

Library Copy


ALASKA PENINSULA/BECHAROF  
NATIONAL WILDLIFE REFUGE

King Salmon, Alaska

ANNUAL NARRATIVE REPORT

Calendar Year 2000

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

  
\_\_\_\_\_  
Refuge Manager

3/5/07  
\_\_\_\_\_  
Date

\_\_\_\_\_  
Refuge Supervisor Review

\_\_\_\_\_  
Date

\_\_\_\_\_  
Regional Office Approval

\_\_\_\_\_  
Date

ALASKA PENINSULA/BECHAROF  
NATIONAL WILDLIFE REFUGE

King Salmon, Alaska

ANNUAL NARRATIVE REPORT

Calendar Year 2000

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

## INTRODUCTION

The lands that make up the Alaska Peninsula/Becharof National Wildlife Refuge Complex (Refuges) are the Becharof Refuge, the Ugashik and Chignik Units of the Alaska Peninsula Refuge, and Seal Cape of Alaska Maritime Refuge. These lands were combined for management out of the King Salmon office in 1983 because they shared common resources and resource issues. Since 1983, the Pavlof Unit of the Alaska Peninsula Refuge has been managed by the Izembek Refuge. This arrangement takes the refuge lands that are closest together and allows them to be managed from one office.

The Alaska Peninsula is a land of towering mountains, active volcanoes, broad valleys, fjords, tundra and large glacial lakes. The Refuges lie along the Pacific side of the peninsula starting about ten miles south of the headquarters in King Salmon and extending for approximately 250 miles. From coastal lowlands on the Bristol Bay side of the Refuges the land raises to steep glaciated mountains and volcanoes, forming the spine of the Refuges, and then plunges to steep cliffs and sandy beaches on the Pacific side. The Bristol Bay side of the Refuges consists primarily of rolling moist to wet tundra, lakes and wetlands. The snow covered, heavily glaciated Aleutian Mountain Range bisects the Refuges with volcanic peaks rising to over 8,200 feet. The Pacific coastline is rugged with sea cliffs rising hundreds of feet from the water. Numerous streams and several large rivers originate on the Refuges and provide salmon spawning areas for the economically important Bristol Bay commercial fishery.

Approximately 2,000 local residents live in 12 villages within or adjacent to the Refuges with many of them using the Refuges for subsistence purposes. The Refuges lie within the Bristol Bay and Lake & Peninsula Boroughs.

In 1978, President Jimmy Carter established the 1,157,000 acre Becharof National Wildlife Monument with Presidential Proclamation 4616. The Alaska National Interest Lands Conservation Act of 1980 changed the Monument into a National Wildlife Refuge. Approximately 503,000 acres of this Refuge is designated wilderness. Becharof Refuge contains Becharof Lake, (300,000 acres) the largest freshwater lake entirely within the boundary of a National Wildlife Refuge.

The Alaska National Interest Lands Conservation Act also created the Alaska Peninsula Refuge and Seal Cape of the Alaska Maritime Refuge. The Ugashik and Chignik Units of the Alaska Peninsula Refuge encompass about 2,648,100 acres and extend over 200 miles. These units are separated by the Aniakchak National Monument and Preserve, a unit of the National Park Service. Within the Chignik Unit is the Mount Veniaminof National Natural Landmark which was established in 1970. Mount Veniaminof has the most extensive crater glacier in the nation and the only known glacier on the continent with an active volcanic vent in its center. It last erupted in 1983.

Seal Cape is a 9,900 acre headland about 30 miles south of the village of Chignik. Narrow bays cut Seal Cape into two principle arms which rise to peaks over 2,000 feet and provide cliffs for sea birds to nest.

The purposes for which the Refuges were established by the Alaska National Interest Lands Conservation Act and shall be managed include: (Unless otherwise noted, the purposes apply to all three of the Refuges.)

(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to...

[Becharof]...brown bears, salmon, migratory birds, the Alaska Peninsula Caribou herd and marine birds and mammals;

[Alaska Peninsula]...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;

[Alaska Maritime]...marine mammals, marine birds and other migratory birds, the marine resources upon which they rely, bears, caribou and other mammals;

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

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

(iv) to insure, 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."

[Alaska Maritime] to provide, in a manner consistent with subparagraphs (i) and (ii), a program of national and international scientific research on marine resources;

Refuge fauna include some of the highest densities of brown bears found in North America. Moose inhabit the area in moderate numbers and the Northern Alaska Peninsula Caribou Herd use refuge lands for calving, insect escape habitat, migration and wintering. Other animals found on refuge lands include wolves, foxes, wolverines, and lynx. Sea otters, sea lions and harbor seals inhabit the shorelines, and nesting bald eagles, peregrine falcons, and thousands of seabirds inhabit the rocky sea cliffs of the Pacific coast. Nesting, migrating, and wintering waterfowl found on wetlands, lakes, and streams throughout the Refuges include tundra swans, greater white-fronted geese,



emperor geese, mallards, northern pintails, American widgeons, greater scaup, and harlequin ducks.

The Alaska Peninsula is world renown for big game hunting. The refuge is subdivided into 21 big game guide-outfitter use areas with 26 special use permits issued for conducting big game guiding activities within these areas. The Refuge staff manages a large, and often controversial, sport hunting program that balances the needs of unguided and guided sport hunters with the needs of subsistence users.



Hot springs creek draining off Mount Peulk.

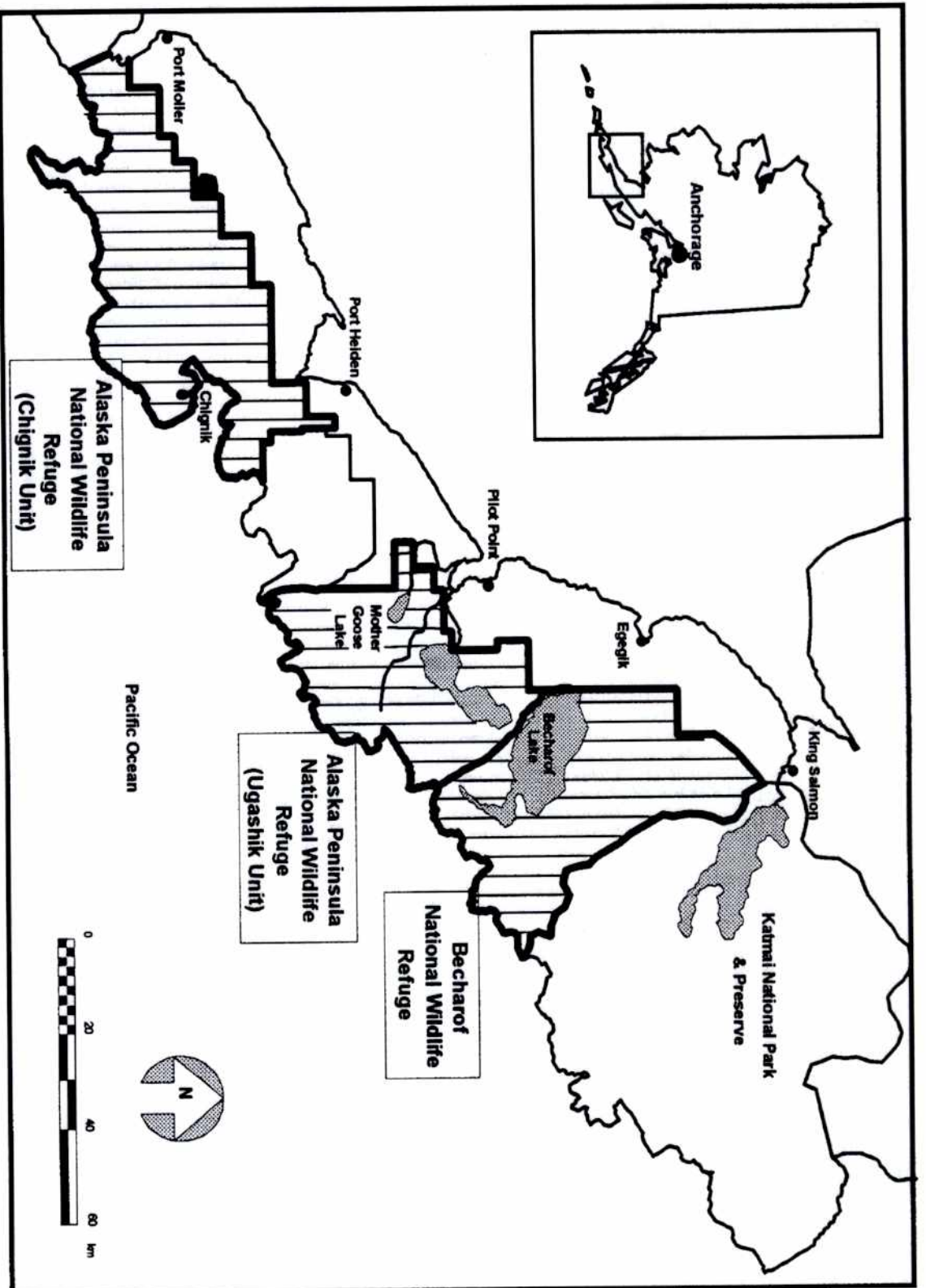


Figure 1. Alaska Peninsula/Becharof National Wildlife Refuge Complex.



INTRODUCTION.....	Page
TABLE OF CONTENTS .....	i
A. HIGHLIGHTS.....	1
B. CLIMATIC CONDITIONS .....	1
C. LAND ACQUISITION .....	nothing to report
1. Fee Title .....	nothing to report
2. Easements.....	nothing to report
3. Other.....	nothing to report
D. PLANNING .....	4
1. Master Plan.....	4
2. Management Plan .....	5
3. Public Participation .....	5
4. Compliance with Environmental Mandates .....	nothing to report
5. Research and Investigations .....	nothing to report
6. Other.....	nothing to report
E. ADMINISTRATION .....	7
1. Personnel .....	7
2. Youth Programs.....	nothing to report
3. Other Manpower Programs .....	nothing to report
4. Volunteer Program .....	8
5. Funding .....	8
6. Safety.....	9
7. Technical Assistance .....	nothing to report
8. Other Items .....	nothing to report
F. HABITAT MANAGEMENT .....	10
1. General .....	10
2. Wetlands.....	nothing to report
3. Forests .....	nothing to report
4. Croplands .....	nothing to report
5. Grasslands .....	nothing to report
6. Other Habitats .....	11
7. Grazing.....	nothing to report
8. Haying.....	nothing to report
9. Fire Management.....	nothing to report
10. Pest Control.....	nothing to report
11. Water Rights.....	12
12. Wilderness and Special Areas .....	12
13. WPA Easement Monitoring .....	nothing to report
G. WILDLIFE .....	14
1. Wildlife Diversity.....	nothing to report
2. Endangered and/or Threatened Species.....	nothing to report
3. Waterfowl.....	14
4. Marsh and Water Birds.....	nothing to report
5. Shorebirds, Gulls, Terns and Allied Species .....	16
6. Raptors .....	16
7. Other Migratory Birds .....	17
8. Game Mammals .....	23
9. Marine Mammals .....	nothing to report
10. Other Resident Wildlife.....	nothing to report
11. Fisheries Resources .....	nothing to report
12. Wildlife Propagation and Stocking .....	nothing to report
13. Surplus Animal Disposal.....	nothing to report
14. Scientific Collection .....	25
15. Animal Control.....	26
16. Marking and Banding.....	26

17. Disease Prevention and Control .....	nothing to report
H. PUBLIC USE .....	29
1. General .....	29
2. Outdoor Classrooms - Students .....	30
3. Outdoor Classrooms - Teachers .....	34
4. Interpretive Foot Trails .....	nothing to report
5. Interpretive Tour Trails .....	nothing to report
6. Interpretive Exhibits/Demonstrations .....	34
7. Other Interpretive Programs .....	35
8. Hunting .....	36
9. Fishing .....	39
10. Trapping .....	39
11. Wildlife Observation .....	nothing to report
12. Other Wildlife Oriented Recreation .....	nothing to report
13. Camping .....	nothing to report
14. Picnicking .....	nothing to report
15. Off-Road Vehicles .....	nothing to report
16. Other Non-Wildlife Oriented Recreation .....	nothing to report
17. Law Enforcement .....	40
18. Cooperating Associations .....	40
19. Concessions .....	nothing to report
20. Cabins .....	41
21. Guides-Outfitters .....	41
22. Subsistence .....	42
I. EQUIPMENT AND FACILITIES .....	44
1. New Construction .....	44
2. Rehabilitation .....	45
3. Major Maintenance .....	47
4. Equipment Utilization and Replacement .....	nothing to report
5. Communications Systems .....	48
6. Computer Systems .....	48
7. Energy Conservation .....	48
8. Other .....	48
J. OTHER ITEMS .....	
1. Cooperative Programs .....	nothing to report
2. Other Economic Uses .....	nothing to report
3. Items of Interest .....	nothing to report
4. Credits .....	nothing to report
K. FEEDBACK .....	nothing to report



## **A. HIGHLIGHTS**

- \*\* Unofficial wind gauges recorded winds up to 110 miles per hour in February (Section B.1.).
- \*\* New Remote Area Weather Station installed at Mother Goose Lake site (Section B. 1.).
- \*\* Comprehensive Conservation Planning Meetings continued (Section D. 2.).
- \*\* Rare Baikal Teal spotted on Naknek River (Section G. 3.)
- \*\* Pacific coast Bald Eagle surveys completed (Section G. 5.)
- \*\* Village Students earn honors in Goose Calendar contest (Section H.2.).
- \*\* Refuge hosted the Refuge Information Technician Workshop (Section H.7.).
- \*\* Becharof Outlet Public Use Survey conducted (Section H. 9.)
- \*\* Clean up efforts continue on Alaska Peninsula Refuge (Section I. 2.).

## **B. CLIMATE**

### **1. General**

The upper Alaska Peninsula is characterized by a 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. Low pressure cells sweep out of the Aleutian Islands, with high moisture content and strong winds, blowing across the Peninsula. High winds and turbulence are especially common near the rugged Pacific Coast Mountains. The heaviest precipitation occurs on the Pacific Ocean side of the Peninsula. The Bering Sea side enjoys more clear weather but lower average temperatures.

Temperatures are generally moderate throughout the year. Daily maximum temperatures may exceed the freezing mark in all months but conversely the daily minimum temperature may drop below freezing in all months except July (Table 1).

*Table 1. 2000 Climatological data reported by U.S. Weather Service at the King Salmon Airport, King Salmon, Alaska.*

Month	TEMPERATURE F				HISTORICAL TEMP		PRECIPITATION(INCHES)		
	Monthly High	Monthly Low	Average Max	Average Min	Average Max	Average Min	PPT	Historical Average	Snow Fall
January	39	-36	13	-4	23	8	.95	1.03	14.2
February	43	-22	37	23	25	9	.73	0.79	4.4
March	44	-10	37	24	31	14	.32	0.91	3.7
April	55	8	44	25	41	24	.63	1.00	0.9
May	61	21	54	31	52	34	1.18	1.30	0.4
June	71	32	60	41	60	42	1.99	1.53	0.0
July	74	38	62	47	63	47	3.11	2.23	0.0
August	72	34	63	46	62	47	2.28	3.01	0.0
September	61	21	54	38	55	40	3.30	2.86	0.0
October	56	12	42	27	40	25	2.13	2.03	0.3
November	49	-8	38	27	30	16	2.20	1.45	4.9
December	46	-10	39	29	23	7	.69	1.23	0.6

*Historical temperature (F) is the average monthly max. and min. temperature for the period of record July 1, 1955 until present.*

At King Salmon the dangerous effects of wind chill can be dramatic. Interior Alaska is known for low winter temperatures and the Aleutian Islands for high winds; however, when climatic influences of each area come together on the upper Alaska Peninsula, the wind chill factor may exceed -120<sup>0</sup> Fahrenheit (F).

The peak wind gust at the official King Salmon airport was 76 miles per hour but unofficial wind gauges in the Naknek–King Salmon area recorded peak winds in the 97-110 miles per hour range. February 1<sup>st</sup> low temperature was -22<sup>0</sup> F that evening as the temperature rapidly rose it began to snow which then turned to a wet, heavy snow. As the night progressed, sleet and rain were added to the mix. With the ground, buildings and most importantly the electric wires still close to -22<sup>0</sup> F, the snow stuck/froze to all unheated objects. Then the wind struck and by 1:00 a.m., February 2nd the power was out. Fortunately, the temperature had warmed up to 31<sup>0</sup> F and continued to rise to a high temperature of 39<sup>0</sup> F. But unfortunately the damage had already been done. South Naknek was without power for two weeks as the electric company had to replace numerous snapped off power poles. The office sustained minor damage to the roof and was without power until noon on the second. Some airplanes and other buildings didn't fair as well. Two privately owned trailers behind the office were blown on their side. The office parking lot was an icy hazard for sometime afterward. What generators the Refuges had were loaned to the local power cooperative to run lights for repairmen to work 24 hours a day until power was restored to all residents. The larger generator was used to heat/power a community building so there was a warm place to go for those who needed it.





Wind damage at the King Salmon airport.

*Table 2. Weather Highlights of 2000.*

Highest temperature:	74 degrees	July 12
Lowest temperature:	-36 degrees	January 4
Total precipitation :	20.05 inches	0.80 inches above normal
Total snowfall:	29.4 inches	15.7 inches below normal
Highest monthly rainfall:	3.30 inches	Month of September
Highest monthly snowfall:	14.2 inches	Month of January
Highest wind:	76mph	February 2

Total snowfall from Table 2 is deceptive. That amount is for the calendar year but if you look at the total for the winter of 99/00 (October, 1999 to May, 2000) the snow fall total was 54.8 inches or 9.7 inches above normal. Most of King Salmon's snowfall occurs in December and January. The winter of 2000/01 is looking like a low snowfall year.

A Forest Technology Systems remote weather station was installed at Mother Goose Lake on June 22. Recorded data can be downloaded to a computer at the sight. Data is also uploaded to a Forest Technology Systems computer server via satellite which the Refuges can access and download to a computer in King Salmon. A second station was ordered and refuge staff is now deciding where the optimal location will be. Once we work out the bugs and have a full year of data we will add an additional table so you can compare climate data from King Salmon to Mother Goose Lake area.



Trailer just behind the office compound that was rolled in wind storm.

## **D. PLANNING**

### **1. Master Plan**

The Alaska National Interest Lands Conservation Act (ANILCA) mandated that a comprehensive conservation plan (CCP) be prepared and periodically revised for each



National Wildlife Refuge that was established, redesignated or expanded by the Act. CCPs for the Alaska Peninsula and Becharof National Wildlife Refuges were prepared in the mid 1980s and are now due for revision. The revision process began in 1998. The two original plans will be combined into one plan for the Becharof Refuge and the Ugashik and Chignik Units of the Alaska Peninsula Refuge that are administered by the King Salmon office. Interpretation of USFWS policy at the Regional level concluded that review of Wilderness and Wild and Scenic River proposals for the Refuges was required for the CCP revision process.

In 2000, work continued on the revision of the CCP. The core planning team members included Refuge Manager Lons and Biologist Squibb at the Refuge office and Planning Branch Chief Kenneth Rice, Natural Resource Planner Peter Wikoff (AP/B Team Leader), Social Scientist Stewart Allen, Wildlife Biologist Charles Ardizzone, and Natural Resource Planner Karen Murphy of Region 7 Planning Branch. This team met in Anchorage on January 24-25, April 3, May 3, June 12, September 6, October 5-6, and October 26-27.

The April 3<sup>rd</sup> meeting addressed goals and objectives. The May 3<sup>rd</sup> meeting involved evaluating a preliminary draft CCP compiled from current drafts of the various sections. Special attention was given to integrating the parts into a whole, particularly the goals and objectives, alternatives, Wild & Scenic River reviews, wilderness, and common management direction tables and text. Progress on the major chapters was reviewed and further assignments made during the June 12<sup>th</sup> meeting. The autumn meetings concentrated on developing the Draft CCP and Environmental Impact Statement (EIS) for internal review within the Region 7 staff and State of Alaska.

By the end of December 2000, the team had produced the internal review draft; it was a bound loose leaf document of about 400 pages and weighing in at 2 lb. 6 oz. This draft plan was based upon five issues, three that came from public meetings plus reviews of Wilderness and Wild and Scenic River proposals that are required by Service policy. These five issues were:

1. How should we address recreational access to remote and sensitive areas?
2. How should we address natural fluctuations of fish and wildlife populations?
3. How can conflicts between refuge user groups be minimized?
4. What lands, if any, should be recommended for Wilderness designation?
5. What rivers, if any, should be recommended for inclusion in the National System of Wild and Scenic Rivers?

The four alternative management proposals were built around these issues.

Alternative 1 was essentially a continuation of current management. Its proposal for 890,000 acres of new Congressionally designated Wilderness was identical to the Wilderness proposals from the 1985 Becharof and Alaska Peninsula CCPs. No rivers were proposed for the Wild and Scenic River System. Wildlife inventory would continue at its current level. Study of public use issues would remain reactive to known conflicts and conservation issues.

Helicopter landings for recreational access could be allowed outside of designated Wilderness on a case-by-case basis. Predator control could be permitted where biologically justified.

Alternative 2 was a no additional designated Wilderness alternative. The Wild and Scenic River proposal included Port Wrangell, Dog Salmon (Ugashik), and the upper Chignik River tributary complex. Wildlife inventory and monitoring effort would increase. A public use monitoring program would be established and objectives developed. Helicopter landings would not be allowed in sensitive or remote areas. Predator control could be permitted if it were the least intrusive tool to achieve management objectives.

Alternative 3 proposed all non-Wilderness lands except the Yantarni Bay Moderate Management area for Wilderness designation, an area of over 3.3 million acres. The Wild and Scenic River proposal included all nine eligible rivers. Wildlife inventory and monitoring effort would increase. A public use monitoring program would be established and objectives developed. Helicopter landings and predator control would not be allowed.

Alternative 4 (Preferred) proposed most lands that did not currently receive significant recreational or subsistence use for Wilderness, an area totaling 2.9 million acres. This proposal contained a non-Wilderness corridor to accommodate a proposed road from Port Heiden to the Chigniks and on to Perryville. The Wild and Scenic River proposal included Port Wrangell and King Salmon (Ugashik) rivers. Wildlife inventory and monitoring effort would increase. A public use monitoring program would be established and objectives developed. Helicopter landings and predator control would not be allowed.

## **2. Management Plan**

Region 7 Realty continued work on the Habitat Protection Plan (Land Protection Plan) for the Refuges. Progress was slowed in 1999 by turnover in the position responsible for the plan.

## **3. Public Participation**

The CCP planning team developed a range of alternatives in response to comments received from the public. The team eliminated earlier alternatives that did not meet Refuge purposes or were outside the limits of Refuge authority. These new draft alternatives were included in a new Refuge CCP "Planning Update for January 2000" newsletter that was sent to over 2,000 people and organizations during January. This newsletter also described Refuge management issue statements that had been developed from earlier public meetings.

Public meetings were held in local communities to seek comments on the CCP, and to discuss the "Planning Update" newsletter. During February, Refuge Manager Lons and Ranger Lind conducted public meetings in Chignik Lake, Chignik Bay, Chignik Lagoon, Port Heiden, Pilot Point, and Egegik. On March 6, Lind, Biologist Squibb, and Pilot Cox conducted a public meeting in Perryville. A total of 46 local residents attended these



meetings.

Table 3. Dates and attendance by local residents at 2000 CCP public meetings.

Community	Date	Local Attendance
Port Heiden	January 17	4
Pilot Point	January 18	2
Egegik	January 19	8
Chignik Lake	February 7	9
Chignik Lagoon	February 8	6
Chignik Bay	February 8	2
Naknek & South Naknek	February 23	2
Perryville	March 6	13

## E. ADMINISTRATION

### 1. Personnel

#### Permanent Staff

1. Daryle Lons; Refuge Manager; GS-485-13; EOD-12/20/97
2. Mark Koepsel; Deputy Refuge Manager; GS-485-12; EOD-11/07/99
3. Dave Cox; Refuge Operations Specialist; GS-485-11; EOD-4/25/99, Promoted to GS-12 on 05/07/00
4. Susan Savage; Wildlife Biologist; GS-486-11; EOD-05/11/97
5. Angie Terrell-Wagner; Refuge Ranger/Public Use Specialist; GS-025-11; EOD-12/29/91
6. Ronald Squibb; General Biologist; GS-0401-11; EOD-03/10/97
7. Orville Lind; Refuge Ranger; (local hire); GS-0025-09; EOD-09/08/91
8. John (Smiley) Knutsen; Refuge Information Technician, (local hire); GS-1001-08; PPT; EOD-09/08/91
9. Charles O'Domin; Refuge Information Technician, (local hire); GS-1001-08; PPT; EOD-10/5/97
10. Gary Terry; Maintenance Worker; WG-4749-08; EOD-07/31/88

11. Gary Melvin; Maintenance Worker; WG-4749-05; EOD-05/24/98
12. Darlene Melvin; Administrative Technician (local hire); GS-303-06; EOD-11/07/99
13. Beth Marsan; Administrative Technician (local hire); GS-303-05; EOD-4/23/00

PPT means permanent part time, all other permanent employees are full time. EOD means entered on duty at this station.

#### Temporary Staff

1. Corey Adler; Biological Technician; GS-404-06; EOD-7/18/99; AE-3/13/00
2. Laura Bundy; Refuge Ranger; GS-025-05; EOD-5/23/99; Local hire; AE-1/28/00
3. Annie Cox, Refuge Ranger; GS-025-05; EOD-6/16/00; AE-10/20/00
4. Theresa Mike, Refuge Ranger; GS-025; EOD-6/04/00; AE-9/23/00
5. Christopher Egan; Biological Technician; GS-404-05; EOD-4/25/00; AE-10/20/00
6. Corey Adler, Biological Technician; GS-404-07; EOD-5/07/00; AE-10/19/00

#### **4. Volunteer Program**

Nine volunteers representing seven states and one Canadian province contributed many hours to the biological program, public use monitoring, administration, maintenance, and the King Salmon Visitor Center. Volunteers assisted with the following projects: Naknek River Spring Waterfowl Survey, Monitoring Avian Productivity and Survivorship (MAPS) banding and songbird migration banding at Mother Goose Lake, Becharof Outlet Public Use Survey, Plant Communities in Relation to Caribou Utilization, Mother Goose Lake small mammal surveys, Harlequin duck surveys, Visitor Center staffing, and maintenance in King Salmon and at several field facilities.

#### Volunteer Staff

1. Brian Bigler (Seattle, Washington); EOD-04/17/00; AE-06/26/00
2. Robert Blush (King Salmon, Alaska); EOD-04/13/00; AE-08/18/00
3. Nathan Gregory (Denver, Colorado); EOD-05/7/00; AE-8/24/00
4. John Harting (Evergreen, Colorado); EOD-05/7/00; AE-09/29/00
5. Steve Howard (Louisville, TN); EOD-05/15/00; AE-09/29/00
6. Richard Russell (King Salmon, AK); EOD-04/15/00; AE-05/15/00
7. Wilfred Schofield (Vancouver, British Columbia, Canada); EOD 06/29/00; AE-08/5/00
8. Julie Teski (Gills Rock, Wisconsin); EOD-08/04/00; AE-08/18/00
9. Rachel Young (Salt Lake City, Utah); EOD08/1/00; AE-09/29

#### **5. Funding**

Funding for 1262 was broken into six projects: annual maintenance (\$28k), Rehabilitation of hangar to meet seismic standards (\$149k), phase two replace the current office building (\$353k), Replace aircraft (\$128k), Replace inflatable boats (\$14k), install heater in hangar



(\$18).

Table 4. Funding History (in thousands) of the Alaska Peninsula/Becharof Refuges

Fiscal Year	1261	1262	1230 &/or 1971 Migratory birds	Total
00	1374.0	690	0.0	2064.0
99	1520.2	417	13.0	1950.2
98	1526.5	5	13.0	1587.5
97	986.0	193	15.8	1194.8
96	909.0	125	13.0	1047.0
95	669.0	346	0.0	1015.0

## 6. Safety

This station strongly supports the Regional safety program and all aspects of keeping the Refuges and facilities a safe place to live and work. The station safety committee comprises of Ranger Orville Lind as chairperson, Fishery Biologist Nick Hetrick, and the following employees; Deputy Refuge Manager Koepsel, Maintenance Workers Terry and Melvin. The expanded committee and active participation by all staff provides the foundation for an aggressive safety program. All staff participates in monthly safety presentations on the following topics:

January: Surviving Home and Work Fires  
 February: Fire extinguishers: Fight or Flight? Fire Safety  
 March: Annual fire drill  
 April: Bear/Firearms training  
 May: Watercraft safety, Bear/Firearms safety, and CPR First-Aid  
 June: Watercraft safety  
 August: Bear safety  
 October: Preparing for winter  
 December: Fire Extinguisher Inspections, why and how.

## 8. Other items

Permanent staff attended the following training and workshops in 2000:

### Refuge Operations Specialist Cox

Refuge Operations Specialist Cox left on January 30, for a 40 hour law enforcement refresher course at Marana, AZ.

Cox traveled to Anchorage for compatibility training on December 4 and 5.

Refuge Ranger Lind

Lind attended an eight hour Hazwoper refresher course on March 22.

Biologist Squibb

Squibb attended the Moose Habitat Workshop in Anchorage January 20-21.

Wildlife Biologist Savage

Savage attended the Fulfilling the Wildlife First Promise: A National Wildlife Refuge System Biologist Workshop at the FWS Conservation Training Center.

She also attended the Moose Habitat Workshop in Anchorage January 20-21.

Refuge Information Technician O=Domin

Refuge Information Technician training course held in King Salmon December 12-14.

Maintenance Worker Melvin

Received training on the maintenance of Remote Access Weather Stations, March 20-21.

Attended Office of Aircraft Services, Train the Trainer for B-3 aviation safety course from October 30 to November 3.

## **F. HABITAT MANAGEMENT**

### **1. General**

Geographic Information Systems (GIS)

Tamara Olson completed her contract (May 2000) with the Refuge to develop and obtain data layers from the Fish and Wildlife Service Alaska Regional Office, National Park Service, the State of Alaska and other entities. Staff has begun using the GIS system to prepare maps for reports, for hunters of the refuge, and provide output to regional office staff, The Nature Conservancy and other entities.



Adler develops a map on the ArcView Geographic Information System computer.

## 6. Other Habitats

Region 7 Botanist Stephen Talbot continued work in on his project, Plant Communities of the Alaska Peninsula and Becharof National Wildlife Refuges in Relation to Caribou Utilization. The purposes of this project include evaluating the status of caribou range, and documenting plant communities at specific sites. University of British Columbia Emeritus Professor Wilfred Schofield again assisted Talbot on the vegetation plots and contributing his expertise with mosses. In this their shortest field season in the three years so far, they sampled 62 plots and recovered voucher plant specimens from areas sampled in Wide Bay highlands in 1999 that were lost in the maelstrom at that site. The new areas sampled in 2000 included caribou calving grounds on State lands near the Big Sandy strip along Sandy River and between Mud Creek and Cinder River. They also sampled caribou range in the Dog Salmon drainage within the Ugashik Unit. Deputy Manager Mark Koepsel, Refuge Ranger Orville Lind, and Biologist Ron Squibb assisted them with their field work.

Talbot used the same method as in 1998 and 1999. They collected data from 5 x 5 meter plots distributed among representative habitats along elevational gradients. Data collected included identification and collection of all vascular and non-vascular species, estimation of species abundance, soil samples, topographic data, and location. Data analysis and lab work were well underway by the end of 2000: analysis of soil samples had been scheduled with the University of Alaska Fairbanks, Palmer Research Center; identification by specialists of vascular and non-vascular plant specimens had begun; and analysis of plot data was underway. The study will continue in 2001.



## 11. Water Rights

Hydrologist Mitch Linne, Region 7 Water Resources Branch, continued field work on the Egegik River below the Becharof Lake outlet in an attempt to document discharge.

## 12. Wilderness and Special Areas

### Becharof Refuge

Approximately 477,000 acres of the refuge were designated the Becharof Wilderness by the Alaska Lands Act. The area represents a variety of pristine habitats with the entire complement 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. The area's Wilderness designation means that this special wildlife/wildland association will be the last place on the refuge subject to irreversible development.



A view of Becharof wilderness.



Three private inholdings are found within the Wilderness area boundary. One of the inholdings (40 acres) is owned by big game guide Philip Shoemaker, another is leased by him (5 acres). He has buildings on both. The third is a Native allotment consisting of 160 acres.

An additional 347,000 acres 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. This recommended area includes lands south of Becharof Lake from Portage Bay on the Pacific to Gas Rocks on the south shore of Becharof Lake, and lands including Gertrude and Big Creek drainages along the refuge boundary with designated wilderness in Katmai National Park.

#### 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 642,000 acres for wilderness designation in all three units of the refuge. The area recommended within the Ugashik and Chignik Units of the Alaska Peninsula Refuge is approximately 474,000 acres, and includes the south slopes of Peulik Mountain, Mount Veniaminof, and public lands on peninsulas between Chignik and Kujulik Bays. No Congressional action has been taken on these proposals to date.

#### Mount Veniaminof National Natural Landmark

Mount Veniaminof was determined to be eligible for natural landmark status in 1967, and was registered in August 1970. Its peak lies about 50 miles east-northeast of Port Moller on Bristol Bay, and 40 miles west-southwest of Chignik Bay village on the Pacific. It is approximately 450 miles southwest of Anchorage within the Chignik Unit of the Alaska Peninsula Refuge.

Named for Russian Orthodox priest Ivan Veniaminof, who studied Aleutian Chain cones early in the 19th Century, this 7,075-foot volcano resulted from a climactic eruption that occurred about 3,700 years ago. Its historic behavior has typically been limited to minor steam and ash eruptions; however, major explosive eruptions occurred in 1838, 1892, and 1953. The last of these resulted in substantial release of lava and formation of a new crater. 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, and the Landmark's boundaries encompass almost 804,000 acres. About 142,000 acres of the landmark are native conveyed lands; the remaining federal public lands include about 107,000 acres of state and native selections.

## G. WILDLIFE

### 3. Waterfowl

The Fish and Wildlife Service Office of Migratory Bird Management, several refuges and United States Geological Survey, Biological Resources Division cooperated in tagging and tracking emperor geese (*Chen canagica*). In the summer of 1999, 12 geese were fitted with collars that transmitted to satellites and 40 geese were fitted with standard radio collars. In December 1999, satellite beacons located the geese from Wide Bay (Alaska Peninsula NWR) to Agattu Island (near Attu). Refuges staff assisted in radio tracking the geese in January, and especially during their migration in April and May. Many birds were found in Meshik Bay and Herendeen Bay during migration.

The Bristol Bay Drainage Spring Waterfowl Survey along the Naknek River of the Alaska Peninsula was conducted March 6 through May 12. For the tenth consecutive year, waterfowl was surveyed from the ground. Twenty-three species of waterfowl were observed during this year. Naknek River waterfowl numbers in 2000 were variable by species compared to other years. Peak counts for Canada goose (*Branta canadensis*), northern pintail (*Anas acuta*), and common goldeneyes (*Bucephala clangula*) were higher than most years while mallard (*Anas platyrhynchos*), greater scaup (*Aythya marila*), and common merganser (*Mergus merganser*) peaks were lower. Tundra swan (*Cygnus columbianus*) peak numbers have been stable from 1995-2000 except for a low in 1996, while greater white-fronted geese (*Anser albifrons*) have steadily increased since 1991 except for a peak in 1997.



Steller's eider a fall through spring visitor.





One goose tracking flight took us to Cape Seniavin where the walrus haul-out was viewed.

Redhead (*Aythya americana*) and white-winged scoter (*Melanitta fusca*) were detected later than ever recorded since the beginning of these ground surveys. In contrast, tundra swan, northern pintail, northern shoveler (*Anas clypeata*), canvasback (*Aythya valisineria*), black scoter (*Melanitta nigra*), and buffhead (*Bucephala albeola*) arrived earlier this spring. Rare sightings included a male Baikal Teal (*Anas formosa*) for four days in early May and Gargany (*Anas querquedula*) for one day in late April.

Seventy-eight streams inside the Alaska Peninsula / Becharof National Wildlife Refuges and two streams near the refuge boundary were surveyed for harlequin ducks. The survey was conducted in late July to focus on harlequin broods. Harlequins were observed on 27 creeks. A total of 67 hens, 151 ducklings in 35 broods, and 9 males were counted. The majority of harlequins were detected on Bible Creek, East Albert Creek, Bear Creek, Cabin Creek, Crooked Creek, Deer Creek, Tributary E (Ugashik drainage), Old Creek and Pumice Creek. Few harlequins were detected on streams draining into the Pacific Ocean. Brown bears were also counted and these observations are presented in the report. The author suggests this survey underestimated harlequin observations by 50% or more. Recommendations are given to improve the survey in



future. [FROM: Savage, S. E. 2000. Harlequin Duck Stream Survey Alaska Peninsula / Becharof National Wildlife Refuge, Alaska July 2000. U.S. Fish & Wildl. Serv., Admin. Rep., King Salmon, AK. (Unpubl). 36 pp.]

## 5. Shorebirds, Gulls, Terns and Allied Species

Glaucous-winged gulls (*Larus glaucescens*) nest on three islands in Mother Goose Lake. In 2000 staff monitored colony productivity as in 1998 and 1999. Staff visited the islands on eight days from June 13 to August 16, but only landed on the two smaller islands during four of those eight days. On all three islands 450-500 adult gulls were counted; on the two smaller islands approximately 250 nests were documented most of which were empty; only about 60 nests showed signs of egg lying. On the last nest check (July 5) there was little evidence that the colony had fledged any young. This is the third year that staff believes the colony has been unproductive.

## 6. Raptors

The Raptor working group, a branch of *Boreal Partners in Flight*, indicated a need to conduct statewide owl surveys. On April 8, one survey was conducted outside of the refuge along the road to Lake Camp. Great horned owls (*Bubo virginianus*) were detected at two of ten stops. Surveyors also heard long-tailed ducks (formally know as oldsquaw, *Clangula hyemalis*) migrating across the Peninsula.

Refuge and Migratory Bird Management (Juneau) staff investigated the status of the adult bald eagle (*Haliaeetus leucocephalus*) population on the Pacific coast of Alaska Peninsula from Cape Douglas to Unimak Island from April 24 to May 2, 2000. This area encompasses parts of six conservation units [Katmai National Park, Becharof National Wildlife Refuge (NWR), Alaska Peninsula NWR, Aniakchak National Preserve, Izembek NWR and Alaska Maritime NWR] and Native Corporation land. The total estimate of adult bald eagles from Cape Douglas to Unimak Island was  $2,530 \pm 603$  (24%). The total estimate of immature bald eagles was  $299 \pm 132$  (44%). This would give a total bald eagle estimate of  $2,829 \pm 735$ .

The proportion of adult eagles first detected while flying was 11% while 38% of immature eagles were first detected in flight. Assuming equal flushing rates for immature and adult bald eagles, a better point estimate for total immature eagles might be  $299 \times 0.38 / 0.11 = 1,033$ . That would give a total eagle estimate of 3,563. This would give a sightability correction for immature bald eagles which are harder to see when not moving because they lack the white head of the adults.

The paired t-test between the 40 plots that were sampled in 1983 and 2000 showed a significant increase of adult eagles (271 adults in 1983 vs. 508 adults in 2000; mean deviation per plot from 1983-2000 was  $6.06 \pm 2.62$  birds). The paired t-test did not show a significant change in immature eagles from 1983 to 2000 (81 immature in 1983 vs. 60 immatures in 2000; mean deviation from 1983-2000 was  $0.54 \pm 0.95$ ). During 2000, 183 nests were detected on the 50 plots. Of these 171 were scored for activity. Of the 171, 39 (23%) were empty and 132 (77%)

were occupied. Of the 132 occupied nests, 116 of these (68% of scored nests) were active (with eggs present; scored by incubating females or eggs observed). We observed eggs at six nests. Comparing the 40 plots observed in 1983 and in 2000, a paired t-test indicated a significant increase in occupied nests in 2000. [FROM: Savage, S. & J. Hodges. 2000, Bald Eagle Survey, Pacific Coast of the Alaska Peninsula, Alaska, Spring 2000. US Fish & Wildlife Service., Admin. Rep., King Salmon, AK. (Unpubl). 12 pp.]



Our compound resident bald eagle approves the recent Pacific survey.

## **7. Other Migratory Birds**

### Neotropical Migratory Bird Program

Biological Technicians Adler and Egan coordinated passerine banding training sessions in King Salmon between May 9 and May 31. Staff operated nets on 14 days, for 303 net hours yielding 102 newly banded birds, 41 recaptures or returns, and four unbanded birds. See the Section 16. Marking and Banding for a summary of all banding activities. No unusual species were captured this year. The banding totals for King Salmon also include one bird banded at Bible Camp / Science Camp in September and 12 birds banded at Bird Camp at the Bristol Bay Borough School in May.

The remainder of the neotropical program takes place at Mother Goose Lake. The project is part of a national program to monitor breeding populations coordinated by the Institute for Bird Populations in Inverness, California. In addition, this avian monitoring effort is part of the regional and nationwide "Partners in Flight" program. The program includes Monitoring Avian Productivity and Survivorship (MAPS) banding (3 stations), migration banding, conducting off-



road point counts, intensive nest searching and monitoring, searching for color banded birds and surveying habitat. The stations are approximately one-half mile apart and represent the only cluster of stations run by U.S. Fish and Wildlife Service in Alaska in 2000. The stations were operated June 10 through August 4. Color banding focused on hermit thrush (*Catharus guttatus*), gray-cheeked thrush (*Catharus minimus*), fox sparrow (*Passerella iliaca*), golden-crowned sparrow (*Zonotrichia atricapilla*), and white-crowned sparrow (*Zonotrichia leucophrys*) and was conducted at the lake and mountain MAPS stations. Hatch year birds were also color banded. Color banding assists staff in detecting returning birds and in identifying individuals for nesting and territorial studies. Staff re-established the 50-meter grid at the Lake site, using latitude/longitude points generated on the Geographical Information System. They also established a grid at Mountain site in a similar manner.

During MAPS staff banded 1,051 new birds and recaptured 536 birds in 1,078 net hours. Of the recaptures 139 were returning birds (two from 1994, two from 1995, six from 1996, 13 from 1997, 35 from 1998, and 81 from 1999) of 13 species. Of the returns, 91 (65%) birds were recaptured consistently at the MAPS station where they were originally banded. The majority of the returns (107 or 77%) were originally banded as adult birds. Two birds from Mother Goose Lake were recovered at other locations during 2000. One recovery was a yellow warbler (*Dendroica petechia*) that was first banded on July 15, 1996 as an after hatch year female. The bird was recovered in Point Baker, AK on May 29, 2000. Unfortunately, a cat recovered this bird. The second bird recovered was a Wilson's warbler (*Wilsonia pusilla*) that was originally banded on August 14, 2000 as a hatch year male. The bird was recovered in Mackenzie, British Columbia on September 10, 2000.

On August 5, fall migration banding began at the Lake MAPS site with a training day and one net. On August 6, migration banding started in full with an addition of two nets to the MAPS array. Migration banding continued until September 13 and resulted in banding 3,760 new birds during 1,534 net hours. In addition 659 recaptures (6 first time returns for 2000 and 23 first time recaps from MAPS 2000) and 47 unbanded were processed. Breeding and fall migration densities of Wilson's warbler continue to be the highest recorded at banding stations in Alaska for 1994-2000. The highest capture day was August 12, with 450 new captures in 30.5 net hours. This year the high 5-day period was from August 9-13 in contrast to 1998 and 1999 when it was from August 14-18. We had three uncommon species visit during migration. These were Lincoln's sparrow (*Melospiza lincolnii*, 1 capture-a first for MOGO), ruby-crowned kinglet (*Regulus calendula*, 4 birds), and slate-colored junco (*Junco hyemalis*, 1 bird).





The Mother Goose migration banding crew includes (Left to Right, back to front): Corey Adler, Nathan Gregory, Chris Egan, John Harting, Susan Savage, Robert Blush, Jenni Burr (Fisheries Research Office Technician), Julie Teski and Rachel Young.

Staff dedicated 416.5 hours to nest searching and color band resighting. In 2000, 138 birds were newly color banded. Of these 138 birds, 117 were new captures and 21 were returns that were initially only banded with metal bands. Of the newly color banded birds, 11 were resighted and recaptured, 34 were only recaptured, three were only resighted, and 90 were neither recaptured nor resighted. The banding staff conducted nest searching and monitoring after their daily banding activities. They found 96 nests of 14 species [40 Wilson's warbler, 11 golden-crowned sparrow, 10 orange-crowned warbler (*Vermivora celata*), 10 hermit thrush, six yellow warbler, four common redpoll (*Carduelis flammea*), three fox sparrow, three savannah sparrow (*Passerculus sandwichensis*), three Gambel's white-crowned sparrow, two tree swallow (*Tachycineta bicolor*), and one each of black-capped chickadee (*Poecile atricapillus*), common snipe (*Gallinago gallinago*), gray-cheeked thrush, and American robin (*Turdus migratorius*)]. Staff also collected habitat parameters of each nest site. The Wilson's warbler sample is probably the largest sample size on record. We had evidence of polygamy in Wilson's warbler



(two nests within a meter of each other, one fledged while the other was eggs). The information will be further analyzed and may result in a scientific publication.

Staff documented 77 species of birds in the Mother Goose Lake basin during the 2000 season. Unusual captures included those named above and one sharp-shinned hawk (*Accipiter striatus*). Unusual sightings included sanderlings (*Calidris alba*) and Aleutian terns (*Sterna aleutica*) [Egan, R.C. & C.D. Adler. 2001. *Landbird breeding and Fall Migration at Mother Goose Lake, Alaska Peninsula National Wildlife Refuge, Alaska, June-September 2000*, USFWS, King Salmon, Alaska. 49 pp.].



The third discovered golden-crowned sparrow nest at day 10 in nest.

Six off-road point counts were completed at Mother Goose Lake. All of these were at the same locations as those conducted in 1999 (Beaver Dam, Little Bay, Hellebore Hill, Lakeshore, Cranberry Circle, and Cabinless Point). Point counts followed standard protocol and were conducted between June 16 and June 26. All point counts were completed within the designated periods according to previous years. Eighteen land-bird and ten other avian species were detected on this year's counts. The most commonly detected species was Wilson's warbler.



Other commonly detected species were hermit thrush, golden-crowned sparrow, American robin, common redpoll, and fox sparrow. These six species were detected on all six routes. Gray-checked thrush, orange-crowned warbler, and yellow warbler were detected on five of the six routes. These results are similar to mist netting information regarding species composition and abundance.

### Wilson's Warbler Analysis

Boreal Partners in Flight conducted a workshop about Wilson's Warbler natural history. Adler and Savage analyzed statewide MAPS data for productivity and survivorship measures. Our station had the highest numbers of Wilson's warbler captures. Several issues regarding data collection and seasonal effects were brought to light. Southwest region had the highest average return rate for after hatch year birds (9.6%) with southeast following closely (8.5%). Additional analyses are required to produce statistically defensible information.



A Wilson's warbler female tolerates the camera while she incubates this nest in a mossy hummock.



### International Migratory Bird Day Count

On May 13, 2000 for the third consecutive year, the refuge sponsored the annual North American Migration Count (NAMC). We fielded five teams that surveyed from the mouth of Naknek Lake to Kvichak Bay. This year fourteen volunteers enjoyed a beautiful sunny day as they encountered just over 6,300 birds of 73 species. This year's early spring on the Alaska Peninsula made it possible to observe a few more migrants during the count. Because of the early spring, most of the waterfowl had moved to nesting grounds. A few highlights this year included: the first Alaska Peninsula Migratory Bird Day Count records for osprey (*Pandion haliaetus*), willow ptarmigan (*Lagopus lagopus*), parasitic jaeger (*Stercorarius parasiticus*), gray-cheeked and hermit thrush, and orange-crowned warbler; large numbers of black scoter (*Melanitta nigra*) and long-tailed duck encountered on Kvichak Bay; and the largest number of white-crowned sparrows ever recorded for the count. Other notable observations included three short-eared owls (*Asio flammeus*), a horned grebe (*Podiceps auritus*), a rusty blackbird (*Euphagus carolinus*), and two merlin (*Falco columbarius*).

### Breeding Bird Surveys

Savage established two breeding bird surveys while she was previously employed at Katmai National Park. The first was established in Katmai National Park along the Valley of Ten Thousand Smokes Road in 1992 and second in King Salmon from Lake Camp to the beach access road in Naknek in 1993. Both surveys were repeated in June 2000; the survey at Katmai was cooperatively done with the Park Service. The King Salmon route was counted on June 4 and resulted in a count of 43 species and 728 individuals. New species that had not been encountered on the route before included: red-necked grebe (*Podiceps grisegena*) and western sandpiper (*Calidris mauri*). The Katmai count was conducted on June 17. At Katmai 428 individuals of 36 species were encountered (highest number of species, but count done about a week latter than average). New species included mallard, greater scaup (*Aythya marila*), red-breasted merganser (*Mergus serrator*), merlin, arctic tern (*Sterna paradisaea*), Lincoln's sparrow and pine grosbeak (*Pinicola enucleator*). Breeding bird survey information can be examined on the Web at: <http://www.mp2-pwrc.usgs.gov/bbs/>.

### Christmas Bird Count

The 15th annual King Salmon-Naknek Christmas Bird Count took place on December 16. Local results were submitted to the National Audubon Society. Nine volunteers donated their Saturday to seek out birds from Lake Camp to the mouth of the Naknek River. Although the weather was pleasant, not many individuals were noted. The Naknek River was mostly open with leads at Rapids Camp on down to the bay. Seventeen species were spotted totaling 920 individuals. A northern goshawk (*Accipiter gentiles*), three hawk owls (*Surnia ulula*), 39 bald eagles (tied for 3<sup>rd</sup> highest eagle count), and a northern shrike (*Lanius exhubitor*) made this count memorable for raptorial species.



## 8. Game Mammals

### Northern Alaska Peninsula Caribou Herd (NAPCH)

The Alaska Peninsula caribou (*Rangifer tarandus*) herd is subdivided into northern and southern herds. The Southern Alaska Peninsula Caribou Herd remains south of Port Moller and ranges to Cold Bay. These animals are monitored by the Alaska Department of Fish and Game (ADF&G) and Izembek Refuge staff. The NAPCH ranges from Port Moller northward to the Alagnak River drainage, using both the Alaska Peninsula and Becharof Refuges. The NAPCH is monitored by ADF&G and Alaska Peninsula/Becharof Refuges staff.

The NAPCH calves primarily on the Bristol Bay coastal plain from the Cinder River southwest to the Bear River. The herd traditionally wintered north to the Naknek River, but beginning in 1986 caribou began crossing the Naknek and wintering north to the Alagnak River and beyond where they mix with Mulchatna herd caribou from the north. The majority of herd use occurs off refuge lands. A substantial proportion of the herd uses refuge lands within the Aleutian Mountains during the summer. Little is known of migration patterns of the caribou that summer in the Aleutian Mountain Range, particularly along the Pacific Coast.

Historically, the size of the NAPCH has fluctuated widely. Apparent peaks were just prior to the turn of the century and again in the early 1940s, when the herd was estimated at 20,000 caribou. The last low occurred during the late 1940s at an estimated 2,000 caribou. Thereafter the herd grew steadily until 1984 when it peaked again near 20,000. Since 1989, the NAPCH has declined. Photo surveys by ADF&G in June 1994 documented about 12,000 animals. In response, ADF&G placed emergency restrictions on caribou hunting in Game Management Unit (GMU) 9(C) during 1994, 1995 and 1996. The emergency regulations reduced winter harvest by 60 percent, so that despite poor calf production the herd stabilized near 12,000 animals. Unfortunately, the herd resumed its decline in 1997 reaching about 8,600 in 1999 and 7,200 in 2000. The ADF&G is considering reducing its current herd objective of 15,000 to 20,000 animals.

In the late 1990's, data indicated that caribou were in mediocre body condition, calf production was poor, and calves had a high incidence of lung worms all indications of nutritional stress (R. Sellers. 1997. *Status of the NAPCH*. Report. ADF&G, King Salmon. 4 pp.). ADF&G management objectives included (1) minimizing the harvest of cows and (2) maintaining an adequate ratio of bulls to cows ( $\geq 40/100$ ). The estimated harvest from the NAPCH during 1994-1996 averaged 2,023 caribou. Sixty-five percent of the harvest was by hunters from local communities (Sellers *ibid.*). The estimated bull/cow ratio declined below 40/100 in the fall of 1998 resulting in the estimated harvestable surplus for the herd falling below the 1,200 animals that the Alaska Board of Game had previously established as the minimum number required to meet the subsistence needs of Alaskans dependent on the NAPCH. A Tier II hunt was instituted in 1999 allocating 600 State permits to those applicants documenting the greatest established dependency on the herd. The Federal Subsistence Board followed by closing federal public lands in GMU 9(E) and in GMU 9(C) south of the Alagnak drainage to non-local hunters, and by



issuing 60 federal permits in addition to the State's permits. The further decline of the NAPCH in 2000 caused ADF&G to reduce the number of Tier II permits to 400; correspondingly the Federal Subsistence Board reduced the number of federal permits to 40.

Supplemental funding through the Refuge Operating Needs System in 1998 has allowed the Refuges to support more caribou projects both directly with refuge staff (see also F. Habitat Management 6. Other Habitats) and by providing funds to ADF&G through Cooperative Agreements. These projects are summarized below.

*Caribou Movements in Boundary Area of Game Management Sub-Units 9(E) & 9(D).*

In this cooperative project among AP/Becharof and Izembek Refuges and ADF&G, we are looking for interchange between the Northern and Southern Peninsula herds. Satellite telemetry collars put on adult females in the Port Moller area during October 1998 have continued to transmit locations weekly for two years. Mortality among these cows has been substantial: three of six caribou from the NAPCH and two of eight from the Southern herd were dead by April 1999. During winter and spring of 2000, another NAPCH cow and two more Southern herd cows died. A recovered collar was re-deployed on a Southern herd female during October 1999. Currently, there are two NAPCH cows and five Southern herd cows with operating satellite collars.

No collared caribou have moved beyond the boundary area into the range of the other herd. The general movement patterns have been migratory among NAPCH animals, and non-migratory among Southern herd animals which stayed within 40 miles of their capture sites. The NAPCH cows have moved northeast along the Bristol Bay coastal plain during fall and back southwest to calving areas during spring. These annual migrations among the three longest surviving NAPCH cows have ranged from 110 to 240 air miles one way. They have migrated from their spring through fall ranges east of Port Moller, where they were captured, to as far as the Naknek River.

See also F. Habitat Management, 6. Other Habitats for a description of Region 7 Botanist Stephen Talbot's continuing work in on his project, "Plant Communities of the Alaska Peninsula and Becharof National Wildlife Refuges in Relation to Caribou Utilization."

*2000 Post-calving Counts of the Northern Alaska Peninsula Caribou Herd.*

The NAPCH continued its decline in 2000. In a cooperative survey effort, ADF&G Area Biologist Sellers surveyed the Bristol Bay coastal plain, and refuge staff surveyed the mountains and upper reaches of drainages on refuge lands including the Pacific coast. Using radio telemetry to assist in locating concentrations, Sellers recorded about 4,200 caribou during late June. The total observed in the traditional refuge survey area during June and July was about 2,800 caribou. The resulting 2000 estimate for the Northern Alaska Peninsula Herd count was 7,000 caribou, down from a count of 8,600 in 1999.

### *2000 Autumn Caribou Composition Survey of the NAPCH*

ADF&G Area Biologist Sellers in a chartered R44 helicopter determined sex and age composition of 1,083 NAPCH caribou. Refuge Pilot Cox and Biologist Squibb assisted from Cessna 206 N32PX by locating radio-collared caribou and other groups of caribou in advance of the helicopter. The resulting ratios were 38 bulls and 18 calves per 100 cows which differed little from 1999 ratios of 40 bulls and 20 calves per 100 cows. The 2000 estimate of large bulls per 100 cows was seven.

#### Moose

Surveys of moose trend areas in GMU 9(C) & 9(E) are a cooperative effort among the Refuges, ADF&G, and the National Park Service (NPS). They are carried out during November and early December before many bulls have dropped their antlers. These surveys provide an estimate of age/sex composition used by both state and federal agencies to evaluate the ability of the moose population to sustain the current level of hunting. These surveys also provide a long term index to population trend.

Although snow cover was lacking during almost all of the survey period, there was good survey weather on three of the days with snow cover, November 29 - December 1. Pilot Cox and Biologists Savage and Squibb used those days to survey the Kejulik, Black Lake, and Dog Salmon trend areas, respectively. During 237 minutes over the Kejulik area, they recorded 125 moose with ratios of 59.2 bulls and 16.9 calves per 100 cows. During 164 minutes over the Black Lake area, they recorded 130 moose with ratios of 47.5 bulls and 15.0 calves per 100 cows. Finally, during 177 minutes over the Dog Salmon trend area, they recorded 83 moose with ratios of 38 bulls and 28 calves per 100 cows. During these surveys, Savage incorporated the use of the computer software *Moving Maps* to record the locations of each observation on the moose survey.

#### Brown Bear

Refuge staff did no systematic surveys of brown bear (*Ursus arctos*) during 2000. Incidental observations of bears were recorded during caribou and moose surveys. ADF&G Area Biologist Sellers carried out bear stream surveys of the long term Black Lake survey area. ADF&G uses those data as an index to population trend and composition for GMU 9(E).

### **14. Scientific Collection**

This year we had only six mortalities from among a total of 4,811 banded and 1,176 returns and recaptures handled. The continued use of the bird hospital and dedicated handling of priority birds continues to improve our record in this area. Of these, five birds were salvaged and will be used for study skins, skeletons, and educational purposes. The remaining dead birds were damaged beyond use by net predators. Mortalities by species included Wilson's warbler (2) and common redpoll (4).



Additionally, four bird specimens of three species were turned into the refuge from staff or visitors. These were used as above.

Seventeen small mammals died during small mammal studies at Mother Goose Lake. Two dead juvenile hare were found on the trails at Mother Goose Lake. Staff worked with University of Alaska-Fairbanks and confirmed they were snowshoe (*Lepus americanus*).

## 15. Animal Control

Brown bears are common in the area surrounding the King Salmon and Naknek communities. In addition to the natural sources of food in the area, people inadvertently provide other sources such as dog food left outside, salmon in smoke houses, and unsecured garbage. Inevitably, some bears learn to use these human sources. Several bears frequent the Borough Landfill. Unfortunately, some bears lose their fear of people and may become bold in their foraging for human sources of food. This process of habituation and food-conditioning has been well documented, and in its extreme can lead to bear attacks (see S. Herrero. 1985. *Bear attacks: their causes and avoidance*. The Lyons Press, New York, NY. 287 p. ISBN 0-941130-82-7). Typically, however, its worst consequence is the destruction of the bolder bears.

Since August 1999, the Refuges have maintained an electric fence around the Administrative Site dumpster during the months that bears are common in King Salmon. After hearing reports of a bear getting into a local dumpster, Squibb reconnected the energizer and battery to the electric fence around this dumpster to make it operational on May 9.

## 16. Marking and Banding

A program of capturing and banding songbirds was initiated on the Refuges during 1994 in an effort to yield long-term information on neotropical migratory birds breeding on or migrating through the Alaska Peninsula from 1994-2000, 39,128 birds of 60 species have been banded at all training, breeding, migration and incidental banding sites. Details on this year's project and a species-specific list of this year's banding totals are summarized in Section G.7.

Table 5. Project banding summary of the Alaska Peninsula/Becharof NWR, 2000.

SITE NAME:	MOGO <sup>1</sup>	MOGO <sup>1</sup>	KS <sup>2</sup>	
TYPE OF BANDING:	MAPS	MIGR	TRN	Total
NO. DAYS BANDING:	28	32	15	75
NO. NET-HOURS:	1077.7	1533.6	302.94	2914.24
Downy Woodpecker		4		4
Alder Flycatcher	6	1		7

Tree Swallow	5		5	10
Gray Jay			4	4
Black-capped Chickadee	13	44	2	59
Boreal Chickadee			2	2
Golden-crowned Kinglet				
Ruby-crowned Kinglet		4		4
Gray-cheeked Thrush	17	58	1	76
Hermit Thrush	57	237	1	295
American Robin	19	12	17	48
Varied Thrush			2	2
Northern Shrike		2	1	3
Orange-crowned Warbler	80	277	6	363
Yellow Warbler	56	242		298
Myrtle Warbler			3	3
Blackpoll Warbler			1	1
Wilson's Warbler	549	2211	11	2771
American Tree Sparrow	5	139	4	148
Savannah Sparrow	12	80		92
Fox Sparrow	33	120	6	159
Lincoln's Sparrow		1		1
Golden-crowned Sparrow	46	84	1	131
G. White-crowned Sparrow	3	23	10	36
Slate-colored Junco		1	1	2
Pine Grosbeak		1		1
Common Redpoll	150	219	36	405
Hoary Redpoll			1	1
TOTALS:	1051	3760	115	4926
CAPTURE RATE (#/100NH):	97.5	245.1	38	169

<sup>1</sup> Mother Goose<sup>2</sup> King Salmon



Small mammal trapping at Mother Goose Lake continued on the Alaska Peninsula National Wildlife Refuge for the sixth consecutive year. Live trapping was conducted with 100 Sherman traps. For 2000, four mammal species were captured: northern red-backed vole (*Clethrionomys rutilus*), meadow jumping mouse (*Zapus hudsonius*), masked shrew (*Sorex cinereus*), and short-tailed weasel (*Mustela erminea*). Northern red-backed voles were most abundant this year, a result that is consistent with data from the previous five years. Masked shrews were the second most abundant species captured in 2000, consistent with all previous years except 1999, when only one masked shrew was captured. A steady population of meadow jumping mice has existed through the study and remained true in 2000. The data for the past six years are discussed and reviewed. Morphological measurements, sex, and the presence of ectoparasites were noted.

[Young, R. 2000. Small Mammal Trapping Baseline Surveys, Mother Goose Lake, Alaska Peninsula/Becharof NWR, Alaska, June-August, 2000. U.S. Fish and Wildl. Serv., King Salmon, AK (Unpubl). 13 pp.]

Table 6. Small mammal new captures by year.

NEW CAPTURES	1995	1996	1997	1998	1999	2000
Masked Shrew	44	33	-	31	1	28
Dusky Shrew	1	-	4	7	-	-
N. Red-Backed Vole	1	44	60	2	18	11
Tundra Vole	-	19	14	-	1	-
Meadow Jumping Mice	-	9	8	6	8	11
Brown Lemming	-	-	1	-	-	-
Least Weasel	-	-	-	-	1	-
Short-tailed Weasel	-	-	1	-	-	1
Arctic Ground Squirrel	-	-	-	-	1	-

Refuge staff assisted in transferring a snowy owl (*Nyctea scandiaca*) from Nick Mike of Kokhanok to the Bird Treatment and Learning Center (transport assisted by Lake and Pen School District). The bird was a female with her metatarsus bone shattered. The break was splinted; the bird has been treated with antibiotics and a medicine to aid the bone healing. The bird was in rehabilitation the last we heard. The rehabilitator suspected the bird was the same bird she had worked with several years ago that had been previously injured on the North Slope.

## H. PUBLIC USE

### 1. General

The majority of public uses currently occurring on refuge lands include subsistence and sport hunting for caribou, moose, and bear; and fishing for Arctic grayling, burbot, dolly varden/Arctic char, rainbow trout, lake trout, northern pike, and five species of Pacific Salmon (king, sockeye, silver, pink and chum). Trapping of furbearing animals and gathering berries also occurs on refuge lands.

Refuge resources are utilized by residents of twelve villages within or near refuge boundaries primarily for subsistence uses. Other Alaska residents and out-of-state visitors commonly utilize refuge resources pursuing sport hunting and fishing activities.

Public demand for high quality outdoor and wildlife associated activities continues to increase as does demand for education and outreach programs. The public use staff includes one Refuge Ranger and two Refuge Information Technicians (RITs). The RITs assist with subsistence, public use and environmental education programs on the refuge. Major duties include serving as liaisons and facilitating the exchange of information between the refuge and local villages; preparing and conducting environmental education and subsistence programs; staffing the King Salmon Inter-Agency Visitor Center; and assisting in other public use programs as needed.

#### Egegik Public Use Camp

A public use survey was conducted on the Becharof NWR and adjacent lands along the Egegik River and the Becharof Lake outlet during the Coho salmon run. The survey was implemented in response to concerns expressed by residents of Egegik during Comprehensive Conservation Plan public scoping meetings over apparent conflict between subsistence users and fly-in sport fishermen. During the study period from July 26 to September 17, 121 groups were observed in the area totaling 581 individuals. Sixty-five groups with 250 individuals entered the refuge. Of those that entered the refuge, 22 groups with 79 individuals were traveling through the study area enroute to and from Becharof Lake.

Local residents spent the majority of their time within the refuge, often traveling through the study area enroute to Becharof Lake, fishing along the Egegik River, or staying overnight in the Jack Meyers cabin. One hundred and fifteen refuge users (including transient users) were local residents accounting for 74% (1,795 of 2,422 user/hours) of the total refuge user/hours.

The majority of non-local users (i.e., residents outside Bristol Bay) arrived by commercial operator (primarily float plane) and spent 72% of their time outside the refuge boundary (1,617 hours of 2,244 user/hours within the study area).



According to the State of Alaska Department of Fish and Game, the 1999 Coho salmon run arrived several weeks later than normal and below average numbers. This probably affected the number of fly-in fisherman observed in the area. A state road project in Egegik may have also affected the number of local users in the survey results. Work began on this project on August 12 and continued through the rest of the study period.

While fishing was the primary activity observed on the refuge, ptarmigan hunting was also a popular activity in the study area. [Bundy, L., 1999. Becharof Outlet Public Use Survey, Becharof National Wildlife Refuge, 12 pp.]

Staffing for the Egegik River field camp included seasonal Ranger Laura Bundy (present the two month period) and several others rotating through every few weeks including Ranger Terrell-Wagner, Refuge Information Technician O'Domin, and Regional Office Staff Bret Christensen, Pete Wycoff, Helen Clough and retired ADF&G Wildlife Protection Officer Rollin Young. There were usually three people stationed at the camp at a time.

Public use staff responded to numerous written information requests this year. There were 320 written inquiries received from 38 states and 9 foreign countries.

## **2. Outdoor Classrooms - Students**

Public Use staff worked with teachers/students in the Bristol Bay School District and the Lake & Peninsula School District this year. The RIT staff is critical to our education and outreach efforts. Much of their time and talent is devoted to developing and presenting environmental education programs in the nearby villages. Refuge Rangers Angie Terrell-Wagner and Orville Lind assisted RITs John Knutsen and Charles O'Domin in conducting Environmental Education programs during the school year.

Biological Technician Adler, Wildlife Biologist Savage and Volunteer Blush assisted Ranger Terrell-Wagner with Bird Camp at the Bristol Bay School. They provided a banding demonstration to five groups of fourth and fifth grade students. Eleven birds of seven species were banded and a fox sparrow nest with four eggs was discovered.

### Environmental Educational Programs

Educational programs this year highlighted Arctic nesting geese and the 2001 Western Alaska Goose calendar contest, Alaska Junior Duck Stamp contest, Sister Shorebird program, biodiversity, predator/prey relationships, bear biology and human safety in bear country, and career opportunities with the Fish and Wildlife Service.

Environmental education programs in January highlighted conservation of Arctic nesting geese and the 2001 Western Alaska Goose calendar contest. Programs given included:

Bristol Bay School District (includes King Salmon, Naknek and South Naknek):

- January 13: Refuge Information Technician John Knutsen worked with 4th grade (20 students) for one hour, 7th grade (21 students) for one hour and 8th grade (20 students) for one hour.
- January 14: Knutsen worked with 5th grade (18 students) for 1.5 hours and a home school family for 1.5 hours.
- January 26: Knutsen worked with 2nd and 3rd grades (16 students) for one hour and 6th grade (21 students) for one hour.
- January 28: Knutsen worked with 9th grade (17 students) for one hour, 10th grade (22 students) for one hour, 11th grade (18 students) for one hour, 12th grade (16 students) for one hour and four home school families (21 students) for 1.5 hours.

Lake and Peninsula School District (includes Chignik Bay, Chignik Lagoon, Chignik Lake, Egegik, Ivanof bay, Perryville, Pilot Point, Port Heiden) programs included:

- January 18: Refuge Information Technician O'Domin and Refuge Ranger Terrell-Wagner participated in a conference call to discuss the 2001 goose calendar contest. Topics included judging the contest, awards for the winners and funding options to publish the new calendar.
- January 19: O'Domin presented the Goose Calendar contest and worked with Chignik Bay K-12 grades (17 students) for two hours.
- January 20: O'Domin worked with Chignik Lagoon K-12 grades (12 students) for two hours on the goose calendar contest.
- February 7: O'Domin traveled to Pilot Point to present an educational program about the conservation of geese and the new calendar contest and rules. He worked with grades K-5 (12 students) and grades 6-10 (8 students) for a total of two and a half hours.

All entries for the next year 2001 Goose Calendar Contest (including the Bristol Bay and Lake & Peninsula School Districts) were received by the February 18 deadline. The local judging will occur in mid-March and the winners work is forwarded to the state contest scheduled for April in Anchorage.

On February 24, O'Domin visited the Chignik Bay School to present a Fish and Wildlife Service Careers program for 20 students and 10 adults. The program lasted one hour and included the new video A Journey Begins/A Tradition Continues by the National Conservation Training Center which the students enjoyed very much. O'Domin also shared his personal experiences working with the Service and stressed how important a good education is in enhancing career opportunities.



On March 8, Refuge Information Technician Knutsen coordinated our Refuges goose calendar contest and forwarded the winners on to the Regional Office for judging in the Western Alaska Contest. Representatives from the Bristol Bay and Lake & Peninsula School Districts and one local artist served as judges.

On April 4, we were notified about the results of the 2001 Alaska Goose Calendar contest. We were very pleased to learn that several of our local students won prizes in this important conservation education program. This is the 13th annual Goose Calendar Contest and it continues to be very popular. There were nearly 1,400 entries from 54 different villages this year. A total of 262 local students (Bristol Bay and Lake & Peninsula School Districts) entered the poster contest and 44 entered the literature contest. The following local students won prizes in the Western Alaska Contest:

*Bristol Bay School District:*

Poster Contest:

First Place (K-2nd): Bjorn King, South Naknek

First Place (6th-8th): Jenny Peterson, Naknek

First Place (9th-12th): Cassie Johnson, Naknek

Literature Contest:

First Place (3rd-5th): Megan Aspelund, Naknek (Home School)

First Place (6th-8th): Melissa Aspelund, Naknek (Home School)

*Lake & Peninsula School District:*

Poster Contest:

Second Place (3rd-5th): Alexa Moore, Chignik Lagoon

Literature Contest:

Third Place (9th-12th): Orin Evanoff, Pilot Point

All prizes and gifts for student winners in the 2001 goose calendar contest arrived and were distributed in early May. The Lake and Peninsula student prizes were sent to their schools for the teachers to present. The Bristol Bay School winners were given their prizes by Refuge Ranger Terrell-Wagner and Refuge Information Technician Knutsen in a School Awards Ceremony on May 24.

In late May, an exhibit showing the student's award winning art and literature work was installed at the King Salmon Visitor Center. Entries not selected as winners were returned to the schools for the community to enjoy.

In tandem celebration of International Migratory Bird Day and Alaska Sea Week, the Refuges sponsored a Bird Academy at the Bristol Bay School on May 25 and 26. Bucky Dennerlein (Alaska Audubon Society), Angie Wade (Chickaloon Village Council) and Refuges' staff conducted the two day event for the 4th and 5th grades classes. A total of 40 students and four teachers participated in the ten hour bird education program.

Refuge Information Technician O'Domin along with Fisheries Biologist Jennifer Burr organized and conducted a one day science camp with grades 6-12, (12 students) at Chignik Lake on September 14.

O'Domin traveled to Pilot Point on September 26 to conduct waterfowl surveys. He worked with grades K-12 (18 students) and three adults for two hours, on the goose calendar contest. He also presented current status of the northern peninsula caribou herd and the permitting process (30 minutes) to four high school students.

On November 10, Terrell-Wagner and Refuge Information Technicians Knutsen and O'Domin participated in a conference call to begin work on the 2002 goose calendar contest. Topics included selecting a new theme; reviewing contest rules, calendar distribution, judging the contest, etc. The state-wide theme selected for the new contest is "Wild about Geese".

Environmental education programs in December highlighted conservation of Arctic nesting geese and the 2002 Western Alaska Goose calendar contest. Programs given included:

Bristol Bay School District:

- December 6: Knutsen worked with 4th grade (12 students) for one hour and 8th grade (17 students) for 30 minutes.
- December 7: Knutsen worked with 5th grade (22 students) for 45 minutes, 9th grade (21 students) for one hour, 11th grade (14 students) for one hour and 12th grade (16 students) for one hour.
- December 8: Knutsen worked with Kindergarten (14 students) for 30 minutes, grade 2nd (20 students) for one hour, 6th grade (20 students) for 30 minutes and 7th grade (17 students) for one hour.
- December 20: Knutsen traveled to South Naknek and worked with K-5th grades (14 students) and three adults for one hour. He also worked with the Naknek 2nd grade (20 students) for one hour.

#### Spirit of Becharof Ecosystem Science Camp 2000

The ecosystem science camp is a week-long residential camp targeted for high school students on the Alaska Peninsula. The fourth annual science camp was held September 5-9 at the Becharof Lake Youth Camp facility on the north shore of Becharof Lake. The facilities are located on the Becharof National Wildlife Refuge, a 35 minute flight by small aircraft south of King Salmon. The camp is situated in an ideal location for students to experience the second largest lake in Alaska, an active salmon spawning stream, and the diverse tundra environment.

The science camp introduces students to the importance and diversity of the Becharof Lake Ecosystem. Sessions integrate western science methodology with the traditional Native way of knowing. Learning modules include aquatic biology, bears, birds, caribou, tundra plants, telemetry, and orienteering with map, compass and global positioning equipment. Additional sessions highlight Native People/cultural awareness including customary and traditional



land/resource uses, stories and games. All learning modules stress the ecosystem approach to using and managing fish, wildlife and plant resources. The camp combines nature, knowledge, and tradition into a hands on fun learning experience for the students.

A total of fourteen high school students (predominantly Alaska Native) and ten adults participated in science camp. This was the second year we combined students from the two school districts into one camp experience. Staff was very pleased with the results combining two districts and plans to combine the two school districts in future years.

The science camp is funded through the challenge cost-share program in cooperation with the Bristol Bay and Lake & Peninsula School Districts, the United States Geological Service-Alaska Science Center, Alaska Audubon Society, Native American Fish and Wildlife Society, Alaska Natural History Association (ANHA), and Harlan & Tyler Willis (owners of the facilities). The Refuges contributed \$15,000 towards the camp and the partner's in-kind donations totaled \$30,000.

### **3. Outdoor Classrooms – Teachers**

The Lending Library program in the King Salmon Visitor Center consists of excellent natural/cultural resource books, video tapes and audiovisual materials that are available for use by teachers in the Bristol Bay School District and the Lake & Peninsula School District. The educational video programs are also used extensively in the Visitor Center during the summer months. This year a total of 3,876 people viewed 558 educational films in the schools and at the Visitor Center.

### **6. Interpretive Exhibits/Demonstrations**

The Refuges' public use staff is responsible for daily management and operation of the King Salmon Inter-agency Visitor Center. The Visitor Center is a cooperative effort of the U.S. Fish and Wildlife Service, National Park Service, Bristol Bay Borough, and Lake & Peninsula Borough and is managed under a Cooperative Agreement. This Agreement was updated and signed by the participatory agencies in September, 1999 and is effective for five years, or less if the agencies agree that changes are needed.

The Visitor Center serves a wide variety of people including local and state residents, U.S. citizens and many international visitors. In 2000, the 695 visitors who signed the guest register represented 45 states and 28 foreign countries.

In partnership with the National Park Service, a visitor donation program was initiated at the Visitor Center. The unique donation box design includes a life-size king salmon head. Visitors must place a hand into the mouth of the salmon to donate money. All donations will be used for exhibit and outreach program development at the Visitor Center. Approximately \$450 was collected during this third year of the program.

On October 16, we installed a large walk-around map that highlights federal/state/local/ public and private lands on the Alaska Peninsula. The custom 3-D interactive map features raised topography, geologic formations, water bodies and shows migration patterns of Bristol Bay salmon using fiber optic lights. The map was fabricated by the Rauda Scale Model Company (Seattle, WA) and is an interagency project with Service and the ANHA. We are very excited to have this map to help orient visitors to Southwest Alaska. We have received many positive comments about the map since it has been at the Visitor Center.

## **7. Other Interpretive and Outreach Programs**

### Annual Anniversary Celebration of the King Salmon Visitor Center

On June 17, we celebrated the Eighth Anniversary of the Visitor Center with an all day Open House. Celebration activities honored the four Visitor Center partners, recognition of new goose calendar winners, and included refreshments, door prizes and a sale on all ANHA items. More than 284 people visited throughout the day, and approximately 65 were present for the door prizes and refreshments. Sales for the day were \$2,700.00. Special guests included representatives from the National Park Service and the two Boroughs.

### National Fishing Week

On August 26 and September 2, refuge staff celebrated National Fishing Week with fly-out fishing trips to the Ugashik Narrows. Mike Cusack's King Salmon Lodge (a local sport fishing facility) provided the air transportation, guides, fishing equipment and lunches. A total of five youth and five parents attended the all day event. Attendees included winners in the 2001 goose calendar contest and door prize winners at the King Salmon Visitor Center Eighth Anniversary Celebration.

### National Wildlife Refuge Week

Several outreach activities were conducted to celebrate "National Wildlife Refuge Week." On November 3, Refuge Ranger Angie Terrell-Wagner coordinated a Birds of Prey demonstration featuring a saw-whet and short-eared owl for students at the Bristol Bay Schools in Naknek and South Naknek. Delesta Fox and Chris Maack, (educational staff with the Anchorage Bird Treatment and Learning Center) traveled from Anchorage to give four (one hour) educational talks for grades K-12th (330 students and teachers). The programs highlighted owl behavior, biology, habitat needs, and rehabilitation.

On November 4, Terrell-Wagner coordinated an "Open House" with several activities at the Visitor Center, from 8:00 a.m. to 5:00 p.m. The Bird Treatment and Learning Center staff and the two owls were featured at the Center; from 11:00 a.m. to 1:30 p.m. Face painting for young children occurred from 10:00 a.m. to 1:00 p.m. (46 children participated). At 12:00 p.m., a short presentation was given about National Wildlife Week, refreshments were served and door prizes including educational books were awarded. Approximately 217 people



attended the day-long activities and 90 were present for the presentation/door prizes. ANHA sales items were discounted 15% for non- members and 25% for members. Book sales totaled \$2,750 for the day.

### Refuge Information Technician Workshop

On November 12-14th, Refuges staff sponsored the Region 7 Refuge Information Technician Workshop in King Salmon. A total of 18 RITs from nine Alaska refuges attended. Everyone enjoyed the excellent guest presentations given by Refuge Supervisor-South Mike Boylan, Refuge Manager Lons, Arctic Refuge Wilderness Specialist Roger Kaye, Tetlin Park Ranger Heather Johnson, Human Resources Specialist Teresa Luiten, Migratory Bird Management Bob Stevens, Subsistence Division Taylor Brelsford, Koyukuk/Nowitna Biologist Orville Huntington, and Wildlife Biologist Savage. Additional guest presentations were given by National Marine Fisheries Barbara Mahoney, Alaska Department of Fish and Wildlife Protection Officer Scott Quist, and Alaska Department of Fish and Game Tom Rothe. Thanks to everyone who helped to make the workshop a success!

On March 18, Savage and Volunteer Blush presented a program to eight 4-H members about bird conservation. The program presented information about cavity nesting birds. Parent George Wilson pre-cut lumber and staff assisted club members to assemble the pieces into tree swallow houses.

## **8. Hunting**

Hunting, including that by local subsistence hunters, unguided sport hunters, and guided sport hunters, is a major public use on the Refuge. Commercial guiding has traditionally included hunts for trophy brown bear, caribou, and moose. Some hunters have taken advantage of overlapping seasons to pursue all three species. However, since the State instituted the Tier II hunt in 1999 for caribou of the NAPCH in GMU 9(E) and that part of GMU 9(C) draining into the Naknek River, non-Alaskan hunters may not hunt the NAPCH, and the 400 Tier II permits are available to hunters most dependent on the NAPCH. The general brown bear seasons in GMU 9 occur during autumn in odd numbered years and during spring in even numbered years such that bears are hunted every other denning cycle.

King Salmon is the hub for commercial air service into the Refuge and serves as the base of operations for several hunting and fishing lodges which operate on the Alaska Peninsula. Those hunters wishing to hire the services of a guide will generally find that fees can be costly and highly variable depending on the length of the hunt, amenities provided, area, and species hunted. Commercial guide fees for moose hunts have ranged from \$5,000 to \$7,500, and a brown bear hunt has typically cost \$10,000 to \$15,000 in recent years.

The State of Alaska requires that nonresident hunters are required to be guided on brown bear hunts by either an Alaska licensed guide or an adult Alaskan resident who is within the second degree of kindred. The fees set by the State of Alaska for resident and nonresident

licenses and tags are listed in the Alaska Hunting Regulations. Nonresident fees can be substantial, e.g., during the 2000-2001 season, a brown/grizzly bear tag cost a nonresident \$500 and a nonresident alien \$650. Once the proper licenses and tags are obtained, the cost of an air charter can range from \$300 to \$625 for each hour of flight time. An average round-trip flight to a hunting location in the Ugashik Unit would take about two hours.

### Caribou

The estimated harvest from the Northern Alaska Peninsula Caribou Herd during 1994-1996 was about 2,000 caribou with about two-thirds of the take by hunters from local communities (R. Sellers. 1997. *Status of the NAPCH*. Report. ADF&G, King Salmon. 4 pp.). Estimates of caribou harvest by local villages derived from the most recent household surveys of winter 1996/97 indicated that 531 caribou were taken by villages of GMU 9(C), 415 caribou were taken by villages in Bristol Bay drainages of GMU 9(E), and 101 caribou were taken by villages in Pacific drainages of GMU 9(E) (T. M. Krieg, J. A. Fall, C. J. Utermohle, and L. Brown. 1998. *Subsistence harvests and uses of caribou, moose, and brown bear in 12 Alaska Peninsula communities, 1995/96 and 1996/97*. Tech. Paper no. 244, ADF&G, Juneau. 136 pp.)

The NAPCH numbered 17,000 to 20,000 during 1981 through 1992 before beginning a steady decline that brought it to about 9,200 in summer 1998 (see section G.8.NAPCH). Petitions to both the Alaska Board of Game (BOG) and the Federal Subsistence Board (FSB) to further protect the caribou herd and subsistence hunting opportunities resulted in emergency meetings of both boards. In late August 1998, the Board of Game closed the nonresident caribou season during the moose hunt (September 5 - 20) in GMU 9(C) & 9(E) and during all of October in 9(E), and restricted resident hunters to bulls only in 9(C) & 9(E). On September 9, the Subsistence Board restricted subsistence hunters to bulls only on the federal public lands that were open to hunting in GMU 9(E).

The estimated bull:cow ratio in October 1998 was 31 bulls per 100 cows; that ratio had been 40 or more during all but one of the previous 11 annual estimates. The herd count dropped to 8,600 in summer 1999. These two statistics resulted in ADF&G's estimate of the harvestable surplus for the herd falling below the 1,200 animals that the BOG had previously established as the minimum number required to meet the subsistence needs of Alaskans dependent on the NAPCH. Therefore, the BOG instituted a Tier II hunt for the 1999-2000 season allocating 600 permits for one bull to those applicants documenting the greatest established dependency on the herd. The FSB followed by closing federal public lands in Game Management Unit 9(E) and in GMU 9(C) south of the Alagnak drainage to non-local hunters, and by issuing an additional 60 federal permits for one bull.

### Moose

Recent harvests of moose in GMU 9(C) & 9(E) as reported by state harvest tickets have been about 100 to 150 animals and almost exclusively bulls (Table 7). Estimates of moose harvest



by local villages derived from household surveys indicated that 41 moose were taken by villages of 9(C), and 21 moose were taken by villages of 9(E) in 1996, the most recent year of surveys (Krieg et al., *ibid.*).

Table 7. Moose harvest as reported by state harvest tickets for GMU 9(C) & 9(E) (ADF&G data). Harvest ticket data may underestimate local subsistence harvest.

SEASON	BULLS	COWS	TOTAL
1997	146	3	149
1998	119	2	121
1999	146	6	152
2000	116	2	118

### Brown Bear

The harvest of brown bear in GMU 9(C) & 9(E) as derived from sealing data has ranged from about 250 to almost 400 animals. Males have consistently comprised 60 to 70% of the harvest (Table 8). Estimates of bear harvest by local villages derived from household surveys indicated that during the 1994/95 through 1996/97 seasons annual averages of 0.4 bear were taken by villages of 9(C), 3.3 by Bristol Bay villages of 9(E), and 9.2 by Pacific villages of 9(E). [T. M. Krieg, P. C. Kenner, L. Hutchinson-Scarborough, and L. Brown. 1996. Subsistence harvests and uses of caribou, moose, and brown bear in 12 Alaska Peninsula communities, 1994/95. Tech. Paper no. 240, ADF&G, Juneau. 69 pp., and Krieg et al., *ibid.*]

Table 8. Brown bear harvest for the upper Alaska Peninsula, 1975-2000, GMU 9(C) and 9(E) combined (ADF&G sealing data, including defense-of-life-or-property mortality, etc.)

DATE	TOTAL BEARS	PERCENT BOAR	MEAN AGE	
			BOAR	SOW
1975-76	261	62	6	7
1977-78	311	64	6	7
1979-80	316	68	6	6
1981-82	339	59	6	6
1983-84	268	61	6	8
1985-86	263	64	7	8
1987-88	398	62	5	6
1988-89	347	66	-	-

DATE	TOTAL BEARS	PERCENT BOAR	MEAN AGE	
			BOAR	SOW
1975-76	261	62	6	7
1989-90	328	67	8	7
1991-92	350	66	7	5
1993-94	310	66	7	7
1995-96	306	70	8	6
1997-98	355	72	7	7
1999-00	358	70	9	8

## 9. Fishing

The rivers and lakes within the Refuges provide world-class fishing opportunities. Game fish include five species of Pacific salmon (chinook, sockeye, coho, pink and chum), Arctic grayling, dolly varden/Arctic char, rainbow trout and burbot. In large lakes, northern pike and lake trout are common. Flowing-water areas most often utilized for sport fishing include the two King Salmon Rivers (Becharof Refuge and Chignik Unit, Alaska Peninsula Refuge); Big, Featherly, Gertrude, and Painter creeks; and Upper and Lower Ugashik lakes, including the Ugashik Narrows.

A total of 27 guides/lodges offering fishing packages operated on the Refuges under special permit in 2000. Most operators promote "catch and release" angling for resident fish species. A variety of package programs that include lodging and air transportation to the fishing areas are available. These package deals range in price from \$1,500 to \$5,000, depending on the length of stay and quality of amenities offered by the lodge.

## 10. Trapping

Historically, the trapping of fur bearing mammals was a full-time winter endeavor on the Alaska Peninsula. Today, trapping popularity is highly variable due to price fluctuations of raw hides. Fox (*Vulpes fulva*), mink (*Mustela vison*), ermine (*M. erminea*) and beaver (*Castor canadensis*) are commonly trapped; and, to a lesser extent, coyote (*Canis latrans*), wolf (*C. lupus*), wolverine (*Gulo gulo*), lynx (*Lynx canadensis*) and river otter (*Lutra canadensis*) are caught. Reports from local residents, guides, and transporters indicate that wolf numbers have increased in recent years; reduced trapping pressure resulting from low fur prices may have contributed to this increase. Alaska Department Fish & Game requires sealing tags on wolverine, wolf, lynx, land otter and beaver (Table 9).

Table 9. Fur bearer harvest in GMU 9(C) and 9(E) combined (ADF&G sealing data).



Year (Winters)	Number Harvested				
	Beaver	Lynx	Otter	Wolf	Wolverine
1984-85	24	14	4	24	14
1985-86	166	23	25	10	20
1986-87	240	27	112	10	22
1987-88	254	3	152	14	30
1988-89	57	4	53	23	36
1989-90	108	2	52	23	31
1990-91	91	2	31	12	23
1991-92	191	16	90	55	56
1992-93	150	22	47	13	17
1993-94	116	35	26	52	27
1994-95	89	36	49	11	30
1995-96	48	15	32	17	10
1996-97	77	27	92	25	15
1997-98	64	17	64	47	30
1998-99	67	34	49	38	25
1999-00	66	21	26	66	12

## 17. Law Enforcement

Commissioned staff on the Refuge consists of two collateral duty officers. Law enforcement activities on the Refuge in 2000 consisted of patrols by air and boat on the Refuge throughout the season and more intensively during the big game hunting seasons. Coordination and cooperation among all local law enforcement agencies are critically important.

Three Notice of Violations were issued in year 2000.

## 18. Cooperating Associations

A branch of the Alaska Natural History Association (ANHA) was established at the King Salmon Visitor Center in May 1992. In 2000, sales totaled \$61,055 and 69 association memberships were purchased.

The bookstore offers more than 125 book titles, an extensive map selection including topographic maps, FAA air charts, nautical charts, and numerous posters and note cards. To encourage local residents to use the Visitor Center and to promote ANHA sales, three large book sales were held this year. All items were discounted 25% for ANHA members and 15% for non-members. The first book sale was held during the annual Anniversary Celebration of the Visitor Center in early June, 2000. Sales during this event totaled \$2,670.00. A large book sale was also held at the Visitor Center Open House during National Wildlife Refuge Week in early November. Sales during this event totaled \$2,750.00 (our third highest sales day ever)! A Christmas Holiday Sale held throughout the month of December had sales totaling \$3,151.00.

On February 5th, Visitor Center staff coordinated a special book signing for a new children's book about the King Salmon area with local author Sarah Donkersloot. Approximately 80 people attended the event with book sales totaling \$1,200.

From March 3-9, Refuge Ranger Angie Terrell-Wagner attended the Association of Partners for Public Lands (APPL) Conference in Anchorage. This is a national group of Cooperating Association managers and state & federal agency representatives that meet yearly to promote the educational missions of each participatory group. During the conference, Angie facilitated a two hour the Fish and Wildlife Service (FWS) agency meeting. Approximately forty people attended the FWS meeting and over 1,000 attended the week-long conference.

Refuge Ranger Terrell-Wagner serves as a member of the ANHA Branch Managers Committee. Committee members provide a vital communication link between other Branch Managers, Agency Coordinators and the Board of Directors about ANHA issues. The Committee includes one representative from FWS, National Park Service, Bureau of Land Management, Alaska State Parks and the ANHA Board of Directors. Terrell-Wagner has served on the committee for two years. The committee duties will rotate to another FWS branch in the future. The Committee meets on a quarterly basis or more often if needed.

To increase the visibility of the Refuges and the King Salmon Visitor Center, ANHA paid for the development of full-color cloisonné pins. The pins are approximately two inches in size and are available for \$6.00 each at the Visitor Center. Sales of the pins have been very good.

ANHA also helped develop custom sweat and T-shirts featuring the Alaska Peninsula & Becharof National Wildlife Refuges and King Salmon Visitor Center. The Refuges design is a five-color graphic of three caribou walking on the tundra with snow-capped mountains and a sunset in the background. The Visitor Center design is a five-color cartoon graphic of three bears eating sockeye salmon.

## **20. Cabins**

Refuge Operations Specialist Cox conducted permitted cabin and reserved land sites inspections on 51 sites during the 2000 year. In keeping with policy, no new cabin permits were issued.

## **21. Guides and Outfitters**

Commercial big game permits issued since 1993 are five-year permits; the 27 permits are held by 18 different big game guides (Table10). One big game guide also does non-hunting tours. Fish Guide and transporter permits are for one year.



*Table 10 . Big Game Guides, Fishing Guides, Outfitters and Transporters Special Use Permits.*

Year	Big Game	Fishing	Tours	Transporter	Total
2000	27	27	1	16	71
1999	27	31	1	27	86
1998	26	35	1	20	82
1997	27	29	1	15	72
1996	29	25	1	12	67
1995	29	23	1	10	62

## **22. Subsistence**

### Subsistence Brown Bear Hunting Seasons

Under Federal Subsistence Management Regulations in the 1999/2000 and 2000/2001 regulatory years, there were no federal brown bear seasons in GMU 9(C). In those regulatory years in GMU 9(E), Federal subsistence regulations allowed 1 bear by Federal registration permit during October 1 through December 31 and May 10 through 25. Federal bear permits were issued from Chignik Lake by Refuge Information Technician Charles O'Domin and from the Refuge Office in King Salmon.

State of Alaska Hunting Regulations continued the pattern of allowing brown bear hunting in GMU 9(C) and 9(E) only every other regulatory year. Therefore, there was a general bear hunt in GMU 9(C) & (E) during the 1999/2000 regulatory year allowing both residents and non-residents to harvest one brown bear during October 1-21 or May 10-25. There was no general brown bear hunt during the 2000/2001 regulatory year. However, there were two local hunts in both years: a registration hunt for both residents and nonresidents in the Naknek drainage within 9(C) during September 1 - October 31 or May 1 - June 30, and a registration hunt for residents only in the Chignik Brown Bear Management Area within 9(E) during November 1 - December 31.

### Subsistence Caribou Hunting Seasons

The Alaska Board of Game instituted a Tier II hunt for the 1999-2000 season allocating 600 permits to those applicants documenting the greatest established dependancy on the herd. The FSB followed by closing federal public lands in Game Management Unit 9(E) and in GMU 9(C) south of the Alagnak drainage to non-local hunters, and by issuing an additional 60 federal permits. Both State and Federal permits allowed only one bull per successful applicant. State Tier II permits were valid on all lands, Federal permits were valid only on Federal Public Lands (see Section H.8.). (In both 1999/2000 and 2000/2001, the Federal Subsistence Regulations continued to NOT apply on federal lands that were selected by ANCSA native corporations or the State but had not been conveyed.)

In the 2000/2001 season, the ADF&G reduced the number of Tier II permits to 400. The number of Federal permits was correspondingly reduced to 40. Tier II permits were issued to the applicants who scored highest on the Tier II application questionnaire. Permittees had to be Alaskan residents. The questions were designed to award the highest scores to applicants who had the greatest long term dependence on the NAPCH.

In contrast, Federal permits were issued on a community basis. The number of Federal permits for each community were allocated based on (1) input from the communities and (2) the number of Tier II permits issued to each community in an attempt to partially compensate for any inequities among communities that might have resulted from the Tier II permit distribution (Table 11.).

Table 10. Distribution of State Tier II and Federal Registration Permits for the NAPCH in 1999 and 2000.

Community	Population	1999		2000	
		Tier II	Federal	Tier II	Federal
King Salmon	480	76	0	33	0
Naknek	666	94	0	61	6
South Naknek	148	60	6	45	5
Egegik	132	73	4	53	5
Pilot Point	102	31	11	28	3
Port Heiden	126	39	12	37	4
Ugashik	8	8	2	3	2
Chignik Bay	121	25	5	17	2
Chignik Lagoon	70	49	7	31	3
Chignik Lake	138	65	7	46	5
Ivanof Bay	15	9	1	7	2
Perryville	107	50	5	34	3
Total	2113	579	60	395	40



During August, Bristol Bay Regional Council Coordinator Cliff Edenshaw and Ralph Andersen of Bristol Bay Native Association's Natural Resource Department visited local communities in GMU 9(C) & 9(E) to distribute the 40 federal permits for Northern Alaska Peninsula Caribou Herd bulls.

### Subsistence Moose Hunting Seasons

An early season moose hunt was again offered in 2000 for subsistence users in GMU 9(C) on federal public lands draining into the Naknek River from the south (Big Creek). During the period August 20 through 31, one bull could be taken by Federal registration permit only. Thereafter, the federal subsistence season corresponded to the state season ending on September 15. Federal moose permits were issued from the Refuge Office in King Salmon.

An early season Federal moose hunt was also offered for subsistence users in GMU 9(E) during September 1 through 20 with a limit of one bull. The State resident season in 9(E) ran September 10 - 20 with a limit of one bull with spike-fork or with 50-inch antlers or antlers with 3 or more brow tines on at least one side.

Subsistence hunters were also permitted to take bull moose on federal public lands during the month of December in Units 9(C) and 9(E). Those 9(C) lands in the Big Creek area of the Naknek drainage were closed for the hunting of moose except by eligible rural Alaska residents who could take bull moose by State harvest ticket or cow moose by Federal registration permit only. Federal cow permits were issued to 9 local hunters. Unfortunately, the warm weather of December made access difficult. The Naknek River never froze sufficiently to allow safe vehicle travel; and, when the Naknek was open for boat travel, Big Creek was clogged with ice jams. No reports of successful hunts were received. In Unit 9(E), the federal season again allowed one bull during December 1 through January 20 by State harvest ticket.

The closure of the Island Arm area to transporter (air taxi) permittees during the subsistence moose season was continued in 2000. Refuge Complex special use permits allowed no Air Taxi drop off in Island Arm north of Burls Creek and Bear Creek between September 1 and 20. Drop offs for five sport hunting camps (maximum of 4 hunters each) were allowed south of Burls Creek and Bear Creek to the end of the Arm. Air taxi transportation to Island Arm was allowed for qualified local subsistence users. The Becharof Lake area was patrolled during September.

## **I. EQUIPMENT AND FACILITIES**

### **1. New Construction**

Between June 21 and 22, 2000 a gray water system was installed at the Mother Goose Cabin Site. While every simple in design it proved to be highly effective and ends the years of sink

water being allowed to run out on to the ground near a stream. Sink water now flows through a plastic pipe under ground to a perforated holding tank that slowly releases water into the soil.

In preparation for new construction, building 8 was transferred to the Bristol Bay Borough and they hauled it off. This building had been used as a residence in its lifetime but the last few years it had been unsafe to be used and had sat empty.



The moving of building 8.

From October 10 – 13, personnel with Phukan Inc from Anchorage Alaska, were on the administrative site surveying. This was being done as a prelude for the Refuges' and Fisheries Resource Office new office building. They checked for buried power, sewer and water lines in addition to the proposed site.

## **2. Rehabilitation**

During May 10-12, the dock was repaired, cleaned and repainted with non-skid paint. This has been a concern for awhile as the treated lumber can get slick due the wind generated waves



and rain. After other options were reviewed this one was determined to be the safest way to protect not only our personnel but also the dock itself. On May 25, bumper blocks were also installed on the dock to help better protect the floats on our aircraft. For years the Refuge has depended on old tires attached to the dock to provide protection to float planes. However at times the tires made it difficult for our pilot to either taxi in or out of the slip without the floats catching on the tires. These new bumpers have allowed the pilot to taxi without this problem while still providing protection for both the dock and plane. To finish the rehabilitation of the dock a kiosk was installed on the railing of the dock where personal flotation devices are stored so that everyone who goes on the dock can do so safely.

On June 3, a new weatherport platform was built at the Mother Goose Cabin site. This replaces a platform that had been in place for over seven years and was to the point of being unusable.

During the week of July 18, Maintenance Staff, Volunteer John Fowler, and Alaska Department of Fish & Game (ADF&G) employee Mark Reynolds replaced the foundation under the Egegik River Cabin. The building consists of two sections that were built at different times with different construction methods. (The oldest section was probably completed in the early 1950s.) In the process of jacking up the building, these two sections pulled away from each other leaving a gap between the old and the new sections. Unfortunately, some of the old timbers and floor joists were too rotten to be easily removed or replaced, and due to the limited time available between the ADF&G and Refuge crews occupying the cabin, some repairs were not completed.

In addition to the foundation work, they replaced the front porch, installed a solar panel array on the roof and a water pump system to bring water to the cabin, and hot water to the kitchen sink and to a shower in the back room. They installed a grey water seep tank and moved the outhouse to a new location.

Although this cabin is within the refuge boundary, it was built by the State of Alaska before the Refuge was established. Over the years a significant amount of trash had accumulated in and around the cabin. All trash that could be burned, including lumber scraps from the foundation replacement project, was burned by members of the Egegik public use field crew. Non-burnable trash was hauled out on Refuge flights as space allowed. Items removed included an old drip oil stove, a large propane refrigerator, a 20-gallon water heater, a wood cook-stove, an aircraft nose wheel, numerous kerosene cans, two dozen 55-gallon drums and approximately 10 trash bags of old paint and tar cans, scrap metal, netting, and ropes.

The crew also scraped the walls and painted the exterior of the cabin Tudor brown. The cabin had been painted at least four different colors including red, beige and various shades of brown. Portions of the cabin interior were painted, primarily the kitchen cupboards and shelves. The bedroom in the main building was also painted.

### 3. Major Maintenance

On February 2, King Salmon experienced winds in excess of 100 mph. This storm caused damage to the warehouse portion of Building 4's roof, the roof to the new duplex. Three of the residential sheds also received damages to their roofs with two of the sheds having their doors blown in. Housing unit 26 had its rear storm door ripped from the frame; further most of the fencing at the two Paul creek housing units (#26, 27) were knocked down. On February 2, repairs were made to Building 4, with the repairs to the rear of Building 26 being started on February 3 and the sheds completed on June 29.



Wind damage to building 4.

### 4. Equipment Utilization and Replacement

With the heavy snows that we received in January and February, the neighboring community of South Naknek, experienced the complete loss of power as over 30 power poles fell down. On February 1<sup>st</sup> Fish and Wildlife Service staff gathered together seven portable generators and sent them to the South Naknek so that the power company could provide heat in the town until repairs could be made.



## **5. Communications Systems**

During the year end close down of the Mother Goose site on September 12; the use of cellular phones from this location was tested. With a trial and error method some sites were found close to the cabin that the phone will work from.

While Maintenance Worker Melvin was at Bible Camp on Becharof Lake to set up for our science camp on September 2, he discovered that a cellular phone works from this location; thus giving this area a second means of communication.

## **6. Computer Systems**

With the year 2000 approaching, there was a fear that there could be problems with the Y2K bug. On January 2, 2000, all computers were tested and only two old programs on two computers were found to have problems. These programs were removed and no other problems were discovered.

On June 14, a new computer was received for the biological staff. This computer was needed due to the new high end type programs being used by them and the old computer not being able to handle the tasks required. On June 19, a new laptop computer arrived and a moving map program was installed to allow for more accurate aerial surveying of wildlife.

During the year considerable upgrading of computer software occurred. These upgrades caused staff to take time to learn the new improved versions.

## **7. Energy Conservation**

On June 22, a 12 volt lighting system was installed at the Mother Goose Cabin site. This system stops the reliance on ether propane fuel or generators for lighting. The system is run off 12 volt batteries that are charged by solar power. This same type of system was installed on September 1 at our Island Arm cabin site.

## **8. Other**

Regional Ecological Services Office personnel visited the Refuge, from August 21 until 24. While here a complete check of our records for old spill contamination sites was conducted. On August 22, they were flown by our Refuge Pilot to survey old contamination sites to check on the status of clean-up action. They also check on some sites that were not previously identified and could be an area of possible new clean-up action.

As part of the Refuges' efforts to clean up old sites over thirty five 55 gallon drums were removed from the Egegik River camp, when it was being closed down for the winter on September 12.