
May	59	24	42	42	2.32	1.18	2.1		11	43	2	3	26
Jun	76	35	53	50	1.10	1.50			12	51	1	5	24
Jul	80	42	55	55	3.04	2.08			10	38	1	3	27
Aug	75	39	57	54	3.15	3.13			11	46		5	26
Sep	70	28	51	47	5.90	2.78			12	53		2	28
Oct	53	14	37	33	2.86	1.92	0.4		13	43	3	11	17
Nov	51	-11	18	23	1.58	1.40	12.3	5	10	52	5	6	19
Dec	46	-23	20	12	1.31	1.24	12.4	9	12	55	3	7	21
Totals					24.21	19.33	50.9				48	67	250

^aSky cover: Clear = 0 to 0.3 cloud cover; Partly cloudy = 0.4 to 0.7 cloud cover; and cloudy = 0.8 to 1.0 cloud cover.

April - June

13

The Spring quarter exhibited normal to mild temperatures. Daily minimum temperatures remained at or above 31 °F beginning May 20th. The Naknek River was completely open and Becharof Lake was 90 percent ice free by the end of April. At that time, Naknek Lake and many lakes between King Salmon and Becharof Lake remained frozen. Most refuge water bodies were ice free by mid-May. Precipitation was slightly above normal. Measurable amounts of snow fell four times. The last measurable snowfall was 2.1 inches occurring May 17th, however no measurable snow accumulated on the ground. Thunder was heard one time during the quarter on June 15th. Six clear days were exhibited during the quarter. Peak winds occurred on June 2nd with gusts up to 51 miles-per-hour.

July - September

The summer quarter exhibited normal to mild temperatures. The high for the year was 80 °F which occurred on July 3rd. Temperatures exceeded 70 °F on nine days. The low for the quarter was 28 °F which occurred on September 28th. However the resulting frost was not hard enough to kill the gardens. Precipitation was well above normal making for a very wet year with flooding conditions. During September precipitation occurred on all but two days. Thunder was heard one time during the quarter on September 19th. On September 22nd, 0.01 inch of snow fell; however, no snow cover was observed during the quarter. Only one clear day was recorded for the quarter. Peak winds occurred September 30th with gusts up to 53 miles-per-hour.

October - December

The fall quarter began with normal temperatures during October and November. However, December exhibited temperatures eight degrees above normal. The first frost hard enough to kill the gardens occurred on October 9th when the temperature dipped to 22 °F. During November the Naknek River froze over between Naknek Lake and King Salmon. By the end of December most of the Naknek River downstream of King Salmon had frozen over and was safe for crossing. The first measurable snowfall for the season occurred on October 22nd when 0.1 inch was recorded. A total of 25.1 inches of snowfall occurred during the season. The greatest snow depth was nine inches recorded December 29th. By year's end eight inches of snow cover remained. Maximum winds for the quarter were 55 miles-per-hour recorded on December 9th.

C. LAND ACQUISITION

1. Fee Title

Unlike most refuges in the lower 48, Alaska refuges have been created and modified by several major pieces of legislation. On November 16, 1978, the Secretary of the Interior invoked his emergency withdrawal powers under Section 204(e) of the Federal Land Policy Management (Organic Act) and withdrew land throughout Alaska. Part of this withdrawal was Public

Land Order (Order) 5653 (as amended), which included lands which are now the Alaska Peninsula National Wildlife Refuge. Order 5653 was rescinded in December 1980 with the passage of the Alaska National Interest Lands Conservation Act (Alaska Lands Act) and created the Alaska Peninsula National Wildlife Refuge from the lands in the Order.

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

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

The Alaska Peninsula Refuge is divided into three management units: Ugashik, Chignik and Pavlof. For administration purposes the Pavlof Unit is managed from Izembek Refuge in Cold Bay and therefore is not discussed herein. The Ugashik and Chignik units contain nearly three million acres within refuge boundaries. Approximately 2.5 million acres are under Federal jurisdiction at present. The remaining acreage has been selected by 23 Native villages in three Native Regions (Koniag, Aleut and Bristol Bay), the State of Alaska, individual Native allotments and other private interest (Table 2 and Figure 4).

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

Management Unit	Administration	Acres
Ugashik	Federal	956,583
	Native Selected Lands	175,953 ^b
	Native Conveyed Lands	113,545
	Native Allotment Application	591
	Native Allotment Certificate	---
	Historical Place Selection	145
	State of Alaska Selection	142,419 ^b
	Private	68
	Sub-total	

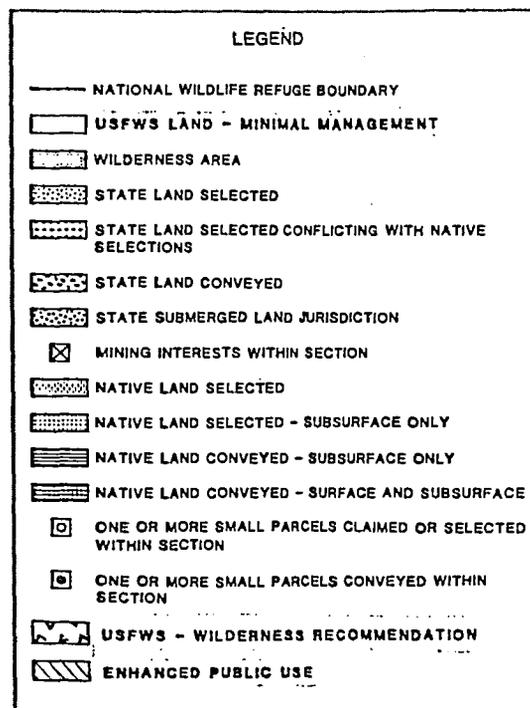


Figure 4. Current land status on Alaska Peninsula Refuge.

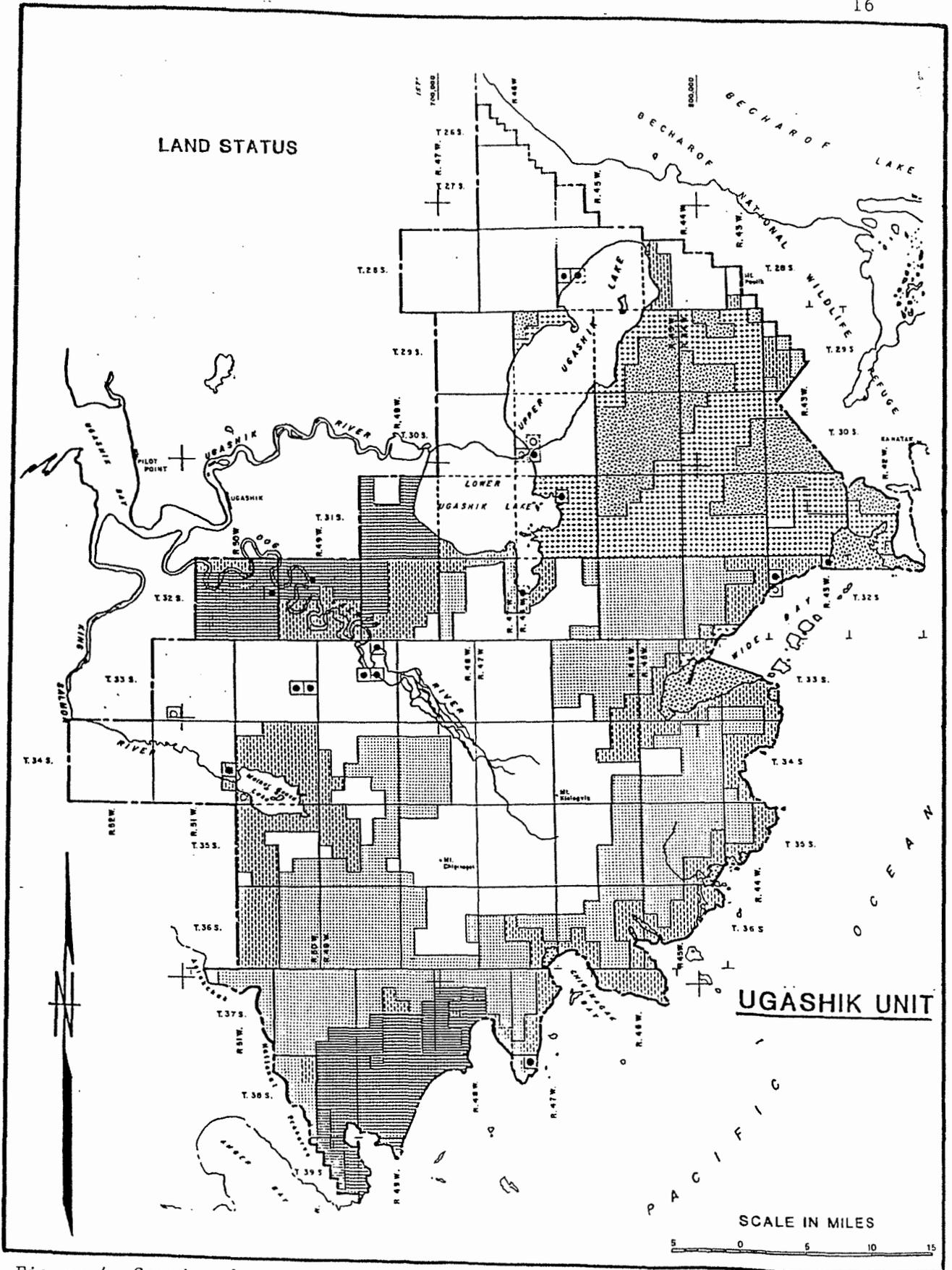


Figure 4. Continued.

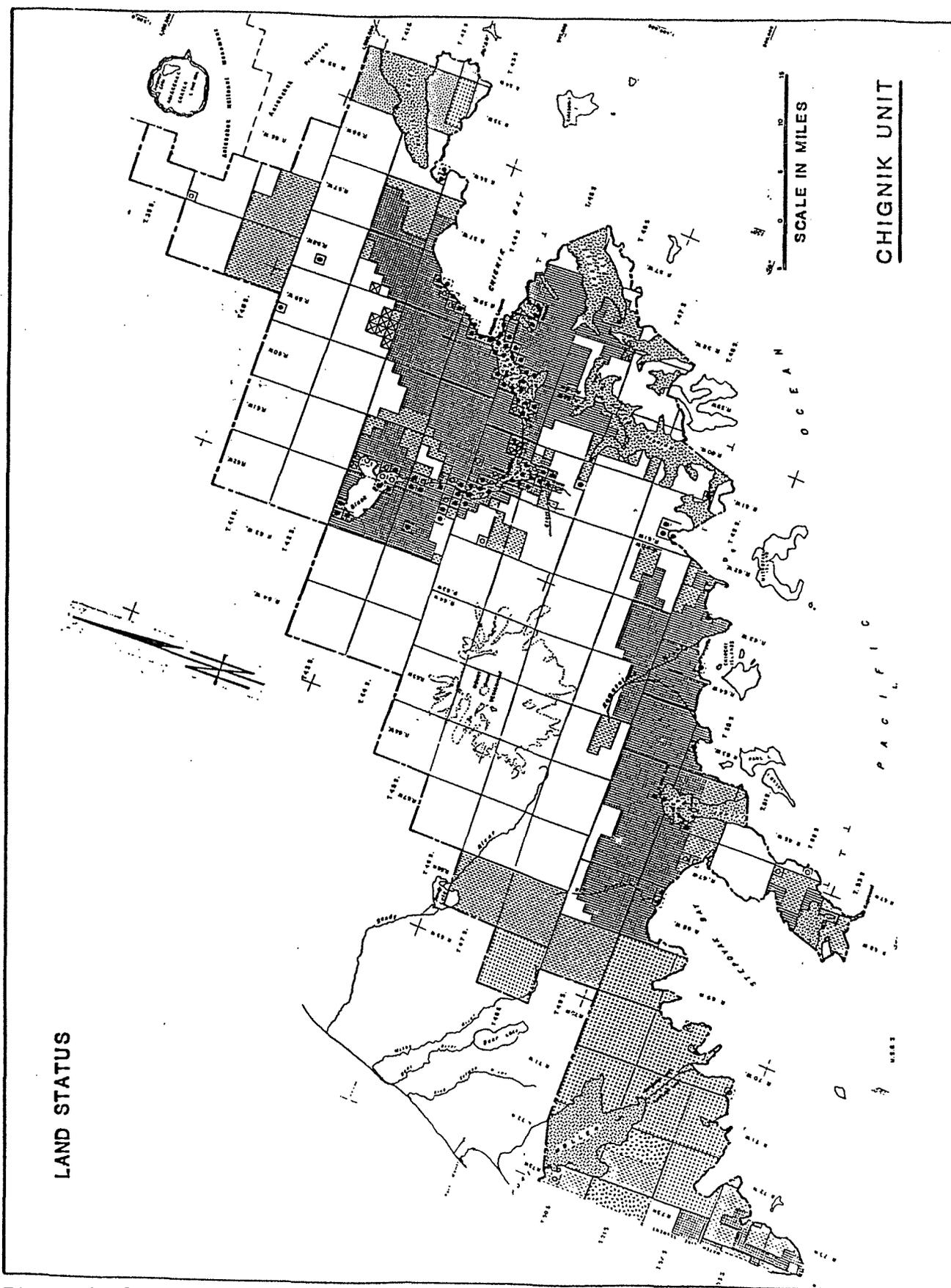


Figure 4. Continued.

Table 2. Continued.

Management Unit	Administration	Acres
Chignik	Federal	1,656,990
	Native Selected Lands	271,358 ^b
	Native Conveyed Lands	430,329
	Native Allotment Application	4,509
	Native Allotment Certificate	296
	Historical Place Selection	140
	State of Alaska Selections	123,990 ^b
	Agricultural Selections	220
	Private	1,045
	Sub-total	
Grand Total		<u>3,878,181</u>

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

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

The "checker board" land status found on the Alaska Peninsula Refuge is largely absent on the Becharof Refuge, primarily because of the protection afforded by previous National Monument status. The overall land status of Becharof is presented in Table 3 and Figure 5.

Table 3. Land status of Becharof Refuge.

Management Unit	Administration	Acres
Becharof	Federal	1,153,000
	State & Native dual Selection	640
	State Selected Lands	32,446
	State Conveyed Lands	160
	Native Selected Lands	80,958
	Native Selected Land (subsurface only)	15,535
	Native Conveyed Lands	640
	Native Allotment Certificate, patent surveyed	320
	Historical Place Selection	560
	Private	190
	Grand Total	

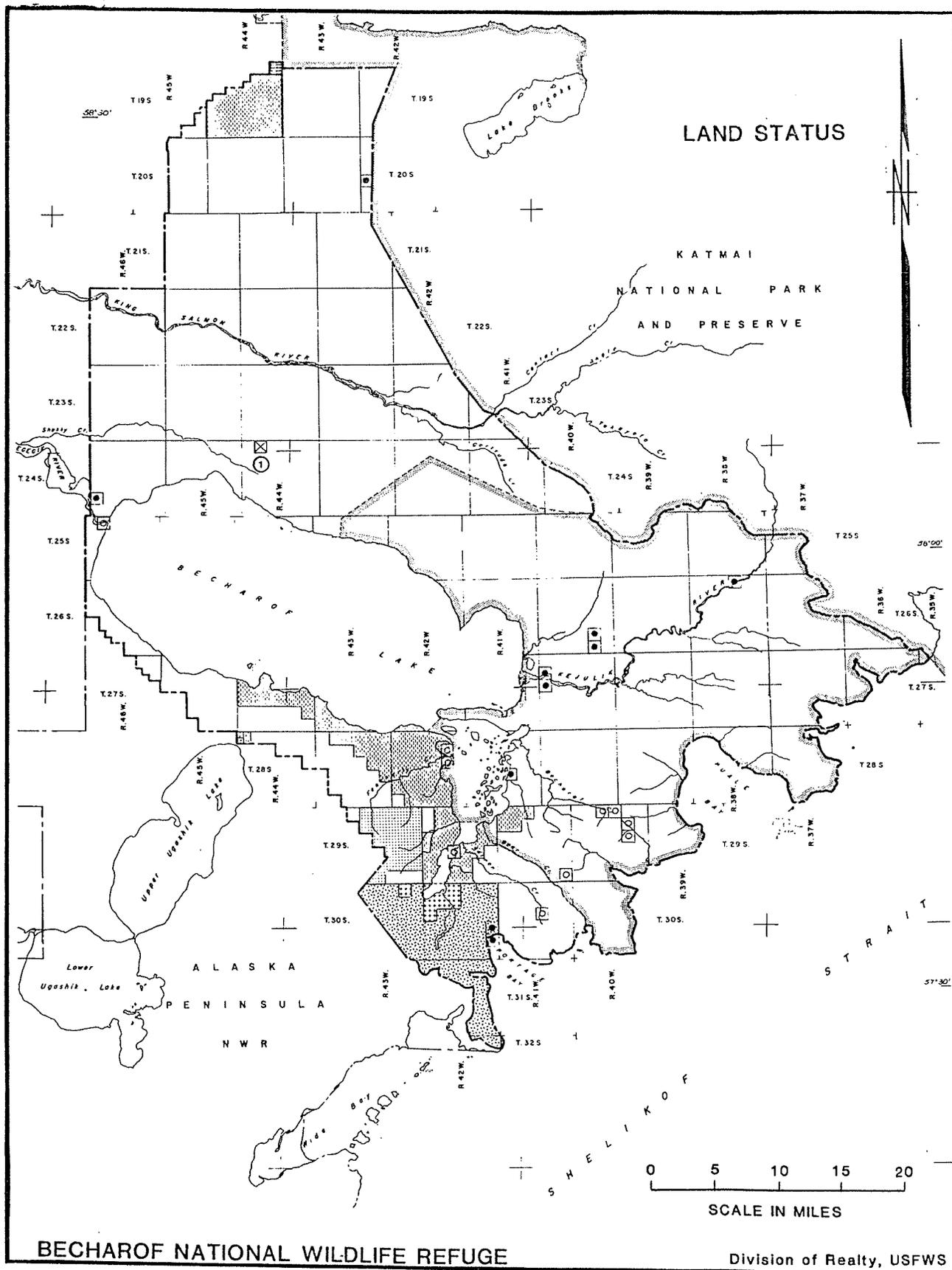


Figure 5. Current land status of Becharof Refuge.

Division of Realty, USFWS

Highlights of land acquisition activities in 1989 include:

- The Fiscal Year 1989 budget contained \$100,000 for the purchase of buildings at the Ugashik Narrows on the Alaska Peninsula Refuge. Two lodges are involved: the Mt. Peulik Lodge owned by Ludwig Brod (German National) and Bob Hicks; and the Myers' Lodge owned by James and Paige Myers. The appropriated funds were for the purchase of the Myers' Lodge. In January, Bob Rice, Realty, completed an appraisal of the Myers property. The buildings were appraised at \$8,500.



The Myers Lodge buildings were appraised at \$8,500. The Service owns the land that the lodge was built on.

10/88, REH

The acquisition of the Myers' interest heated up rapidly during July. Realty was instructed to complete the purchase by August 30th. As part of this effort, Danielle Jerry, Realty and Refuge Manager Hood conducted an onsite contaminant review (Level I) on July 27th. Events moved rapidly toward success during August. Refuge Manager Hood made a personal examination and inspection of the property on August 28th. He then submitted a "Certificate of Inspection and Possession" to Realty. On September 8th, Bob Rice held a closing with the Myers in Anchorage. Thus the acquisition of the Myers' interest in their buildings at the Ugashik Narrows was completed. The Service paid \$70,000 for the property. The Myers were given 30 days to remove any personal property.



Years of neglect produced these results. The kitchen in the main lodge is typical of the deterioration of the lodge buildings. 10/88, REH

On September 26th, Associate Manager Constantino and Refuge Manager Hood met with Ludwig Brod and Bob Hicks, owner of the Mt. Peulik Lodge, Ugashik Narrows, Alaska Peninsula Refuge, to discuss the future of their trespass buildings. As expected, they want equivalent treatment to the Myers; i.e., at least \$100,000 payment for their buildings or 15-20 years of personal use. The latter option was their preferred alternative. Negotiations continued on this matter at year's end.

- The 30-day waiting period for the Myers' to remove personal property from the Ugashik Narrows ended on October 9th. On the 12th, Refuge Manager Hood, Maintenance Worker Terry, Outdoor Recreation Planner Rodriguez and Biological Technician Mumma held a "clean-up" party at the Narrows. The highlight of the event was a \$70,000 bon-fire. Maintenance Worker Terry's 5-gallon can crusher was field tested. A total of 242 5-gallon cans were crushed in approximately 90 minutes of work. Weather limited the clean-up effort to one day. Final torches will be applied next June. A major eyesore and administrative headache has been removed from the Alaska Peninsula Refuge.



A \$70,000 bon-fire was held to celebrate the lodge becoming Service property. Final clean-up will be completed in June 1990. 10/12/89, REH

- On April 17th, the refuge received a letter from John Merrick, Manager, Lands and Resource, Koniag, Inc. responding to our request for input into the development of a public use management plan. One comment was particularly significant. Mr. Merrick stated, "The maps in your Public Use Management Plan are somewhat misleading in that a 68,438 (acre) block of land at Yantarni Bay shown as conveyed land is conveyed as to subsurface oil and gas rights, but the Service still owns the surface estate and other minerals...." We immediately sent a request to Realty to find out what was going on.

For years we have been referring all requests for special use permits from fishing and big game guides in the Yantarni Bay area to Koniag with the statement that these were private lands and we had no control over them. Several significant camps have developed at the Yantarni airstrip during this period.

Upon investigation Realty learned that pursuant to Section 1427, Alaska Lands Act, Koniag, Inc. had released the Yantarni Bay lands to the Federal government over six years ago. However, the Bureau of Land Management had never processed this release; thus the land still belongs to Koniag, Inc. Realty drafted a letter to the Bureau of Land Management for the Regional Director's signature requesting that they move on this matter at once.

Bureau of Land Management responded by placing the transfer on their Fiscal Year 1990 schedule.

- The Alaska Maritime National Wildlife Refuge Comprehensive Conservation Plan recommends the transfer of Seal Cape to the Alaska Peninsula National Wildlife Refuge. Since Seal Cap is similar in geology and habitat to the Castle Cape area of Alaska Peninsula Refuge, it is considered logical for us to manage this 8,200 acre area. Although it requires Congressional action to formally transfer this unit to Alaska Peninsula Refuge, the management responsibilities were transferred by an administrative action in June.
- Realty prepared draft language which would amend appropriate sections of the Alaska Lands Act as it pertains to refuge boundaries in Alaska. This language was submitted to the House Interior Committee on July 25th for use in a draft Alaska Omnibus Act. As written, the Becharof Refuge will be consolidated with the Chignik and Ugashik Units of the Alaska Peninsula Refuge. Seal Cape will be removed from the Alaska Maritime Refuge and incorporated into the Alaska Peninsula Refuge. The resulting Conservation System Unit will be named the Alaska Peninsula National Wildlife Refuge. The Pavlof Unit of the Alaska Peninsula Refuge will be incorporated into the Izembek Refuge.
- An issue paper was prepared on November 3rd, and submitted to the Regional Office on a proposed settlement of a court case, United States vs. Guild, AA-8433-Trade and Manufacturing (T&M) Site Contest. Mr. Bernard Guild claimed 80 acres under a T&M site application on the Egegik River, Becharof Refuge. The Bureau of Land Management countered with an interagency determination that 10 acres more accurately described the land used and occupied. A court case followed. In a memorandum dated September 19, 1989, Assistant Regional Solicitor James Mothershead described a proposed settlement that was justified "...in the interest of reducing the workload and expense of protracted litigation..." The Service was asked to concur in the transfer of the east 40 acres of the claim to Mr. Guild. The refuge recommended that the Service continue to support limiting the T&M site to a maximum of 10 acres. The Regional Director signed a letter supporting the refuges' position.
- During the first week of December, Chief of Realty Sharon Janis notified us that the proposed purchase of the Hammond inholding on the Kejulik River in Becharof Refuge has been funded. Fiscal Year 1990 funding of \$125,000 has been earmarked for the purchase of this 17-acre inholding.

2. Management Plan

Fishery Resource Management Plan. The King Salmon Fishery Assistance Office has the lead in developing a Fishery Resource Management Plan for both Alaska Peninsula and Becharof refuges. In November, the plan suddenly surfaced after months of inactivity. Refuge Manager Hood provided comments on Section 6. Goals and Objectives to the King Salmon Fishery Assistance Office on the 14th.

Public Use Management Plan. The first step-down management plan that Alaska Peninsula/Becharof refuges will develop is this important plan. Regional Office assistance was provided by Refuge Planning staff Norm Olson and Mike Haase. Highlights of this years activities included:

- Public Involvement Program developed by refuge staff and approved by Regional Director on February 27, 1989.
- An announcement of the planning effort was mailed on February 22, 1989 to over 2,000 people to determine their interest in participating in the plan development.
- Workbook 1 was mailed in mid-March to over 200 participants. This workbook included: (1) brief history of the refuges; (2) summary of decisions made in the Alaska Peninsula and Becharof Comprehensive Conservation Plans; (3) maps showing land management categories and land ownership patterns; and (4) list of objectives for the refuges' public use program.
- In April, due to the excessive workload created by the Exxon Valdez Oil Spill, all public use management planning activities were placed on hold. Village "open houses" were cancelled.
- An update on our Public Use Management Plan was mailed on September 11th. This update summarized comments we received on Workbook 1 which outlined public use issues and objectives for refuge lands. Our original planning schedule called for this update to be sent in June.
- Workbook 2 was developed by Refuge staff with assistance from Norm Olson and Mike Haase. It was mailed to over 200 participants. Workbook 2 highlighted the public use management issues raised in the planning process to date. It solicited help from those concerned in identifying and selecting options to manage the various public use issues on the refuge. Public meetings were scheduled in Anchorage, Kodiak and all villages on or near the Alaska Peninsula/Becharof refuges during January 1990 to further solicit comments. After a draft plan is drawn up and an environmental assessment is completed, the document will be mailed out again for comments and additional public meetings will be scheduled. Our goal is to complete the Public Use Management Plan by December, 1990.

3. Public Participation

25

See discussion on Public Use Management Plan above.

5. Research and Investigations

Becharof NR89 - "Island Denning and Seasonal Movement of Brown Bear within Becharof National Wildlife Refuge" (74515-83-01)

A brown bear capture/collaring effort was initiated in 1983 to study bear use of Becharof Refuge. Study objectives were to examine the extent of island denning in Becharof Lake, seasonal movement between the Refuge and Katmai National Park, parameters delineating winter dens, and to establish a data base of brown bear movement. See Section G.8. for data results.

Alaska Peninsula NR89 - "Brown Bear Studies at Black Lake" (74510-88-01)

In 1988, a ten-year cooperative interagency study was initiated on brown bears in the Black Lake area of Alaska Peninsula Refuge. The project involves the National Park Service, the Fish and wildlife Service, and the Alaska Department of Fish and Game as the lead agency, with Alaska Peninsula Refuge providing 1/3 of the funding and personnel to assist the study. Biological Technician Mumma and Deputy Refuge Manager Poetter assisted in 1989 field work. See Section G.8 for data results.

Alaska Peninsula NR89 - "Alaska Peninsula - Upper Braided Creek" (88-7-11)

Funding for this "Refuge Contaminant Issue of Concern" study was originally provided in Fiscal Year 1988. A major purpose for which the Alaska Peninsula Refuge as established is to ensure water quality within the refuge. Valid mining claims for hard rock mining of gold, zinc, silver and lead in the upper Braided Creek of the Meshik River drainage, Chignik Unit, are expected to be placed in production within the next 5 to 10 years. This study was designed to provide background information on selected water quality parameters. A control was included in the study design with annual schedule for sampling. A Bell Jet Ranger helicopter was used in 1989 versus a week-long field camp, with all samples collected in one day instead of several, cutting sampling costs. Resulting data will eventually be used to evaluate possible impacts of the planned mining operation on the water quality of Braided Creek.

E. ADMINISTRATION

The Fish and Wildlife Service plans to reorganize the four Alaska Peninsula refuges (Alaska Peninsula Refuge, Alaska Peninsula Unit of Alaska Maritime Refuge, Becharof Refuge and Izembek Refuge). To accomplish the proposed reorganization, the Service submitted draft language which would amend the appropriate sections of the Alaska National Interest Lands Conservation Act as it pertains to refuge boundaries in Alaska. This language was submitted to the House Interior Committee on July 25th for use in a draft Alaska Omnibus Act. As written, the Becharof Refuge will be consolidated with the Chignik and Ugashik Units of the Alaska Peninsula Refuge. Seal Cape will be removed from the Alaska Maritime Refuge and incorporated into the Alaska Peninsula Refuge. The

resulting "Conservation System Unit" will be named the Alaska Peninsula National Wildlife Refuge. The Pavlof Unit of the Alaska Peninsula Refuge will be incorporated into the Izembek Refuge.

The Alaska Peninsula and Becharof refuges are currently being managed as one refuge under this administrative view point. In prior years an annual narrative for each refuge was produced. In 1987, approval was received to produce only one narrative. In October, 1989 approval was received to operate both refuges under one annual work plan (74510). This should reduce the workload since we are no longer required to do everything in duplicate.

1. Personnel



3 2 5 6

1 7 4 8
11/89, RJK

PERMANENT

1. Ronald Hood, Refuge Manager, GS-485-12, 09-15-85, PFT
2. Richard Poetter, Deputy Refuge Manager, GS-485-11, 04-23-89, PFT
3. Randall Arment, Assist. Refuge Manager/Pilot, GS-485-12, 10-03-82, PFT
4. Donna Dewhurst, Wildlife Biologist, GS-485-11, 02-26-89, PFT
5. Jose Rodriguez, Outdoor Recreation Planner, GS-023-07, 08-27-89, PFT
6. Dwight Mumma, Biological Tech., GS-404-05, 02-19-84, PFT (local hire)
7. Gary Terry, Maint. Worker, WG-4749-08, 07-31-88, PFT
8. Janice Collins, Refuge Secretary, GS-318-05, 06-11-84, PFT
9. Vacant, Clerk Typist, GS-322-03, PPT

TEMPORARY

27

10. Cindylou Walston, Clerk Typist, GS-322-03, 05-09-89, 06-03-89, TPT
11. Chimene Terry, Clerk Typist, GS-322-03, 06-04-89, 08-11-89, TPT
12. Jean Gansch, Clerk Typist, GS-322-03, 08-18-89, 09-30-89, TPT
13. Gregory Thompson, Biological Tech., GS-404-05, 06-04-89, 09-22-89 TPT
14. Timothy Howard, Biological Tech., GS-404-05, 06-07-89, 09-12-89, TPT



7 15

16 17

The entrance sign was installed by the YCC crew.
7/89, REH

YOUTH CONSERVATION CORPS

15. Toby Hudon, Enrollee, 06-05 to 07-28
16. Heidi Wilson, Enrollee, 06-05 to 07-28
17. Bridget Shawback, Enrollee, 06-05 to 07-28
(Not Pictured)
- Mike Evans, Enrollee, 06-05 to 07-18
- Kimberly Fundeen, Enrollee, 06-28 to 07-07

STUDENT CONSERVATION ASSOCIATION

- Patrick Hickey, St. Charles, IL, 05-28-89 to 08-19-89, Puale Bay Camp
Hilda Sexauer, Ste. Genevieve, MO, 05-28-89 to 08-19-89, Oil Creek Camp
Allan Smith, Greensboro, NC, 05-28-89 to 08-19-89, Puale Bay Camp
Robert Kirk, Ontario, Canada, 10-16-89 to 01-08-90, Headquarters



Student Conservation Volunteer Rob Kirk at Island
Bay fuel cache. 11/89, DAD

VOLUNTEERS

Ezekiel Peters, Lake Forest, IL, 06-05-89 to 08-14-89, Puale Bay Camp
 Denise White, Northford, CT, 06-17-89 to 08-17-89, Oil Creek Camp
 Mike Cook, Lyons, OR, 06-17-89 to 08-05 89, Oil Creek Camp
 Carey Marzicola, Bel Air, MD, 06-18-89 to 08-04-89, Puale Bay Camp
 David Bassett, United Kingdom, 06-18-89 to 09-11-89, Puale Bay Camp
 Veronica Cassilly, Bel Air, MD, 06-28-89 to 08-04-89, Puale Bay Camp
 Douglas Low, Scotland, 08-14-89 to 09-24-89, Puale Bay Camp
 Tess Madigan, New Brunswick, Canada, 09-08-89 to 09-26-89, Puale Bay Camp
 Barrie Gilbert, Logan, UT, 08-07-89 to 08-14-89, Bear Research
 SSGT. Kevin Fisher, King Salmon AFS, 06-13-89 to 06-16-89, Clean-up Proj.
 SSGT. Brenda Brown, King Salmon AFS, 06-13-89 to 06-16-89, Clean-up Proj.
 SA Amanada Reese, King Salmon AFS, 06-13-89 to 06-16-89, Clean-up Proj.
 AIC Daniel Bilodeau, King Salmon AFS, 06-13-89 to 06-16-89, Clean-up Proj.



Oil Creek field camp personnel relaxing during their off-hours. Left to right is Zeke Peters, Denise White, Mike Cook, Hilda Sexauer, and camp leader Greg Thompson.

08/89, GLT



Puale Bay field camp personnel taking a break for a photo session. Kneeling is camp leader Tim Howard, standing (left to right) is David Bassett, Pat Hickey, Carey Marzicola, Allan Smith, Veronica Cassilly.

08/89, DAD



Volunteers Tess Madigan and Doug Low returning to the Puale Bay field camp from the bird colonies. 09/89, DAD

Highlights of the year included:

- A request to recruit for an Outdoor Recreation Planner position (Vice John Payne) was submitted to the Regional Office on January 12th.
- Rick Poetter, Rainwater Basin Wetland Management District, Kearney, Nebraska was selected for the Deputy Refuge Manager position. He entered on duty April 23rd.
- Donna Dewhurst, Alaska Maritime Refuge, was selected for the Wildlife Biologist position. Donna entered on duty February 26th.
- Maintenance Worker Terry was presented with a 10-year Length-of-Service certificate at the staff meeting on January 23rd.
- In February, our recruitment for a temporary clerk typist came up empty. There were no candidates in the King Salmon area on the Office of Personnel Management (OPM) register for clerical positions. Refuge Manager Hood was designated as an OPM tester. We advertised the position locally and received five applications. Tests were administered on March 25th and 26th. From the resulting clerk-typist register, Cindylou Walston was selected. She entered on duty May 8th. On the 30th, Cindylou resigned effective June 2nd to accept a full-time permanent secretarial job with the Air Force. On the 31st we were able to select a replacement, Chimene Terry, to start on June 5th.

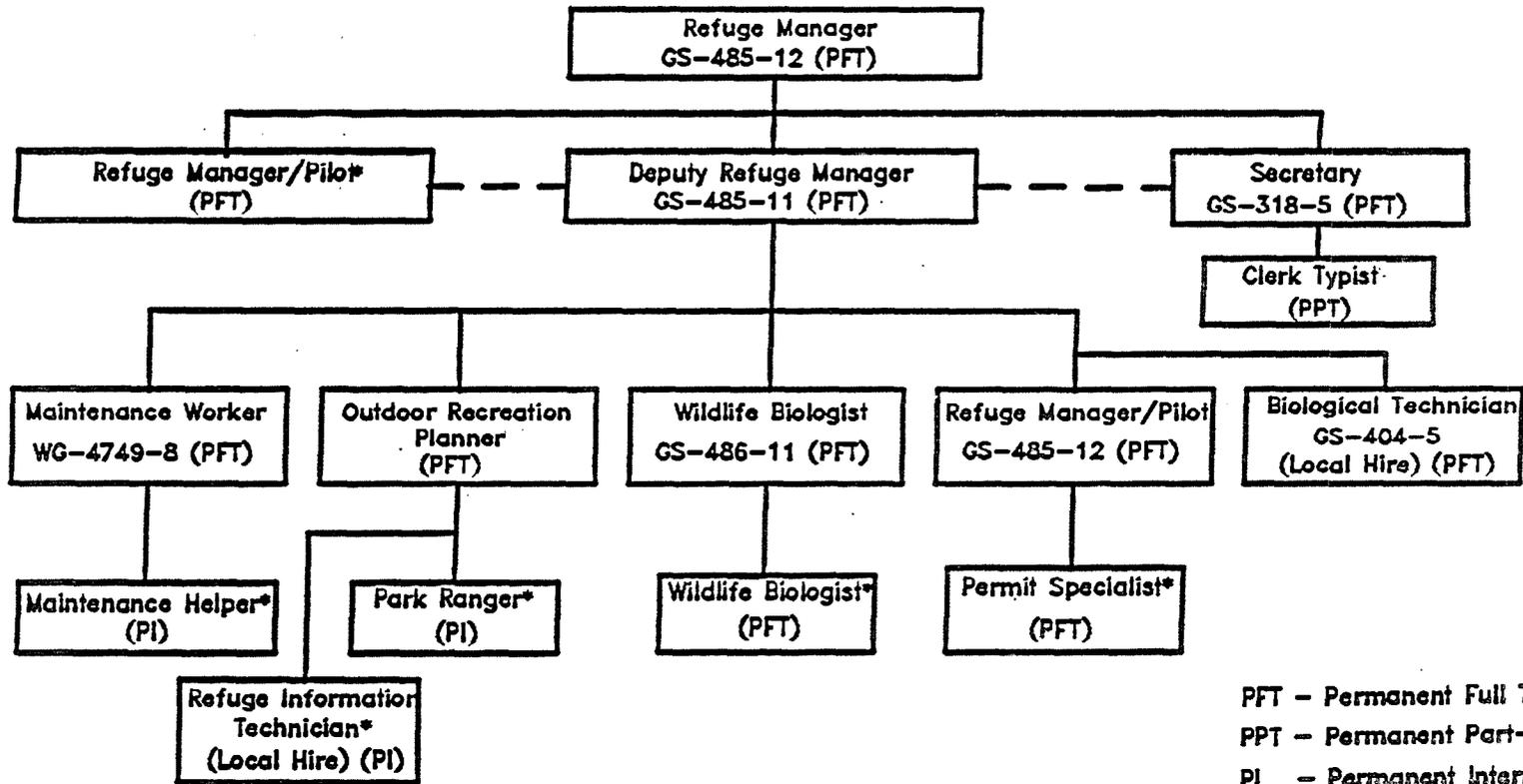
- Pursuant to direction received from the Regional Office, the recruitment documents for an Outdoor Recreation Planner were revised and resubmitted on April 25th. A developmental position was requested with recruitment at the GS-5 level and full performance at GS-9.
- The new Outdoor Recreation Planner, Jose Rodriguez, was selected from a list of nine candidates in July. Jose came to us from the Corps of Engineer where he worked as a Park Ranger. He entered on duty on August 27th.
- Temporary Clerk Typist Chimene Terry submitted her resignation effective August 11th, to begin college at the University of Alaska, Anchorage. We were fortunate to immediately fill the position with Jean Gansch. Jean came to us from Katmai National Park where she had been working as a volunteer. We terminated Jean on September 30th since she was a summer hire. With the exhaustion of the clerk typist register established in March, recruitment efforts began again. This position was advertised as permanent-part-time December 1st to 15th. Four applications were received. At years end we were waiting for OPM to send the testing material.
- Refuge Secretary Jan Collins received a "Sustained Performance" award on October 2nd. Jan continues to be the glue that holds the refuge administration together. Thanks Jan for all the hard, dedicated work that you provide!



Manager Hood presenting Secretary Jan Collins with Special Achievement Award for her outstanding work performance in 1989.

10/89, RDP

Alaska Peninsula/Becharof National Wildlife Refuges



PFT - Permanent Full Time
 PPT - Permanent Part-time
 PI - Permanent Intermittent
 * - Projected position, individual approval required to officially establish.

Figure 6. Approved staffing pattern.

A new staffing plan for the Alaska Peninsula/Becharof Refuges was approved by the Regional Director Walter Stieglitz on April 8th (Figure 6). The funded positions require 7.5 Full-Time Equivalents (FTE). One position is local hire which does not count as a FTE. The funding for the maintenance position is shared with the King Salmon Fishery Assistance Office. The FTE allocation history is shown in Table 4. The low use in 1989 is a reflection of the three vacancies that occurred this year.

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

FY	Full Time Equivalent			
	AKP	BCH	TOTAL	USED
89	5.0	4.0	9.0	6.68
88	5.0	4.0	9.0	8.06
87	5.0	5.0	10.0	8.24
86	3.4	5.7	9.1	8.66
85	3.4	3.4	6.8	6.28

2. Youth Programs

This year's Youth Conservation Corps program began on June 5th with four enrollees and ended on July 28th with three enrollees. One other enrollee was selected to begin with the others but suffered a motorcycle accident and was unable to report until June 28th.

Two male and three female enrollees were selected from the local high school to participate in the work program. Toby Hudon, Bridget Shawback and Heidi Wilson produced some very fine work and completed the nine week program. Kim Fundeen, the enrollee that got the late start due to the motorcycle accident, was unable to perform her duties satisfactory and quit the program on July 7th. Mike Evans gave his notice on July 18th after a series of late arrivals for work and indications of not wanting to work any longer.

Maintenance Worker Terry assumed the duties of daily supervision of the enrollees. He worked extremely well with the youths, instilling upon them proper work ethics while at the same time teaching them basic maintenance skills and accomplishing a variety of Station duties. As with most programs of this type, counseling and extra attention is required and Gary's efforts demonstrated his patience and aptitude in working with youths.

Work projects for this year centered around the "Take Pride in America" theme with the installation of new refuge entrance and informational signs in various locations; clearing of brush and litter pickup around the perimeter fence; lawn seeding and fertilizing; mowing and trimming lawns; removal of accumulated trash from around buildings; major cleaning and reorganizing of storage facilities; washing and waxing of vehicles;

miscellaneous painting; constructing weatherport floors and outhouses; insulating water pipes in the crawl spaces of each residence; and a variety of minor maintenance. The work completed was of good quality and essential.

The enrollees sat in on appropriate sessions of the training put on for the field crews. This training included; first aid, Cardiopulmonary resuscitation, bear safety, cold water survival, sexual harassment and hypothermia. The following video cassette movies were shown to the enrollees for educational purposes: Wildlife of Alaska, A Portrait of the Last Frontier, In Celebration of America's Wildlife, The Power of Fire, Ages of Alaska, Catch and Release Fishing, Wild Fury - Alaska Peninsula and the Chain of Life.

A flight in the Service aircraft was arranged to take the enrollees on an environmental education trip to the Katmai National Park. A Park Service interpreter met them at the Brooks camp area and discussed various aspects concerning the park and its wildlife.

3. Other Personpower Programs

The Student Conservation Association (SCA) program proved again to be an excellent source of energetic and dedicated resource assistant volunteers for the field camps. A total of four resource assistants were utilized this year.



Student Conservation Association and other volunteers, seasonal biotechs and permanent staff receive survival suit training in the Naknek River. 6/89. MSA

Originally, three resource assistants were to staff the Ugashik Narrows field camp for the collection of data related to public uses of that area. With the advent of the Exxon Valdez oil spill, the one camp was expanded to two and placed on the Pacific coastline of the refuge to collect data related to the spill (see Section F.14.). These resource assistants provided the station with 12 weeks of work. Their work period ran from May 28th through August 19th. Their first week was spent receiving training in first aid, Cardiopulmonary resuscitation (CPR), bear safety, shotgun certification, cold water survival, boat operation and safety, sexual harassment and hypothermia.

Resource Assistant Hilda Sexauer was assigned to the Oil Creek field camp and assistants Pat Hickey and Allan Smith were assigned to the Puale Bay field camp.

The fourth position was filled by Resource Assistant Rob Kirk, for the period of October 16th through January 8, 1990. Rob helped Biologist Dewhurst compile the data from the past field season.

Wallace Elton, Assistant Program Director for the Student Conservation Association, stopped by for a formal visit on August 1st and the morning of the 2nd. The purpose of his trip was to acquaint himself with various stations in Alaska and visit with the station managers and Resource Assistants. The refuge staff and fisheries staff involved with the Student Conservation Association program were able to discuss with Mr. Elton the pros and cons of the program and get a variety of questions answered. Unfortunately, all of the resource assistants were in the field and we were unable to get Mr. Elton to them due to bad weather.

4. Volunteer Programs

A total of 13 volunteers were utilized this year. Periods of work ranged from a couple days to 2 1/2 months. Work centered around oil spill data collection, research and "Take Pride in America" clean-up projects.

When it was decided to staff two field camps on the Pacific coastline of the refuge, due to the oil spill, a mad dash was on to find quality volunteers to assist with the collection of field data (see Section F.14.). Normally, the station pays only for the volunteers air fare from Anchorage, but since the oil spill made volunteers very hard to find the station paid for their air fare from the lower 48 also.

Their first week was also spent receiving training in first aid and Cardiopulmonary resuscitation (CPR), bear safety, shotgun certification, cold water survival, boat operation and safety, sexual harassment and hypothermia. This training proved to be effective and beneficial as evidenced by the lack of any serious injuries relating to bears, boats or hypothermia.

The Oil Creek field camp needed three volunteers to complete its staffing, and they included: Zeke Peters, a recent high school graduate, came to us from Illinois; Mike Cook, a high school biology teacher from Oregon; and Denise White, a college graduate from Connecticut.

The Puale Bay field camp originally also required three volunteers which included: David Bassett, a college graduate from England; Carey Marzicola, a physical therapist, from Maryland; and ten days later, Veronica Cassilly a college graduate also from Maryland (friend of Carey).

In August, it was determined that the Puale Bay field camp would need to be extended into late September to continue the study on the murre colonies. Due to personal commitments of the previous volunteers, there was a need to find more help to continue the camp. Located were: Doug Low, a college graduate from Scotland; and Tess Madigan, a college graduate from New Brunswick, Canada, who came to us from her summer volunteer work in the Pribilof Islands with the Alaska Maritime Refuge.

Five King Salmon Air Force Base volunteers assisted with a "Take Pride in America" and "Challenge Grant" clean-up project in the Mother Goose lake area (see Section H.22.). These individuals included; Staff Sergeant Kevin Fisher, Staff Sergeant Brenda Brown, Senior Airman Amanda Reese, Airman First Class Daniel Bilodeau and Airman Mark Crowl. They worked very hard during June 13th - 16th to complete this project.

The station had one other volunteer this year. Dr. Barrie Gilbert, Utah State University signed on to accompany Manager Hood on an inspection of various streams in the Island Arm area of Becharof Lake during the period of August 7th - 10th. Dr. Gilbert is a renowned authority on brown bears and is interested in conducting a behavior study of the bears in this area. The visit to the area was for the purposes of familiarization.



Biologist Donna Dewhurst and Dr. Barrie Gilbert photograph red salmon at the mouth of Bear Creek. 8/89, REH

5. Funding

Since Fiscal Year 1987, a disturbing pattern has been repeated annually - our funding has not been finalized until mid-fiscal year. This pattern again was repeated in Fiscal Year 1989. Final funding figures were not received until April -- a final annual work plan was never received! The pattern is again being repeated in Fiscal Year 1990. At this writing we are again waiting for final funding allocations. The funding history for both refuges is presented in Tables 5 to 7.

Table 5. Alaska Peninsula Refuge funding Fiscal Years 1984 to 1989 (in thousands).

FY	1260				TOTAL	1360	TOTAL
	Base	MAINT.	RPRP	CIP			
89	\$368.0	\$ 12.0	\$ 5.0 ^a	\$ 5.0	\$390.0	--	\$390.0
88	\$234.5 ^b	\$ 75.5	\$50.0	\$27.0	\$387.0	--	\$387.0
87	\$323.0 ^c	\$135.0 ^d	--	--	\$458.0	--	\$458.0
86	\$180.6	\$ 66.4	--	--	\$247.0	--	\$247.0
85	\$179.5	\$235.5 ^e	--	--	\$415.0	\$ 5.0 ^f	\$420.0
84	\$285.0	\$130.0 ^g	--	--	\$415.0	\$10.0 ^f	\$425.0

^aChallenge grant funds.

^bIncludes \$20,000 for Arctic nesting goose information program.

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

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

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

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

^gEarmarked for large ARMM projects.

ARMM = Accelerated Refuge Maintenance Management

RPRP = Resource Problem-Related Projects

CIP = Contaminant Impact Problems

Table 6. Becharof Refuge funding Fiscal Year 1984 to 1989 (in thousands).

FY	1260					1360	TOTAL
	Base	Maint.	RPRP	CIP	TOTAL		
89	\$335.0	\$ 5.0	--	--	\$340.0	--	\$340.0
88	\$280.0	\$ 68.0 ^a	\$ 30.0	\$ 30.0	\$408.0	--	\$408.0
87	\$237.0	\$256.0 ^b	\$ 45.0	--	\$538.0	--	\$538.0
86	\$201.6	\$ 56.4	\$101.0	--	\$359.0	--	\$359.0
85	\$216.0	\$169.0 ^c	\$101.0	--	\$486.0	\$ 5.0 ^d	\$491.0
84	\$240.0	\$ 80.0 ^e	--	--	\$320.0	\$10.0 ^d	\$330.0

^aEarmarked for large ARMM projects.

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

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

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

^eEarmarked for large ARMM projects.

Table 7. Base funding history for Alaska Peninsula/Becharof refuges (in thousands).

FY	AKP	BCH	TOTAL
89	\$368.0	\$335.0	\$703.0
88	\$234.5	\$280.0	\$514.5
87	\$208.0 ^a	\$237.0	\$445.0
86	\$180.6	\$201.6	\$382.0
85	\$179.5	\$216.0	\$395.5
84	\$285.0	\$240.0	\$525.0
83	\$280.0	\$260.0	\$540.0
82	\$290.0	\$287.0	\$577.0
81	\$ 62.0	\$206.0	\$268.0

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

Then came the Exxon Valdez oil spill -- pure chaos! Who pays for what! Who does what! The refuge will have to eat those charges! Charge those helicopter flights to this code -- no to that code! Do this! Don't do that! The instructions and charge codes changed weekly -- or was it daily? Read Section F.14. for details.

We took an aggressive posture toward the spill. At each point we made our judgement based on the resources that we were trying to protect, did our best to charge to the proper code and refused to worry about the bean counters. Very few of our planned work projects were accomplished, but some were!

In the end, oil spill funds covered every charge that we made to any oil code. And we turned back around \$100,000 of resource funds that were used to make end-of-year purchases for this and other refuges. [We never got a single thank-you card from the benefiting refuges!]

6. Safety

Field operations on the Alaska Peninsula are inherently hazardous. Weather patterns are unpredictable, operations are usually in remote, rugged areas and both refuges have a healthy population of brown bears. All combine to make life interesting and create a need for constant attention to safety.

A 40-hour safety training course and orientation was given for seasonal staff as well as some permanent staff. This training included bear safety, hypothermia, sea survival, shore survival, firearm use and care and certification in first-aid and cardiopulmonary resuscitation (CPR).

This year's field season had no major accidents or injuries, although there were two minor medivacs from the field camps. One Student Conservation Association volunteer was driving nails and had a nail hit the corner of his eye. He was flown to Kodiak by an Exxon helicopter survey team. The individual was lucky, only needing some medication and an eye patch to be worn for a few days. The other medivac was for a Student Conservation Association volunteer that had a minor ear infection. Coastal field camp locations hosted high numbers of brown bears which was a major safety issue (see Section G.8 for further information). No major confrontations occurred. Over all, the field season was very successful.

Maintenance Worker Terry had to get three stitches in his finger after cutting it on broken glass during a cabin removal project.

Our refuge demonstrates pertinacious support of the safety program. Monthly safety meetings are held. Presentations related to current field operations and climatic hazards are presented. The station safety committee was re-established with new staff members (former members transferred). The committee's contribution to the station is to make a productive response to the requirement that safe and healthy working conditions, safe working habits and methods are established and maintained. Meetings are conducted on a quarterly basis.

A station safety inspection was conducted by Deputy Refuge Manager Poetter on June 13th and 14th. The station passed the inspection with some minor infractions. These involved the fuel dispensing areas. They had not been properly protected by barriers and not labeled "NO SMOKING" and "FLAMMABLE". Immediate action was taken to correct these deficiencies.

8. Other Items

Refuge staff training and conference attendance.

<u>Training/Meeting</u>	<u>Location</u>	<u>Dates</u>
Refuge Manager Ron Hood:		
8th International Bear Conference	Victoria, B.C	2/19 - 2/26
Region 7 Project Leaders Meeting	Anchorage, AK	4/10 - 4/14
Performance Mgmt. Seminar	Anchorage, AK	6/7
Sexual Harassment	King Salmon, AK	6/9
Computer Training MS-DOS - WordPerfect 5.0	King Salmon, AK	9/12 - 9/14
Deputy Refuge Manager Rick Poetter:		
Performance Mgmt. Seminar	Anchorage, AK	6/7
Sexual Harassment	King Salmon, AK	6/9
Computer Training MS-DOS - WordPerfect 5.0 D-Base III+	King Salmon, AK	9/12 - 9/14
Assistant Refuge Manager/Pilot Randy Arment:		
Law Enforcement Refresher	Marana, AZ	3/14 - 3/19
Sexual Harassment	King Salmon, AK	6/9
Computer Training MS-DOS - WordPerfect 5.0 D-Base III+	King Salmon, AK	9/12 - 9/14
Ground School Recurrent Training	Anchorage, AK	12/3 - 12/9
Outdoor Recreation Planner Jose Rodriguez:		
Refuge Information Technician Training	Anchorage, AK	12/3 - 12/7

Wildlife Biologist Donna Dewhurst:

Law Enforcement Refresher	Marana, AZ	3/13 - 3/22
Sexual Harassment	King Salmon, AK	6/9

Refuge Secretary Jan Collins:

Computer Training WordPerfect 5.0 - D-Base III+	King Salmon, AK	9/12 - 9/14
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Biological Technician "Moose" Mumma:

Arctic Survival	Eielson AFB, Fairbanks, AK	2/25 - 3/5
Non-Pilot "Pitch-Hitter" Course	King Salmon, AK	3/21 - 3/23
Sexual Harassment	King Salmon, AK	6/9

Maintenance Worker Gary Terry:

Outboard Marine Corp "Outboard I"	Kent, WA	3/13 - 3/17
Outboard Marine Corp "Outboard II"	Kent, WA	3/20 - 3/24
Sexual Harassment	King Salmon, AK	6/9

F. HABITAT MANAGEMENT**1. General**

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



The mountains around Cape Kanatak separate Becharof Lake from the Pacific Ocean. 8/89, DAD

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

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

Refuge	Cover Type	Approximate ^b	
		Number	Total
Becharof	Open low shrub/grass tundra	460,000	31.5
	Deep clear water	299,000	20.5
	Barren	120,000	8.2
	Closed shrub/grass	90,000	6.2
	Open low shrub/heath tundra	69,000	4.7
	Miscellaneous deciduous	71,000	4.9
	Snow/cloud/light barren	22,000	1.5
	Marsh/very wet bog	22,000	1.5
	Shallow sedimented water	17,000	1.2
	Wet bog/wet meadow	17,000	1.2
	All other types	273,000	18.6
Total		1,460,000	100.0

Table 8. Continued.

Refuge	Cover Type	Approximate ^b	
		Number	Total
Alaska			
Peninsula ^c	Closed shrub/graminoid	881,000	19.2
	Barren	847,000	18.4
	Snow/cloud/light barren	616,000	13.4
	Miscellaneous deciduous	558,000	12.2
	Deep clear water	473,000	10.3
	Open low shrub/graminoid tundra	431,000	9.4
	Open low shrub/ericaceous tundra	297,000	6.5
	Wet bog/wet meadow	258,000	5.6
	Marsh/very wet bog	142,000	3.1
	Shallow sedimented water	27,000	0.6
	All other types	61,000	1.3
Total		4,591,000	100.0

^aData from Bristol Bay Land Cover Cooperative Mapping Project.

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

^cIncludes Ugashik, Chignik and Pavlof management units.



Chiginagak Bay provides sheltered waters for harlequins, oldsquaw and other sea ducks. 4/89, DDM

An aerial photography mission for the Alaska Peninsula/Becharof refuges was successfully completed on August 13th and 14th. The mission was flown by John Winship and Bill Fowler from Region 2. After a summer of rotten weather, the skies cleared and two perfect days appeared. Aerial photography was obtained for:

Becharof Refuge

Kanatak Road
Becharof Lake outlet

Alaska Peninsula Refuge

Ugashik Narrows
Dog Salmon transportation
corridor
Meshik River transportation
corridor

The photography was infrared at a scale of 1:15,840 (1 inch = 1,320 feet).

2. Wetlands

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

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

6. Other Habitats

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

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

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



Wildflowers such as these Kamchatka rhododendrons add summer color to the alpine tundra along the Aleutian Range. 7/89, DAD

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

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

12. Wilderness and Special Areas

Becharof Refuge. Approximately 400,000 acres or one third of the refuge was established under the Alaska Lands Act as the Becharof Wilderness. The values of the wilderness area are several fold. The area represents a variety of superlative pristine habitats with a complete compliment of plant and animal associations still intact. Wilderness designation insures that representative samples of these interdependent associations, some of which are unique, will be perpetuated for this and future generations to enjoy. The genetic diversity protected by the unit will serve as 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.



Cape Aklek, in the wilderness portion of
Becharof Refuge, provides ideal colony
sites for cormorants, murre, and puffins.
7/89, DAD

Four private inholdings currently exist within the wilderness area. Three of the inholdings are owned by registered guides. Registered guide, Philip Shoemaker, owns two of the parcels and has built new lodges on both. Former Alaska Governor, Jay Hammond, continues to offer his inholding for sale; but has been very selective about who he sells it to. This inholding has been placed on the Service's Fiscal Year 1990 acquisition schedule (See Section C.1.).

An additional 347,000 acres (29 percent) of the refuge was recommended for wilderness designation in the November 1, 1988 Record of Decision for the Becharof National Wildlife Refuge Final Supplemental Environmental Impact Statement for the Wilderness Proposal of the Final Becharof Comprehensive Conservation Plan/Environmental Impact Statement/Wilderness Review. No Congressional action has been taken on this proposal todate.



The proposed wilderness area for Becharof Refuge included Mt. Becharof, shown decorated by the first autumn snows.

10/89, DAD

Alaska Peninsula Refuge. At present, no refuge lands are designated wilderness. A Record of Decision signed November 1, 1988 for the Alaska Peninsula National Wildlife Refuge Final Supplemental Environmental Impact Statement for the Wilderness Proposal of the Final Alaska Peninsula Comprehensive Conservation Plan/Environmental Impact Statement/Wilderness Review recommended 640,000 acres for wilderness designation. No Congressional action has been taken on this proposal to date.

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

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

14. Exxon Valdez Oil Spill

The March 24, 1989 grounding of the 987-ft. long M/V Exxon Valdez on Bligh Reef in Prince William Sound, Alaska, resulted in the largest oil spill in United States history. Over 10 million gallons of Prudhoe Bay crude oil spilled into eastern Prince William Sound and spread southwest to the Alaska Peninsula, a distance of more than 700 miles from the spill site (Figure 7). Within that area, approximately 3200 miles of shoreline have been fouled by the oil, approximately 725 of which is associated with the Becharof and Alaska Peninsula National Wildlife Refuges (i.e., the entire refuges' Pacific coastline!). Discussion of the oil spill as it related to the refuges is organized into the following categories: pre-impact preparation, containment, reconnaissance, impact assessment, wildlife damage assessment, shoreline clean-up/treatment, and winter monitoring.

Pre-impact Preparation

- 4/5 The Regional Office requested that we identify specific areas to be protected when the oil spill moved into the Shelikof Strait. A meeting was held with Refuge staff and Dick Sellers, Alaska Department of Fish and Game, to map coastal wildlife populations and sensitive areas. A list of special areas was provided to the Regional Office.
- 4/7 We received guidance from the Regional Office to "Do everything we could do to get pre-impact inventories of important coastal resources."



Helicopters proved to be the only safe and efficient (but costly) way to access the rugged Pacific coast of the Alaska Peninsula. 09/89, DAD

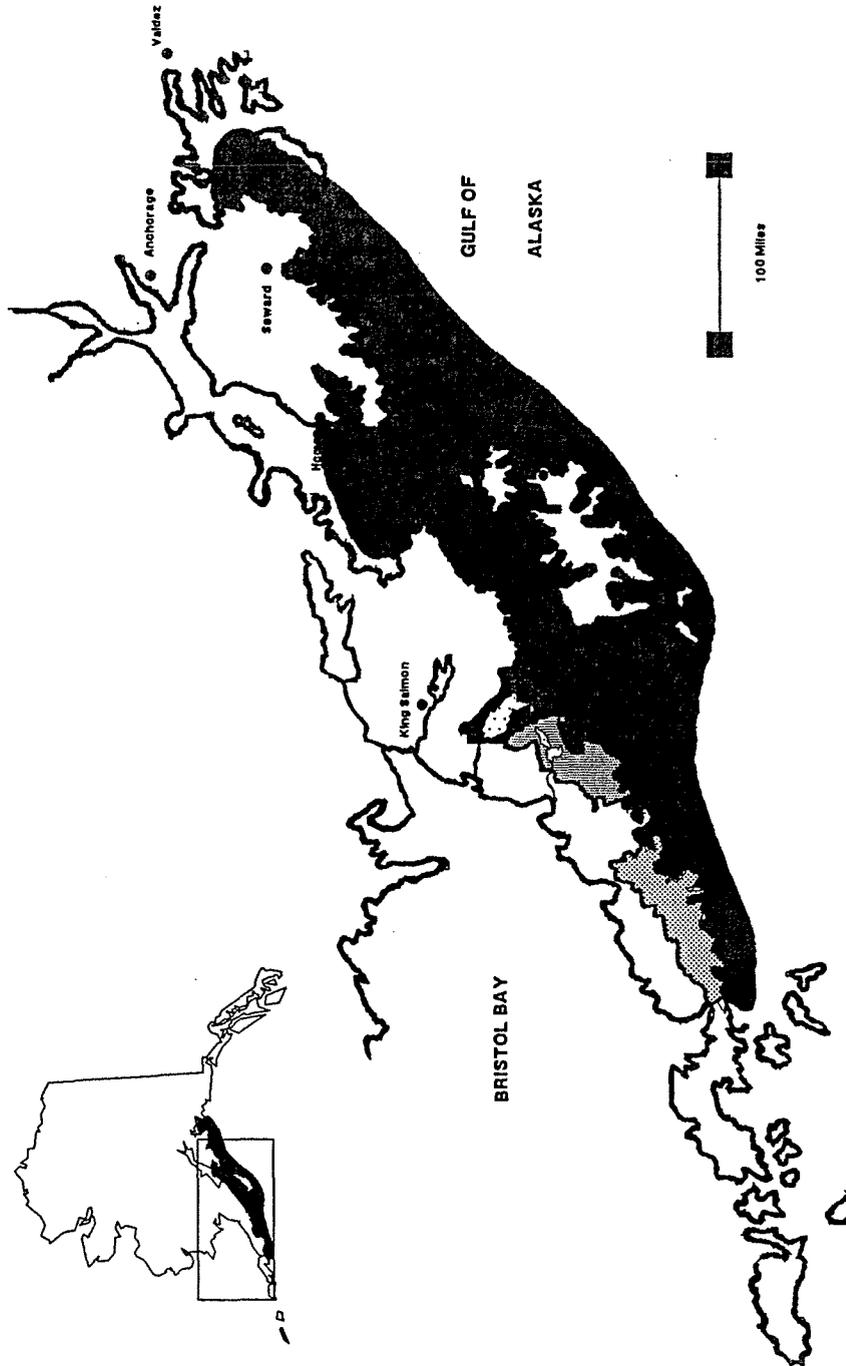


Figure 7. Extent of the Exxon Valdez oil spill as of October, 1989. Oil distribution within the darkened area was patchy and varied at any given time.

- 4/10-15 Wildlife Biologist Dewhurst and Biological Technician Mumma conducted an inventory of seabirds, waterfowl, and marine mammals from Cape Kubugakli to Castle Cape, using a Bell 206 helicopter.
- 4/15-16 Manager Hood traveled to Kodiak to input in the development of a Natural Resource Priority list. An interagency team developed the list to assist U. S. Coast Guard with preventing the oiling of beaches on the Alaska Peninsula. Coordination was initiated with the recently established Department of Interior Incident Command Post and the Exxon Command Post in Kodiak.
- 4/21 Wildlife Biologist Dewhurst was detailed to Kodiak to act as the refuges' representative to the Incident Command Team and to assist the Service's Kodiak Zone Coordinator, Jay Bellinger.
- 4/23-28 Biological Technician Mumma was detailed to Kodiak to be trained on cleaning and feeding procedures for oiled birds and oil impact assessment; and to assist with additional pre-oil wildlife surveys.
- 4/25 Biologist Dewhurst completed a draft of the "Pre-oil habitat Assessment Plan, Alaska Peninsula Pacific Coast."
- 4/26 Oil was confirmed on the beach at Kashvik Bay, Katmai National Park, immediately north of the Becharof Refuge boundary. Dewhurst and Mumma flew as observers on an U.S. Coast Guard H-3 helicopter flight along the Alaska Peninsula from Katmai National Park south to Kuiu Bay, with a public relations stop in the community of Chignik. A pre-oil wildlife survey was attempted from Castle Cape southward, but flying limitations of the large helicopter prevented a thorough survey.
- 5/4-7 Biologist Dewhurst and Biological Technician Jeff Sellinger (Region 8) conducted pre-oil wildlife surveys along the Peninsula from Castle Cape to Stepovak Bay. The surveys were conducted by helicopter and included a sea otter census. During the same period, Biologist Vic Barnes (Kodiak/Region 8) and Biological Technician Dan Munson (Kodiak/Region 8) conducted sea otter surveys from Katmai National Park south to Chignik.

Containment

- 4/25 Biologist Dewhurst met with Exxon representatives to discuss oil containment and booming procedures for specific sensitive bays and inlets along the refuge. Fourteen refuge bays were identified for containment protection with booms ... and during the next two weeks, booms were only placed in one location -- the mouth of Chignik Lagoon.

Reconnaissance

- 4/27 Assistant Manager Arment and State Biologist Dick Sellers conducted the first helicopter reconnaissance flight to the Peninsula Pacific coast, from King Salmon. Alinchak and Puale bays were surveyed with no oil found.
- 4/28 High winds and low ceilings prevented any helicopter reconnaissance trip from King Salmon.
- 4/29 The motor vessel (M/V) Sally M reported a one-half acre patch of sheen/mousse just off Cape Kekurnoi, between Puale and Alinchak Bays, adjacent to Becharof Refuge. The U. S. Coast Guard confirmed the sighting with a C-130 aircraft overflight. A helicopter reconnaissance team from King Salmon confirmed the first oil on-shore on the refuge, on the west side of Puale Bay. Oil impact was sparse, with a loose distribution of mousse droplets and patties documented. Mike Gardner, Alaska Department of Environmental Conservation (ADEC) collected samples of the mousse for oil "fingerprinting."

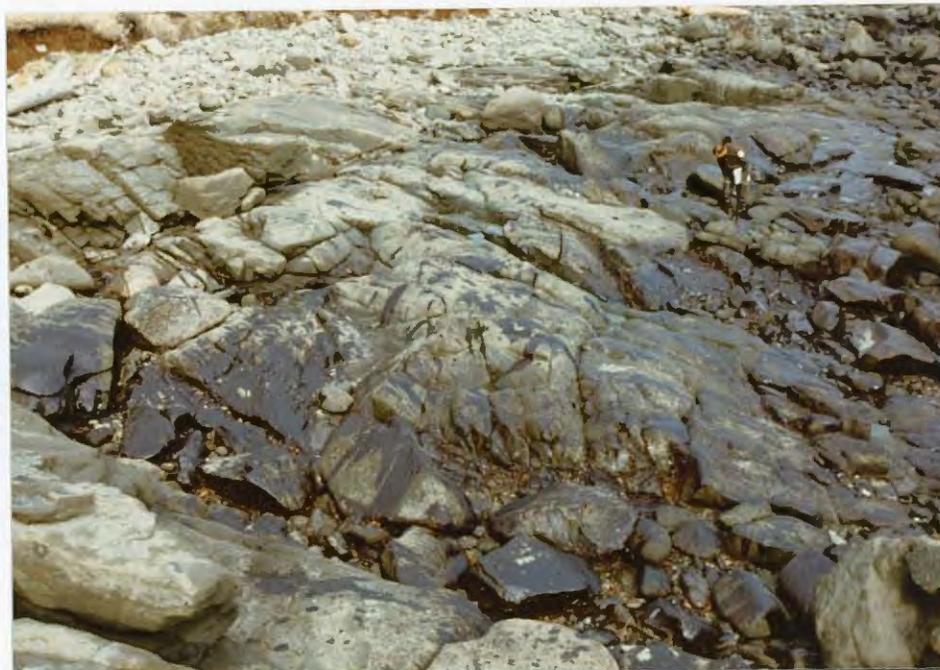


Mike Gardner (left), ADEC, and Mike Wood (right), Alaska Fire Service helped document the first shoreline impacts on Becharof Refuge, collecting samples for "fingerprinting".

4/29/89, MAB

4/30

("Black Sunday") Field reconnaissance by helicopter documented large amounts of oil mousse on the shoreline from Alinchak Bay to Dry Bay, with 522 bird carcasses and 2 sea otter carcasses documented on beaches. Also, approximately 150 northern sea lions were sighted hauled-out on the Kekurnoi Islets amidst seas full of moderate to heavy levels of mousse.



Deputy Refuge Manager Rick Poetter inspects initial oil impacts at Cape Kubugakli on Becharof Refuge.

5/7/89, REH

5/1

The M/V Linn J reported "a large slick of sheen and mousse" outside Chignik and Anchorage Bay with much of the oil being in the water column. The Peninsula Airways mail plane also reported mousse off Negro Point in Chignik Bay. Verification by the U. S. Coast Guard indicated that the sheen/mousse was from diesel fuel, not crude oil, and likely from illegal bilge pumping.

5/1

Helicopter reconnaissance continued south from Dry Bay and discovered mousse on Cape Unalishagvak and mousse and sheen along several of the islands in Wide Bay. Confirmed oil impact now extended along the entire Pacific coast of Becharof Refuge (100 miles of shoreline).

- 5/3 The (Dept. of Interior) Incident Command Team in Kodiak was disbanded, with the National Park Service setting up their own similar system and the Fish and Wildlife Service relying on Jay Bellinger and his oil spill coordination staff.
- 5/1-7 Alaska Maritime Refuge's M/V Tiglax conducted oil reconnaissance from the Barren Islands to Chignik, and return. Shore parties at Dry and Puale bays collected/counted 802 dead oiled birds, 656 of which were murre.
- 5/4 Biologist Dewhurst and Biological Technician Sellinger sighted patches of sheen and mousse as far south as Mitrofanina Island (south of Chignik).
- 5/5 During an H-3 helicopter overflight, the U. S. Coast Guard confirmed oil sightings as far south as Devils Bay (just north of Mitrofanina).
- 5/8 State Biologist Dick Sellers and Biological Technician Mumma conducted shoreline reconnaissance from Amber Bay (Aniakchak National Monument) south to Kujulik Bay, finding no sign of oil on the beaches.
- 5/9 Aerial reconnaissance from the National Oceanic and Atmospheric Association (NOAA) revealed that the previous night's gale force winds out of the northwest moved the oil's leading front to a position just north of Sutwik Island, along the Aniakchak National Monument coast.

Impact Assessment

- 5/10 Biologist Dewhurst accompanied the first ADEC impact assessment team survey on Becharof Refuge, and received training in the ADEC method of assessment (Table 9). Using a Bell 206 Long-ranger helicopter, the shoreline was flown at an average altitude of 50 ft. and airspeed of 20-60 knots, with frequent stops to examine impact more closely. Impact was rated from "Very Light" to "Moderate" with moderate being the strongest impact rating given to beaches south of Prince William Sound. **The ADEC team rated Puale Bay as the hardest hit shoreline recorded outside of Prince William Sound!** Mousse and sheen was also recorded inside the tidal lagoon at Puale Bay.



Assessment of "moderate" shoreline oil impacts in Puale Bay gave it the dubious honor of being the hardest hit shoreline outside of Prince William Sound! Note: oil in this photo was 12 inches deep with the band being 4 to 6 feet wide.
5/10/89, ADEC

Table 9. Summary of ADEC Shoreline Oil Impact Terminology.

Rating	Band Width	Area Impacted
Very Light	less than 1m ^a ,	less than 1 percent intertidal
Light	1 - 3m,	1 - 10 percent intertidal
Moderate	3 - 6m,	10 - 50 percent intertidal
Heavy	greater than 6m,	greater than 50 percent intertidal

^aCategories are based on width of continuous band of impact and/or percent of the intertidal zone impacted.



As seen from the ground, Puale Bay oil appears like shiny, hardened patches of brown tar, referred to technically as "mousse pies".
5/7/89, REH

- 5/11 Biologist Dewhurst accompanied the first Exxon Shoreline Clean-up Assessment Team (SCAT) visit to the Becharof Refuge coast, Puale Bay. The SCAT consisted of a geologist, archeologist and biologist - all independently hired consultants for Exxon to conduct their own investigation of shoreline impact and to suggest methods of clean-up. Due to the large quantities of oil mousse encountered, SCAT rated Puale Bay as "mechanical clean-up only" ... another first for outside Prince William Sound!
- 5/13-19 Biologist Dewhurst traveled back to King Salmon to train refuge personnel in the ADEC method of impact assessment. Refuge personnel then assessed oil impact along the entire coast of Becharof Refuge. Patches of moderate oil impact were documented from Cape Kubugakli (northern refuge border) south to Dry Bay. The remaining coastline received very light to light impact.
- 6/25 A study project entitled "Exxon Valdez Oil Spill - Examination of Shoreline Impacts" was initiated on Becharof Refuge, from Puale Bay to Dry Bay. The project was implemented by refuge seasonal biological technicians and volunteers working from the Puale Bay and Oil Creek Field Camps (See Section G.5 for camp details).

Study objectives were to establish semi-permanent plots for monitoring of oil degradation and to daily monitor oil movement and new shoreline impacts.

Oil Degradation Study Plots

The primary study areas of Puale Bay, Oil Creek beach, and Dry Bay were subdivided into 10 sections, with 10 - 24 monitoring plots per section. A total of 151 plots, of one square meter in size, were semi-permanently marked using surveyor stakes and flags (See photo). Plots were selected in areas of shoreline impact and monitored at least twice a month, during low tide, from June 25th to September 17th. Monitoring involved photographing each plot and then making a subjective visual determination of: substrate, percent new oil in the plot, and oil color and texture.



A total of 151 plots similar to this one in Dry Bay, were set up to monitor oil degradation, and develop an index to age shoreline impacts.
7/10/89, GLT

Results of monitoring the static plots indicated a consistent pattern of decrease in oil coverage over time (Figure 8). As the oil mousse aged, it darkened from a light chocolate brown to black and hardened to a asphalt-like appearance. The mousse remained solidified during the cooler temperatures, but would start to melt during the few sunny days. Oil on driftwood and other beach debris appeared to become permanent markings, often being the only remaining sign of impact long after the oil on the beach surface was buried or washed away. Within a couple of days' tidal cycles, much of the oil on sandy beaches became buried, and more difficult to monitor (See photo). During the final survey in September, just prior to removal of plot markers, a majority of the plots were free from oil on the surface. Plots were then excavated but the small mousse paddies

originally present proved to be very difficult to locate in the beach substrate below.

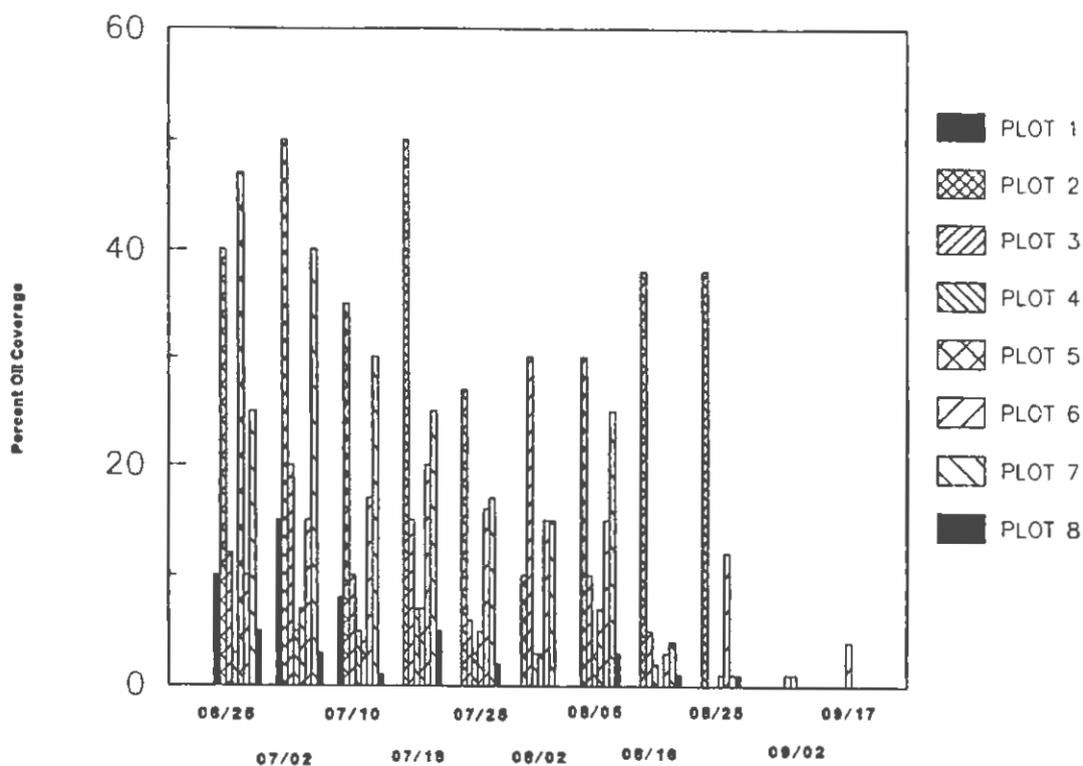


Figure 8. Oil study plots monitored around Puale Bay demonstrated an overall decline in surface coverage from June to September, 1989.



The forces of nature cover and uncover layers of oil at Puale Bay. 8/89, DAD

Daily Shoreline Impacts - June through September

Daily shoreline foot surveys were conducted at low tide, to monitor oil movement and impacts on beaches in Puale Bay and adjacent to Oil Creek, over the summer of 1989. New impacts or "hits" were evaluated and categorized as per previously discussed ADEC guidelines (Very Light to Heavy).

New oil continued to appear on monitored beaches throughout the summer (Table 10) with new heavy impacts recorded in July and September. Impacts were generally in the form of mousse paddies of various sizes, light brown and free of sand, distinguishing it from refloated oil. Informal observations by vessel operators in Puale Bay indicated quantities of oil appearing on their anchors, while moored in Puale Bay. Perhaps some of the "new" oil was refloated from the water bottom, washing ashore on monitored beaches. Less frequent monitoring in the fall (Late September-November) indicated very few new oil impacts, and all impacts were in the "very light" category.

Table 10. Daily shoreline oil impacts, June 25 - September 17, 1989, on Puale Bay and Oil Creek beaches.

Impact Category	June	July	August	September
Very Light	1 ^a	13	16	7
Light	3	5	2	0
Moderate	0	0	0	0
Heavy	0	1	0	1
Totals	4	19	18	8

^aNumbers indicate quantity of new oil impacts/hits recorded.

Wildlife Impact Assessment

The assessment of the oil spill impacts on refuge wildlife included both primary and secondary impacts from documenting the immediate wildlife mortalities to collecting eggshells and non-viable eggs to test for hydrocarbon content.

5/17 Biologist Dewhurst traveled to the Migratory Bird Management Office in Anchorage to discuss wildlife impact assessment studies to be conducted this summer along the refuge coastline.



This sub-adult brown bear, photographed from a helicopter near Puale Bay displayed suspicious oil-like markings on its left shoulder. 6/19/89, DAD

5/27

To facilitate oil spill-related wildlife studies, the originally scheduled Ugashik Narrows Public Use Camp was cancelled and funds, personnel, and equipment redirected to create two new camps along the Becharof coast. Tentative camp locations were planned for Puale Bay and Dry Bay/Oil Creek (See Section G.5 for camp details). Wildlife impact studies included seabird colony population census and productivity monitoring (See Section G.5), beached bird surveys, and bald eagle productivity surveys (See Section G.6).

Animal Carcass Recovery

Collection of beached bird carcasses on the refuge's beaches was initiated early (May) with Exxon/VECO chartering fishing boats and their crews to walk beaches and collect the carcasses. These "Catcher" boats would then transfer the carcasses to "Tender" boats where Fish and Wildlife Service employees identified and cataloged them prior to storage in freezer vans at Kodiak. In addition, refuge employees and volunteers conducted beached birds surveys on selected beaches from May to November, 1989. Carcass recovery was a continuous effort with all agencies involved in an attempt to quantify oil related mortality. Overall, Alaska Peninsula/Becharof refuges accounted for approximately 13 percent of the total bird carcasses documented (Table 11).



Concentrations of murre on the water near Cape Aklek during oil movement through the area. 5/13/89 DAD

Table 11. Summary of documented wildlife mortality related to the Exxon Valdez Oil Spill, March - November, 1989.

	Alaska Peninsula/ Becharof refuges	Kodiak Zone	Totals (All Areas)
Sea Otters	7 ^a	196	1,010
Raptors	2	66	162
Bald Eagles (only)	2	62	144
Migratory Birds	4,718	22,614	36,429
Ending Date	11/29/89	9/15/89	9/26/89

^aIncomplete data.

Examining the composition and timing of bird carcass recovery yielded much insight into migration timing and differential mortality rates for individual bird species. Based solely on data from Alaska Peninsula/Becharof refuges, the rate of carcass recovery peaked early in May, decreasing in mid-summer only to increase again in August (Figure 9). The first peak coincided with the major impact of oil on refuge shorelines and the initiation of carcass recovery. The second peak, in August and lasting through October coincided with a secondary kill of new fledgling seabirds (due to starvation, relation to oil spill not yet proven) from area colonies. The primary location of recovered carcasses was Puale Bay (38 percent), followed by nearby Dry Bay (11 percent) and Perryville area

(9 percent) - at the southern extreme end of Alaska Peninsula Refuge, approximately 600 miles (coastline) from Puale Bay. Species composition of the recovered carcasses was strongly weighted toward the Auk and Puffin family - Alcidae (74 percent), followed by Procellariidae (11 percent), and Laridae (8 percent) (Figure 10). By examining mortality in the Alcidae family, 85 percent of the carcasses recovered were murrens (Figure 11).

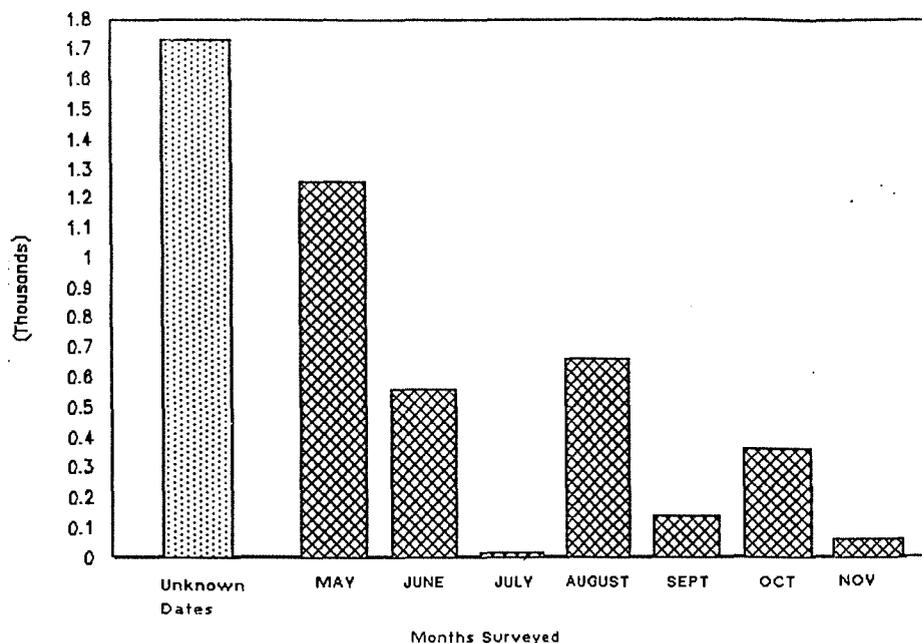


Figure 9. Monthly distribution of bird carcass recoveries along Alaska Peninsula beaches, May to November, 1989.

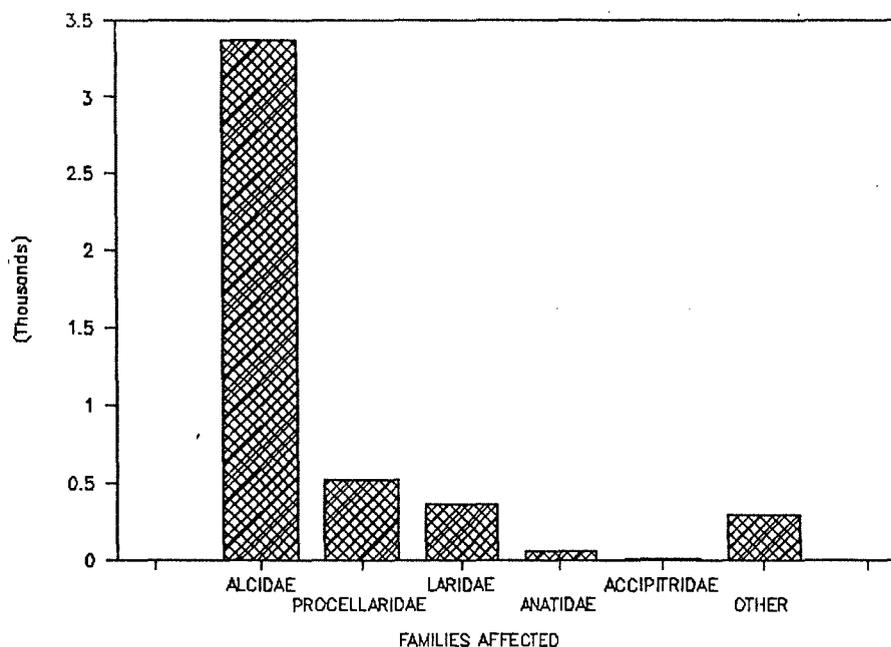


Figure 10. Family composition of bird carcasses recovered on Alaska Peninsula/Becharof refuges May to November, 1989.

5/4

U.S. Coast Guard Vice Admiral Robbins visited the various command centers for the oil spill and was adamant that he wanted clean-up activities to start immediately!

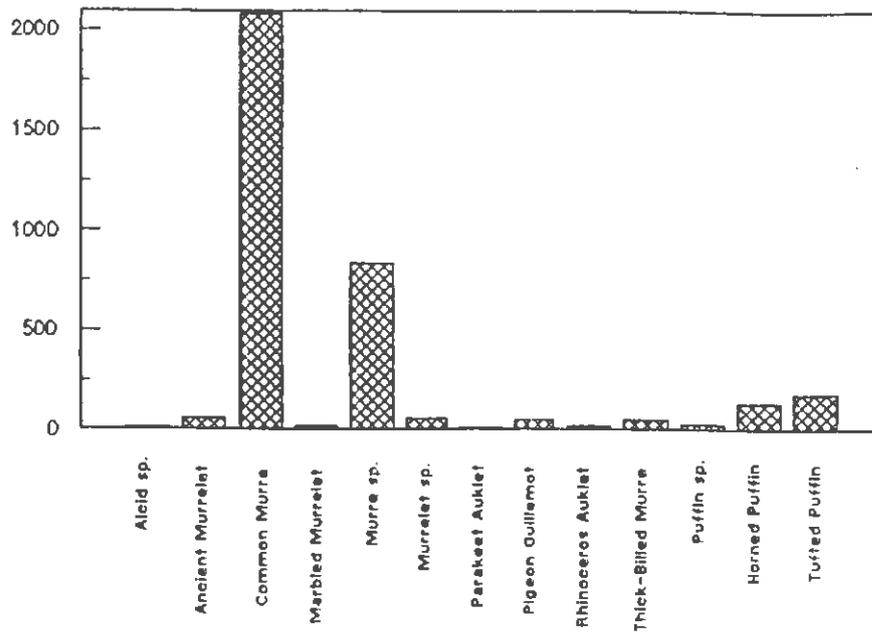


Figure 11. Species composition of alcid carcasses recovered on Alaska Peninsula/Becharof refuges, May to November, 1989.



An oil covered cormorant typifies bird carcasses removed from refuge beaches in May and June. 5/14/89, REH

- 5/5 Jay Bellinger, Kodiak Onsite Coordinator put in a work order to Exxon with clean-up in Puale Bay as top priority. Exxon proceeded to start clean-up work in Katmai National Park.
- 5/10 Exxon SCAT outlined clean-up recommendations for Puale Bay as follows: mechanical pick-up with wide-tracked equipment with outside burial to achieve timely clean-up ... as-soon-as-possible schedule to minimize potential damage to clam beds from continuous burial of oil at each tide change.
- 5/12 An Interagency Shoreline Clean-up Committee was established to prioritize sites for passive clean-up by Exxon/VECO. Passive or "Type A" clean-up consists of removing surface oil mousse on sandy shoreline by hand using shovels, bagging the mousse, and removing onto waiting tender boats. "Type B" clean-up involves using heavy machinery or other power equipment to remove the oil. Puale Bay was the only "Type B" clean-up site identified in the Kodiak Zone at this time.
- 6/2 Shoreline "Type A" clean-up priorities were finalized with Becharof Refuge's Puale and Dry bays listed in that order, with a required clean-up **completion date of June 15** to minimize impact to seabird rookies and salmon fisheries resources.



Oil on rocks was not touched by Exxon's Type "A" clean-up activities. 5/14/89, REH

- 6/24 Exxon initiated "Type A" clean-up ("treatment") on the beaches in Puale Bay. A crew of 30 people working off the boats M/V Ruff-N-Ready, Barb M-II, Centaurus, and Massacre Bay started hand cleaning the mousse with shovels (nicknamed the "Pooper-Scooper Brigade"). During this time, one to six inch patties of mousse were still coming in on every incoming tide.
- 7/4-26 Service Biologist Dan Stinnett was detailed from the "lower 48" to monitor clean-up activities in Puale Bay.
- 7/16-18 Exxon requested approval from the Coast Guard for demobilization of the clean-up crew in Puale Bay. They reported that the clean-up crew had removed 12,307 bags of oiled debris - an estimated 246 tons of oiled materials. An Interagency Clean-up Assessment Team, consisting of the Coast Guard, ADEC, and the Kodiak Onsite Coordinator Jay Bellinger representing Becharof Refuge, inspected beaches on the 16-18th. Team members were upset at the quality of the beach treatment, would not approve it and refused to allow demobilization.



Ever present oil sheen visible in the intertidal flats of Puale Bay. 9/89, DAD

- 7/20 Exxon reported they had removed an additional 2,593 bags of oiled debris and again requested demobilization. The request was again denied.

- 8/14 Exxon clean-up crews were finally permitted to demobilize from Puale Bay and moved their clean-up operations to beaches in Alinchak Bay.
- 8/29 Exxon crews commenced clean-up activities in Dry Bay. Passive clean-up of the beach and mud flats involved a crew of around 40 people and five support/tender boats.
- 9/2 Exxon gave the order for all clean-up crews in the Kodiak area to demobilize and return to Kodiak.
- 9/28 Refuge Manager Hood and Kodiak Onsite Coordinator Jay Bellinger inspected beaches in Alinchak and Puale bays as a follow-up to Exxon's withdrawal from clean-up activities. Treatment/clean-up on the beaches appeared to be successful; however, re-oiling was in progress. Mousse/tar balls were observed rolling up in the surf. These did not float, but rolled along the bottom. One beach segment in Alinchak Bay appeared to have been missed by the clean-up activities, and was set aside as a control/study beach by the Interagency Clean-up Assessment Team.



In late August through October, quantities of juvenile puffin carcasses were recovered from refuge beaches, later linked to starvation. 9/18/89, DAD

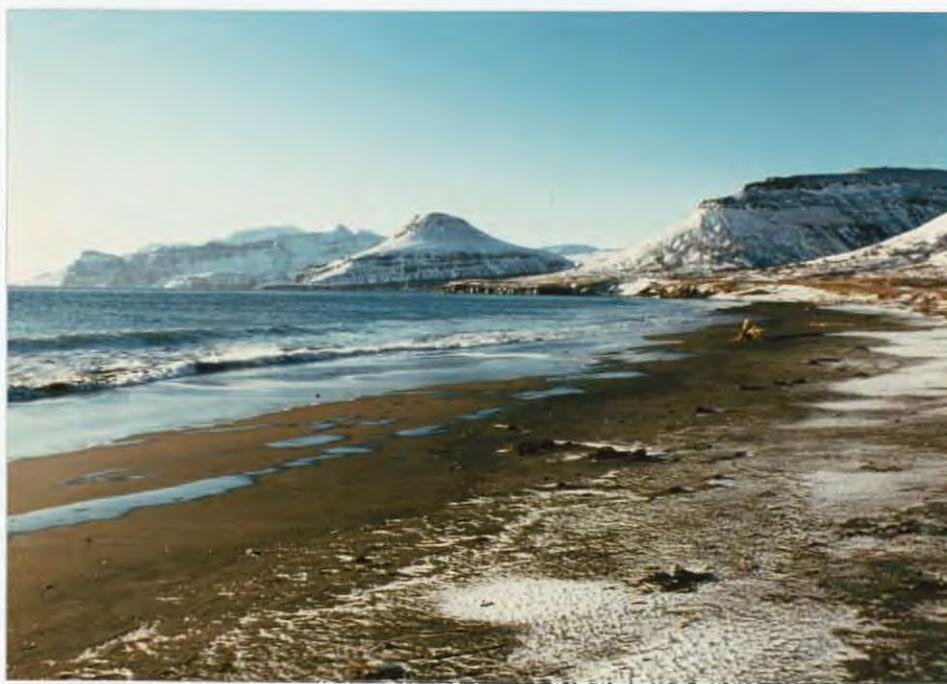
Winter Monitoring

- 9/23 - Alaska Maritime Refuge's M/V Tiglax was used to conduct
10/13 beached bird surveys and examine beaches in the Kodiak area, after Exxon's withdrawal from clean-up activities. The

biological crew aboard included Becharof Refuge representatives Biologist Dewhurst and Scottish volunteer Doug Low. Becharof Refuge beaches examined included Puale, Dry and Portage bays, and Oil Creek. Field crews working from the M/V Tiglax in October, walked 17 miles of Becharof beaches and counted/removed 444 bird carcasses (63 percent puffins) ... representing the highest density of beached birds encountered during the trip.

11/22-29

Due to the autumn die-off of juvenile puffins along the Pacific coast of Becharof Refuge, it was decided to re-visit the coast in late November to check for further mortality. A Bell 206 helicopter provided access for Biologist Dewhurst and Volunteer Rob Kirk to conduct beached bird surveys along 13.7 miles of beaches, from Cape Kubugakli to Cape Kumnik. Only 25 beached bird carcasses were found during the survey, including one adult boreal owl. No oil was apparent on any of the carcasses. Autumn storms altered the shoreline profile, creating higher energy and steeper beaches. After a summer of Exxon's cleaning efforts in Puale Bay, moderate quantities of dried mousse were still visible, likely due to seasonal erosion. Floating sheen with mousse was photo-documented in Alinchak Bay, with lines of suspected sheen observed from Puale Bay to Yantarni Bay. Winter weather conditions prevented any further on-the-ground checks until April 1990.



Winter conditions are dangerously beautiful along the Pacific coast of Alaska Peninsula. Compare this late November photo of Oil Creek to that on Page 73.

11/23/89, DAD

G. Wildlife3. Waterfowl

The Exxon Valdez oil spill created an ecological emergency that severely impacted planned refuge inventories and surveys. Our involvement in the emperor goose migration watch was severely reduced. Tundra swan nesting and production surveys, waterfowl production counts and the spring Naknek River waterfowl survey were cancelled.

Emperor Geese

Emperor geese are a northern Pacific Flyway species, with 80 to 90 percent of the population remaining within Alaska throughout the year. This Alaska contingent nests along the coastal fringe of the Yukon-Kuskokwin Delta and the eastern coast of Siberia. Thousands of geese stage along the Bristol Bay coastline each spring and fall enroute to and from their Aleutian Island and Alaska Peninsula wintering areas. Spring surveys of geese migrating along the Alaska Peninsula reveal a decline from approximately 150,000 counted in 1971 to current levels fluctuating around 50,000 since 1986.

Observations of emperor geese during "migration watches" were initiated in 1986 during fall staging on the lagoon at Cinder River, along the Bristol Bay side of the Alaska Peninsula (Figure 12). In 1988, the Alaska Fish and Wildlife Research Center initiated a six-year study of neck-collared emperor geese to examine mortality, behavior, and migration routes. This study includes spring and fall migration watches at Cinder Lagoon, combined with aerial surveys and radio tracking.

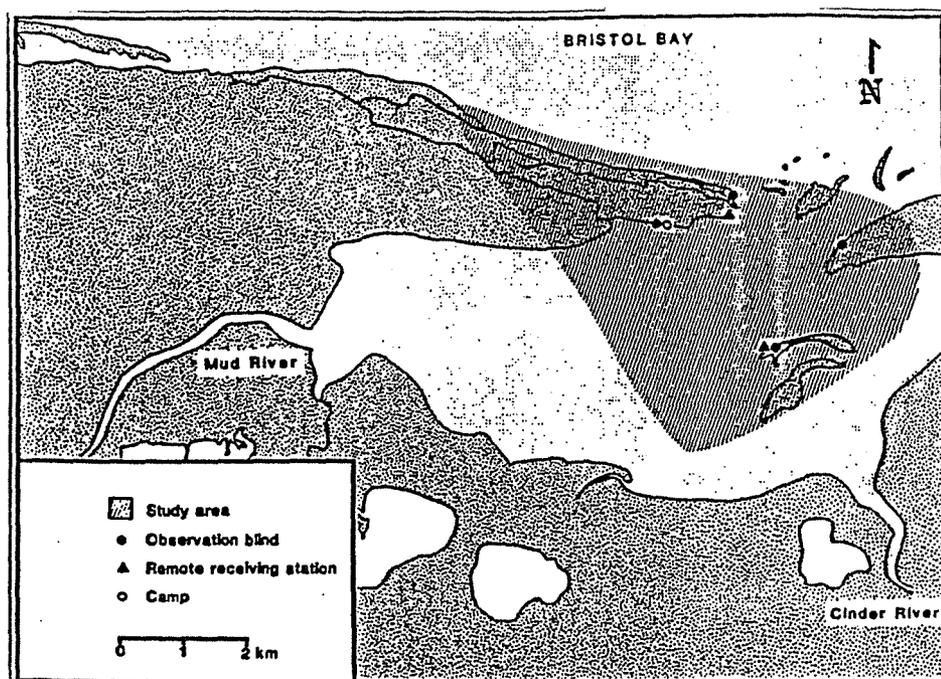


Figure 12. Location of study area, observation blinds, and remote radio-monitoring stations for emperor geese staging at Cinder Lagoon, Alaska Peninsula, 1989.

At Cinder River, the staging emperor goose population peaked at 9,000 in late April and 11,000 in late September. Combined geese observations from Cinder River and the Nelson Lagoon study sites comprised 36.2 percent of the total spring count during the May 5th aerial survey.

Radio telemetry tracking combined with ground observations identified 24 unique individuals in the spring and 152 in the fall. Nearly all collared birds were banded during the summers of 1988 and 1989. Cinder River observers recorded 13.6 of all collars applied in 1989 and 5.3 percent of all collars applied in 1988. The varying numbers of collars recorded during spring and fall staging may be an indication of different cohorts using the lagoon. Continuing monitoring of radio-collared geese will enhance our understanding of the turnover rates and site fidelity along the Alaska Peninsula.

During fall migration this year, ground observations indicated that non-breeding birds arrived to the staging grounds prior to breeding birds. An influx of family groups was noted on September 14th. From September 15th to October 23rd, observers found 21.3 ± 2.4 percent juveniles among 108,583 geese aged, as compared to 26.5 ± 1.4 percent of 32,420 sampled geese in 1988.

White-fronted Geese



Biological Technician Tim Howard handled molting white-fronted geese for banding and fitting with radio transmitters.

7/12/89, DAD

In 1988, the Alaska Peninsula Refuge assisted the Alaska Research Center in a study of sub-populations of Pacific white-fronted geese on the Alaska Peninsula. Based on observations of whitefronts in the Ugashik drainage

in early summer, it was determined that a small population of molting geese (both white-fronts and Canada geese) uses the habitat in the vicinity of Hook Lagoon, along the Bristol Bay coast (Figure 13). An effort to band the molting birds was successfully initiated last year, providing incentive to continue the banding project on an annual basis.

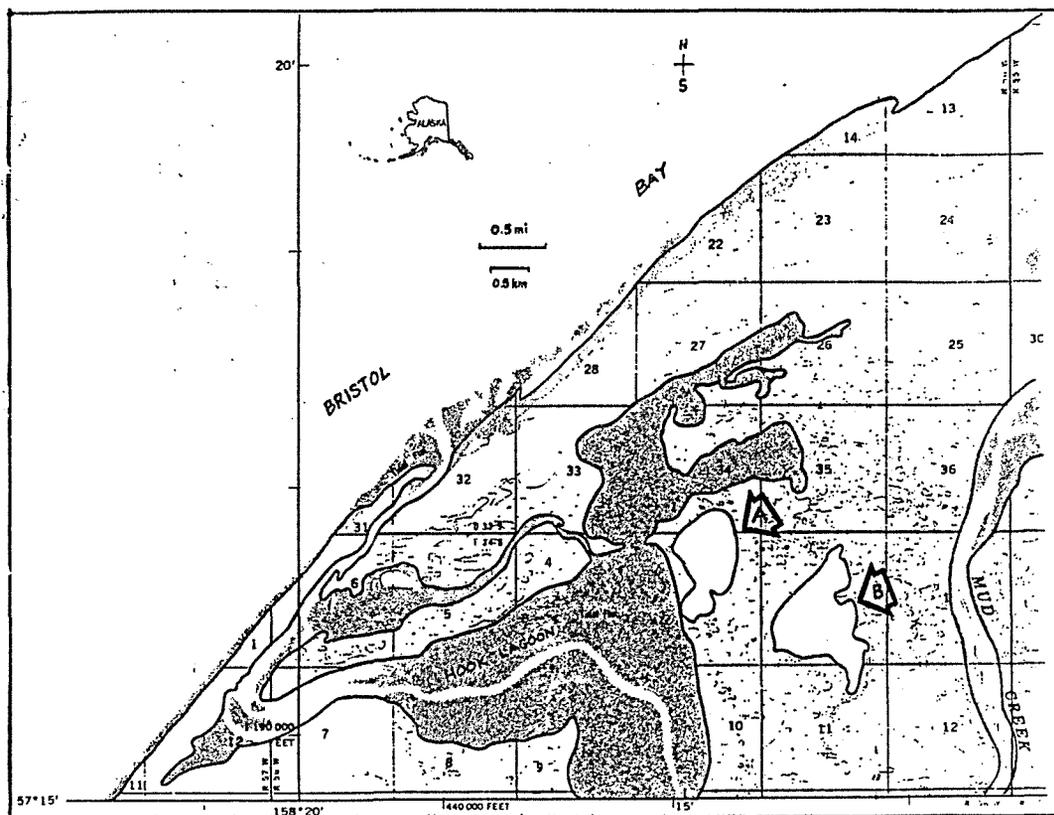


Figure 13. General study area and lakes (A and B) where molting white-fronted geese were captured.

Aerial surveys over the Hook Lagoon area in July indicated several hundred molting geese again staging in the Hook Lagoon area. On July 12th, a banding crew from Togiak Refuge (Lee Hotchkiss, Dave Fisher, Diane Campbell) and Dennis Orthmeyer, Northern Prairie Wildlife Research Center joined forces with Alaska Peninsula Refuge staff (Randy Arment, Donna Dewhurst, Tim Howard) and Alaska Department of Fish and Game Biologist Dick Sellers to band white-fronted geese at Hook Lagoon. Two airplanes used to herd the geese into a pre-set drive trap. Forty-seven whitefronts were captured and fitted with aluminum leg bands. Fifteen of the geese were also fitted with radio collars, with the remainder receiving numbered yellow neck collars. Blood samples and a variety of measurements were obtained from the radio collared birds.

The success of this year's joint banding effort between Togiak and Alaska Peninsula Refuges has prompted plans for similar, and possibly expanded cooperative efforts in 1990.

**Seabird Oil Spill Related Studies
Pacific Coast Field Camps**



Nestled between the mountains and the sea, the Puale Bay field camp had caribou, brown bears and Exxon clean-up crews as daily visitors. 6/17/89, DAD

Funded by monies from Exxon Valdez oil spill wildlife assessment projects, the refuge established two remote field camps on the Pacific coast of Becharof Refuge. Camps were located approximately six miles apart, on the south side of Puale Bay and at the mouth of Oil Creek (Figure 14). Each camp was staffed primarily by volunteers (both Student Conservation Association and regular volunteers) with a seasonal biological technician as the camp coordinator. Camp objectives were similar with different orders of priority:

Oil Creek Field Camp (June 14 - August 21)

- productivity monitoring of red-faced cormorants colony;
- census of seabird colonies - Cape Aklek to Cape Unalishagvak;
- beached bird surveys;
- oil degradation plot monitoring;
- collecting of eggshells from seabird colonies; and
- collecting plants for Refuge herbarium.

Puale Bay Field Camp (June 16 - September 26)

- productivity monitoring of murre and cormorant colony;
- oil degradation plot monitoring;
- beached bird surveys;
- census of seabird colonies in Puale Bay;
- collecting eggshells from seabird colonies; and
- collecting plants for Refuge herbarium.

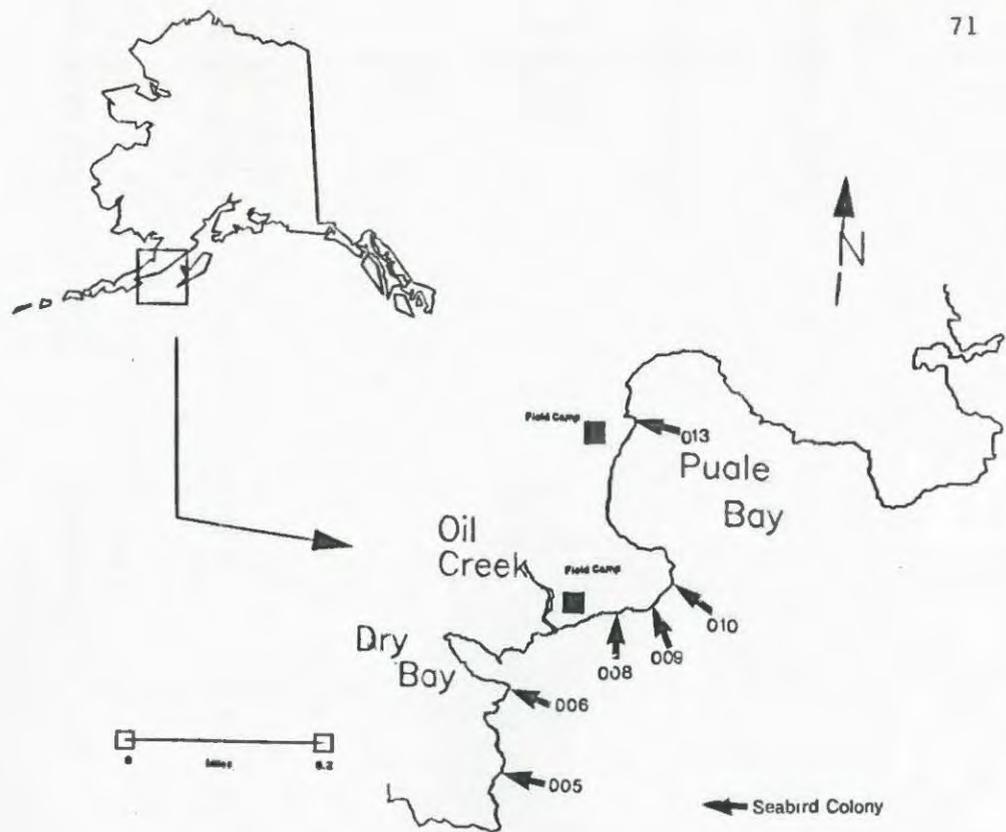


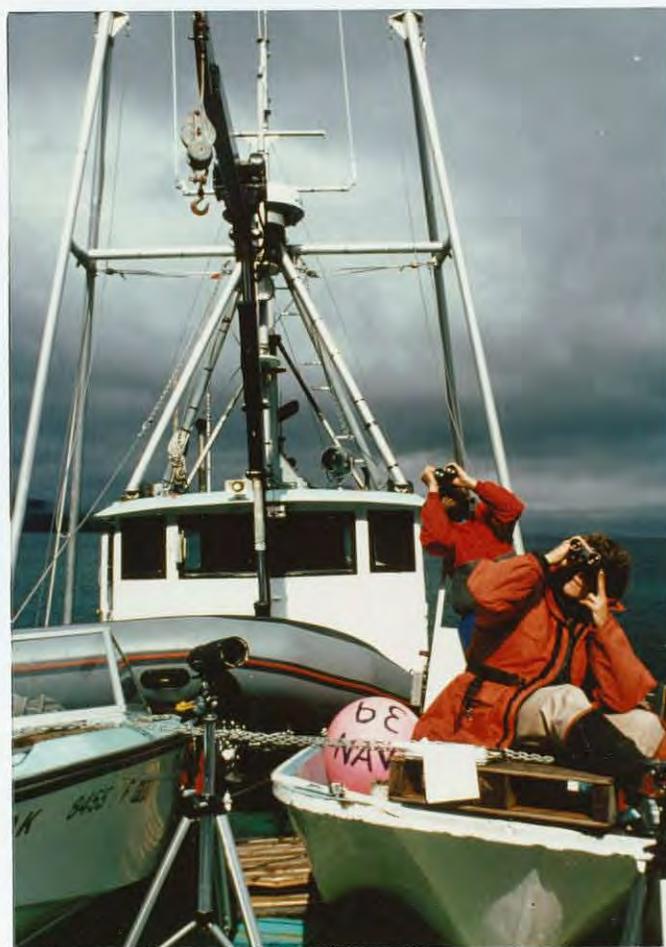
Figure 14. Locations of the "Oil Creek" and "Puale Bay" field camps along the Pacific coast of the Alaska Peninsula, June - September, 1989.



Situated on a scenic mountain plateau, crew of the Oil Creek field camp encountered more fog, higher winds and late summer flooding. 8/16/89, DAD

Population Census of Seabird Colonies

Census of seabird colonies in Becharof Refuge was conducted from July to August to determine if numbers of selected species of breeding colonial seabirds in oiled areas have decreased compared to numbers previously censused at these sites. Data from Alaska Peninsula colonies was incorporated into a larger study encompassing the entire spill area. Survey methods involved a combination of land-based plots and total counts from boats (Table 13). Land-based plots were set-up and monitored by both field camps. Inflatable rafts were used to conduct replicate counts, but observers were not able to total count the larger (greater than 5,000 birds) murre colonies due to the instability of the rafts. The Service Motor Vessel (M/V) Surfbird, from the Raptor Management Office in Juneau, was used for one week in mid-August to successfully count these larger colonies.



Biologist Don Williamson and Deborah Rudis assisted in the census of murre colonies using the M/V Surfbird as an observation platform. 8/19/89, DAD

Table 13. Species composition of Puale Bay area seabird colonies (See Figure 14 for colony locations) surveyed June - September, 1989, Becharof Refuge, Alaska.

Colony No.	Total estimate of species ^a							Survey Methods ^b
	COMU	BLKI	HOPU	TUPU	GWGU	RFCO	UNCO	
005	15,000	1,000	-	-	-	-	50	E,C,V,I
006	0	0	0	0	50	0	0	E,C,V,I
008	20,400	0	50	100	100	582	0	E,C,V,I,L
009	0	0	-	-	32	-	150	E,C,I
010	-	0	-	-	150	-	12	E,C,I
013	<u>1,632</u>	<u>0</u>	<u>5</u>	<u>24</u>	<u>131</u>	<u>0</u>	<u>145</u>	E,C,I,F
Total	37,032	1,000	55	124	463	582	357	

^aCOMU = Common murres; BLKI = Blacked-legged kittiwakes; HOPU = Horned puffins; TUPU = Tufted puffins; GWGU = Glaucous-winged gulls; RFCO = Red-faced cormorants; UNCO = cormorants spp.

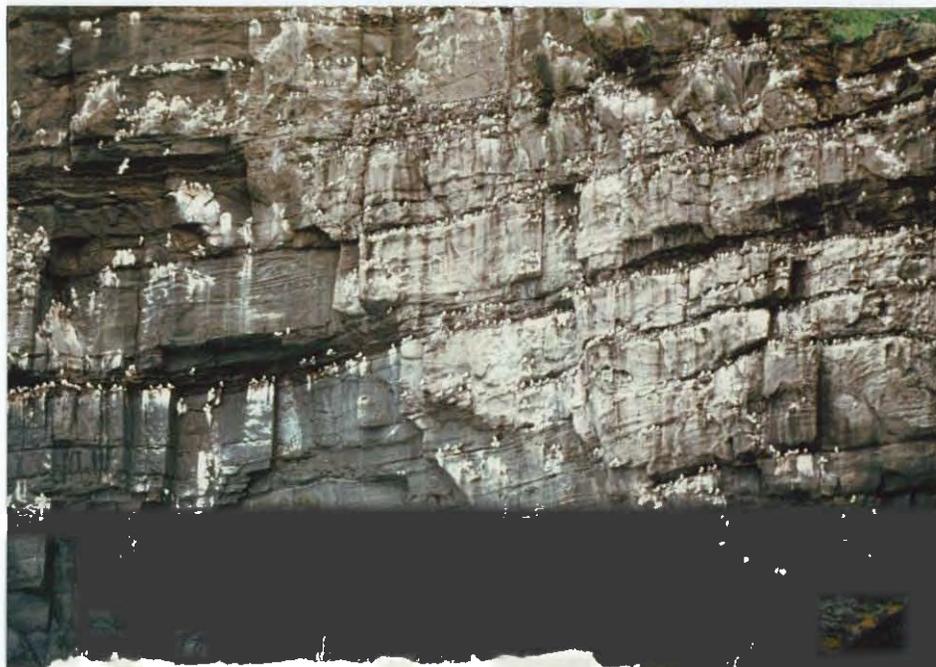
^bC= total count; E= estimate; I= inflatable boat; V= motor vessel; F= fixed-wing plane.

Even though all seabirds present in the breeding colonies were inventoried, most of the emphasis was placed on common murres and black-legged kittiwakes for oil spill assessment purposes.



Seasonal field crews prepare to census seabird colonies along Cape Unalishagvak (background). 6/17/89, DAD

The section of the south shore of the Alaska Peninsula between Chignik and Cook Inlet has been reported to contain 156,580 breeding murres (USFWS computer archives 1986). Most of these birds are found in the Puale Bay area colonies. Murre colonies here have not been censused in any replicate manner, but single counts or estimates were conducted in 1976 and 1981. The Puale Bay/Cape Unalishagvak colonies were estimated to contain 92,800 murres in 1976 and 74,500 in 1981. Since these were one-time counts or estimates and no data is available about the breeding chronology that year, it is uncertain whether this difference is a decline or natural variation due to daily differences of colony attendance.



Black-legged kittiwakes and murres (common and thick-billed) crowd the ledges of a breeding colony near Cape Unalishagvak. 8/19/89, DAD

In 1989, the murre colonies around Puale Bay delayed egg laying, preventing early season surveys. Counts primarily made in August after the murres laid, resulted in a total of 37,032 murres (Table 13), suggesting that possibly a minimum of 37,468 and a maximum of 55,768 murres were gone, a possible 50-60 percent population decrease.

The outlier t-test was used to see if the 1989 data was outside the variation expected from historical data. The 1989 changes had an 84 percent confidence interval (CI) ($P=0.16$). The variation between 1976 and 1981 data, along with the limited size are most likely responsible for this lower than expected significance. While one can not completely eliminate that possibility that some natural decline may have occurred here, it seems equally feasible that some or all of this decrease might have related to the oil spill, since so many dead murres and oil washed into this bay and beaches (See Section F. 14.). The establishment of

plots will greatly facilitate monitoring of future recovery or change. Additionally, these murre colonies were also the only ones in the oil impacted area where land-based plots are feasible.

Kittiwakes are not abundant in this area and are only found at the Cape Unalishagvak colony: 1,000 in 1976, 1,200 in 1981, and 1,000 in 1989 (Table 13). Little work was done on this species, but no significant change was apparent.

Productivity Monitoring of Common Murres

Sixteen murre productivity plots were established along three ledges of the Puale Bay colony 013, monitoring 311 nesting sites. Common murres made up 93 percent of the monitored birds, with the remaining being thick-billed murres. Although the field camp was in place on June 16th, productivity plots could not be established until July 18th due to the murres remaining out on the water, with only sporadic visits to the cliffs. Plots were monitored daily (weather permitting) until September 24th.



It's hard to establish murre productivity plots when all the birds remain on the water ... June in Puale Bay.

6/25/89, DAD

Murre chicks were observed from August 28th to September 22nd, with the peak of chick rearing being in mid-September (Figure 15). Observers counted 131 chicks (or brooding postures), representing only a 42 percent hatching success rate. Fledgling success was estimated at 92 percent with 120 out of the 131 chicks presumed to have fledged, producing an overall reproductive success (chicks fledged/murres incubating) of 39 percent. Low reproduction may have been caused by a number of factors from the delay in nesting to periodic destruction by storms to oil on eggs causing

natality. Over 104 murre eggshell fragments were collected by field personnel for later hydrocarbon analysis to test for any oil-related causes of egg failure.

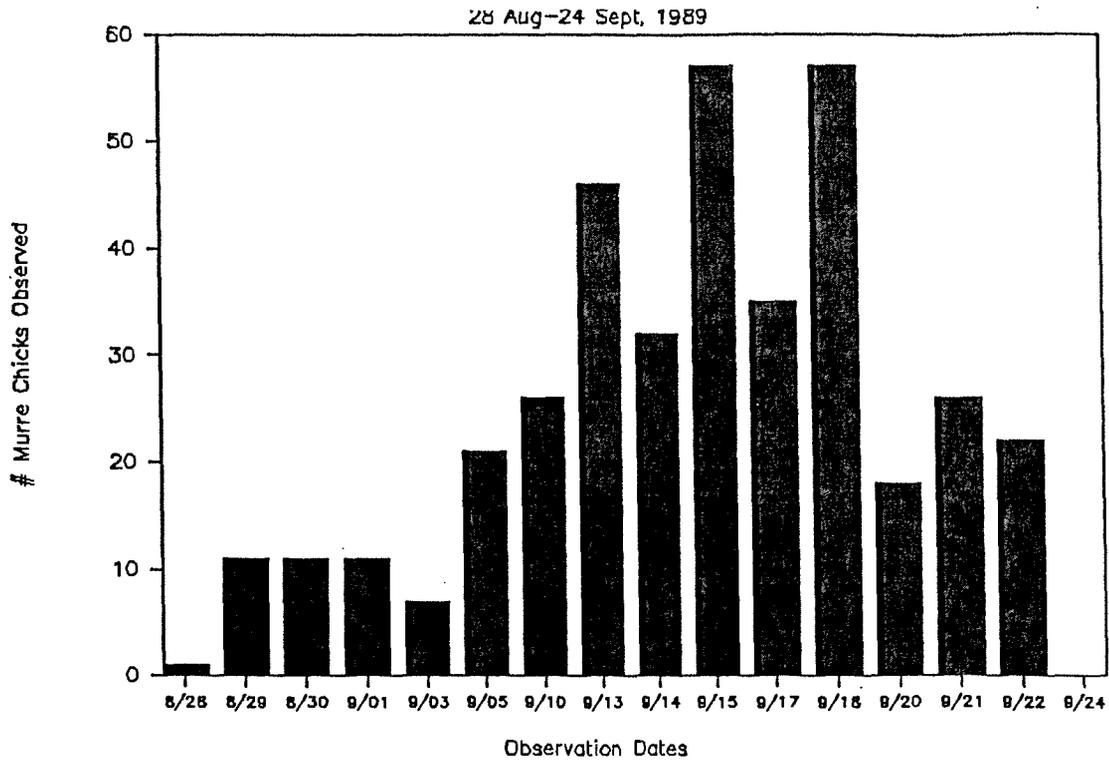


Figure 15. Frequency of murre chicks observed in Colony 013, Puale Bay, Becharof Refuge, August 28 - September 24, 1989.

Ten murre productivity plots were also established at Colony 008, monitoring 228 murres from July 16th to August 14th. No eggs, brooding postures, or chicks were observed during this time period. Financial and personnel constraints forced discontinuation of this survey with the removal of the Oil Creek Field Camp on August 21st.



Volunteer "Roni" Cassilly, Carrie Marzicola, and David Bassett monitor murre production in Puale Bay.

7/27/89, DAD

Productivity Monitoring of Cormorants

Cormorant productivity was monitored by both 1989 field camps along the Pacific coast (Table 14). The nesting success rate for red-faced cormorants was very low for Colony 008 (33 percent) and all 47 nests monitored in Colony 013 were abandoned prior to chicks being observed. Fourteen eggs were observed in the nests of Colony 013 prior to abandonment. A series of severe rain/wind storms in late July was thought to contribute to the high nest abandonment rate. Pelagic cormorant nests followed similar fates to those of the red-faced cormorants, with only a 6 percent nesting success rate overall. Contrastingly, double-crested cormorants, observed only in Colony 013, had an 100 percent observed nesting success. This higher nest success was likely attributable to three factors: later nesting chronology, larger nests, and nesting higher on the cliff face (less erosion and disturbance by other birds).



Red-faced cormorants constructing nests in colony 008 ... all nest pictured were abandoned prior to establishment of Oil Creek field camp on June 14th.

5/26/89, DAD

Table 14. Reproductive success of cormorants in the Puale Bay area of the Alaska Peninsula, Alaska, June 30 - September 24, 1989.

Location & Species	Total Nests	Abandoned Nests	Total Eggs ^a	Chicks Downy	Chicks Feathered
<u>Colony 008</u>					
Red-faced	327	220	27	147	106
Pelagic	11	7	0	8	6
<u>Colony 013</u>					
Red-faced	47	47	44	0	0
Pelagic	6	4	4	6	4
Double-crested	4	0	0	13	10 ^b

^aQuantity observed (ie. eggs, chicks...), not necessarily quantity present.

^bOne nest of three chicks was last observed on September 24th with still-downy chicks ... fledgling potential unknown, so not included in this total.



Portrait of a nesting red-faced cormorant,
Colony 008, near Oil Creek field camp.

6/14/89, DAD

Nesting chronology of the cormorants was approximately one month earlier than that observed for murre. Thirty-two red-faced cormorant nests were documented on May 16th and 28th only to be found abandoned on June 14th, with possible re-nests within the monitored plots. Nests were in place prior to the beginning of productivity monitoring at both sites. Eggs were not visible at Colony 008 due to disadvantages of the observation points. Eggs were observed in place at the establishment of the Colony 013 plots on July 6th. Colony attendance peaked on July 9th for Colony 008, and then gradually decreased through mid-September (Figure 16), while chicks were first observed on July 27th and peaked in mid to late August. The removal of the Oil Creek Field Camp created the gap in data for August 18th to September 13th. Nests of pelagic and red-faced cormorants in Colony 013 seemed to follow the same chronology up until nest abandonment.

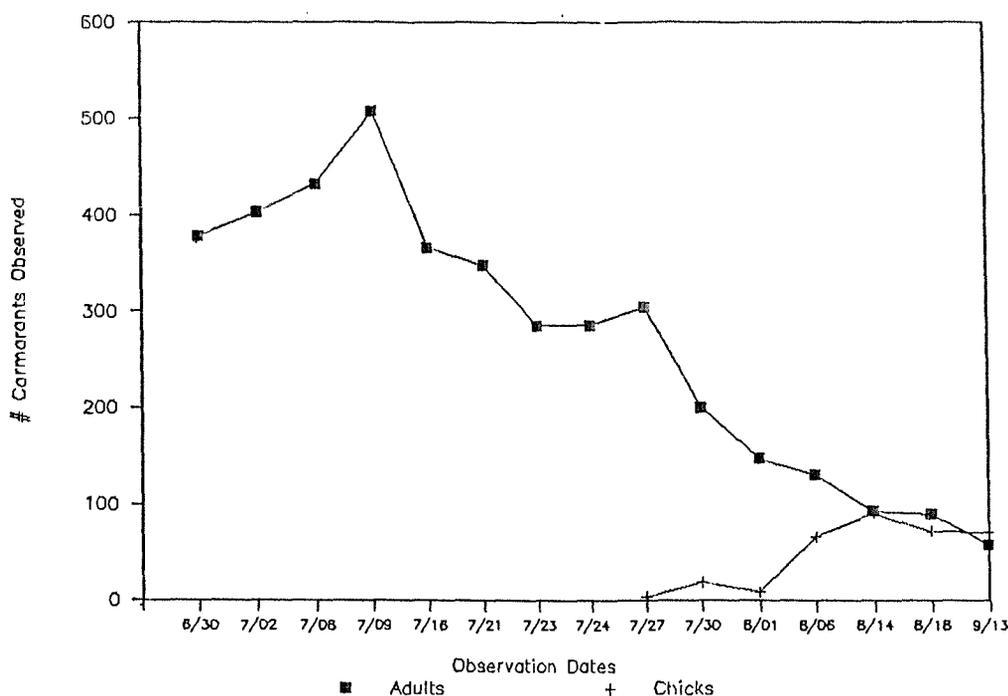


Figure 16. Frequency of red-faced cormorant adults and chicks observed in Colony 008, Oil Creek, Becharof Refuge, June 30 - September 13, 1989.

6. Raptors

Aerial random plot surveys of Refuge bald eagles were established in 1983 and repeated in 1987. In response to a request by the Migratory Bird Management Division, the refuge conducted eagle productivity monitoring from May 10th to July 25th to investigate any possible effects of the Exxon Valdez oil spill on birds nesting along affected Pacific coastline. Seventy-two nests were monitored from Cape Kubugakli south to Cape Kunmik, including all coastline of the Becharof and Ugashik Refuge units. Bell 206 Jet Ranger helicopters were used in all surveys except for census of fledglings. This survey was performed using the Refuge's Cessna 206 fixed-wing aircraft. Productivity monitoring involved four replicate surveys conducted during incubation, early hatchling, late hatchling, and early fledgling stages.

Sixty-five of the 72 nests surveyed were active in 1989 producing 68 downy young, but fledgling only 57 young. The mean number of young observed per successful nest was 1.6 with a range of one to three eaglets. A minimum of 10 failed eggs was observed, with three eggs collected for hydrocarbon analysis.

Fifty percent of the nests monitored failed, either due to abandonment or nest destruction. Two abandoned nests on the islands in Wide Bay showed signs of nest destruction by brown bears including extensive site digging, feces, and one tuft of bear hair. An increase in helicopter/fixed-wing overflights, related to oil spill activity, was observed along the coast this summer, but direct nest harassment was not observed.



Eagle nest in Chiginagak Bay shows two downy eaglets, numerous remains of kittiwakes and one suspected oiled egg, which was collected for hydrocarbon analysis.

6/21/89, DAD

Two unusual observations of eagle nests were recorded during the productivity surveys. One nest near the Oil Creek Field Camp was missed on initial surveys, and was later documented in a shallow cave about 30-feet above mean high tide on a cliff face. Another nest on the Kekurnoi Islets of Puale Bay contained one downy eaglet and five downy glaucous-winged gull chicks in mid-June, but by the next survey in early July, only traces of the gull chicks remained with one, large gloating eaglet.

7. Other Migratory Birds

The 4th annual King Salmon-Naknek Christmas Bird Count took place on December 16th. Local results were submitted to the National Audubon Society, which sponsors and publishes results in the ornithological journal American Birds. Even though the count is not held on refuge lands, Alaska Peninsula Refuge coordinates this event. Twenty-one volunteers donated their Saturday to seek out birds from Lake Camp to Pederson Point.

A record total of 21 different species were spotted with a total count of 2,467 individuals. Six new species and record high counts for 13 species were recorded during the year's count (Table 15).

Table 15. Species composition and numbers of birds recorded in the King Salmon - Naknek Christmas Bird Count, 1986-1989.

Species	1986	1987	1988	1989
Greater scaup ^a	0	0	0	2
King eider ^a	0	0	0	2
Oldsquaw	0	0	1	0
Common goldeneye ^b	30	0	2	340
Common merganser	293	1,259	44	827
Red-breasted merganser ^b	0	0	1	147
Merganser sp.	125	0	0	117
Duck sp.	0	0	0	36
Bald eagle - adult	8	14	4	8
immature ^b	2	2	2	4
unknown	0	3	1	4
Northern goshawk	0	0	1	1
Peregrine falcon	1	0	0	0
Willow ptarmigan ^b	0	1	0	24
Glaucous-winged gull ^b	0	60	80	107
Gull sp.	0	0	3	2
Rock dove	1	0	0	0
Owl sp. ^a	0	0	0	2
Downy Woodpecker ^a	0	0	0	2
Gray Jay ^b	0	0	21	38
Black-billed Magpie	42	26	41	40
Common Raven	231	246	285	237
Black-capped chickadee ^b	20	5	18	23
Boreal Chickadee ^b	4	3	0	7
Chickadee sp. ^b	0	6	0	29
Northern Shrike	1	3	0	1
White-crowned sparrow	1	0	0	0
Snow Bunting ^a	0	0	0	1
Pine Grosbeak ^b	4	0	10	36
White-winged crossbill ^a	0	0	0	175
Common redpoll ^b	19	0	60	71
Redpoll sp. ^b	0	0	0	99
Fringillidae sp. ^b	0	0	0	85
Totals ^b	782	1,628	574	2,467

^aNew species recorded during 1989 count.

^bRecord high quantity recorded during 1989 count.

8. Game Mammals

Both the Alaska Peninsula and Becharof Refuges are open to sport and subsistence hunting of game mammals. A complete discussion of harvest is found in Section H.8. This section deals with the population biology of several large game mammals found on the refuges.

Becharof Refuge Bear Study

In 1983, a study was initiated to determine movements and denning of brown bears in southeast Becharof Lake, known as the "Island Arm." It has been determined that denning on islands is an uncommon occurrence. Aerial surveys using radio-telemetry tracking in winter found most of the bears denning in the Aleutian Mountain Range northeast of the capture location, with many of the dens actually in Katmai National Park (Figure 17 and Tables 16 and 17). Other winter dens occurred in the mountains to the southeast of Becharof Lake. Due a surprising persistence of the radio collar batteries, the study was extended through 1989. On the down side, due to the oil spill, no radio tracking was attempted from June to October of this year. An updated status of the collared bears is summarized in Tables 16 and 17.

Table 16. Current status of bears radio collared in 1985 near Island Arm, Becharof Lake in Becharof Refuge.

ID	Sex	Frequency	Date Last Located	Location
85-01	F	166.399	9/18/86	Cabin Creek, Becharof
85-02	F	166.119	9/18/86	Salmon Creek, Becharof
85-03	M	166.081	5/19/89	4 mi N of Alinchak Bay, den Becharof
85-04	F	166.140	10/25/88	Salmon Creek, Becharof
85-05	F	166.040	8/12/87	Bear Creek, Becharof (shot in 1987 bear season)
85-06	F	166.320	8/12/87	Bear Creek (shot in 1987 bear season)
85-07	F	166.111	5/20/89	3 mi NW of Puale Bay
85-08	F	166.019	1/27/88	Buttress Range, den, Katmai Park
85-09	F	166.058	11/07/89	Alagogshak Creek, den Becharof
85-10	F	166.441	10/02/85	Upper Ugashik Lake, Alaska (86-07) Peninsula
85-11	F	166.009	5/19/89	Canyon Range, den, Katmai Park
85-12	F	166.459	11/08/89	2 mi NW of Cape Kanatak Becharof
85-13	F	166.280	11/08/89	Salmon Creek, den Becharof
85-14	F	166.101	5/19/89	Canyon Range, den Katmai Park
85-15	F	166.260	3/29/89	7 mi N of Dry Bay Becharof

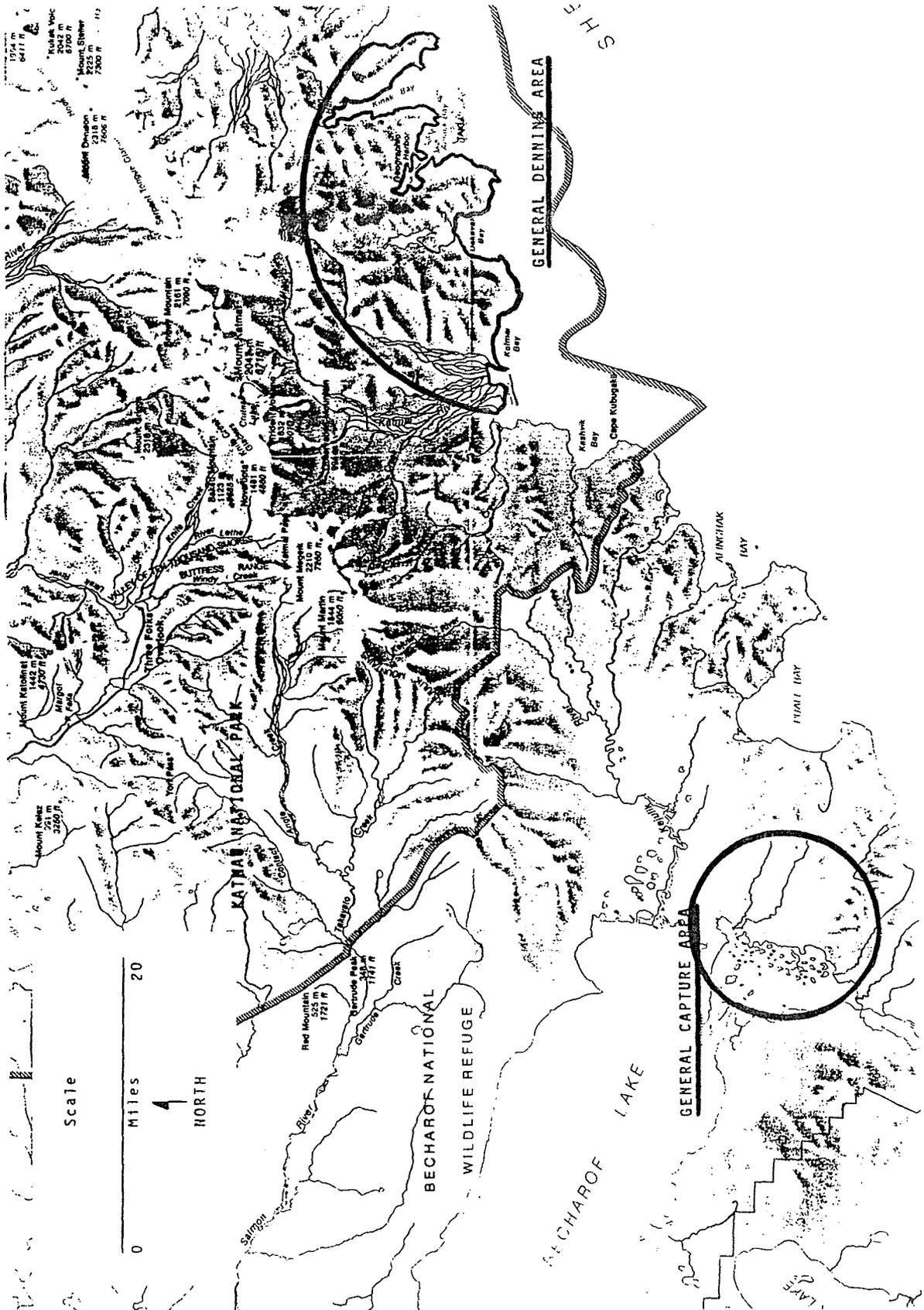


Figure 17. General brown bear capture and denning areas.

Table 17. Current status of bears radio collared in 1986 near Island Arm, Becharof Lake in Becharof Refuge.

ID	Sex	Frequency	Date Last Located	Location
86-01	F	166.837	11/21/89	Upper Katmai Valley Katmai Park
86-02	M	166.963	11/08/89	SE of Ruth River, Becharof (suspected shed collar)
86-03	M	166.088	5/19/89	Jute Peak, den, Becharof
86-04	F	166.887	5/20/89	N of Geographic Harbor, den Katmai Park
86-05	F	166.987	5/20/87	1/2 mi NW of Dakavak Lake, den, Katmai Park
86-06	F	166.913	5/19/89	N of Geographic Harbor, den Katmai Park
86-07	F	166.813	5/19/89	1/2 mi W of Hidden Harbor, den, Katmai Park
86-08	F	166.788	11/08/89	SE of Kejulik River, Becharof
86-09	F	166.862	5/19/89	Alagogshak Creek, den Becharof
86-10	M	167.138	8/02/89	S of Katmai Bay, Katmai Park
86-11	F	167.165	8/11/86	Teresa Creek, Becharof
86-12	F	166.739	2/09/87	6 mi E of Severson Peninsula Becharof (shed collar)
86-13	F	167.113	11/08/89	Oil Creek, den, Becharof
86-14	F	166.938	8/10/87	Ruth River, Becharof
86-15	F	166.762	1/27/88	Topographers Peak, den Katmai Park
86-16	M	166.199	6/12/88	Knife Peak, Katmai Park
86-17	F	166.441	5/19/89	Barrier Range, den Katmai Park

To take advantage of available helicopters, Biological Technician Mumma conducted a survey flight in June of the Becharof Lake Island Arm area to look for new bear dens on the lake islands. Several islands had apparent old dens and several bear-excavated holes. Five new dens were documented with measurements and photos taken of three of the new dens.



"I can't believe I ate the whole thing" Manager Ron Hood ... no really ... Ron is holding a radio collar recovered from this bear skeleton near Puale Bay. 5/20/89, CRA

Black Lake Bear Study - Alaska Peninsula Refuge

In 1989, 40 bears were captured and marked during May 21st and 24th in a 469.3 square-mile portion of the Alaska Peninsula near Chignik. The study area was a representative cross-section of all habitats available to bears in an area of moderate hunting pressure. Six replicate aerial searches were accomplished during May 28th to June 6th. Resultant estimated densities using the Lincoln-Peterson mark-recapture methodology included:

- all bears - 1.93 mi²/bear (95% CI = 1.59-2.47);
- independent bears - 3.10 mi²/bear (95% CI = 2.63-3.78)
(excluded offspring w/sows); and
- bears greater than 2 yrs old - 2.64 mi²/bear (95% CI = 2.17-3.35).

Sample sizes were large (estimated total population was 243 bears and estimated independent bears was 151), suitability was high (42 percent for independent bears), and proportion of the population marked averaged 28 percent.

Bear density varied markedly between different quadrants of the search area. An estimate of bear density in each quadrant during spring was independently obtained using the estimated total number of bears present and search effort data for each quadrant. Based on this, a quarter of the

search area was estimated to have an overall density of one mi^2/bear and a quarter of the area had a density less than five mi^2/bear .



State Fish and Game Biologist Dick Sellers glues a temporary radio transmitter onto a brown bear near Chignik Lagoon as part of the Black Lake Bear Study. 5/29/89, RDP

Brown Bear/Stream Surveys

Annual bear/stream surveys were conducted in August by Wildlife Biologist Dewhurst, Biological Technician Mumma, and Assistant Refuge Manager/Pilot Arment, in the Becharof and Ugashik Lakes area. Streams with concentrations of spawning sockeye salmon were aerially surveyed for bears on August 9th and 10th, and 15th through 17th using a Piper Supercub on floats, on loan from the Law Enforcement Division. Based on four replicate counts, 291 total bears were observed, with a mean of 73 bears per survey flight. A separate flight was also conducted surveying Bible Creek and the Kejulik River adding another 50 bears to the count. Of all the bears sighted, 50 percent were singles, 16 percent were sows w/ young, 11 percent newborn cubs, and 23 percent were yearling cubs.



Brown bear food!! Concentrations of spawning sockeye salmon in Cleo Creek near Becharof Lake. 8/8/89, DAD

By comparing data from previous surveys conducted, a declining trend in total bears sighted was noted for both lake systems (Figures 18 and 19); however, no other patterns could be discerned from changes in population composition (singles, sows w/cubs, cubs) over the same time period. Trend information from the Refuge bear/stream surveys was given to Fish and Game Biologist Dick Sellers to help assess the impacts of hunting on Becharof Refuge bears. Combined with data showing increased bear harvest on the Refuge (see Section H. 8.), Biologist Sellers issued an emergency order on December 31, 1989, shortening the spring 1990 bear season by eight days. Continued population monitoring will be essential to evaluate the effects of the change in harvest regulations.

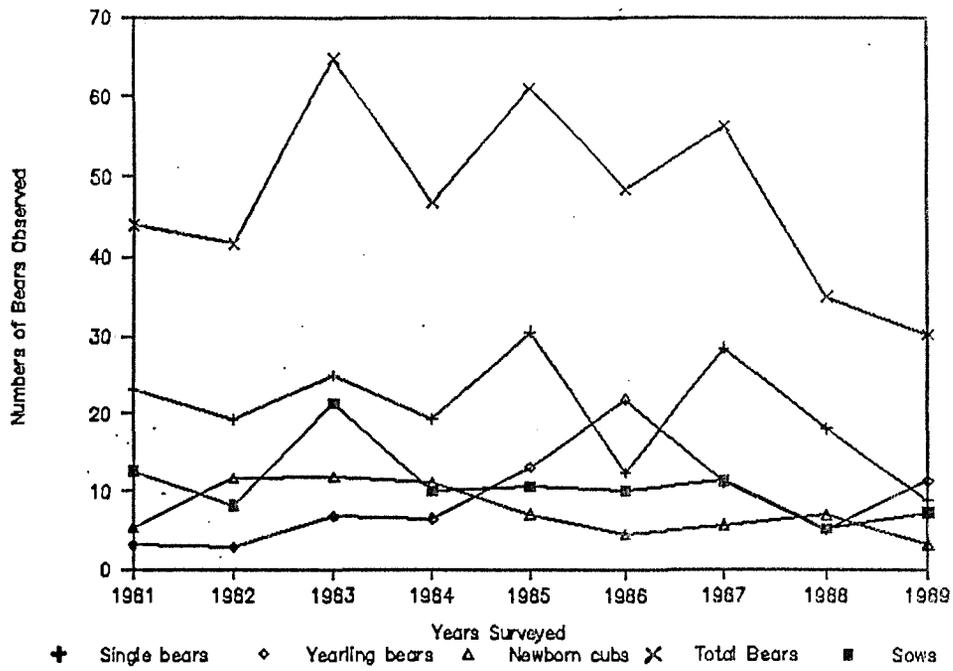


Figure 18. Composition of brown bears observed on Becharof Lake tributaries, Becharof Refuge, 1981 - 1989.

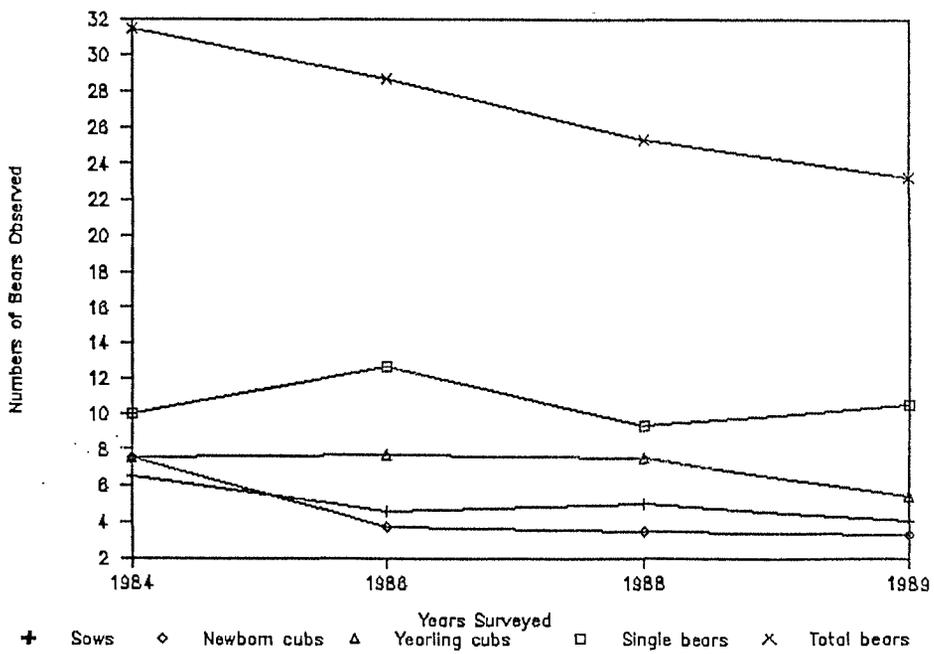


Figure 19. Composition of brown bears observed on Ugashik Lake tributaries, Alaska Peninsula Refuge, 1984 - 1989.

Brown Bear Behavior Study

In April 1989, Dr. Barrie Gilbert of the Utah Cooperative Wildlife Research Unit submitted a research proposal entitled "Time budget comparisons of hunted brown bears on salmon streams: a bio-energetic approach to resource planning" for future work on Becharof Refuge. Unfortunately the proposal was rejected in May by the Regional Biological Study Review Panel due to errors in proposal format. Dr. Gilbert visited Becharof Refuge in August and was accompanied by Refuge Manager Hood on an inspection of the various salmon streams in the Island Arm area of Becharof Lake for research potential. Dr. Gilbert has been studying bear behavior in Katmai National Park for a number of years, and is very interested in expanding his research to the hunted bear population on the Refuge. Considering the possible implications of oil exploration activities, recreational development, and the proposed Kanatak Road on management of the Becharof brown bear population, the Refuge is very supportive of new research efforts in this area. Currently Dr. Gilbert is in the process of re-formatting his research proposal with plans for re-submission to the Regional Review Panel.

Summer 1989 Field Camp Bear Encounters

During the 1989 field season, June 14th - September 26th, the two Pacific Coast field camps (See Section G.5) documented 89 people/brown bear encounters. Of these encounters, 41 percent occurred near creeks adjacent to the camps, 27 percent in the open tundra, 19 percent on the beaches, and the remaining 13 percent within the camps' perimeters. Careful records were kept of each bear encounter, any actions taken and the results of those actions. The frequency of encounters increased greatly in late July, when chum and pink salmon started spawning in the coastal creeks. Both camps were located approximately 500-600 meters from the streams.

Composition of the brown bears involved in the human/bear encounters included predominately (60 percent) two pairs of sub-adult bears (nicknamed "Hans & Frans" and "Bonnie & Clyde"), followed by unidentified single bears (28 percent), large boars (5 percent), sows with newborn cubs (4 percent), and sows with yearling cubs (1 percent). Many opportunities also existed for documented bear/bear interactions as the competition intensified with more bears moving into the area attracted by the spawning salmon. No formal study was attempted in 1989, but is tentatively planned for the 1990 field camps (funding permitting).

A majority of the human/bear encounters required no actual interactions (61 percent), but just involved visual observations. The coastal field camps were equipped with a variety of hazing and protection equipment: flare guns, shot gun cracker shells, bird shot, rubber and lead slugs, pepper spray canisters, air horns, and cassette tape players. Guidelines for use of hazing equipment gave camp leaders much latitude to deal with each individual situation; however, shot guns (12-gauge) loaded with lead slugs were always to be standing by when hazing was attempted. In many cases arm waving and shouting to the bear from a distance was enough to deter it from approaching (Table 18). In some cases cracker shells and

flares were used to haze bears from the immediate camp area, but habituation seemed to be a factor with the sub-adult bears, necessitating elevation of force to use of rubber slugs (Oil Creek - 8/2/89). In one anecdotal situation, on July 22nd, the Oil Creek Camp resorted to using a large "boom box" tape player blasting with sounds of the "Honeydrippers" to haze two bears away from their outhouse.

Table 18. Brown bear deterrents used in the Oil Creek and Puale Bay Field Camps, Becharof Refuge, Alaska, June - September 1989.

Hazing Methods	Effects		
	No Response	Slow Avoidance	Fast Avoidance
Shouting/Talking	5 ^a	2	1
Cracker Shells	2	3	0
Flares	0	2	1
Crackers & Flares	2	4	1
Shot in the Air	1	4	0
Rubber Slug (at bear)	0	1	1
Loud Music	0	1	0

^aNumbers designate how many times use of a hazing method generated the given response.

Despite the lack of hostile human/bear encounters with the field camps, bears did manage to accomplish quite a lot of physical damage to camp equipment. Below a chronological list of bear damage:

- 7/03/89 - chewed/destroyed seat of 4-wheeler - Puale Bay
- 7/24/89 - punctured rear point of Zodiac raft (patchable) - Puale Bay
- 8/02/89 - destroyed 5 cans of motor oil, with paw prints on Avon raft but no damage - Oil Creek
- 8/21/89 - punctured and slashed Zodiac raft (not patchable) - Puale Bay
- 9/02/89 - slashed replacement Zodiac raft (not patchable) - Puale Bay
- 9/05/89 - punctured two tires of 4-wheeler - Puale Bay

Inflatable rafts were stored on the beach, not immediately in camp, making them harder to protect from damage. Plans are being formulated to use electric fences around the boats in future field camps.



Brown bears damaged two inflatable boats and the seat and tires of one 4-wheeler during the 1989 field season.

8/89 TSH

Barren-ground Caribou

The Alaska Peninsula caribou herd is subdivided into northern and southern herds. The southern herd remains south of Port Moller and ranges to Cold Bay. The northern herd ranges from Port Moller northward to the Naknek River drainage, utilizing both the Alaska Peninsula and Becharof Refuges.

Historically, the size of the northern herd fluctuated widely with apparent peaks just prior to the turn of the century, and again in the early 1940's when the population was estimated at 20,000 caribou. The last population low occurred during the late 1940's with an estimated 2,000 caribou. Since that time the herd experienced steady growth until 1984 when the population apparently stabilized around 20,000 (Figure 20). Composition of the northern Peninsula herd (bull/cow/calf), surveyed in the fall, has demonstrated annual fluctuations, but consistently with half of the herd composed of cows (Figure 21).

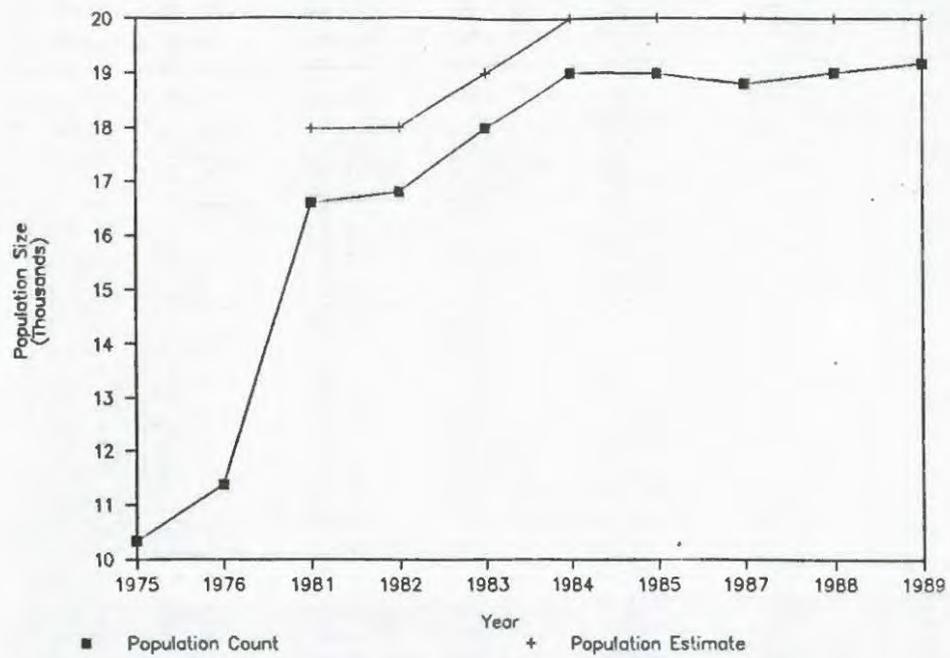


Figure 20. Observed and estimated population size trends of the Northern Peninsula caribou herd, 1975 - 1989.



Barren-ground caribou of the Northern Alaska Peninsula herd crossing the Kejulik River, Becharof Refuge.

9/84, SHL

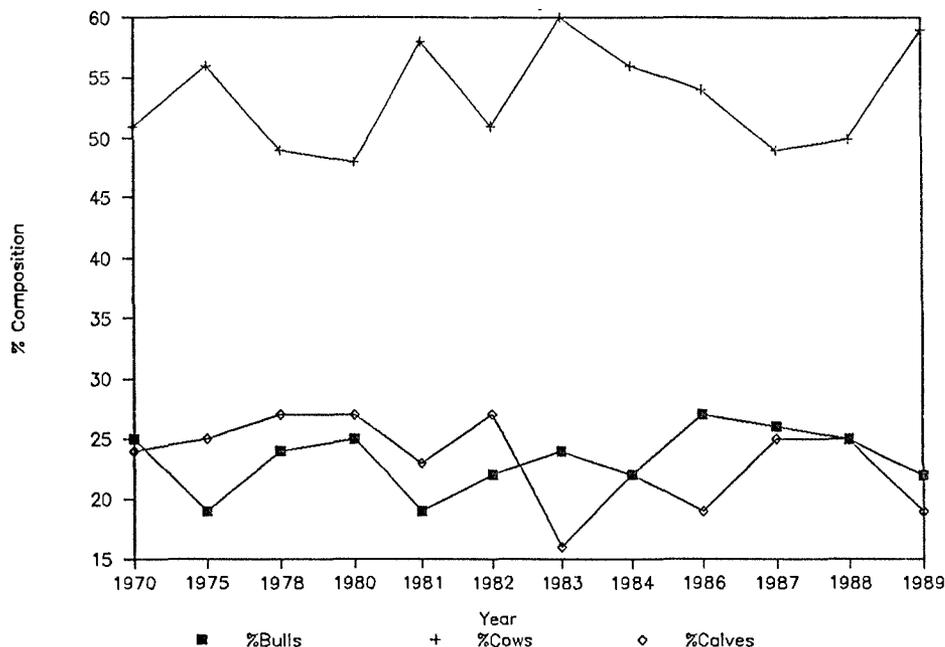


Figure 21. Composition changes of the Northern Peninsula caribou herd, 1970 - 1989.

The northern herd's primary calving grounds are in the Bering Sea flats between Cinder River and Sandy River (Figure 22). In recent years the post calving migration north has progressed earlier, and in the past two years, most of the herd moved north of the Egegik River by August 1st. Traditionally this herd wintered between the Egegik and Naknek Rivers. However, in 1986 and 1987 many caribou crossed the Naknek River and wintered northward to the Alagnak River nearly overlapping with a portion of the Mulchatna herd. By late winter 1988, an estimated 3,000 - 4,000 caribou, including nine with radio collars, crossed the Naknek River. During the next several months, these caribou intermingled with virtually the entire Mulchatna herd between the Naknek River and Lake Iliamna (Figure 22). Radio collared caribou from both herds confirmed to be associated in the large groups. Two northern peninsula herd caribou and six Mulchatna caribou with radio collars associated in a large group which moved up the east side of Lake Iliamna as far north as Kokhanok. The presence of perhaps 40,000 - 50,000 caribou of both herds within this area represented a major shift in winter distribution. Prior to 1988-89, as many as 7,000 Mulchatna caribou had moved into the Alagnak drainage and 2,000 had wintered around Pauls Creek and King Salmon Creek. In 1988, extremely deep snow in the Mulchatna/Nushagak drainage forced much of the Mulchatna herd to move south across the Kvichak River. It is believed that record setting cold northwesterly winds combined with deteriorating range conditions south of the Naknek River prompted more of the Northern Alaska Peninsula herd to move into the Alagnak drainage. In the late 1989, both herds again met in the Alagnak drainage area, but in smaller numbers than documented in the previous winter.

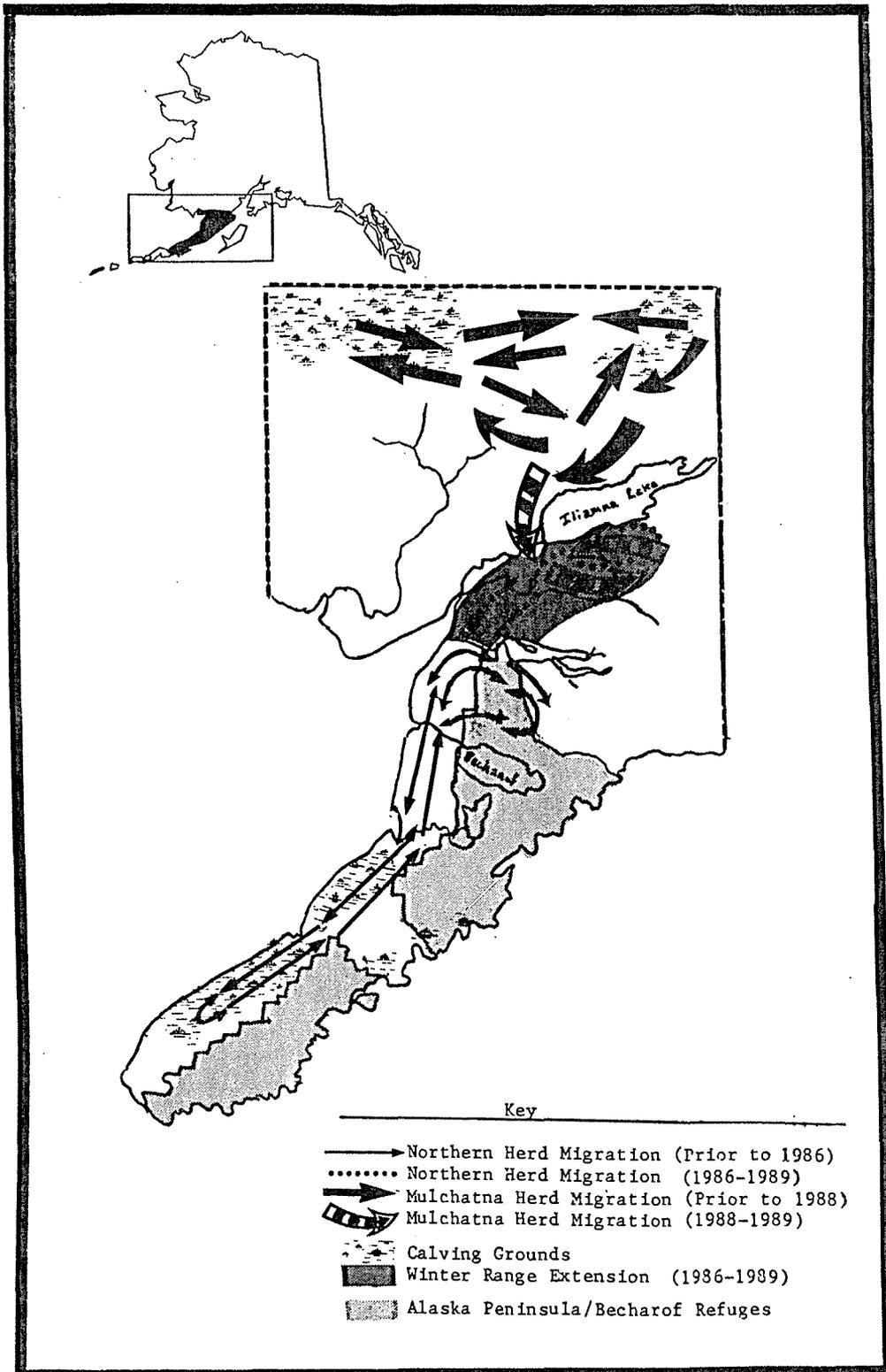


Figure 22. Seasonal movement and land use of the Northern Peninsula and Mulchatna caribou herds, 1980 - 1989.

By late March, at least half of the northern peninsula herd had moved back across the Naknek River, with the remaining straggling south throughout the rest of the spring. During June, all except one of the nine radio-collared caribou that had been north of the Naknek River were located in the traditional calving area, north of Port Heiden. The one missing caribou was not located with the Mulchatna herd and apparently either died or remained in the area southeast of Lake Iliamna.

Historically there had been no caribou spending the summer in the Alagnak/Big Mountain area, but in recent years several groups of mostly bulls have been seen. During 1989, for the first time, calving was documented in the hills between King Salmon Creek and the Alagnak River; however, it is not known if these caribou were originally from the Mulchatna or northern peninsula herd.

Moose

Moose did not become abundant on the Alaska Peninsula until the 1940's to 1950's. Range expansion from the Lake Clarke/Lake Iliamna area boosted the peninsula populations allowing for the first sport moose hunting in the mid 1950's. However, the peninsula's population declined in the mid-1960's to the early 1970's, attributed to poor browse situations. Beginning in the early 1970's, Fish and Game liberalized the moose hunting season to bring the population in line with the carrying capacity of the range. The liberalized seasons resulted in a composition disparity of many older animals with fewer younger animals. This was attributed to younger animals being more susceptible to the gun. As a result the population decline continued, compounded by loss of recruitment animals to predation by brown bear, especially on moose calves. In the late 1970's Fish and Game instituted a trophy only (bulls with greater than 50 inch antler spread or three brow tines) restriction on hunter take. As a result, the percentage of cows was allowed to increase (See Dog Salmon population data) helping stabilize the population. In 1986, the management goal of 40 bulls per 100 cows was reached, and current efforts are to maintain the population at this level.

The annual moose survey of Bible creek and Kejulik River on the Becharof Refuge was not conducted in 1989, due to early winter storms bringing high winds and poor visibility in the mountains. The combination of lack of adequate snowfall, high winds, and fog have prevented completion of this survey for three out of the past four years, with the last full survey conducted in 1987.

Annual aerial moose surveys by the refuge are conducted to supplement similar surveys done since 1981 by the Alaska Department of Fish and Game. The Fish and Game surveys are done at the extreme northern boundary of the refuge, partially within Katmai National Park. Composition (bull/cow/calf) of the boundary moose population has remained relatively stable since 1981 (Figure 23); however, population recruitment, as indicated by relative percent of yearling bulls (Figure 24), has declined, likely due to continued high predation by brown bears in this area of relatively high bear concentrations.

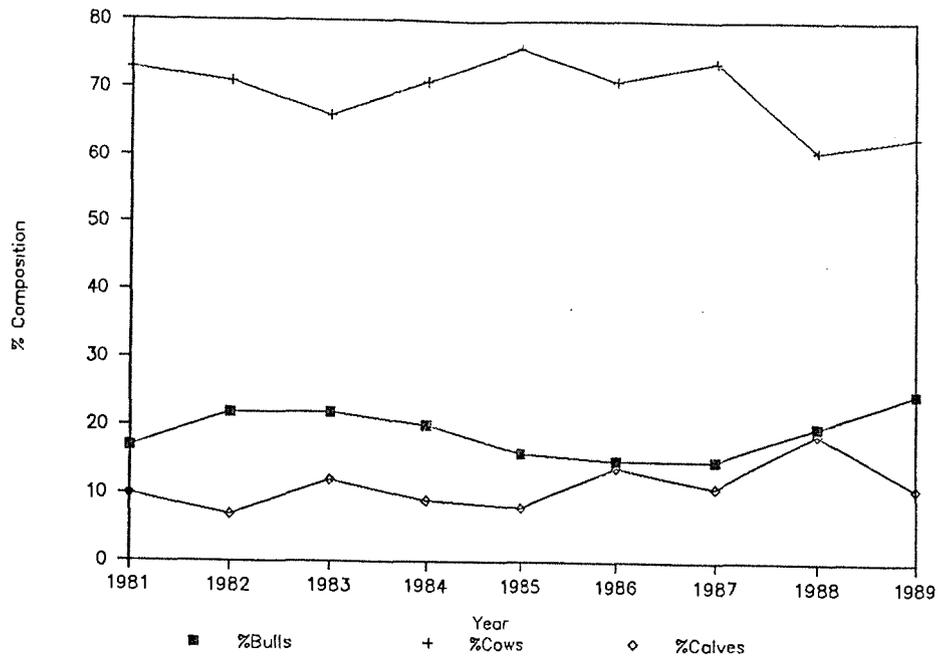


Figure 23. Composition changes in the moose population surveyed along the boundary between Becharof Refuge and Katmai National Park, 1981 - 1989.

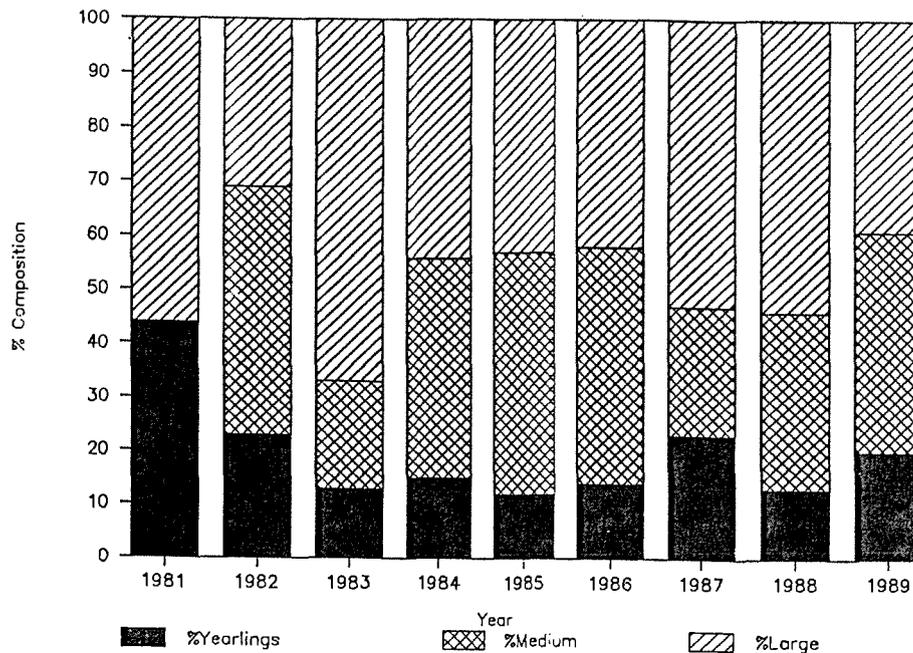


Figure 24. Size class trends of bull moose surveyed along the boundary between Becharof Refuge and Katmai National Park, 1981 - 1989.

Fish and Game also monitors moose populations on the Ugashik Unit of Alaska Peninsula Refuge. The area around the Dog Salmon River drainage has been surveyed since 1962. Composition (bull/cow/calf) of the Dog Salmon River population demonstrates a decline in bulls with a relative

increase in cows (Figure 25), attributed to the change in harvest regulations (trophy-only restrictions). The age composition (yearling bulls vs. medium-large bulls) seems to indicate stable population recruitment (Figure 26).

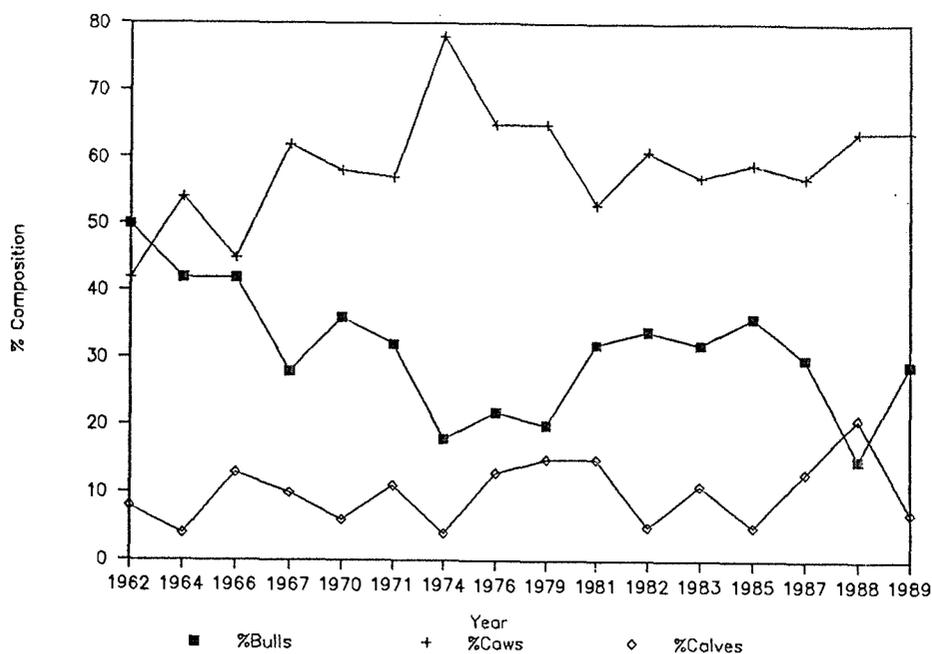


Figure 25. Composition changes in the moose population of the Dog Salmon River drainage, Alaska Peninsula Refuge, 1962 - 1989.

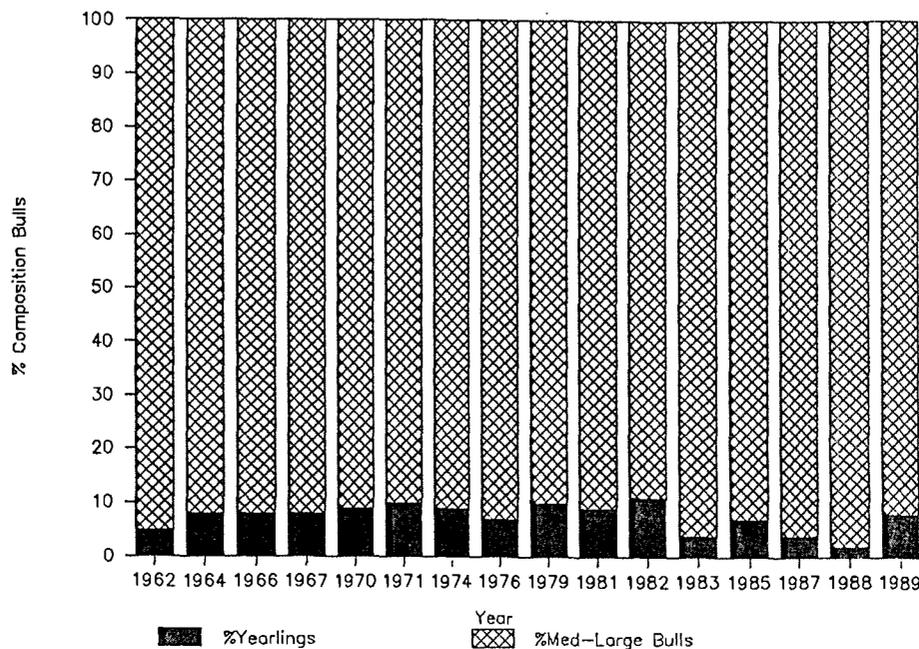


Figure 26. Size class trends of bull moose surveyed in the Dog Salmon River drainage, Alaska Peninsula Refuge, 1962 - 1989.

11. Fisheries Resources

King Salmon Fishery Assistance Office Activities

Stock Identification of Bristol Bay, Alaska Salmon Stocks. Under a contract with National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service is conducting a study to determine the feasibility of genetic stock identification of Bristol Bay, Alaska salmon stocks. The King Salmon Fishery Assistance Office, as a study cooperater, is responsible for collection and shipment of salmon tissue samples to the Fish and Wildlife Research Center, Anchorage. Electrophoretic analysis of eye, muscle, heart, and liver tissue will be used to identify individual salmon stocks.



King Salmon Fishery Assistance Office personnel collect chum salmon tissue samples at Meshik River for electrophoretic analysis at the Alaska Fish and Wildlife Research Center.
7/3/89, MSA

Continuing the genetic sampling begun in 1988, chinook, chum, coho, and sockeye salmon were sampled from four major drainages of the Alaska Peninsula and Becharof refuges. The drainages and number of fish sampled,

in parenthesis, were Bear River for sockeye (75), King Salmon River for coho (27), King Salmon River and Mother Goose Lake for chinook (50), and Meshik River for both chinook (58) and coho (76). The tissue samples are presently being analyzed at the Research Center in Anchorage.

Southwest Alaska Rainbow Trout Investigations: Gertrude Creek, King Salmon River Drainage. Data analysis and a draft report on 1988 sampling in Gertrude Creek to determine rainbow trout population structure and distribution were completed in 1989. The age of 80 rainbow trout, determined from reading otoliths, ranged from 4-11 years. Sampled forklengths ranged from 310-588 mm. The age of the same fish, determined from reading scales, underestimated the actual age of the rainbow trout, especially the older age classes; ages ranged from 3-8 years. These data suggest caution should be exercised when using scales to age long-lived trout. Adjustments in the age composition of scale aged trout are necessary prior to calculating the true age composition. In June 1989, additional field work was conducted on Gertrude Creek. A total of 38 rainbow trout were captured. Lengths and weights were measured, scales were taken from these fish. Otoliths were taken from two mortalities. Analysis of these data continue.

The Gertrude Creek study in 1988 and 1989 was preliminary and indicate sport fishing resources on the entire King Salmon River Drainage need further investigation. The presence of older rainbow trout indicate the population is vulnerable to over-fishing. As drainage specific harvest are unavailable, it is suggested that some means to determine harvest levels be implemented, such as modifying the reporting requirements of the special use permits.

Cooperative Arctic Grayling Management Activities

The Alaska Peninsula/Becharof refuges have been assisting the Alaska Department of Fish and Game with management inventories of arctic grayling on the Ugashik Lakes since 1987. Due to the Exxon Valdez oil spill, we were unable to provide any assistance in 1989.

However, based on data gathered in 1987 to 1989, Fish and Game has clearly demonstrated that a significant problem with severely depressed grayling stocks exists. Therefore, they have prepared a proposal to the Alaska Board of Fisheries to establish a "catch and release" fishery for arctic grayling in the Ugashik drainage. The Board will act on this proposal in early 1990.

H. PUBLIC USE1. General

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



Mountains of Aleutian Range provide spectacular scenery, but at the same time restrict public access.

7/89, DGB

Public use inquiries about the refuges continue to increase again this year. Poland continued to be highly represented with 42 inquiries. We had inquiries from 25 states and eight other countries. No doubt, we are getting better known.

As a consequence of a continuing rise in recreational type inquiries and the continual increase in visitor use on the refuges, a full time permanent Outdoor Recreation Planner was added to the refuges' staff in 1989. This individual now has the task of developing the Public Use Management Plan (see Section D. 2.) which will guide the future development of recreation within the Alaska Peninsula/Becharof refuges. In developing this plan, we will solicit public comment on several issues related to refuge management including, access to the refuges, methods of access and location of access, guided and unguided use/areas, facility development and use (trail construction and development of improved campsites), management and maintenance of easements, the need for new public use and/or safety cabins, permitting the use of tent platforms on the refuges, and the need for additional information and educational programs. Also information concerning land ownership patterns within and around the refuge boundaries will be gathered. The need to establish manned stations on the refuges during peak use times will also be evaluated.

As is evident from the above, many questions are yet to be answered regarding public use on the refuges, but progress is being made and the doors to a new era of public use on the refuges have opened.

6. Interpretive Exhibits/Demonstrations

The Bristol Bay Borough held the 1st Annual Winter Festival on February 3rd to 5th. The refuges placed a new display, "The National Wildlife Refuge System", at the bazaar held at the Borough School on the 4th. Two to three hundred people viewed the display.

The refuges cooperated with the Kodiak Emergency Services Council in their efforts to film a documentary on the effects of the Exxon Valdez oil spill in the Kodiak area. On August 21st, we provided transportation to their representative, Dawn Black, to our Puale Bay field camp. She video taped the study activities. A copy of the video will be provided to the refuge when completed.

8. Hunting

Hunting is a major public use on the refuges. An increasing number of non-local and non-resident hunters is evident through review of past harvest reports. Commercial guiding includes hunts for world-class trophy moose, brown bear, and caribou. Some hunters take advantage of overlapping seasons of the three species. However, brown bear season occurs on an 18 month rotation; spring (even years) or fall (odd years) hunt.

A non-resident or non-local would be wise to obtain information about the area and facilities to insure a quality Alaska hunting experience.

Lodging and store prices are very expensive and will vary from place to place. For both the Alaska Peninsula and Becharof refuges, King Salmon is the termination point for commercial air service. Once a hunting party arrives in King Salmon, air taxi and charter service is available to most areas on the refuges. King Salmon is also the base of operation for numerous guides and outfitters operating on the Alaska Peninsula. Those hunters wishing to hire the services of an outfitter or guide find fees are costly and highly variable, dependent upon the length of the hunt, equipment provided, type of animal hunted and the area to be hunted. Commercial guide fees for moose or caribou may range from \$2,500 to \$3,500 while a brown bear hunt may cost \$5,000 to \$10,000.

An individual wishing to provide privately owned equipment without the benefit of a guide or outfitter will find the fees set by the Alaska Department of Fish and Game for non-resident license and tags to be just the beginning (Table 19). Once the proper license and tags are obtained, the cost of a charter flight can range from \$150 to \$625 per hour of aircraft operation with most camp placement and pick-up requiring three or more hours of aircraft time.



Enjoying a day out on the tundra. 84, FAO

Table 19. Alaska non-resident license and tag fees for 1989 (Fish and Game data).

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

Hunters are required to submit a hunt report to Fish and Game at the close of the hunting season. The report includes information on harvest success. Due to the long hunting seasons, Fish and Game lags behind one year in processing of the harvest reports, thus hunter success in calendar year 1988 is shown in Tables 20 and 21.

Table 20. Caribou and moose harvest for the Alaska Peninsula Game Management Units 9C and 9E, 1988 (Fish and Game data).^a

Species	Bulls	Cows	Ukn.	Total
Caribou	841	147	1	989 ^b
Moose	138	10		148

^aHarvest reports include both Alaska Peninsula and Becharof refuges.

^bThe subsistence harvest is estimated to be 1,311. Thus the total harvest is estimated to be 2,300 caribou.

Table 21. Brown bear harvest for the Alaska Peninsula, 1975-1988, Game Management Units 9C and 9E (Fish and Game data).

Date ^b	Total Bears	Percent Boar	Mean Age		Percent Harvest ^a	
			Boar	Sow	Boar	Sow
1975-76	261	62	6	7	49	51
1977-78	311	64	6	7	45	55
1979-80	316	68	6	6	47	53
1981-82	339	59	6	6	47	53
1983-84	268	61	6	8	53	46
1985-86 ^c	263	64	7	8	60	37
1987-88 ^d	398	62	6	6	69	29

^aFigure represents bears 5 years of age or older.

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

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

^dIncludes 12 bears of unknown age and/or sex.

Refuge staff worked with Fish and Game Biologist Sellers in assessing the impacts of hunting on brown bears on Becharof Refuge. An Emergency Order shortening the spring 1990 bear season by eight days was issued by Sellers on December 31st. The brown bear harvest within the Becharof Lake drainage and the Pacific drainage of Cape Igvak has increased from a bi-annual average of 33.6 (1961-86) to 68 in 1987/88. Fifty bears were taken from this 1,000 square miles area during 1987 fall season, and 29 were harvested in 1989. This level of harvest can not be sustained and evidence of over-harvest is apparent in recent harvest statistics. The fall sex ratio has declined from 64 percent males in 1983 to 53 percent in 1985 and 1987 to 50 percent in 1989. Male skull size has been smaller than elsewhere in Unit 9. The harvest density (number of bear killed per 100 square miles) within the refuge is over twice as high as for the remainder of Subunit 9(E).

9. Fishing

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

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

Over 20 fishing guides and transporters, which offer fishing packages, are permitted on the refuges and promote wilderness fishing experiences. Most operators of these lodges promote catch and release angling for resident fish species. They offer a variety of package programs that include lodging and air transportation to the fishing areas. These package deals may range in price from \$1500 to \$5000 depending on the length of stay and quality of amenities offered by the lodge.



Reeling one in out of an Alaska Peninsula stream.
07/83, FAO

Ugashik Narrows Public Use Study

In the summers of 1987 and 1988, a public use field camp was established at the Ugashik Narrows to collect site specific creel and public use data. This study was scheduled to continue in 1989. Due to the Exxon Valdez oil spill, funds and personnel were diverted to the Puale Bay field camps for oil spill related studies.

Based on population data generated in 1987-89, the Alaska Department of Fish and Game has proposed a "Catch and Release" fishing regulation for arctic grayling in the Ugashik lakes. See Section G. 11. for additional discussion.

10. Trapping

Historically, the trapping of fur bearing mammals was a full-time winter endeavor on the Alaska Peninsula. Today, trapping still takes place but is highly variable due to the price fluctuation of raw hides. Fox, mink, ermine and beaver are commonly trapped. To a lesser extent, coyote, wolf, wolverine, lynx and otter are caught. Fish and Game requires, as a method of monitoring take, a sealing tag be placed on wolverine, wolf, lynx, otter and beaver. Data from the sealing records is in Table 22. No records are available on fox, mink, ermine or coyote.

Table 22. Fur bearer harvest in Game Management Units 9C and 9E (Fish and Game data).

Year (winter)	Number Harvested				
	Beaver	Otter	Lynx	Wolverine	Wolf
1984-85	--- ^a	24	4	14	14
1985-86	166	25	23	20	10
1986-87	240 ^b	112 ^b	27	22	10
1987-88	254 ^b	152 ^b	3	30	14
1988-89	57	53	4 ^c	36	23

^aNo data available.

^bIndicative of increasing prices for short-hair furs.

^cAll taken from Unit 9E.

15. Off-Road Vehicling

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

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

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

17. Law Enforcement

On May 12th, the remains of a downed Cessna 170A consisting of the fuselage and separated wings were impounded by Refuge Officers Poetter and Arment with the assistance of Maintenance Worker Terry. The aircraft had attempted to take-off on a refuge "dry" lake bed but found out it was not as firm as expected. The aircraft nosed-in damaging the prop, engine and portions of the wings. This occurred around October 12, 1987. The owner, Ronald V. Gilson, was first notified in August 1988 after it was discovered. The owner was notified that he was responsible for removing the plane and a permit for a helicopter would be required. In November 1988 a time extension was asked for and granted. In May 1989 the fuselage with the wings detached and tied against it, were still on site. With the use of a Bell 206 Jet Ranger helicopter the remains were slung 16 miles to refuge headquarters. The owner was sent a bill totalling \$1,598.84 for the cost of impounding and notified that he had 90 days to pay the bill and pickup his property or disposal procedures would be implemented. The bill was paid and the aircraft removed.



This Cessna 170 was impounded by refuge officers after the owner failed to remove it from the refuge. 5/12/89, RDP

On July 7th, Refuge Officers Arment and Poetter paid a visit to the Mount Peulik Lodge located at the Ugashik Narrows. The purpose of the visit was to determine if the lodge was in operation since a special use permit had not been issued and we had information that clients were in. The information was correct and a violation notice was issued for "conducting commercial enterprise on a National Wildlife Refuge without a permit". The bond set was \$250. Mount Peulik Lodge was given ten days to apply and

obtain a permit or be cited again if they continued operation. A permit was obtained and the bond forfeited.

Finally, time out from the oil spill activities permitted an opportunity to get a day of law enforcement patrol work accomplished since the opening of the hunting seasons. On Saturday, September 16th, Biologist Dewhurst and Deputy Manager Poetter ran the twin 60 hp jet boat up Big Creek into the refuge. Eight different boats with hunters (mostly for caribou and moose) were stopped and hunting licenses checked. During the process the hunters were asked if they knew what property they were on. Most did not know they were on a national wildlife refuge. The "Take Pride in America Program" (Section H.22.) was briefly discussed with each group along with a summary of the purposes of the refuge.

A special law enforcement thrust was made on the refuges by Senior Resident Agent Wally Soroka from Anchorage; Special Agent/Pilot Roger Parker from Anchorage; and Special Agent/Pilot Mark Webb from Fairbanks during the period of October 3rd to 8th. Emphasis was placed on brown bear hunters but also included caribou and waterfowl hunters.

Refuge Officers Poetter and Arment spent several days conducting law enforcement patrols during October. The team conducted patrol flights in the borrowed (Park Service) super cub. Approximately 20 camps were checked for guide and cabin site compliance with State hunting regulations and refuge special use permit requirements.

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 (Alaska Lands Act 304(d), 1303 (b), 1315 and 1316).

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

The final Cabin Management Policy on National Wildlife Refuges in Alaska was issued in June, 1989.

The Becharof Refuge currently has five cabin sites with usable structures. Current status of these cabins is: three have been permitted; one is being handled by Bureau of Land Management as part of a Trade and Manufacturing site application; and one is designated for administrative purposes. The Becharof Refuge has seven private inholdings with associated cabins.

The Ugashik Unit of the Alaska Peninsula Refuge currently has 15 cabin sites with usable structures. Current status of these cabins is: 11 have been permitted; two applications are pending; one is designated for administrative purposes; and one application has been denied. The Ugashik Unit has nine inholdings with associated cabins.

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

Assistant Refuge Manger/Pilot Arment and Deputy Refuge Manager Poetter completed the 1989 cabin inspection project May 9th - 11th using a contracted Bell 206 Jet Ranger helicopter.

Project objectives involved checking eight cabins sites and two tent platforms/tent frame sites. The cabin sites included six in Chignik Unit and two in Ugashik Unit. The inspection crew was based at Port Heiden while inspecting cabins in the Chignik Unit.

Depending upon site specific needs, various items were addressed including: (1) photo documentation; (2) determining special use permit compliance; (3) determining appropriate action(s) to take in regards to the "Take Pride in America/Alaska" (See Section H. 22.) and "Challenge Grant" programs; and (4) posting inspection notices.

Listed below are specific findings for each site.

May 9th

Site: Sandy River
User: Jeff Graham

The cabin is a mess. It appears that the site has not been significantly utilized since last inspected by Refuge Manager Hood in April 1986. The front door is off and nowhere to be found. Three of the four windows are uncovered. An old garbage pile adjacent the cabin contains approximately 20-five gallons fuel cans. An old garbage pile 15 yards west of the cabin has in excess of 40-five gallon fuel cans. Fixed wing aircraft operation into and out of this site is hazardous. An inspection sign was posted, noting why the site is not in compliance with special use permit conditions.

Site: Clark Bay

Non-permitted cabin claimed by John Swiss. It appears that the site has not been significantly utilized since last inspected by Refuge Manager Hood in April 1986. The cabin is 'trashed out'. Cans, food, insulation materials and garbage are scattered throughout the interior. Half of the front door is off and missing. An inspection sign was posted.

Site: Ramsey Bay

Non-permitted cabin claimed by John Swiss. The cabin appears to have been used subsequent to Refuge Manager Hood's last inspection in April 1986. The inside appears to have been cleaned up since the last inspection. Two five-gallon fuel cans in the cabin are full of fuel. Also, there is a relatively new three-burner Coleman stove. However, the cabin

surroundings are 'trashed out' with about 15 to 20 five-gallon fuel cans. An inspection sign was posted.

Site: West Fork Chignik River

User: Keith Johnson

One window is missing in the cabin. The interior is relatively clean. Four to five foot snow drifts precluded inspecting the surrounding area.

May 10th

Site: Braided Creek

User: Richard Jensen

The cabin site has remained unchanged over the last three years. A business card had been affixed to the interior wall which reads: "Whelan's Mining and Exploration, Inc., Patrick Whelan, Mining Engineer, Economic Geologist, Land Surveyor, Box 2782, Boise, ID 83701, Phone (208) 454-3787".

Site: Kujulik Bay

User: Jay Frazier

The cabin interior is very neat and orderly. There are a few personal belongings. However, most items are that of emergency survival type. On the north and west side of the cabin there are about five five-gallon fuel cans and ten plastic crates. The outbuilding has been freshly painted since last inspected by Refuge Manager Hood in April 1986. About 20 five-gallon fuel cans are located on the south and west side of the outbuilding. An inspection sign was posted, noting why the site is not in compliance with special use permit conditions.

Site: King Salmon River

User: Howard Flynn

Front door is gone from cabin and one window remains uncovered as was noted during the last inspection. A one by three foot hole exists in east end wall where a bear had apparently chewed through. Approximately 25 five-gallon fuel cans remain scattered throughout the cabin site. An inspection sign was posted, noting why the site is not in compliance with special use permit conditions.

Site: Upper Volcano Creek

User: Howard Flynn

The tent frame is in good shape and well kept. No garbage observed. An inspection sign was posted, noting that the site is currently in compliance with special use permit conditions.



A "temporary structure" constructed within the refuge starts like this. 5/10/89, RDP

Site: Upper Dog Salmon Drainage
User: Butch Hautanen

The tent frame and one tent platform appeared to be in good shape and well maintained. About 12 to 15 full five-gallon fuel cans are neatly stored under bed boards in one tent frame. Three to five five-gallon fuel cans are stored under the tent platform for use as buckets. One empty five-gallon fuel can was out in open area. It was probably blown there by wind. An inspection sign was posted, noting that the site is currently in compliance with special use permit conditions.



However after several years have passed each guide/out-fitter want more and more and for a longer and longer period of time -- so, in a relatively short period of time, you have this for someone "down the road" to deal with.

5/10/89, RDP

May 11th

Site: Upper Dog Salmon River

User: Brent Jones

Confirmed construction of meat storage shed. Three of four sides are painted with earth tone reddish brown, however the east end still needs finished. Confirmed replacement of two of three bunkhouses and reconstruction of main cabin. Cabin and one bunkhouse are painted, however, bunkhouse south of cabin has not been painted. Sign on unpainted bunkhouse reads, "NO TRESPASSING, HUNTING OR FISHING - VIOLATORS PROSECUTED UNDER PENALTY OF LAW". Four of seven buildings are padlocked. Noted one stack of 12 empty 55-gallon fuel drums and 12 other drums scattered throughout the site. Site still has garbage pile containing in excess of 400 five-gallon fuel cans as noted on earlier inspections.



Big game guides/outfitters want more structures on the Alaska Peninsula and they want them in the name of "Safety". This is a meat shed. 5/11/89, RDP

The inspection project was followed by a letter to the permittee of each inspected cabin site. The letter advised the cabin users of our findings, possible recommendations and expectations in relation to compliance with special use permit conditions.



And here is how the guides/outfitters mark their territories -- implied and/or otherwise. After being approached by a Refuge Officer, this guide was reluctant to remove the illegal sign. 5/11/89, RDP

21. Guides and Outfitters

The Alaska State Supreme Court ruled on October 21, 1988 (Owsichek vs. State of Alaska, Guide Licensing and Control Board) that exclusive guide areas are unconstitutional. Therefore, the need for and use of "guide areas" has been thrown open for evaluation. As a result of the Owsichek decision, the Fish and Wildlife Service in Alaska decided to manage commercial big game hunting operations on National Wildlife Refuges under an interim policy. The policy was designed to minimize impacts on wildlife refuges for two years to allow the State of Alaska adequate time to develop a legal system for managing commercial trophy hunting. The interim policy essentially freezes commercial hunting operations (guides and outfitters) at the 1988 level and limits them to the same areas as in 1988. The Service is responsible, by law, for managing commercial operations on national wildlife refuges. However, the Service's preferred solution is for the State to develop an allocation system that will resolve the issue. The Service intends to work with the State, other Federal agencies, Alaska Professional Hunters Association and interested organizations and individuals to assist in developing a new system under the State's authority and in compliance with State and Federal laws, regulations and policies.

On November 1st, Serene Partch, Investigator, Division of Occupational Licensing, Alaska Department of Commerce and Economic Development met with Refuge Manager Hood, Deputy Refuge Manager Poetter and Assistant Refuge Manager/Pilot Arment to discuss the State's licensing intentions for commercial big game guide/outfitters, lodges and transporters for 1990.

A total of 58 special use permits were issued for known commercial guiding, outfitting and transporting activities occurring within the refuges (Table 23).

Table 23. Special Use Permits issued for Guides/Outfitters 1982-1989.

Year	Number
1982	33
1983	30
1984	35
1985	40
1986	42
1987	53
1988	61
1989	58

A total of 43 commercial guiding/outfitting permittees recorded approximately 5,947 total client use days within the refuges last year (Table 24). Fishing clients represented approximately 69 percent of the total clients. However big game hunters represented approximately 50 percent of the total client use days.

Table 24. Permittees and total associated client use within the refuges - 1988.

Permittee	Big Game Hunting		Fishing		Total	
	Client		Client		Client	
	Clients	Days	Clients	Days	Clients	Days
Aldridge	11	84	10	80	21	164
Blue	16	122	17	25	33	147
Branham			110	220	110	220
Brod			19	147	19	147
Cerami	5	50			5	50
Christensen	2	10			2	10
Cusack M.			89	89	89	89
Dykema	18	90	4	24	22	114
Flynn, D.	17	119			17	119
Flynn, H.	4	32			4	32
Frazier	17	116			17	116
Gillis	6	54			6	54
Grasser	15	141	97	679	112	820
Hautanen	6	34	2	5	8	39

Table 24. Continued.

Permittee	Big Game Hunting		Fishing		Total		
	Client		Client		Client		
	Clients	Days	Clients	Days	Clients	Days	
Hendricks	6	24			6	24	
Holman			130	130	130	130	
Johnson	30	141			30	141	
Jones	23	120	14	108	37	228	
King	12	54	25	175	37	229	
Klutch	42	364	18	180	60	544	
Lamoureux	8	46	8	45	16	91	
Langvardt	26	280	2	20	28	300	
Lazer	19	146	15	90	34	236	
Loesche			28	28	28	28	
Martin			95	475	95	475	
Matthews			62	62	62	62	
McLay	3	30	1	6	4	36	
McNutt	4	33			4	33	
Meredith	3	26	3	6	6	32	
Munsey	8	80			8	80	
Myers, R.	2	20	1	5	3	25	
Owsicheks			8	8	8	8	
Pederson, A.	2	20			2	20	
Pederson, H.	2	20			2	20	
Porter	13	125	3	3	16	128	
Runyan	6	60			6	60	
Shoemaker	8	75	14	120	22	195	
Sjoden			30	45	30	45	
Suiter	11	36	52	52	63	88	
Swiss	7	65			7	65	
Thompson	5	20	5	20	10	40	
Tudor			4	4	4	4	
Vrem	39	363	24	96	63	459	
Totals	43	396	3,000	890	2,947	1,286	5,947

A total of 33 big game guide/outfitter permittees were responsible for harvesting 70 brown bears, 55 moose and 198 caribou last year (Table 25). Sows represented approximately 24 percent of the bear harvest, while no cow moose or caribou were harvested.

A total of 29 fish guide/outfitter permittees were responsible for the harvest of approximately 1,570 fish (Table 26). Approximately 48 percent salmon, 39 percent arctic char, 11 percent arctic grayling and 2 percent rainbow trout made up the total reported harvest.

Table 25. Permittees, client use and big game harvested within the refuges - 1988.

Permittee	Bear			Moose					Caribou				Harvest Unit(s)		
	Client	Harvest		Client	Harvest				Client	Harvest					
	Clients	Days	M	F	T	Clients	Days	M	F	T	Clients	Days	M	F	T
Aldridge						1	4				10	80	4	4	Ugashik
Blue						5	45	4	4		11	77	9	9	Becharof
Cerami	5	50	3	2	5										Becharof
Christensen	2	10													Chignik
Dykema											18	90	18	18	Becharof
Flynn, D.						3	21	3	3		14	98	9	9	Ugashik
Flynn, H.						2	16	1	1		2	16			Ugashik
Frazier	5	37	4	1	5	4	31	4	4		8	48	5	5	Chignik
Gillis	5	50	4	1	5	1	4	1	1						Chignik
Grasser	4	64	1	1	2	3	21	1	1		8	56	6	6	Ugashik
Hautanen						2	6	2	2		4	28	4	4	Ugashik
Hendricks	2	10	2		2	2	10	2	2		2	4			Ugashik
Johnson	14	95	10		10	6	35	5	5		10	11	9	9	Chignik
Jones	9	63	3	4	7	5	20	4	4		9	37	8	8	Ugashik
King	2	24	1	1	2	4	12	4	4		6	18	6	6	Chignik
Klutch	14	140	3	2	5	6	60	6	6		22	164	20	20	Bech/Chig
Lamoureux						2	16	2	2		6	30	6	6	Ugashik
Langvardt	5	70	4	1	5	6	60	6	6		15	150	15	15	Ugashik
Lazer											19	146	19	19	Bech/Ugas
McLay	3	30	2	1	3										Ugashik
McNutt	4	33	2	1	3										Ugashik
Meredith	3	26	1	2	3										Becharof
Munsey						4	40				4	40	4	4	Becharof
Myers, R.											2	20	2	2	Becharof
Pederson, A.	2	20	2		2										Chignik
Pederson, H.	2	20													Ugashik
Porter	1	5				7	70	6	6		5	50	5	5	Bech/Ugas
Runyan						1	10				5	50	5	5	Ugashik
Shoemaker	3	45	2		2						5	30	5	5	Becharof
Suiter											11	36	9	9	Bech/Ugas
Swiss	6	60	4		4						1	5	1	1	Chignik
Thompson											5	20	2	2	Becharof
Vrem	5	105	5		5	5	55	4	4		29	203	27	27	Bech/Ugas
Totals	33	96	957	53	17	70	69	536	55	55	231	1,507	198	198	

M = Male; F = Female; T = Total

Table 26. Permittees' client use and fish harvested within the refuges - 1988.

Permittee	Clients	Client Days	Fish				Total	Harvest Unit(s)
			Salmon	Char	Grayling	Trout		
Aldridge	10	80	6	25			31	Ugashik
Blue	17	25	20	5	5	4	34	Becharof
Branham	110	220	48	22		4	74	Bech/Ugas
Brod	19	147	108	19	7	12	146	Ugashik
Cusack M.	89	89		14	3		17	Bech/Ugas
Dykema	4	24	22				22	Becharof
Grasser	97	679	73				73	Bech/Ugas Chig
Hautanen	2	5	4	4			8	Ugashik
Holman	130	130	30	30	2		62	Ugashik
Jones	14	108	18	20	60		98	Ugashik
King	25	175						Chignik
Klutch	18	180	40	20	4	4	68	Bech/Chig
Lamoureux	8	45						Ugashik
Langvardt	2	20	4	12			16	Ugashik
Lazer	15	90	30	12	5		47	Bech/Ugas
Loesche	28	28	45	300	30		375	Bech/Ugas
Martin	95	475	120	40			160	Ugashik
Matthews	62	62		3			3	Bech/Ugas
McLay	1	6						Ugashik
Meredith	3	6		8			8	Ugashik
Myers R.	1	5	3	2	5		10	Becharof
Owsicheks	8	8						Becharof
Porter	3	3	2	10			12	Bech/Ugas
Shoemaker	14	120	40		15		55	Bech/Ugas
Sjoden	30	45	55	22	4		81	Ugashik
Suiter	52	52	20	50	4		74	Bech/Ugas
Thompson	5	20			20	5	25	Becharof
Tudor	4	4			3	3	6	Becharof
Vrem	24	96	65				65	Bech/Ugas
Totals	29	890	2,947	753	618	167	32	1,570

A total of 16 permittees were responsible for the harvest of approximately 596 game birds (Table 27). Game bird harvest was incidental to big game hunting.

Table 27. Permittees and game birds harvested within the refuges - 1988.

Permittee	Ptarmigan	Ducks	Harvest Unit(s)
Aldridge	6		Ugashik
Blue	40		Becharof
Brod	3		Ugashik
Grasser	22		Ugashik
Hautanen		10	Ugashik
Jones	2		Ugashik
King		10	Chignik
Klutch	80	12	Bech/Chig
Lazer	50		Bech/Ugas
Myers, R.	6	3	Becharof
Porter	10	10	Bech/Ugas
Runyan	3		Ugashik
Shoemaker	100	40	Becharof
Thompson	10		Becharof
Tudor	2	2	Becharof
Vrem	175		Bech/Ugas
Totals	16	509	87

On August 16th, Refuge Manager Hood signed a letter denying a special use permit to Jay Frazier to guide hunters on the Alaska Peninsula Refuge. He had been recently convicted of significant violations of State of Alaska game regulations. Mr. Frazier appealed the denial to the Regional Director. By letter dated September 1st, Acting Regional Director John P. Rogers sustained the denial. He stated, "Your recent conviction of State wildlife hunting regulations is a grave matter to us. The established policy to deny guiding privileges on National Wildlife Refuges in Alaska upon the conviction of serious fish and game violations is intended to send a clear message that refuge permittees must maintain the highest ethical conduct. This denial confirms our dedication to the standard."

Refuge Manager Hood signed a letter denying a special use permit to Mr. Gregory Boyd for commercial hunting guide/outfitter activities on September 5th. This denial was based upon the fact that Mr. Boyd did not have a permit in 1988. The denial was not appealed.

22. Take Pride in America and Alaska

The "Take Pride in America/Alaska" program was very successful this year. Refer to Sections C.1., E.2., H.17. and H.20. for other "Take Pride" activities.

Our major thrust this year was a "Challenge Grant" project on Mother Goose Lake in the Ugashik Unit of the Alaska Peninsula Refuge. During the planning phase Refuge Manager Hood and Assistant Refuge Manager/Pilot

Arment made contacts with refuge special use permit holders, Alaska Professional Hunters Association, local Boy Scout Troop, local Girl Scout Troop, and King Salmon Air Force Station to solicit assistance in the effort. During April, Hood and Arment met with Sergeant J. Colt, King Salmon Air Force Station to finalize plans for the summer's clean-up activities.



After several years of litigation the manager's denial of the claimants' use of the small cabin, associated with this site, was sustained. This is only a fraction of what future public users were left with to see. As part of the "Take Pride in America/Alaska" and "Challenge Grant" programs, the site was cleaned of most trash and garbage

...

6/14/89, CRA



... to the tune of \$17,000.

6/15/89, REH



...using the volunteer services of five King Salmon Air Force Station personnel.

6/13/89, CRA

Between June 13th and 16th, Assistant Refuge Manager/Pilot Arment led a crew five King Salmon Air Force Station volunteers: Staff Sergeants Kevin Fisher and Brenda Brown; Senior Airman Amanda Reese; Airman First Class Daniel Bilodeau and Airman Mark Crowl. The project involved cleaning up three cabin sites in the Mother Goose Lake area. This hard-working crew was responsible for digging out and removing in excess of 900 five-gallon fuel cans, 40 fuel barrels, one game observation tower and other assorted trash. Between the afternoon of the 14th and the morning of the 16th, the crew prepared and loaded seven Cessna Caravan loads of garbage out of the area. Approximately one half of the fuel containers had to be repositioned out of a small lake site using a Bell 206 Jet Ranger. The refuge Cessna 206 was used to haul out four loads of garbage and transport personnel and their gear.



Five Air Force Station volunteers were responsible for gathering, loading and removing 40 55-gallon barrels and 900 5-gallon fuel cans from Mother Goose Lake.

6/13/89, CRA

On May 2nd, Assistant Refuge Manager/Pilot Arment and Maintenance Worker Terry cleaned up three tent frame sites on Becharof Refuge as part of the "Take Pride in America/Alaska" program. The clean-up included the removal of the tent frames and all trash and garbage associated with the structures.

I. EQUIPMENT AND FACILITIES

1. New Construction

In September 1988, a contract for additional dirt and fence work at the four new residences was awarded to D.R. Lax Construction, Naknek, Alaska for \$40,438. The construction was scheduled for the summer of 1989. In June 1989, the work did actually begin, but the dirt work at Quarters 28 had not been finished by years end and no final inspection completed on the rest of the work. Below is a listing of the work completed:

Quarters 26 - The cracked concrete driveway was removed and a new concrete driveway poured. A 60-foot long x 6-foot high privacy fence was constructed between the back yard and the entrance driveway. A week later a strong, but not excessive, wind blew down an eight-foot section of it.

Quarters 27 - The cracked concrete driveway was removed, the driveway grade was lowered, an improved water drainage was established and then a new concrete driveway was poured. A 120-foot long x 6-foot high privacy fence was constructed along the east side of the property line.

Quarters 29 - The cracked concrete driveway was removed and replaced with gravel, since this site was determined to be wetter and driveway cracking would persist. A water drainage channel was constructed to take water away from the front of the house.

As an add-on to the contract, all the free-standing storage sheds of the four residences were fitted with tie-downs. Also, the overturned storage shed at Quarters 29 was righted and the roof reattached and repaired. The Refuge staff got an "I told you so" on the Regional Engineers when the shed was blown over.

2. Rehabilitation

In April, two new fuel tanks were ordered: a 1,000 gallon underground tank to replace 1,000 gallon above-ground tank used for heating fuel at the office; and a 500 gallon tank to replace the 1,000 gallon above-ground tank used for heating fuel at the shop. Both tanks needed to be replaced because they were old boiler tanks and were beginning to leak.

A relatively warm December day was spent by Biological Technician Mumma, Maintenance Worker Terry, Deputy Manager Poetter and Student Conservation Volunteer Kirk cleaning and rearranging the field camp storage area. Planning for new shelving and reorganization of the supplies has been completed and now the new shelving needs to be constructed.

3. Major Maintenance

January of 1989 went down in history as having the coldest weather ever recorded for King Salmon. The temperatures normally drop to around -30 °F, but this year they reached -48 °F with a windchill factor of -115 °F. A multitude of weather caused facility and vehicle problems occurred due to this extreme weather. Frozen pipes, icing of vehicle fuel lines, failure of furnace fuel pumps, and boiler system failures were common problems. The following is an account of a ten day series of events encountered by Maintenance Worker Terry:

- 1/20 - Thawed frozen water pipes under Quarters 11.
- 1/22 - Shut down entire water system to Quarters 11 after it was determined that several water lines had broken.
- 1/24 - Replaced failed furnace fuel pump at Quarters 1.
- 1/26 - Repaired boiler water circulating system in office building.
- 1/28 - Cleaned and readjusted boiler in Quarters 28. The government vehicle Gary was using quit enroute to the quarters due to fuel line freeze up. After returning to headquarters, the vehicle could not be refueled due to the gas pump being froze up. When the vehicle was put into the shop for repair, Gary discovered that the shop's water lines were frozen. After repairing the water lines, the vehicle and the gas pump, Gary was able to finally call it a day.
- 1/29 - Quarters 27 froze up. Cold wind entering through the boiler room's fresh air intake froze several water lines. Fortunately the freeze up was confined only to the boiler room. Unfortunately a one-inch crack was discovered in the front header of the new boiler. Gary repaired the broken water line and header tank, and had the heating system fully functional by the 31st.
- 1/30 - Thawed frozen water lines in Quarters 9. Weather stripping was installed around the entrance door. Gary installed a temporary fuel line between the storage tank and the furnace in Quarters 1. Apparently the ground frost had ruptured the underground fuel line.

Gary worked long and hard through very inclement and hazardous weather and did an outstanding job.

In April, one of the two septic system submergible pumps failed. Attempts to obtain a replacement ran into a stone wall when it was discovered that the cadillac design that was installed is no longer being manufactured. A replacement pump would take six weeks to be manufactured. The end result was that a new pump was built and delivered three months later. Before the new pump could be installed the backup pump went out and caused the headquarters sewer lift station to fail (August). Maintenance Worker Terry spent a day and a half waist deep in the "stuff" replacing the electric lift motor. A second pump was ordered and finally replaced in November.

With the advent of the Exxon Valdez oil spill, at the beginning of the field season, an added load was put on Maintenance Worker Terry to keep not just two field camp's equipment operational but an unplanned

additional one. Instead of the nine scheduled field personnel, over 20 were put into the camps utilizing the equipment. With multiple users of equipment, there is more abuse requiring a more intense maintenance effort to keep up. Compounding the equipment problems was the fact that two camps were located in the salty environment of the Pacific coast beaches. A maintenance nightmare! Gary was able to rush to come up with the extra serviceable equipment and keep it running while also servicing other field camp operations for the Fisheries office. Projects included: servicing boat motors; constructing additional weatherport floors and outhouses; repairing portable generators and kerosene heaters; maintaining the camp's 4-wheeler; etc. At times, Gary was required to fly to the various field locations and complete repairs to keep the camps operational. The field camps were operational from mid-June through September.



The refuge gasoline tank was filling with rainwater causing major problems with the operation of vehicles. The "no go" fuel filter was allowing water to pass thereby putting gallons of water in a vehicle's tank during a fill-up. 11/89, RDP

4. Equipment Utilization and Replacement

Maintenance Worker Terry completed construction of his invention to crush 5-gallon fuel cans, in August. Most people that have spent any time in remote Alaska have seen the enormous amount of empty fuel containers scattered or piled around the countryside. On the Alaska Peninsula/Becharof refuges this problem is prevalent around the various

cabin sites. Thousands of cans exist along with a much lesser number of 55-gallon drums and other debris. Gary was put to the task of developing a portable can smasher that could be safely operated in the field. His invention allows one person to crush four cans per minute thus reducing the volume of the cans, to be removed from a particular area, thus reducing the costs of Station clean-up operations. Details of this new money saver will be available after it is presented as an employee suggestion and recommended for an award.



Maintenance Worker Terry's newly invented 5-gallon can crusher in operation at the Ugashik Narrows (former Meyers property) clean-up site. Outdoor Recreation Planner Rodriguez on left and Biological Technician Mumma on the right.
10/12/89, REH

High winds on September 8th overturned the Refuge's 18 ft. twin outboard jet boat that was tied to the upstream side of the boat/float-plane dock. Waves driven by the wind broke over the side and swamped it. The current tried to push the boat under the dock but the ropes held it. The next day, Maintenance Worker Terry was able to winch it to shore. The only damage suffered was a cracked section of the windshield and the motor and fuel tanks had to be drained of water and completely serviced.



These two new four-wheelers and trailers were purchased with Regional Office end-of-year monies. Thanks mom!!
11/03/89, RDP

Two new Yamaha 250cc four-wheelers were received in October. These are 2-wheel drive units for use in the field camps on the beaches and law enforcement during the winter and miscellaneous other uses around the compound. Two lightweight six-foot long (tongue to rear) Spotlyte Trak-Star utility trailers were also received. These trailers are made out of a tubular frame that holds large plastic tubs for hauling items. These trailers will be very beneficial to the station operation. These are the first all-terrain-vehicles the station has purchased. All four items were purchased with Regional year-end monies.

Two new 10 foot x 15 foot and one 10 foot x 10 foot weatherports were received this month. They were also purchased with Regional year-end monies.

A total of four new 35 horsepower Johnson outboards were purchased this year. Two were purchased with year-end monies from the Regional Office.

A 1990 1/2 ton Dodge Power Ram 4x4 pickup was partially delivered this year. It got as far as Seattle and is now awaiting the first spring barge of 1990. This vehicle will replace the rundown 1979 Dodge 4x2 pickup.

Regional year-end monies also purchased six Remington Model 700 "Mountain" rifles in the .375 H&H magnum caliber. These rifles will help us comply with the new Region policy on working in bear country. The rifles have Kevlar stocks, 18" barrels, Alaska armor treatment, rear peep sight, front sight blade with fluorescent bead and sling. They were to be magnum ported and had to be returned to have it completed. Each rifle ran a total of \$1,095.

5. Communications Systems

During June, when a helicopter became available, a moment was taken to determine a final resting place for another VHF repeater. Currently, one is in operation on Whale Mountain which gives us excellent radio coverage around Becharof Lake. With this system we are able to utilize an hand-held 2-way radio to reach the King Salmon headquarters and then it is possible to use the phone patch to call locally on the land phone lines. The Mother Goose Lake area farther down the peninsula is sheltered by various mountains and had a need for a repeater, also.



Repeater shelter for the Mother Goose Lake area being lifted to its permanent location just north of the lake.

08/23/89, REH

In August, a helicopter was utilized to install the housing for the new VHF radio repeater on top of a 1500 ft. peak one mile north of Mother Goose Lake. Two days later, Communications Specialist Tim Miller and a radio technician from Revl Communications, Anchorage revisited the site and installed the radio system. On the same trip they visited the Whale

Mountain repeater site and returned the radio units that were pulled out for servicing earlier in May. If all keeps working well, the Station will have an extended area of communications deep into the Ugashik Unit of the Alaska Peninsula Refuge, especially out of the refuge cabin site at Mother Goose Lake. Now all that is needed are one or two portable repeaters to temporarily station around, as needed, to cover blind spots created by the various mountains, such as for Pacific Coast field camps. Just such a repeater was ordered with Regional year-end monies, but by years end had not been delivered.

6. Computer Systems

The station received two new computers and put them on line during in June. Both were slated for the biological program, but they have been utilized by most of the staff. One is a portable Compaq II and the other is a Zenith laptop. A Kodak Diconix inkjet printer was also purchased for field use. With these two purchases, the stations complement of IBM compatible computers is now up to three, which is still inadequate for the size of the staff. The third computer, already on line, is an older Epic AT desk top that has the old left side F key layout and monochrome monitor. In August, a new enhanced keyboard and color monitor were purchased for the Epic AT. What an improvement! It is currently used primarily by the clerical staff. The antiquated Data General system is being phased out in switching to the IBM compatible systems.

Another Zenith 286 laptop was purchased in August. This machine has been assigned for primary use by the Station's three manager types and the Outdoor Planner.

7. Energy Conservation

The Station took a step backwards on its energy conservation measures. In December, the wind generator had to be secured from rotating. The automatic braking system would not keep it from auto-rotating. When this happens the generator tower shakes violently. Since the manufacture has gone out of business replacement parts are not available. Maintenance Worker Terry climbed the tower and tied down the blades to keep them from rotating. This was required due to the safety hazard created if the wind generator rotates out of control and disintegrates, (possibly injuring persons or property below).

J. OTHER ITEMS

2. Other Economic Uses

In addition to 58 Special Use Permits issued for cabins, guides, outfitters and transporters, six (6) permits were issued for other uses (Table 28). Only one of the six permits was issued for other economic uses.

The economic use permit was issued to Global Pacific Mineral Services for access to the hard rock mining claims adjacent Braided Creek. The 1989

assessment plan calls for the use of a gas powered, portable jack hammer which will be used to collect three to six, 100 to 200 pound rock samples. A Compatibility Determination and Section 810 Evaluation were completed as part of the permit.

Table 28. Special use permits issued for other economic use and non-economic uses.

Year	Other Economic Uses		Sub Total	Non-Economic Uses			Sub Total	Total
	Oil/Gas	Mineral		Federal	State	Other		
1984	9	1	10	4	2	1	7	17
1985	5	1	6	3	2		5	11
1986		1	1	2	2	1	5	6
1987	1	1	2	4	1		5	7
1988	1		1	5	1	1	7	8
1989		1	1	4	1		5	6

3. Items of Interest

In January, the U.S. Coast Guard fired 1,500 round of 2mm projectiles into the barge, UMTB 283, sinking it in 100 fathoms of water southwest of the Semidi Islands. Resource damage is expected to be negligible due to the nature of the diesel fuel, the rough weather at the site and the depth of the water at the site. Thus ended a week of phone calls between the Regional Contaminants Coordinator and this office. Weather prevented bringing the barge into a quiet bay along the Alaska Peninsula and transferring the diesel fuel to another barge.

Izembek Refuge Manager Robin West was in King Salmon on February 8th for a coordination meeting.

Refuge Manager Hood met with Dr. Taylor Brelsford, University of Alaska, Fairbanks/Bristol Bay Campus on February 15th to discuss the rural university program and the possibility of establishing an internship working on the refuges.

On February 24th, Assistant Refuge Manager/Pilot Arment was requested by the King Salmon Flight Service Station to conduct a "search and rescue" mission for a missing aircraft. A PA-11 was last reported somewhere between King Salmon and Illiamna Lake. Within an hour after departure Biological Technician Mumma and Arment spotted the wreckage approximately 42 miles northeast of King Salmon, adjacent to a small lake. The completely totaled aircraft was flipped on its back with one wing torn off. Fortunately there were no major injuries.

Assistant Regional Director John Rogers and Deputy Associate Manager Ted

Heuer conducted a station visit on August 1st - 3rd. The staff had the opportunity to meet and discuss refuge issues and career goals with John and Ted. Refuge facilities were toured with Refuge Needs Information System proposals being pointed out and discussed. A number of issues were discussed including: the Exxon Valdez oil spill, commercial big game guide/outfitter special use permits and applications, and the need for a supercub for law enforcement. The weather cooperated and an aerial tour of the Alaska Peninsula Refuge was provided in the Refuge's Cessna 206.



Ted Heuer and John Rogers inspecting the Myers Lodge,
Ugashik Narrows, Alaska Peninsula Refuge.

08/03/89, REH

On September 18th, the U.S. Coast Guard reported a fatality and another person critically injured at Sandy Lake - 15 miles southeast of Cape Seniavin. Apparently a 16-foot skiff with four men and one moose carcass aboard swamped and capsized during high winds. One of the four men, Robert B. Saunders, 53, of Rhode Island died. The survivors were identified as Darrel McDonald of Anchorage, and Joseph Albea and Rover Devaney, both of Charlotte, North Carolina. Alaska Trophy Hunting pilot William McComas was critically injured when he crashed his Piper supercub in an apparent attempt to aid the three boat survivors. McComas was flown to Port Heiden by a Coast Guard helicopter and then to Anchorage in a Coast Guard C-130. The three boat survivors were transported via helicopter to the Mel Gillis' Sandy River Lodge. Saunder's body was found on the 19th. Sandy Lake is on the boundary of the Chignik Unit of the Alaska Peninsula Refuge. Mr. Gillis had a special use permit for commercial guiding on the refuge.

On October 20th our office received a radio call for possible rescue at the Cinder River Lagoon field camp being manned by Alaska Fish and Wildlife Research Center personnel. However, the VHF radio transmission was weak. Using the Park Service supercub, the refuge sent Assistant Refuge Manager/Pilot Arment down in an attempt to provide food and determine the extent of the problem. Apparently high winds had blown an outboard engine fuel tank out of the crew's inflatable raft rendering the crew stranded on the beach spit opposite their field camp. A fuel tank, hose and fuel were flown to the spit the next day.

Dee Butler and Michelle Chivers, Division of Realty, were in King Salmon on October 31st to inspect all rental quarters. A two hour meeting with refuge and fishery staffs covered a wide range of rental related subjects. The implementation of Office of Management and Budget (OMB) Circular A-45 requirements for recovery of utility costs was particularly alarming. Employee pocketbooks are sure to suffer more. Despite the distasteful subject matter, Dee and Michelle did an excellent job. We appreciate their professional and empathetic approach to this highly volatile subject. We may not agree with what we are hearing on rental rates, but we now have a much better understanding of how and why our rates are determined.

4. Credits

Arment	Sections B.; H. 20., 21., 22.; J. 2. and 3.
Collins	Section E. 8.; typing, editing and compiling.
Dewhurst	Sections D. 5.; F.; and G.
Hood	Introduction, Sections A.; C.; D. 2.; E. 5.; H. 6 and 15.; J. 3.; K. and editing.
Poetter	Sections E. 1., 2., 3., 4.; H. 17.; and I.
Rodriguez	Section H. 1., 8., 9., and 10.
Mumma	Sections E. 6.; H. 1., 8., 9., and 10.
King Salmon Fishery Assistance Office	Section G. 11.

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DGB	David Bassett
FAO	King Salmon Fishery Assistance Office
GLT	Gregory Thompson
MAB	Michelle Bourassa
MSA	Lynn Arment
RDP	Rick Poetter
REH	Ronald Hood
RJK	Robert Kirk
SHL	Steve Lanigan
TSH	Timothy Howard

K. FEEDBACK**Circular A-45**

The impact of an aggressive effort to implement the Office of Management and Budget (OMB) Circular A-45, "Policy Governing Charges for Rental Quarters and Related Facilities" is being felt by each employee in an already depleted resource - their pocketbooks. The thrust of OMB Circular A-45 is for each employee to pay their "fair share" of both the base cost (construction) and utilities and services costs of rental housing. Like motherhood and country, this is an admirable concept and is supported by all right-thinking employees. Each employee should pay his/her fair share and should not be subsidized by the Government. But has this thrust and its implications been thoroughly thought out? I suspect not! I believe that the complete implementation of Circular A-45 will have an impact that management does not foresee -- a severe reduction in the pool of employees willing to compete for positions in Alaska!

One of the tenants of Circular A-45 is that the employee pays all cost for utilities (fuel oil and electricity in King Salmon). Currently, our charges are established by those of our appraisal community (Anchorage at present). This is \$0.069 per kilowatt hour for electricity and \$1.044 per gallon for fuel oil. The actual King Salmon rates are \$0.140 per kilowatt hour and \$1.328 per gallon. These rates are 102.8 percent and 27.2 percent higher than Anchorage rates. Without-a-doubt, the next target in implementing Circular A-45 will be this apparent subsidy. Utility costs to the employee will increase another 50 percent when this occurs. Paying these costs may be appropriate; but can the average employee afford to?

The monthly base rental rate is based on a survey of rental costs in the nearest community over 3,500 in population (again, Anchorage). This survey is conducted at five year intervals. We were fortunate that our last survey was conducted when the Anchorage rental rates were very depressed (1987). Thus our rates are now at an all time low. This base rate is then subjected to various adjustments -- the isolation adjustment overshadows all others. For King Salmon the current adjustment is \$2,271 per month. Great! The government owes us money for living in King Salmon (\$1493 in my case). Not-so-great, everybody pays. Circular A-45 places a maximum on adjustments of 60 percent of base rental rate. This base rent is then subjected to an annual "Consumer Price Index" adjustment (3.7 percent this year). Thus spiraling upward. In 1992, there will be another rental survey -- rental costs will increase still more since Anchorage rate are highly likely to be approaching normal levels.

So what! Regional Office management has encouraged us to restructure our recruiting efforts to target employees at the entry level. An effort is also being made to assure the world that grades in Alaska are not being inflated just because the position is located in Alaska. A major policy that guarantees "return rights" has been implemented in an effort to increase the applicant pool for positions in Alaska.

These efforts are all meaningless if an employee can not afford to live in bush Alaska. A critical flaw in Circular A-45 is that the employee's ability to pay is not factored into rental computations. Thus the GS-5 pays the same rent as the GS-12. One King Salmon employee is currently paying a rental rate that is 24 percent of their base pay. How happy do you think that this employee is with the situation? How successful will we be in recruiting GS-5, 7, or 9 level employees in the future?

A revised Circular A-45 is expected to be published in the near future in the Federal Register for comment. I encourage everyone impacted to carefully review the Circular and provide comments. Fish and Wildlife Service management should also recognize that the Circular and its implementation will directly impact the ability of the Service to attract and hold employees in bush Alaska. Don't let this opportunity pass just because we are too busy or lack the foresight to predict its impact on our ability to get the job done!

Maintenance Staff Needs

Presently, Alaska Peninsula/Becharof refuges have one permanent full-time Maintenance Worker (WG-4749-08). Funding for the position is shared by the King Salmon Fishery Assistance Office (33 percent) and the Alaska Peninsula/Becharof refuges (67 percent). Facilities under his care include: office/storage; shop; warehouse; fuel shed; bunkhouse; storage and hangar buildings; water system; three fuel systems; sewage system; nine residences; drives and grounds for five acre headquarters site; float-plane/boat dock; three large boats; over 14 outboard motors; a passenger van; four, two and four-wheel drive light duty trucks; a front-end loader/backhoe tractor; "bobcat" utility loader; and miscellaneous smaller gas and electric power equipment/tools. A conservative estimate of the monetary value of the real property is over seven million dollars.

Clearly, the present workload is too much for one person! The workload demand during the summer field season and extreme winter weather creates a situation whereby only emergency and high priority work can be accomplished. The station's preventive maintenance program is suffering; which in turn will result in higher operating costs due to the need to replace equipment and facilities more frequently. During the past five years, we have benefited from a generous rehabilitation and new construction program. As these facilities age, there will be a concomitant increase in needed maintenance. This station is attempting to get funding for a Maintenance Helper, WG-4748-05, position at a permanent full-time level. The current maintenance management system budget thrust should meet this need -- but the observed track record for the Region does not make us optimistic.



Goodbye to 1989 -- a bellwether year that will remain in
our memory forever! 8/89, DGB