



ANNUAL NARRATIVE REPORT

Calendar Year 1982

ALASKA MARITIME NATIONAL WILDLIFE REFUGE

Homer, Alaska

ALEUTIAN ISLANDS UNIT

Adak, Alaska



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Anchorage, Alaska 99503

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



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Review and Approvals

Tom J. Early 4/25/83 *Don C. Riffe* 4/2/83
Submitted By Date Regional Office Review Date



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A. Highlights

- Closure of Homer Office indicated
- St. Matthew Island surveyed
- 1982 Vessel Charter a great success!

B. Climatic Conditions

Obviously, any one weather data source for the Alaska Maritime National Wildlife Refuge (AMNWR) would not be indicative of weather patterns for the entire complex. The only realistic way to gather pertinent weather data is to utilize weather data from each specific unit at one or more locations. Presently we receive weather data from the National Weather Service (NWS) in Homer and from a remote, satellite relayed, meteorological station located on St. Matthew Island in the Bering Sea. This station was installed and operated by an environmental consultant firm from California for use by several oil companies in that area. The station transmits air temperature, barometric pressure, wind direction and speed, and north and east wind components. This is valuable information for the NWS and oil companies, as little weather data are available from this portion of the world.

Listed below are climatological data from five sources scattered across the AMNWR (excluding the AIU). This table presents the means and extremes for temperature, precipitation, and wind; however, coastal areas are notorious for localized weather patterns.

	<u>Kotzebue</u>	<u>St. Matthew</u>	<u>Cold Bay</u>	<u>Homer</u>	<u>Ketchikan</u>
<u>Temperature(oF)</u>					
High (Date)	79(06)	54(08)	--	66(7/27)	82(6/26)
Low (Date)	-28(01)	10(03)	--	-7(2/15)	0(1/22)
Ave. for Yr.	23.5	--	37.6	36.8	43.7
Departure from Average	+2.6	--	-3.7	+1.48	-2.5
<u>Precipitation</u>					
Total from Yr.	10.64	--	43.79	19.71	87.49
Departure from Average	+1.69	--	+10.56	-3.37	-74.78
<u>Wind (mph)</u>					
Ave. for Year	--	--	17.8	8.7	--
Max.* (date)	--	60(11)	58(01,11)	31(10)	--

*Maximum wind speed for 1 minute period.

C. Land Acquisition

3. Other

The AMNWR contains about 3.1 million acres of land consisting of about 2,500 islands, islets, and headlands which are used by large numbers of marine birds and mammals. Some key wildlife areas were

not included in the refuge because of Native or State selections or other private property. Also, there are some areas included in the refuge which have little or no value for wildlife. Since land exchanges will be on-going for several years, the refuge should attempt to gain some of these critical wildlife areas in exchange for less desirable lands we own. A list of islands suggested for exchange is given in the 1981 Refuge Narrative Report.

The Regional Office Realty Division has not yet completed sets of land status maps for the AMNWR. We did receive AMNWR boundary maps from the Washington Office, but even these contain errors. We must check with the Realty Division when issuing Special Use Permits to verify current land status.

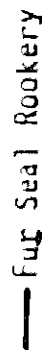
Section 1417 of ANILCA ratified the "Pribilof Terms and Conditions" and authorized appropriation of funds for:

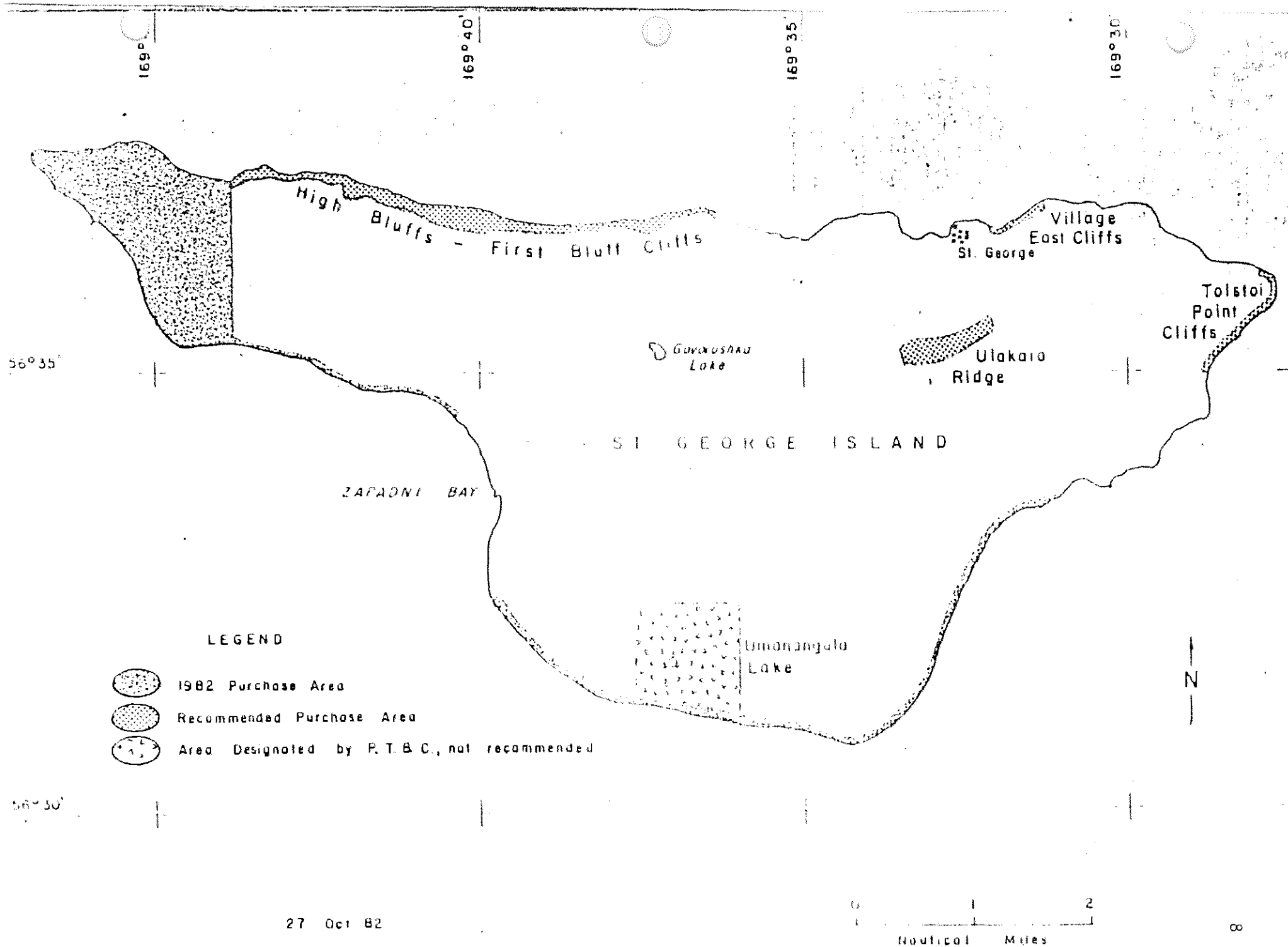
- (1) Purchase by the USFWS of a minimum of 8,000 acres and 9,000 acres maximum of seabird habitat, including one section of representative habitat each on St. Paul and St. George and all of Walrus and Otter Islands, for \$5,200,000.
- (2) Exchange of the subsurface estate of the 8,000 acres with the Aleut Regional Corporation.
- (3) Lease of one-acre administrative sites on St. George and St. Paul islands for use by the USFWS as headquarters and administrative sites for the Pribilof Islands subunit of the AMNWR.
- (4) Cooperative study of transportation, facilities, and cultural and natural resources interpretation programs.

In 1982, \$1,920,000 was appropriated to purchase approximately 3,000 ac. of habitat. This includes cliffs on both St. Paul and St. George Islands, the representative sections (Rush Hill) on St. Paul, and the western tip of St. George. None of the other provisions have been met. The boundaries of the 1982 purchase are shown on the following maps.

Based on an Ascertainment Report written in October 1982, the Division of Realty recommended that the following ranked list of lands be purchased in the Pribilofs:

High Bluff-First Bluff Cliffs (St. George)	150 ac.
Tolstoi Point Cliff (St. George)	50 ac.
Village East Cliffs (St. George)	30 ac.
Tolstoi Cliffs (St. George)	20 ac.
Otter Island	155 ac.
Reef Neck Cliffs (St. George)	25 ac.
Ulakaia Ridge (St. George)	100 ac.
Walrus Island	30 ac.
	<u>560 ac.</u>





27 Oct 82

Obviously, this recommendation, plus the 3,000 ac. purchased this year, does not total the 8,000 minimum acres specified in the agreement. There just isn't the need for more land in the Pribilofs from a refuge perspective. One option by Realty to resolve this problem may be to increase bird cliff buffer zones beyond 150' along the top of the island. Another option might involve the purchase of other lands owned by the Pribilof village corporations on the Alaska Peninsula or in the Aleutians.

This year Sanak Island (29,920 acres) excluding 5 acres under a permit by the USCG, was interimly conveyed to the Sanak Native Corporation. After collections were made on past grazing fees due, the administration of grazing on the island was turned over to the Corporation.

D. Planning

1. Master Plan

Title III of ANILCA mandates the Secretary to "prepare and from time to time revise a Comprehensive Conservation Plan for each refuge". This plan is to serve as the station master plan for Alaskan Refuges. This effort is coordinated by the Regional Office planning team. The AMNWR is the antepenultimate refuge in Alaska scheduled for comprehensive planning and is scheduled to actively begin in 1984 and be completed in 1987.

2. Management Plan

Initial work is being done on completing a fox control plan for the entire complex. This involves elimination of introduced foxes on selected islands through either direct or biological control.

5. Research and Investigations

Alaska Maritime NR 81 - "Storm-Petrels as Indicators of Environmental Conditions" (AMR-5-82)

Dr. P. Dee Boersma, under a research grant from the University of Washington, Seattle, is conducting a study to determine the incidence and level of chlorinated hydrocarbons in Fork-tailed Storm-Petrels. Most of this work is being conducted in the Barren Islands, Gulf of Alaska Unit. The final report of the work is scheduled for completion in April 1983.

Alaska Maritime NR-82 - "Paleomagnetic Data from the Bering Sea Islands and the Yukon-Koyukuk Basin" (AMR-9-82)

In order to better understand the position of Alaska in Cretaceous times it is necessary to study the paleomagnetic data from various points in Alaska. Hand samples of oriented rock of andesites, dacites and rhyolitic tuffs were to be taken from St. Matthew Island during the summer months. Several samples will also be taken from outside the refuge in other areas in the Bering Sea. David Stone, Geophysical Institute, University of Alaska, is the principle investigator.

Alaska Maritime NR-82-"St. Matthew Island Biological Reconnaissance" (AMR-13-82 and AMR-26-82)

Due to the possible pressure on wildlife and other natural resources of St. Matthew Island associated with the exploration, development and exploitation of the nearby Navarin Basin by oil companies, a basic biological reconnaissance is necessary. Prior information on the area is extremely limited. The study is being conducted by the Marine Bird Management Project, Wildlife Operations, FWS, Anchorage.

A crew of between six and eight biologists was on the island from 22 May until 11 August. Studies included aspects of migratory birds, seabirds, terrestrial birds, foxes, Reindeer, vegetation, Pacific Walrus, and Polar Bears. In summary, the bird list on St. Matthew was increased by over 80 percent (56 species) from past surveys. Information was gained on spring migration, but still limited information is available for fall use. The 1977 estimates for seabird populations are quite low, and the total number of seabirds may exceed 3 million birds. Further studies and data analysis need to be done. Over 130 km. of line transects for terrestrial birds were completed. Twenty-six adult and seven fox pups were tagged, and sightings were recorded to determine movements. There appears to be only one female Reindeer remaining from the 1944 introduction. Vegetative plots were done in an effort to map the area. An estimated 400 walrus use three haul-out sites on St. Matthew and Hall Island. The Walrus population has increased since 1977. No sign of Polar Bear activity was seen.

Field work is planned for 1983, and the data from 1982 will be combined with 1983 for a final report.

Alaska Maritime NR-82 "Biological Reconnaissance of Hazy Islands and Monitoring of Storm-Petrel Populations at St. Lazaria and Petrel Islands" (AMR-13-82)

The Marine Bird Management Project, Wildlife Operations, FWS in Anchorage, undertook this study during early summer of 1982. Objectives are to provide baseline information on birds and mammals of the Hazy Islands and develop a method for monitoring storm-petrel populations in Southeast Alaska at 3-10 year intervals.

Alaska Maritime NR-81 "Survey of Middleton Island" (AMR-13-82)

Personnel from the Marine Bird Section of the National Fishery Center and Marine Bird Management Project, Wildlife Operations of the FWS in Anchorage spent several weeks on Middleton Island in June and late July and early August. Assessments were made on the current population level and breeding status of Pelagic Cormorants, Black-legged Kittiwakes, Common Murres and Thick-billed Murres, and on comparisons of these results with results of previous studies. Six permanent Black-legged Kittiwake and nine Pelagic Cormorant plots were established to monitor their reproductive efforts. Populations are included in the table below:

<u>Species</u>	<u>1976</u>	<u>1978</u>	<u>1981</u>	<u>1982</u>
Pelagic Cormorant (# nests)	1,919	2,341	2,474	2,612
Black-legged Kittiwake (# nests)	42,458	75,247	82,885	77,196
Total Murres (# birds)	5,851	6,803	5,521	6,161
Tufted Puffin	885	1,320	732	924
Glauc-winged Gull (# birds)				1,610

Alaska Maritime NR-82 "Analysis of Populations and Trophics at Large Seabird Colonies in the Arctic and Northern Bering Seas" (AMR-14-82).

David Roseneau and Alan Springer, principle investigators, estimated numbers of birds and nests at St. Matthew Island, Cape Thompson, and Cape Lisburne, and the "Bluff" area in Norton Sound. They work with an environmental consulting firm, FALCO, based in Fairbanks. Permanent census plots were established to determine reproductive success of murres and kittiwakes; growth rates of kittiwake and auklet chicks; and food habits of murres, kittiwakes and auklets. These factors are related to physical and biological processes that effect seabird populations. This study is designed to further understand the dynamics of seabird populations and their supporting food webs. Recently there have been large annual differences in water temperature and sea ice in the region. These marked changes in the physical environment appear to have had major effects on regional seabird populations.

Alaska Maritime NR-82 "Systematics and Evolution of Peromyscus sitkensis and Microtus coronarius in Southeast Alaska" (AMR-22-82).

Mr. Richard Wood, University of Alaska Museum, collected 12 deer mice (*P. sitkensis*), eight of which were live animals. The studies include karyotypic and morphometric analysis plus breeding experiments. Zoogeographic information was needed from Forester Island.

Alaska Maritime NR-81 "Migrant Bird Survey at Middleton Island, Alaska" (AMR-28-82)

Dan Gibson of the University of Alaska Museum in Fairbanks is attempting to determine the long-term abundance and movements of birds migrating across the Gulf of Alaska. Middleton Island is the best locality to gather this information.

Work was conducted this year from 1 through 29 September. A total of 123 species of birds was recorded this fall. To date, 173 species have been recorded on Middleton Island based on spring and fall surveys. Sixteen specimens were collected in the fall of 1982 to positively identify species variations and/or because a bird was permanently disabled. The sighting of a Northern Mockingbird was the first substantiated Alaska record of this species.

E. Administration

1. Personnel

On September 21 a meeting was held in Homer with AWR Riffe and RS Calvert regarding possible closure of the Homer Office. We could not convince them it would be feasible to maintain a Homer presence with the current situation. This is allegedly because we lost the 112' vessel which was to be stationed here and because of the present administration and tight budgets imposed.

From a personnel and morale standpoint the decision was not good, but from an administrative aspect it does make sense. There will be a marked de-emphasis in marine bird and mammal activities and the AMNWR will lose its identity after being parcelled out to other refuges..

The plans call for the management of the refuge to be shifted as follows:

- Gulf of Alaska Unit - Kenai NWR
- Alaska Peninsula Unit - Izembek NWR
- Aleutian Islands Unit - Aleutian Islands Unit (Adak)
- Bering Sea Unit - Yukon Delta NWR
- Chukchi Sea Unit - Selawik NWR

The Aleutian Islands Unit will be responsible for the overall coordination between units of the AMNWR, consolidation of reports, and data submission.

5. Funding

A comparison of FY 82 and FY 83 funding levels are distributed as described below for the AMNWR-Homer Office:

	<u>1210</u>	<u>1220</u>	<u>1400</u>	<u>Total</u>
FY 82	131,000	99,000	31,000	261,000
FY 83	356,400	106,200	155,400	618,000

There was \$800,000 programmed from BLHP monies to be obligated for the rehabilitation of a 113' vessel confiscated running drugs in the Gulf of Mexico. After plans were drawn up to rehabilitate and modify the vessel based on our needs and the views of marine architects from Seattle, the costs exceeded the amount available. Therefore, the plans to acquire this vessel were dropped. There are plans, although not in the immediate future, to have specifically constructed a similar size vessel suited to our needs and Alaskan waters. Presently the AMNWR complex has no vessel over 25', though the "highway" to all of our lands is the ocean.

Our chartered 94' Marco crab boat, "Sea Spray", was exceptional. The vessel and crew were both extremely pleasant to work with. The crew assisted above and beyond the duty required even to the extent of hiking the hills looking for geese. The total charter cost was \$231,773.59 including fuel for a 103-day period (\$2,193.50 per day) during 10 May through 20 August.

The bottom fell out of the crab stock in the entire North Pacific this fall and winter and we expect more interest in our charter for the 1983 season. Whether we can afford the charter may be another matter.

Whether it is more economical to purchase a vessel or charter a vessel is debatable. Several intangibles are involved when chartering such as known quality of vessel and crew, direct control over crew, availability of vessel and crew when it is needed. We had an exceptional charter this year but a bad one in 1976.

Without vessel support many projects cannot be undertaken, however, other programs suffer if too large a vessel is operated and maintained because of chronic deficit FWS funding. It would be possible to own, maintain, and operate a seaworthy vessel of approximately 80' length cautiously on an intermittent year-round schedule and complete most of our advices. It would be practical and necessary to share costs and use it with other entities within the FWS. Estimated total costs, including a 3-person crew, would be near \$350,000-\$400,000 per year (1983 dollars) for an 8-month operational season. The 65' "Aleutian Tern" did a credible job for 10 years in the Aleutians at a cost of about \$210,000 per year.

6. Safety

Safety meetings are held to discuss current operation practices. One minor accident occurred during the reporting period when Refuge Biologist Bailey chipped a front tooth while boarding a skiff from the charter vessel this summer.

8. Other Items

Our lease rate for the office space went up from \$.85 to \$1.00 per square foot per month. This was partially a result of inflation and partially because we have been consistently 2-3 months behind in bill payments. CGS in Anchorage handles the payments, which are delayed by technicalities and by the fact that we must first use the space for the entire month before the bill is submitted.

We were issued an eviction notice on October 1, 1982 because our bills were excessively in arrears due to CGS administration changes. This was cleared up after emergency payment was requested on several past due bills.

F. Habitat Management

1. General

Refuge lands are managed to maintain undisturbed wildlife populations and natural wildlife diversity. Man's influence is becoming increasingly evident on our land areas, and we attempt to reduce or mitigate these impacts as much as possible. Due to diverse land areas and logistics, our greatest obstacles are assessing and monitoring the wildlife and habitat on the refuge.

3. Forests

Through ANILCA we own a still undetermined amount of land on Delphin and Discoverer Islands north of Kodiak. We obtained a copy of the boundaries of the former "Afognak Forest and Fish Culture Reserve" of December 1892. According to ANILCA a joint venture of Native Corporations on Kodiak Island is entitled to timber resources on these islands, and management and harvest of the timber will be in accordance with management plans developed by the joint venture and the Secretary of the Interior. No action on this has been taken yet.

7. Grazing

At the start of the year the AMNWR (excluding the AIU) administered 112,342 acres of grazing lands through four leases and two Special Use Permits (SUP). In June after collecting back fees due for grazing on Sanak Island, administration of this permit was turned over to the Sanak Native Corporation. This reduced our total acreage of grazing on the AMNWR to 82,428. All grazing leases were granted by the Bureau of Land Management (BLM) and transferred to us through ANILCA and the Refuge Administration Act. We are still honoring the BLM leases until expiration. Grazing under SUP's has occurred for 20 years and, excluding the AIU, is as follows:

<u>Island</u>	<u>Acreage</u>	<u>No. of Cattle</u>	<u>Rate</u>	<u>Lease Type</u>	<u>Exp. Date</u>
Simeonof	10,850	507	\$.05/AUM*	SUP	9/30/82**
Caton	4,400	114	2.40/AUM*	SUP	9/30/82**
Bear-Harvester	430	NTE 30	25/year	BLM Lease	12/31/83
Chernabura	7,248	104	120./yr.	" "	12/31/83
Wosnesenski	7,500	64	45./year	" "	12/31/82
Hagemeister (Reindeer)	52,400	NTE 450	10/year***	SUP	12/31/82
Total	82,828	1,269			

* \$4/AUM for each AU exceeding the quota (275 on Simeonof and 85 on Caton Island). \$8/AUM for each AU charged with willful trespass.

** Cattle were to be removed 9/31/82, but they were still present at year's end. See details in this section.

*** Filing Fee only (Native reindeer grazing)

As the above table indicates, there is a great discrepancy in fees charged for grazing. Some of this is due to politics, some to honoring BLM lease rates, and two result from refuge policy. In 1980 an unbiased appraisal was conducted to determine "fair market value" of grazing on refuge lands in Alaska, and consequently a value of \$2.40/AUM was established.

As a rule cattle are placed on an island and left on their own with occasional culling by the lessee, his caretaker, or a passing fisherman. Not many are actually sold (none commercially) due to transportation and inspection problems. The relatively mild maritime winters allow some calves to survive, and in several cases populations expand to fairly high levels.

The refuge is making sporadic attempts to count animals and assess habitat damage on these areas. Distance and weather limit most aircraft support, and until we can utilize an ocean-going vessel, our surveillance of these operations will be minimal.

Simeonof Island was established as a refuge in 1958, and PLO 1749 gave grazing responsibility to the BLM. In 1961 the BLM issued a 20-year grazing lease for 275 cattle. In 1976 the island was designated as Wilderness, and the same year the Refuge Administration Act transferred all grazing responsibilities from the BLM to the FWS. The lessee was informed as early as 1977 that the lease probably would not be renewed when it expired in 1980. In 1978 as many as 728 cattle were counted on the island, resulting in moderate to severe overgrazing and erosion. After many verbal and written appeals to State and U.S. Senators and the Secretary of the



A view of Simeonof Island from the air. The cabin site is out of the picture on the left. This island has the potential to be one of the best waterfowl islands in the Alaska Peninsula Unit once the cattle and fox are removed. (C.A. 10/82)



A few of the "tame" cattle on Simeonof Island. They are mostly a mixture of Scottish Highland and Hereford and well adapted to the environment of the Aleutians. (C.A. 10/82)



Offloading supplies on Simeonof Island beach.
(C.A. 10/82)



Base of operations at Simeonof Island showing old
house, barn, and corrals. (C.A. 10/82)

Interior, the lessee delayed removal of the cattle. On February 1, 1982 a formal written agreement establishing a final removal deadline of September 30, 1982 was signed by the permittee and the Regional Director.

About September 1, the permittee sold the cattle to another individual with provisions that they be removed by October 1, 1982 but we still recognized the original permittee as responsible for the cattle. After many false promises to remove the cattle, we finally sent ARM (AIU) Van Klett and volunteer C. Ambroz to Simeonof to monitor any activity to remove the cattle. Two "cowboys" were sent out to Simeonof by the buyer of the cattle to await a barge which never came. Nothing else was done. Finally on November 2 the cattle were impounded according to 50 CFR procedures. Then after no effort was made to remove them they were confiscated by the U.S. Government on November 19, 1982.

Caton Island was included as part of the Aleutian Islands NWR established in 1913. In 1959 the first SUP for cattle grazing NTE 100 A.U. was issued. Through ANILCA (December 2, 1980) the island was designated Wilderness. Since July 1981, the permittee was aware that we wanted to eliminate cattle grazing from the island. In late 1981 the permittee agreed to a final cattle removal date of June 1, 1982, and a SUP reflected that date.

However, in early May the permittee appealed the date asking for an extension. We agreed on a new removal date of September 30, 1982, coinciding with the Simeonof Island removal deadline. During the summer the permittee underwent open heart surgery and spent the remainder of the year convalescing in Anchorage. The buyer of the cattle on Simeonof apparently also agreed to remove them from Caton Island, and the same scenario followed. Because of the difficulty in locating the permittee the cattle were not impounded until November 8, and they became Government property on December 10.

Bid advertisements were sent out on December 30, 1982 for the sale and removal of cattle on both Simeonof and Caton Island.

Other problems may be just starting as BLM leases expire and our rates go into effect. We contacted the permittee on Wosnesenski Island in late 1981 and again in November of this year about the rate increase, and we are expecting an appeal soon. Two other BLM leases are due to expire at the end of 1983, and it appears that will be Izembek NWR's problem.

12. Wilderness and Special Areas

The AMNWR has 2,580,716 acres of Wilderness, most of which was created by ANILCA. The Aleutian Islands Unit administers 2,210,175 acres, and the Homer office administers 370,541 acres as follows:

<u>LOCATION (Island)</u>	<u>ACREAGE</u>	<u>DATE WILDERNESS DESIGNATED</u>
Aleutian Islands Unit		
Aleutian Islands	1,300,000*	12/2/80 (ANILCA)
Bogoslof	175	10/23/70
Unimak	910,000	12/2/80 (ANILCA)
Sub Total	2,210,175	
Other (Homer)		
Forrester	2,832	10/23/70
Hazy	32	10/23/70
St. Lazaria	65	10/23/70
Tuxedni	5,548*	10/23/70
Semidi Group	250,000	12/02/80 (ANILCA)
Caton	4,414	12/02/80 (ANILCA)
Simeonof	25,855*	1/19/76
Bering Sea NWR	81,340	10/23/75
Chamisso	455	1/03/75
Sub Total	370,541	
Grand Total	2,580,716	

* Portions of these islands are excluded from Wilderness designation. Acreage shown is amount designed as wilderness only. Figures for Simeonof and the Semidi islands include surrounding tidelands.

In September 1981 the Cook Inlet Region, Inc. (CIRI) proposed an exchange for land inholdings within the Kenai NWR for 2,560 acres of St. Matthew Island, part of the Bering Sea NWR. The present administration condones the exchange, since Section 1302 of ANILCA allows the exchange of refuge lands with Native Corporations. However, CIRI is acting as a front for Atlantic-Richfield Company (ARCO) which wants support facilities developed on St. Matthew for exploration and development of the potential oil in the Navarin Basin about 120 miles to the west of the island. The lease sale is in 1984, but the Continental Offshore Strategaphic Test Well (C.O.S.T.) is scheduled to be drilled in 1983.

St. Matthew Island is a true wilderness area and relatively few humans have ever set foot on the area. In addition, the Bering Sea NWR supports one of the largest seabird nesting areas in the Northern Hemisphere with more than 3 million birds. Polar Bears also denned here early in the century before they were shot off by commercial hunters. It is a major haul-out area for Walrus in the winter and up to 400 bachelor males use the area in the summer. The only known breeding area for the rare McKay's Bunting is on St. Matthew Island.

A task force was set up to evaluate the effects of the proposed land exchange and development and to determine mitigation measures needed in the event the exchange occurs. Martin and Early from the Homer office were members of the task force. Our findings and recommendations were submitted to the Regional Director; the task force was disbanded on March 12, 1982.

The COST well is going to be drilled during the summer of 1983 with support by helicopter from Nome. Initially, a barge may be kept off St. Matthew Island to support helicopters and to serve as an emergency landing area.

G. Wildlife

2. Endangered and/or Threatened Species

Refuge Manager John Martin is still serving as leader of the Aleutian Canada Goose Recovery Team this fall. More is discussed in the Aleutian Islands Unit section.

Martin and Refuge Supervisor South Larry Calvert travelled to the Semichi Islands in May to check for returning released geese. Bad weather prevented much field work on Nizki Island, the actual release site, but valuable information was gained on early spring use by geese as well as other wildlife populations during their brief stay.

3. Waterfowl

A variety of waterfowl, including many species of sea ducks, utilize refuge habitat for both migration and breeding. We are crudely assessing summer waterfowl populations around islands during our initial survey work, but the emphasis is placed predominately on seabirds, marine mammals, and fox populations. Virtually no work has been done on waterfowl use on most refuge lands during migration and winter.

7. Other Migratory Birds

Nesting seabird populations are fairly well known in the Chukchi Sea Unit through surveys conducted by other agencies and individuals. In the Bering Sea Unit most of our lands in Norton Sound are poorly known. The St. Matthew Island area (Bering Sea NWR) is becoming increasingly well known to biologists due to oil exploration. Recent land purchases in the Pribilof Islands should be assessed for seabird populations and potential threats. Most AMNWR lands in the Alaska Peninsula Unit have been assessed, except for several of the Pavlof and Sanak islands. In the Gulf of Alaska Unit most critical areas have been initially surveyed.



Refuge Supervisor (S) Larry Calvert inspecting gull nest on Nizki Island in the Aleutian Island Unit. Gulls and other species of birds now frequently nest on open beaches since introduced Arctic Fox were removed.

(J.M. 05/82)



Larry Calvert overrode John Martin's decision to make a dash for Shemya today...

(J.M. 05/82)



Its nice to see birds nesting on the beaches of Alaid
and Nizki Island again - even if it is Glaucous-winged
Gulls. (J.M. 05/82)



Larry Calvert reading Aleutian Canada Goose leg bands
during the spring survey of Alaid and Nizki Islands.
Shemya Island (and Air Force Base) is in background.
(J.M. 05/82)

Virtually no work has been accomplished on the refuge during the fall, winter, or spring seasons. As a result, little is known about departure dates, winter residency, or spring arrival dates for most seabird species in any particular area. This information is critical to properly set guidelines for certain permit activities within the refuge.

9. Marine Mammals

Marine mammals known to haul out on the AMNWR include the Northern Sea Lion, Harbor Seal, Pacific Walrus, Sea Otter, and Northern Fur Seal. The recent and future purchases of lands on the Pribilof Islands are adjacent to several fur seal rookeries which may pose management and public relations problems and challenges.

10. Other Resident Wildlife

The introduced herd of Bison on Popof Island in the Shumagin Islands (APU) was aerially counted January 29, 1982 by ADF&G, King Salmon. Sixteen adults and two calves were noted in one herd and eight unidentified animals in another. We own a small amount of land on the extreme south end of the island. The ownership of the Bison is in question.

11. Fishery Resources

Most of our lands administered from the Homer Office are comprised of small offshore islands and islets, and therefore salmon spawning streams are fairly inconsequential to total production. Surveys and stream assessment work has not been initiated to date. There is no funding allocated in the fisheries program, although assessment work is necessary to meet the establishing objectives set forth in ANILCA.

14. Scientific Collections

Three Special Use Permits issued this year involved collections as part of their activities. SUP #AMR-22-82 was issued to the University of Alaska Museum for collections on Forester Island in the Gulf of Alaska (see details under Section D.5 "Research and Investigations"). Permittee #AMR-27-82 collected 30 Tufted Puffins and 6 Rhinoceros Auklets on St. Lazaria Island. This permit was issued to Point Defiance Zoo and Aquarium in Tacoma, Washington to initiate their marine bird complex. All animals collected were chicks and were raised and kept in captivity. Permit #AMR-28-82 was issued to the University of Alaska Museum to collect birds on Middleton Island in the Gulf of Alaska (See details under Section D.5 "Research and Investigations"). A total of 16 individuals of 13 species were collected either to compliment the University's museum series, to positively identify species variation, or to salvage injured birds found.



St. Lazaria Island, in the Gulf of Alaska Unit, contains only about 57 acres but has more than half a million breeding seabirds. (J.M. 07/82)



Vegetation on St. Lazaria presents a major barrier for access. This dense vegetation, however, doesn't hinder seabirds from finding their nest burrows. (J.M. 07/82)



The vessel chartered from Sitka to take the Pt. Defiance crew and Manager Martin to St. Lázaria Island. (J.M. 07/82)



Personnel from the Pt. Defiance Zoo and Aquarium collect Tufted Puffins on St. Lázaria. (J.M. 07/82)

Listed below is the summary of collection's made during the period:

<u>Species</u>	<u>No. Collected</u>	<u>Age</u>	<u>Sex</u>	<u>Location</u>	<u>Permit #</u>
Deer Mouse	10	Ad	--	Forrester Is.	AMR-22-82
Deer Mouse	2	SAd	--	Forrester Is.	AMR-22-82
Sub Total	12				
Tufted Puffin	30	Chick	--	St. Lázaria Is.	AMR-27-82
Rhinoceros Auklet	6	Chick	--	" " "	AMR-27-82
Sub Total	36				
White-winged Scoter	1	Ad.	M	Middleton Is.	AMR-28-82
Lesser Golden Plover	2	Juv.	M	" "	" "
Lesser Golden Plover	1	Juv.	F	" "	" "
Semipalmated Plover	1	Ad.	M	" "	" "
Wandering Tattler	1	Juv.	F	" "	" "
Gray-Tailed Tattler	1	Juv.	M	" "	" "
Stilt Sandpiper	1	Juv.	M	" "	" "
Ruff	1	Juv.	M	" "	" "
Thayer's Gull	2	Ad.	F	" "	" "
Downy Woodpecker	1	Ad.	F	" "	" "
Alder Flycatcher	1	Juv.	M	" "	" "
Townsend's Solitaire	1	Juv.	M	" "	" "
Northern Shrike	1	Juv.	M	" "	" "
Purple Finch	1	Juv.	M	" "	" "
Sub Total	16				

Grand Total 64 individuals; 16 species

H. PUBLIC USE

1. General

No 1240 funds are programmed for public use at the Homer Office, and therefore little activity has occurred. We respond to requests for talks/tours but do not solicit such activities. Because of the office location on the backside of office building, with no conspicuous sign, the limited number of personnel on the staff, and the fact our lands are not known to most local residents, we have a relatively low profile in the community.

7. Other Interpretive Programs

In February RM Martin presented a slide talk on the refuge requested by the Homer Chamber of Commerce. Approximately 75 people were present. During the same month, he presented a similar program to the Kachemak Bay Conservation Society. In April, ARM Early and RB Bailey assisted the local elementary school during "Sea Week". Much of the latter activity was conducted during the spring low tides when actual "hands on" experience was gained by students. In May ARM Early presented an overview of the refuge and its projects and plans to the Kenai Peninsula Rural Development Council.

17. Law Enforcement

ARM Early is the only individual on the Homer office staff with law enforcement authority. Virtually no LE related work is conducted from this station, as no AMNWR lands are nearby. The several local requests for enforcement work were handled through the resident FWS special agent in Kenai.

I. EQUIPMENT AND SUPPLIES

4. Equipment Utilization and Replacement

We presently utilize a Chevrolet Suburban 4x4 picked up excess from the YACC program.

J. OTHER ITEMS

3. Credit

The AMNWR-Homer section was written by Tom Early and edited by John Martin and Ed Bailey. Typing was done by Sandy Carpenter, secretary of Refuges (South), in the Regional Office.

K. FEEDBACK

1. Regional Office

We have yet to see the 25% reduction in Regional Office staffing the Regional Director indicated would occur last March at the Migratory Bird Conference.

ALEUTIAN ISLANDS UNIT
ALASKA MARITIME NATIONAL WILDLIFE REFUGE

ADAK, ALASKA

ANNUAL NARRATIVE REPORT

Calendar Year 1982

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

Personnel

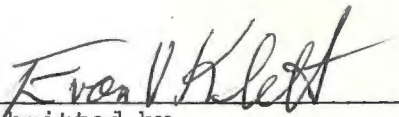
Permanent

1. C. Fred Zeillemaker, Refuge Manager, GS-12, PFT (EOD 1/24).
- 2a. Barry Reiswig, Assistant Refuge Manager, GS-11, PFT (Reassigned to Yukon Flats NWR 2/5).
- 2b. Evan V. Klett, Assistant Refuge Manager, GS-11, PFT (EOD 2/21).
3. Fredric G. Deines, Refuge Biologist, GS-11, PFT (EOD 1/10).
4. Carol M. Hagglund, Administrative Officer, GS-7, PFT (EOD 5/10/79)
5. Ronny D. Bowers, Maintenance Mechanic, WG-10, PFT (EOD 6/28/81).
6. Kathy D. Karcheski, Clerk-Typist, GS-3, PPT (EOD 10/4/81, Resigned 12/3).

Temporaries, YACC & Volunteers

7. B. Leslie Slater, Bio-Tech., GS-5, TPT-TFT (5/2 - 11-1) and Volunteer, FT (1/18 - 5/2 and 11/1 - 12/31).
8. Mark Masteller, YACC (4/13/81 - 3/16).
9. Jean Savage, YACC (4/20/81) - 3/17) and Volunteer (4/26 - 12/1).
10. Justine Logan, YACC (6/1/81 - 2/26) and Volunteer (2/26 - 9/2).
11. Veneta O'Rourke, YACC (6/8/81 - 2/22).
12. Donna Kafka, YACC (10/30/81 - 3/16).
13. Steve Kendall, Volunteer, FT (12/29/81 - 2/25).
14. Cam Matson, High School OJT Student (10/1/81 - 5/25).
15. Tanya Varnell, High School OJT Student (10/1 - 5/25).
16. Kim Judd, Volunteer (2/12 - 6/28).
17. Melly Zeillemaker, Volunteer (3/15 - 12/1).
18. Don Drago, Volunteer, FT (EOD 4/22).
19. Vernon Conover, Volunteer (4/27 - 12/1).
20. Konrad Schmidt, Volunteer, FT (5/5 - 9/19).
21. Jay Hammernick, Volunteer (5/10 - 6/23).
22. Chris Ambroz, Volunteer, FT (5/10 - 12/3).
23. Dana Bradley, Volunteer, FT (5/24 - 8/20).
24. Mark Ostwald, Volunteer, FT (5/24 - 8/20).
25. Natasha Kline, Volunteer, FT (7/12 tp 12/3).
26. Mary Stefansky (Schmidt), Volunteer, FT (8/10 - 9/19).
27. David Small, High School OJT Student (EOD 9/14)
28. Mark Graves, Volunteer, FT (10/27 - 12/10).

Review and Approvals

	2/24/83		
Submitted by	Date	Regional Office	Date

Aleutian Islands Unit	
Alaska Maritime NWR	Date
Station	



(Left to right) Kathy Karcheski, Fred Zeillemaker, Carol Hagglund, Fred Deines, Van Klett and Ron Bowers.



(Left to right) Mark Ostwald, Dana Bradley, Chris Ambroz, Don Dragoo, Natasha Kline, and Konrad Schmidt.



(Left to right) Melly Zeillemaker, Kathy West, Donna Kafka and Tanya Varnell.



Steve Kendall and Leslie Slater



Mark Masteller



Jean Savage

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K. FEEDBACK 92

A. HIGHLIGHTS

- Preparation of revised bird checklist for Aleutian Islands. (Section G.1)
- A spring survey of Agattu and Alaid/Nizki Islands in May found first returning transplanted Aleutian Canada geese. (Section G.2)
- Aleutian Canada goose nesting study on Buldir Island in June produced largest number of nesting pairs in history of surveys. (Section G.2)
- Discovery of new nesting population of Aleutian Canada goose on Chagulak Island. (Section G.2)
- Trapping, banding, and transplanting of record numbers of Aleutian Canada geese from Buldir to Agattu Island to reestablish an additional nesting population. (Section G.2)
- Circumnavigation of Rat, Little Sitkin and Tanaga Islands for seabirds and marine mammals. (Section G.4 & GG9)
- Continuation of bald eagle study on Adak. (Section G.6)
- Continuation of caribou productivity and range study on Adak. (Section G.8)
- Construction of new permanent radio antennae at refuge headquarters. (Section I.5)

B. CLIMATIC CONDITIONS

January through May weather conditions were considerably milder and even wetter than normal (Table 1). All fresh and salt water habitats remained completely open through the winter of 1981-1982. Adak temperatures were considerably cooler than normal from June through October, which adversely affected the production of wildlife food, particularly berries. November was mild, but a cooling trend increased through December and all fresh water habitats were frozen over and snow covered by the end of the year. Measurable precipitation was recorded on 277 days and peak wind gusts of 76 knots occurred on November 11. Peak winds did not exceed 50 knots in January or May through September. Weather information for other stations in the chain is difficult to obtain, but what was available by the end of the year for Attu and Shemya at the west end and Dutch Harbor in the eastern portion indicate conditions similar to Adak prevailed, although July was considerably drier at those stations than at Adak. (Tables 2,3 and 4)

C. LAND ACQUISITION

Little was accomplished during the year on the proposed land exchange between the Service and the Ounalashka Village Corporation of Unalaska. The Corporation still seeks to acquire the 22G rights to approximately 195 acres on the south side of Amaknak Island. Meetings were held with personnel from the Alaska Maritime NWR, Realty and Wildlife Operations to finalize the decision on which small islets and rocks in the Unalaska Island area would be proposed to the Corporation for exchange. Nine islets with high values for marine bird use were selected. The proposal is still under review.

D. PLANNING

2. Public Participation

On September 14, 1982, a helicopter survey of all major caribou habitat areas on Adak revealed a count of 274 caribou. This number was considerably lower than expected. A herd of this size would not be capable of sustaining the average harvest of 134 animals. Because of this problem, closer coordination and discussions were held with all major Naval commands, two sportsman's clubs and the Alaska Department of Fish and Game. The results of these discussions helped to formulate a short-term and a long-term solution to the problem. The Naval commands asked people under their control to limit their bag to one animal. The caribou season was closed by emergency order on December 14, 1982 after a minimum desired base population of 199 animals was reached. A proposal to shorten the season, reduce the bag limit, retain the emergency closure clause and install a registration permit hunt was developed. All involved parties were contacted concerning the hunting closure and proposed changes. All groups supported both actions.

TABLE 1. 1982 ADAK, ALASKA, WEATHER SUMMARY.

	<u>1982 Precip.</u> (")	<u>Normal Precip.</u> (")	<u>1982 Snow</u> (")	<u>Normal Snow</u> (")	<u>Days Meas. Precip.</u>	<u>1982 Max.</u> (°F)	<u>1982 Min.</u> (°F)	<u>1982 Ave.</u> (°F)	<u>Normal Ave.</u> (°F)
JAN	9.67	6.40	16.8	17.0	26	47	16	35.5	34.0
FEB	5.93	4.77	2.1	19.3	18	54	25	37.3	33.0
MAR	7.33	5.97	11.0	20.2	26	57	24	39.9	34.2
APR	1.58	4.58	3.6	10.1	19	51	31	39.7	37.2
MAY	3.14	4.51	0.7	2.1	23	52	28	41.4	40.6
JUN	3.82	3.17	0	T	28	57	37	43.9	44.6
JUL	5.06	5.07	0	0	14	62	37	47.1	51.0
AUG	4.63	5.07	0	0	22	66	41	50.0	51.0
SEP	7.71	5.56	0	0.01	27	58	33	48.0	48.2
OCT	4.49	4.59	1.0	3.5	21	53	34	44.0	45.1
NOV	8.36	8.23	15.2	12.1	27	55	25	38.5	37.0
DEC	4.64	7.70	28.3	19.2	26	44	17	33.1	34.0
Totals:						Extr.:		Ave.:	
	66.36	65.62	78.7	103.51	277	66	16	41.5	40.8

TABLE 2. 1982 ATTU, ALASKA, WEATHER SUMMARY.

	1982 <u>Precip.</u> (")	Normal <u>Precip.</u> (")	1982 <u>Snow</u> (")	Normal <u>Snow</u> (")	Days Meas. <u>Precip.</u>	1982 <u>Max.</u> (°F)	1982 <u>Min.</u> (°F)	1982 <u>Ave.</u> (°F)	Normal <u>Ave.</u> (°F)
JAN	4.15	UNK	M*	UNK	13**	42	29	34.5	UNK
FEB	1.72	UNK	2.0*	UNK	4*	51	17	36.8	UNK
MAR	M	UNK	M	UNK	M	M	M	M	UNK
APR	M	UNK	M	UNK	M	M	M	M	UNK
MAY	M	UNK	M	UNK	M	M	M	M	UNK
JUN	3.74	UNK	T	UNK	11	60	33	44.5	UNK
JUL	1.31	UNK	T	UNK	10	65	41	49.6	UNK

Data for remainder of year not available.

Totals for 4 months:

10.92**	UNK	2.0**	UNK	38**	Extr.:	65	17	Ave.:	41.3	UNK
---------	-----	-------	-----	------	--------	----	----	-------	------	-----

* Missing

** Incomplete Data

TABLE 3. 1982 SHEMYA, ALASKA, WEATHER SUMMARY.

	1982 <u>Precip.</u> (")	Normal <u>Precip.</u> (")	1982 <u>Snow</u> (")	Normal <u>Snow</u> (")	Days Meas. <u>Precip.</u>	1982 <u>Max.</u> (°F)	1982 <u>Min.</u> (°F)	1982 <u>Ave.</u> (°F)	Normal <u>Ave.</u> (°F)
JAN	3.64	2.13	32.9	-	27	40	17	31.2	31.6
FEB	M*	M	M	-	M	M	M	M	M
MAR	3.47	2.11	16.9	-	30	40	22	34.0	32.0
APR	2.38	1.57	4.1	-	22	44	24	36.5	34.6
MAY	1.87	2.12	0.2	-	22	47	34	40.1	37.7
JUN	2.94	1.49	0	-	17	50	38	42.3	41.6
JUL	0.82	2.51	0	-	14	56	38	46.5	46.0

Data for remainder of year not available.

Totals for 6 months:

15.12	11.93	54.1	-	132	Extr.:	56	17	Ave.:	37.9	37.3
-------	-------	------	---	-----	--------	----	----	-------	------	------

* Missing

** Incomplete Data

TABLE 4. 1982 UNALASKA/DUTCH HARBOR, ALASKA, WEATHER SUMMARY.

	1982	Normal	1982	Normal	Days	1982	1982	1982	Normal
	<u>Precip.</u>	<u>Precip.</u>	<u>Snow</u>	<u>Snow</u>	<u>Meas.</u>	<u>Max.</u>	<u>Min.</u>	<u>Ave.</u>	<u>Ave.</u>
	(")	(")	(")	(")	<u>Precip.</u>	(°F)	(°F)	(°F)	(°F)
JAN	M	UNK	M	UNK	M	M	M	M	UNK
FEB	M	UNK	M	UNK	M	M	M	M	UNK
MAR	M	UNK	M	UNK	M	M	M	M	UNK
APR	1.52	UNK	0**	UNK	12	50	23	35.8	UNK
MAY	3.34	UNK	T	UNK	17	57	27	40.5	UNK
JUN	2.28	UNK	0	UNK	21	59	38	47.2	UNK
JUL	2.92	UNK	0	UNK	13	61	41	49.8	UNK

Data for remainder of year not available.

Totals for 4 months:

for 4 months:					Extr.:	Ave.:		
10.06	UNK	T**	UNK	63	61	23	43.3	UNK

* Missing

** Incomplete Data

D. PLANNING

5. Research and Investigations

Biological control of Aleutian Islands populations of introduced canids. University of California at Davis under contract to the Fish and Wildlife Service. Dr. Robert Rudd and Dr. Edward West. Arctic foxes introduced by trappers many years ago have decimated species of birds on islands where they have been introduced and are principally responsible for the near extinction of the Aleutian Canada goose. There is evidence to indicate that red foxes will compete with and eventually eliminate Arctic foxes from ranges which both species inhabit. This study was designed to determine whether red foxes will eliminate Arctic foxes, and the number of red foxes required to remove a given number of Arctic foxes. The study was cancelled in mid year, due to budget cuts.

The movement and breeding biology of bald eagles on Adak, Island. Fish and Wildlife Service, Aleutian Islands Unit. --A large population of bald eagles inhabits the Adak Naval Station on Adak Island. The study will determine the movement of birds from the Station area in winter to eyrie sites and will determine basic breeding parameters for eagles on Adak. A detailed discussion of the year's results is given in Section G.6.

Caribou productivity and range use on Adak Island. Fish and Wildlife Service, Aleutian Islands Unit. Previously, little was known about the caribou herd introduced in 1958-59 on Adak Island. Initial study of the herd began in 1981 and has continued. A revised study outline was prepared in April 1982. The primary objectives of this study are to develop baseline information on herd productivity and develop an estimate of range carrying capacity on Adak Island. Information will be used for recommending carrying capacity to protect wildlife and other resource values on Adak and other islands in the Aleutian Islands Unit of the Alaska Maritime National Wildlife Refuge where caribou/reindeer grazing now occurs or may occur in the future. Results are discussed in Section G.8.

Rock ptarmigan survey, Adak and Attu Islands. Fish and Wildlife Service, Aleutian Islands Unit. This study was developed to attempt a method of indexing ptarmigan populations on islands where sport hunting occurs yet little is known about population levels. An extensive literature search was conducted and a method was developed for carrying out a survey. Results are discussed in Section G.10.

Aleutian Arc magmatism in space and time: a geochemical and petrologic study. Cornell University, Department of Geological Science, Dr. R.W. Kay. This study began in 1976 and focuses on the relationship between magmatic activity, uplift, subduction, and the physical state of the crust and mantle. The origin of the chemical characteristics of arc magmas is also being investigated.

Investigation of the sea-air exchange of chemical substance. University of Rhode Island, SEAREX Executive Committee, Dr. Robert A. Duce. This is the first year of a study in the Aleutian Islands as part of a world wide evaluation of the atmospheric concentrations and fluxes to the ocean of a variety of organic and inorganic substances. An air particle monitoring system was established on Shemya Island.

Census of fur seals and Stellers sea lions in the eastern Aleutians. National Marine Fisheries Service, Marine Mammal Laboratory, Seattle, Washington, Dr. Thomas Loughlin. A census of fur seals and sea lions was made in the Aleutian Islands east of Umnak Island. A number of individuals of both species were collected for stomach sample analysis. A final report on the census is still pending.

Revegetation of distributed tundra. University of Tennessee, Department of Botany, Dr. Cliff Amundsen. Work is continuing on a study to determine which introduced species are suitable for vegetation establishment on areas disturbed by military activities. Thus far, results indicate that introduced species can be maintained only at high cost. The use of native American dunegrass (Elymus mollis) shows far more promise as a recovery species.

Aleutian Canada goose Study. Fish and Wildlife Service, Aleutian Islands Unit. The Aleutian Canada goose study continued and consisted of a spring survey, nesting study, and trap, band and transplant effort. A detailed discussion of this years effort is contained in Section G-2.

E. ADMINISTRATION

1. Personnel

The year could be remembered as another year of change. By the first of February the only "old timer" left on the staff was Administrative Officer Hagglund.

- Assistant Manager Reiswig transferred to the Assistant Manager position of Yukon Flats NWR.
- Refuge Clerk Karcheski resigned in December to take a part-time job in the High School Administrative office.

Three individuals joined the staff during the year: C. Fred Zeillemaker transferred from Crescent Lake NWR (Nebraska) to become the refuge Manager, Van Klett arrived from the Washita NWR (Oklahoma) to fill the Assistant Manager position and Fred Deines left Ecological Services (Nebraska) to join the staff as Refuge Biologist. Leslie Slater was promoted from the volunteer ranks into the TPT Biological Technician slot in May. While in this position, Les was in charge of the bald eagle nesting and eaglet banding programs. She also supervised crews on caribou vegetation and peak-of-rut surveys. Les did an excellent job. When her six month appointment was up, she joined the volunteer ranks once more.

Staffing during the past five years is shown in Table 5.

TABLE 5. FY Staffing 1979-1983, AIU

<u>Year</u>	<u>PERMANENT</u>		<u>TEMPORARY</u>
	(Full-Time)	(Part-Time)	
FY 79	5	8	9
FY 80	7	5	11
FY 81	7	1	1
FY 82	5	1	1
FY 83	6	2	5

2. Youth Programs

Five of the seven YACC positions allotted this station in 1981 were filled as we began the year. As in past years, this program was critically important to the unit's program. With the loss of experienced Aleutian personnel and the addition of personnel new to Alaska and the Aleutian Islands, the five young people proved their value in keeping the refuge biological and interpretation program going. They did an excellent job and their efforts made the difference between the success and failure for many of the projects undertaken during the year. Masteller, Logan and Kafka provided strong support in the bald eagle and caribou research studies. Kafka also took over and continued the I&R program started by

Beach last year. Savage continued her excellent work as office receptionist and O'Rourke provided janitorial services. When the YACC program was phased out, we lost the services of a group of dedicated young people. They were a credit to the program.

3. Other Manpower Programs

An On-The-Job Training program for high school seniors was continued with Bob Reeve High School of Adak. Three individuals, two in the 1981-82 school year and one in the 1982-83 school year were employed for 20 hours per week by the refuge. The salaries of the individuals were paid by the school. The students were exposed to a wide variety of refuge tasks in the biological, clerical, and interpretive areas of refuge management. Students assisted in surveys, necropsies of eagles and the development of interpretive exhibits for the headquarter's visitor contact area. Varnell researched and developed material on the Aleut Natives which was presented in two segments on AFRTS T.V. The refuge was fortunate in having fine individuals to work with and we are looking forward to a continuation of the program with the high school.

4. Volunteer Programs

Sixteen volunteers contributed 7,648 hours of time on a variety of projects during the year. With the YACC program cancelled, the volunteer program was studied and used as a means of providing people to assist the unit in accomplishing its biological studies. An intense effort was made to hire the best possible individuals available. The summer field season could not have been accomplished without their dedicated efforts. Nine volunteers assisted in conducting sea bird transects, spring Aleutian Canada geese (ACG) surveys in the Near Islands, ACG nest survey on Buldir, Caribou condition survey on Atka, ACG nesting survey on Chagulak, marine mammals surveys over entire Aleutian chain, bald eagle nest survey and eaglet banding, caribou census on Adak as well as vegetation analysis and peak-of-rut count. They also assisted in analyzing data and the writing of reports associated with the above projects.

Other volunteers aided in conducting National Wildlife Week open house activities, preparation of interpretative displays in the headquarter's visitor center area, worked as office receptionist, conducting interpretative classes for elementary school grades and numerous maintenance jobs. Three YACC enrollees whose appointments had expired signed on as volunteers and continued to serve as receptionist or continued to do biological work and complete the associated reports.

5. Funding

The following Table shows the breakdown of funds, by program, for the Aleutian Islands Unit during the past seven years.

TABLE 6. -FISCAL YEAR FUNDING, 1977-1983, AIU

<u>Year</u>	<u>1210 MB</u>	<u>1220 MNB</u>	<u>1240 I&R</u>	<u>1400 SE</u>	<u>Total</u>	<u>BLHP</u>
FY-77	192,000	45,000	17,000	222,000	476,000	-
FY-78	231,500	51,500	17,000	242,000	542,000	-
FY-79	364,000	51,500	20,000	307,000	742,500	1,781,000
FY-80	262,000	30,000	21,000	282,000	595,000	1,403,000
FY-81	144,000	60,000	21,000	140,000	365,000	-
FY-82	192,000	123,000	31,000	75,000	421,000	-
*FY-83	515,450	178,100	36,450	250,000	980,000	-

* Funding for Alaska Maritime NWR, which includes AIU.

The Aleutian Island Unit's portion of the AMNWR FY83 budget remained essentially the same as that shown for FY82. Sufficient funds are available to allow us to meet commitments layed out in the annual work plan advices and to charter a boat for the 1983 summer field season.

6. Safety

Administrative Officer Hagglund acted as the station Safety Officer until October. Maintenance Mechanic Bowers assumed the duties at that time and conducted the safety meetings for the remainder of the year.

Safety meetings were held monthly with all station personnel participating. Topics included hypothermia and Arctic survival, winter driving, care and cleaning of fireplaces, proper handling of rocket charges, safety clothing, eye protection and proper use and care of hand and power tools.

The station emergency action plan plus the headquarters building and housing fire plans were reviewed and revised where needed. Operators checklists for vehicles and boats were prepared. Use of these checklists will reduce maintenance needs on the equipment and catch minor problems before they become unsafe conditions or safety hazards.

Periodic fire safety inspections of the refuge headquarters building were initiated by the Navy Fire Department. All the necessary materials needed to hook the headquarters fire alarm into the Naval Base system are on hand, but have not been hooked up because of a shortage of manpower and a backlog of jobs.

The following safety training was completed during the year:

<u>Course</u>	<u>Participants</u>	<u>Length</u>	<u>Instructor</u>
Red Cross CPR	All Field personnel	8 hrs.	Navy Doctor
Seasonal Orientation and Emergency Procedures	All Field Personnel	16 hrs.	Martin

The Seasonal Orientation and Emergency Procedures training taught by Martin provided an excellent introduction to various safety procedures necessary in the Aleutian environment. Proper handling of the Whaler and Zodiacs, use of radios and EPIRB units, the use of a wide variety of safety and navigational equipment, and emergency and survival techniques were discussed at length and demonstrated.



Chris Ambroz and Mary Stefansky, along with all station personnel, received training in the use of the cold water survival suits prior to the start of our summer field season. (K.S. 1982)

Purchases during the year included: new fire extinguishers, floatation coveralls and radar reflectors for the Whaler and Zodiacs.

Two no lost time accidents occurred during the year. Refuge Biologist Deines tripped over one of the radio antenna guy wires while rushing to secure bald eagles under the cannon net. This fall caused a cut which required two stitches in his chin. The Assistant Manager stepped on a nail while securing the field camp on Buldir. His tetnus shot was still good, no further treatment was necessary.

The refuge biologist and a research biologist operating a Zodiac between Agattu and Shemya August 8 became separated from the charter vessel "Sea Spray" in dense fog and spent the night lost at sea for about 16 hours. Fortunately, through U.S. Coast Guard guidance the "Sea Spray" was successful in locating the missing boat and crew the next morning. They were found rowing towards Shemya about 1/4 mile off shore. Both personnel experienced no health problems from the incident but several valuable lessons and equipment needs were documented.

F. HABITAT MANAGEMENT

1. General

The Aleutian Islands Unit (AIU) of the Alaska Maritime National Wildlife Refuge (AMNWR) consists of 2,720,400 acres and is composed of 200 major islands and islets in the Aleutian Chain. (fig. #1) The refuge starts at the west end of the Alaska Peninsula (660 air miles SW of Anchorage, AK) and extends some 1,100 miles to the west. The headquarters for the AIU, a 2 year old combination office/visitor center, is located on Adak, which is 1,100 air miles from Anchorage.

With exception of military bases on the islands of Adak (5,000 personnel), Shemya (1,100 personnel), and Attu (45 personnel) and small native villages (less than 100 people each) on Atka, Umnak, Unalaska and Akutan, the islands are uninhabited.



The Aleutian Islands are of volcanic origin. Several islands still support active volcanoes; however, the majority are "dead" and a few have calderas that create lakes like this one on Kasatochi. (D.D. 1982)

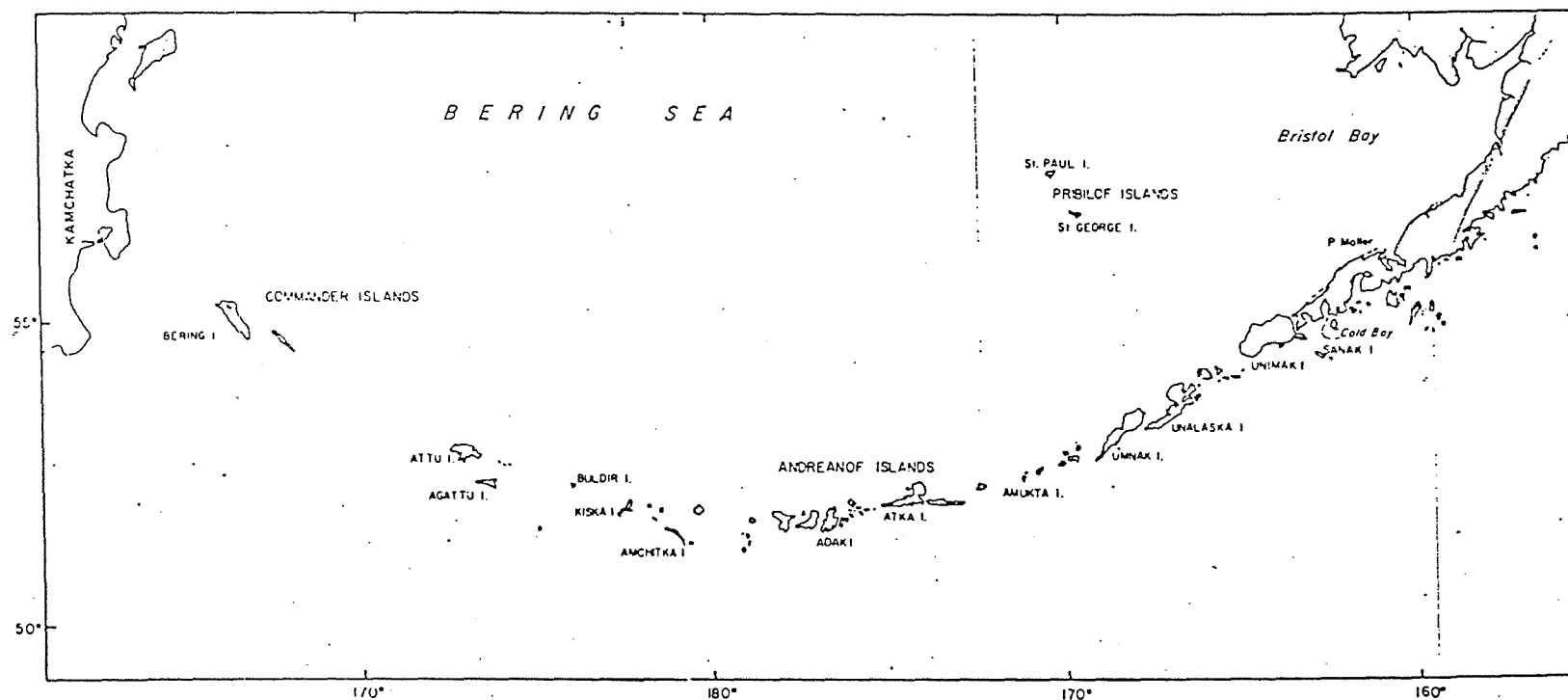


Fig. 1 . Aleutian Islands Unit, Alaska Maritime NWR, map.

2. Wetlands

Many of the islands have freshwater "potholes" which superficially resemble the prairie pothole country. A few areas produce aquatic growth which support limited populations of waterfowl. This is especially true of Amchitka, Kanaga, and Agattu Islands. Current management amounts to monitoring construction activities at military installations and attempting to steer development away from wetlands and lagoons. Thus far, the military has been quite sensitive to our suggestions.

12. Wilderness and Special Areas

The passage of ANILCA designated approximately 1.3 million acres of the Aleutian Islands Unit as Wilderness. Some notable areas of the Unit excluded from the designation are 127,870 acres for military and light-house purposes on Shemya, Attu, Adak, Amchitka and Ugamak Islands; and approximately 200,000 acres selected by Native Corporations under the Alaska Native Claims Settlement Act.

Other special areas or designations which occur or are proposed for the Unit are listed below:

<u>ISLAND</u>	<u>DESIGNATION</u>
Aleutian Islands Unit	Biosphere Reserve
Agattu	Research Natural Area
Buldir	Research Natural Area
Kiska	Battlefield Nominated to National Register of Historic Places
Attu	Battlefield Nominated to National Register of Historic Places
P-38 G Lightning (Aircraft) - Attu Island	National Register of Historic Places
B-24 D Liberator Bomber (Aircraft) - Atka Island	National Register of Historic Places

G. WILDLIFE

1. Wildlife Diversity

In bridging the North Pacific Ocean to Asia, the Aleutian Islands offer refuge to an international variety of birds. Migrants converge from all points of the compass. Over 70 Asiatic species, some occurring nowhere else in North America, have been found in the Aleutians, particularly the western islands. Several, including the whooper swan, bean goose, Asian form of the Green-winged teal, common pochard, tufted duck, smew, white-tailed eagle, common greenshank, wood sandpiper, Far Eastern curlew, common sandpiper, long-toed stint, eye-browed thrush, olive tree-pipit, and rustic bunting, occur regularly during migration.

A large variety of seabirds nest on the islands' cliffs and tundra covered hillsides in dense, noisy colonies. Their rookeries vary in size and composition, but some of the more numerous include Northern fulmars, fork-tailed storm-petrels, red-faced cormorants, glaucous-winged gulls, black-legged kittiwakes, thick-billed murre, pigeon guillemots, ancient murrelets, least auklets and tufted puffins.

A revised checklist of the 239 bird species observed in the Aleutians was prepared in 1982 (Table 7). It excludes those found exclusively on Unimak Island due to its avifaunal similarities to mainland Alaska rather than the remainder of the chain. Although some records date from the late 1800's, most status determinations are based on observations since the mid-1960's. Those species marked with a closed dot (●) nest or have nested in the Aleutians. Those marked with an open dot (o) are suspected of nesting or have nested, but require additional documentation. Habitat preferences, seasonal and monthly occurrence and seasonal abundance have been coded in this list as follows:

M - Marine Waters/Seashores
E - Estuaries
W - Fresh Water Wetlands
T - Lowland Tundra
A - Alpine Tundra/Rocks

S - Spring/3-5 (Mar.-May.)
s - Summer/6-8 (Jun.-Aug.)
F - Fall/9-11 (Sep.-Nov.)
W - Winter/12-2 (Dec.-Feb.)

a - Abundant (very numerous common species)
c - Common (certain to be seen in suitable habitat)
u - Uncommon (present, but not certain to be seen)
o - Occasional (seen only a few times over a 2-5 year period)
x - Accidental (has been recorded once or more times since 1913, but does not occur with any regularity.)

The numerals 1 through 12 indicate known months of occurrence. Slashes (/) separate periods or seasons of occurrence. The years of occurrence are shown in parentheses for accidental species.

TABLE /
REVISED CHECKLIST OF
BIRDS OF THE ALEUTIAN ISLANDS

-23-

	S s F W		S s F
o Red-throated Loon MEW 1-12	u u u r	Common Goldeneye MEWT 10-7	c o u
Arctic Loon MEW 9-5	u r r	Barrow's Goldeneye MEW 5-6	x x
• Common Loon MEW 2-12	u u u r	Bufflehead MEW 10-6	u o u
Yellow-billed Loon MEW 2-7	r o r	Smew EW 2-7/9-11	r o r
Horned Grebe MEW 9-7	u o r u	Hooded Merganser MEW 3-5/11-12	o x
Red-necked Grebe 8-7	u x u u	o Common Merganser MEW 9-7	u o u
Western Grebe ME 12 (1980)	x	• Red-breasted Merganser MEWT 1-12	c u u
Short-tailed Albatross M 5-10	o o o	Osprey WT 5/10 (1957,1970)	x x
Black-footed Albatross M 5-11	o c c	• Bald Eagle MEWTA 1-12	c c c
Laysan Albatross M 2-9	u u u u	• White-tailed Eagle MEWT 5-10	r r r
• Northern Fulmar M 5-9	c c c	Steller's Sea-Eagle MET 4-5	o
Mottled Petrel M 5-10	o r r	Northern Harrier EWT 2-7/9-11	o o o
Cook's Petrel M 6/8 (1933,1975)	x x	Northern Goshawk ET 8 (1946)	x
Pink-footed Shearwater M 5-6 (1975)	x x	• Rough-legged Hawk T 5-10	o o o
Flesh-footed Shearwater M 5/7-9	o o r	Golden Eagle T 6/8	x o
Sooty Shearwater M 4-5/7-9	r a a	Eurasian Kestrel ET 1-5/9-10	x x
Short-tailed Shearwater M 4-10	u a a	Merlin MEW 1-6/10-12	x o
• Fork-tailed Storm-Petrel M 4-9	a a a	• Peregrine Falcon MEW 1-12	u u u
• Leach's Storm-Petrel M 5-11	c c c	o Gyrfalcon WT 1-12	o o o
• Double-crested Cormorant MEW 4-7	r r	• Rock Ptarmigan TA 1-12	a a a
• Pelagic Cormorant M 1-12	c c c c	Sandhill Crane MEWT 5-7/10-11	u o o
• Red-faced Cormorant M 1-12	a a a r	Black-bellied Plover MEW 6-7/9-10	o o
Chinese Egret W 6 (1974)	x	Lesser Golden Plover MEWT 4-6/8-10	u o u
Black-crowned Night-Heron W 4 (75,81)	x	Mongolian Plover MEW 5-6/7-9	r o
Whooper Swan MEW 10-5	r r u	Common Ringed Plover E 5/8	o x
Bean Goose MEW 5-6	r o	• Semipalmated Plover MEW 5-7/9	o o x
Greater White-fronted Goose EWT 5(79)	x	Little Ringed Plover E 6 (1974)	x
Snow Goose MEWT 5/10	o x	Eurasian Dotterel WT 9 (1977,1978)	x
Emperor Goose MEW 9-7	u x c a	• American Black Oystercatcher M 1-12	c c c
Brant ME 9-3	r r o	Common Greenshank E 5-6/7-9	r o
• Canada Goose MEWT 4-10	u u u	Greater Yellowlegs MEW 5/10 (1970,75)	x x
• Green-winged Teal EWT 1-12	a a a a	Lesser Yellowlegs MEW 5-6/7-10	o o o
Baikal Teal ME 6 (1971)	x	Green Sandpiper E 5-7	o o
Falcated Teal WT 2-6/10-11	o x x x	Marsh Sandpiper E 9 (1974)	x
• Mallard EWT 1-12	c c c c	Spotted Redshank E 5/8-10	o x r
Spot-billed Duck E 1-12 (70,71,73,80)	x x x x	• Wood Sandpiper EW 5-9	u r r
• Northern Pintail EWT 1-12	u u u c	o Wandering Tattler MEW 5-10	u r u
Gargany WT 5-7/8-10	r o r	Gray-tailed Tattler ME 5-6/7-10	o r
Blue-winged Teal EW 7/10 (1968,1979)	x x	Common Sandpiper EW 5-6/7-9	r o
Northern Shoveller EWT 1-12	r o r o	Terek Sandpiper ME 5-6/8-9	r o o
o Gadwall MEW 11-5	r r r	Whimbrel WT 5-6/8-9	o o o
o Eurasian Wigeon EWT 8-7	u o u r	Bristle-thighed Curlew E 5-6	o x
American Wigeon EWT 11-6	r o r	Far Eastern Curlew E 5-7	o r
Common Pochard EW 5-6/10	r x x	Black-tailed Godwit E 5-6	r x
Canvasback MEW 10-7	o o o r	Bar-tailed Godwit ET 5-6/9-11	u r o
Ring-necked Duck EW 4 (1977)	x	Ruddy Turnstone MEW 5-6/7-10	c o a
Tufted Duck EW 1-12	r o r o	Black Turnstone ME 6 (1971)	x
• Greater Scaup MEW 1-12	c r u c	Great Knot E 5-6	x o
• Common Eider ME 1-12	a a a a	Red Knot E 5-6/7-10	o o o
King Eider MEWT 1-5/11-12	o x o	Sanderling ME 8-5	u u
Steller's Eider ME 1-6/10-12	r x r r	Semipalmated Sandpiper EW 9 (1977)	x
o Harlequin Duck ME 1-12	a u c a	Western Sandpiper EWT 5/7-12	x x o
Oldsquaw MEWT 8-6	a o c a	Rufous-necked Stint E 5-6/7-9	r x r
Black Scoter ME 10-6	c r c c	Little Stint EW 9 (1979)	x
Surf Scoter MEW 11-6	x x o	Temminck's Stint E 5-6/7-9	r o c
White-winged Scoter MEW 1-12	c r u c	o Long-toed Stint EW 5-6/7-9	u

BIRDS OF THE ALEUTIAN ISLANDS (Cont.)

	S	s	F	W		S	s	F	W
Least Sandpiper EWT 4-6/7-8	r	o	o		Belted Kingfisher EW 6/7-9		o	x	
Baird's Sandpiper MEW	o	o	r		Eurasian Skylark T 4-7/9	o	x	o	
Pectoral Sandpiper EW 5-7/8-10	o	o	u		Horned Lark E 9 (1978)		x		
Sharp-tailed Sandpiper EW 5/9-11	x	r			Tree Swallow EWT 6/7-11		o	o	
• Rock Sandpiper MET 4-12	c	c	c	c	Violet-green Swallow EW 9-10		o		
Dunlin MEWT 8-6	o	x	o	o	Bank Swallow EW 5-6/9	o	x		
Curlew Sandpiper E 5/9 (1977,1982)	x	x			Cliff Swallow EW 6		o		
Spoonbill Sandpiper E 6 (1977)		x			BarnSwallow EW 5-6/7-8	x	o		
Broad-billed Sandpiper E 8-9(1977,78)	x	x			• Common Raven MEWTA 1-12	a	a	a	
Buff-breasted Sandpiper E 9		o			• Winter Wren ET 1-12	c	c	c	
Ruff E 5-6/8-10	r	o	r		American Dipper W ?		?		
Short-billed Dowitcher EW 9 (1982)		x			Middendorff's Grasshopper WarblerT 9		o		
Long-billed Dowitcher MEW 6/9	x	o			Wood Warbler T 10 (1978)		x		
o Common Snipe EW 5-10	u	r	r		Dusky Warbler T 9 (1978)		x		
• Red-necked Phalarope MEW 5-9	c	c	c		Arctic Warbler T 5-6/9-10	x	x	o	
Red Phalarope MEW 5-6/7-10	r	c	r		Red-breasted Flycatcher T 6 (1977,82)		x		
Pomarine Jaeger M 5-7	o	u			Siberian Flycatcher T 9 (1977)		x		
• Parasitic Jaeger MEWT 4-9	u	u	u		Gray-spotted Flycatcher T 5-6	o	o		
Long-tailed Jaeger ME 5-6/8-9	o	x	o		Siberian Rubythroat T 5-6/9-10	r	r	r	
South Polar Skua M M 7 (1969)		x			Northern Wheatear TA 8-11		x	o	
Common Black-headed Gull ME 5-10	r	o	r		Orange-flanked Bluetail T 6 (1982)		x		
Bonaparte's Gull MEWT 5/8-10	x	o	x		Gray-cheeked Thrush T 9 (1978)		x		
Black-tailed Gull ME 5 (1980)	x				Eye-browed Thrush T 5-6/8-10	u	r	o	
Mew Gull MEWT 8-5	r	x	r	r	Dusky Thrush T 5/10	o	x		
Ring-billed Gull E 6 (1982)		x			American Robin T 5 (1977)	x			
Herring Gull MEWT 2-6/9-11	o	o	o	o	Siberian Accenter T 9 (1978)		x		
Slaty-backed Gull ME 2-6/8-10	r	o	o		Yellow Wagtail EW 5-6/8-10	u	r	r	
• Glaucous-winged Gull MEWT 1-12	a	a	a	a	Gray Wagtail T 5-6	o	o		
Glaucous Gull MEWT 11-6	r	o	o	r	White Wagtail ET 5-6/9	o	x	o	
• Black-legged Kittiwake MEW 1-12	c	c	c	o	Black-backed Wagtail ET 5	o			
• Red-legged Kittiwake M 5-10	u	u	u		Olive Tree-Pipit T 5-6/9	r	o	o	
Ross' Gull M 1 (1982)				x	Pechora Pipit T 5-6	o	x		
Sabine's Gull MEWT 5/7-10	x	x	o		Red-throated Pipit ET 5-6/9	r	o	o	
Common Tern ME 5-6/7-8	o	o			• Water Pipit EWT 2-12	r	r	r	
• Arctic Tern MEWT 5-9	c	c	o		Bohemian Waxwing T 10 (1971)		x		
• Aleutian Tern MEWT 5-8	u	u			Brown Shrike T 10 (1978)		x		
White-winged Tern E 7 (1976)		x			Northern Shrike ET 1-3/7(1941,46,75)	x	x	x	
Dovekie M 7 (1980)		x			Yellow-rumped Warbler T 5 (1980)	x			
• Common Murre M 1-12	a	a	u	o	Townsend's Warbler T 10 (1977)		x		
• Thick-billed Murre M 1-12	a	a	u	c	• Savannah Sparrow T 5-9	r	r	o	
Black Guillemot ME 5 (1968)	x				Fox Sparrow T 6 (1894,1944)	x			
• Pigeon Guillemot M 1-12	c	c	u	u	• Song Sparrow EWT 1-12	c	c	c	
• Marbled Murrelet MET 1-12	u	u	r	o	Golden-crowned Sparrow T 3/9-11	x	o		
• Kittlitz's Murrelet MET 1-12	u	c	u	o	Dark-eyed Junco T 1-4/11	x	x		
• Ancient Murrelet MT 1-12	c	c	u	o	• Lapland Longspur EWT 4-11	a	a	a	
• Cassin's Auklet M 1-12	u	u	u	u	Little Bunting T 9 (1977)		x		
• Parakeet Auklet M 1-7	u	r	u		Rustic Bunting T 5-6/9-10	u	r	r	
• Least Auklet M 3-12	u	a	a	o	Gray Bunting T 5 (1977,1980)	x			
• Whiskered Auklet M 2-11	u	u	r	o	Common Reed-Bunting T 5-6	o	x		
• Crested Auklet M 1-12	c	a	r	r	• Snow Bunting EWTA 1-12	c	c	c	
• Rhinoceros Auklet M 6-10		r	r		McKay's Bunting T 1-3	x			
• Tufted Puffin MT 1-12	a	a	a	o	Brambling T 5-6/9-10	r	o	r	
• Horned Puffin M 1-12	c	c	u	o	Rosy Finch ET 1-12	a	a	a	
Common Cuckoo T 5-7	o	x			Common Rosefinch WT 5-6/8	o	o		
Oriental Cuckoo T 6 (1937)		x			Red Crossbill T 10 (1899)		x		
Oriental Scops-Owl T 6 (1977,1979)		x			o Common Redpoll T 1-12	r	r	o	
• Snowy Owl ETA 12-8	r	r	r		• Hoary Redpoll T 5-7/12-1	o	o		
o Short-eared Owl ET 5-6/9-10	o	r	o		Pine Siskin T 3 (1977)		x		
Jungle Nightjar T 5 (1977)		x			Oriental Greenfinch T 5-6/8-9	o	o	x	
White-throated Needletail T 5(74,78)	x				Eurasian Bullfinch T 5/9 (1977,1978)	x	x		
Fork-tailed Swift T 5-6/9	x	x	o		Hawfinch T 5-6	o	o		
Rufous Hummingbird T 6 (1936)		x							

2. Endangered and/or Threatened Species

The Aleutian Canada Goose is designated an Endangered Species. Historically, their breeding range extended from the eastern Aleutians to the Kurile Islands, wintering either in Japan or from British Columbia to California. Geese were common in the western Aleutians until the turn of the century. The reason for their decline is speculative, but the introduction of fox to the Aleutians is considered the primary cause. Hunting pressure and loss of wintering habitat are also of importance in the overall picture.

Since the late 1940's refuge personnel have conducted a program to eliminate fox on selected islands. Amchitka was designated fox-free in 1960, and likewise for Alaid and Nizki Islands in 1976. Agattu received this status this year.

Buldir was one of the few islands to escape fox introduction and supported a remnant population of about 300 geese in 1963. Goslings were captured on Buldir in 1963, 1972, and 1975 to initiate a captive breeding program. Propagation facilities were established at Patuxent Wildlife Research Center, Amchitka Island, and Northern Prairie Wildlife Research Center. The Aleutian Canada Goose Recovery Team was formed in 1975, and established two main objectives. The first is to maintain a minimum wild breeding population at the 1977 level of 1160 geese. Secondly, self-sustaining populations, i.e., a minimum of 50 breeding pairs, are to be re-established in three former breeding locations.

As part of the continuing effort to meet these objectives, the following were completed in the 1982 field season: a survey of Agattu and Alaid/Nizki in the Near Islands for returning Aleutian Canada geese in late May, a goose nesting survey of Aleutian Canada geese on Buldir Island in June, and the trapping, banding and transplanting of Aleutian Canada geese from Buldir to Agattu in August, and the release of the last of the hand-reared Aleutian Canada geese on Agattu in August. A new nesting population of Aleutian Canada geese was discovered on Chagulak Island in mid July.

The Aleutian Canada goose survey program began with a good omen when nine birds were observed on Adak, at Clam Lagoon, in early May.



Although the majority of the Aleutian Canada geese spend the spring/summer period on Buldir, we do have migrants that stop over for a few days on Adak. (E.V.K. 1982)

Spring surveys were conducted on Agattu and Alaid/Nizki Islands the end of May for returning Aleutian Canada geese. A two man team set up a field camp on Alaid/Nizki to search for geese from May 10 to May 17 and met with only partial success. They were able to get in one good day of surveying a part of the island and found 3 banded geese. One of the birds was from a group released on Nizki in 1981. The weather then deteriorated and they were forced to spend the rest of their time on Shemya Island at the Air Force Base. While on Shemya they received a reliable report of 13 Aleutian Canada geese but couldn't personally verify it.

Additional surveys for Aleutian Canada geese were conducted from May 20 to May 27 on Agattu and May 22-26 on Alaid/Nizki Islands. On Alaid/Nizki, a two man team utilized the field camp set up earlier and spent 5 days thoroughly searching the island for geese. During their stay, no sign of geese were found on Alaid half of the island. Fourteen banded Aleutian geese and one unbanded goose were observed in the vicinity of the site of 1981's release, a cove on the SE side of Nizki. Goose droppings were found in a cove on the north side of Nizki.



The geese are two of 14 transplants that returned to Alaid/Nizki-Agattu Islands. (E.V.K. 1982)

Spring survey work for geese on Agattu consisted of two separate one week efforts. Two refuge personnel utilized the old fox trappers cabin in Aga Cove as a base camp and hiked to the major coves in the vicinity to look for geese. The other effort consisted of two refuge personnel and one researcher utilizing the charter vessel "Sea Spray" and a 13 foot inflatable zodiac to check all of the other large bays and coves around the island.

The charter vessel took them to the general area of the coves and bays and the zodiac was used to go ashore and check for geese.

On Agattu, geese were found only in the Aga Cove area. Fourteen banded Aleutian Canada geese were observed. Of these fourteen birds, all but three were also seen on Alaid/Nizki. All but two of the Alaid/Nizki birds were utilizing both locations. These numbers fell considerably short of our objective to locate eighteen banded birds on Agattu (total of 367 geese released there in 1978-1980) and seventeen banded birds on Alaid/Nizki (342 released there in 1981). Because of the small number observed and the fact that none of the birds seen were hand reared birds from the Northern Prairie Wildlife Research Center, it was decided to cancel the captive propagation program for Aleutian Canada geese.

One promising sign for both Agattu and Alaid/Nizki Islands was the re-establishment of ground-nesting birds such as glaucous-winged gulls, common eiders, and red-faced and pelagic cormorants. The abundance and

accessibility of their nests, coupled with the lack of fox sign, helped to reaffirm that these islands are indeed fox free. This will assist in helping the small Aleutian Canada goose population to re-establish itself as a viable nesting population on these islands where it once existed prior to fox introductions at the turn of the century.



Buldir Island has many steep, cliff-faced beaches (top photo) with no protected cove to facilitate boat landings, features that discouraged the Arctic fox from being introduced there. Tip Valley (bottom photo) is heavily used by Aleutian Canada geese for nesting. (E.V.K. 1982).



During the 1982 breeding season, a team composed of 6 refuge personnel returned to Buldir for 31 days (May 29 to June 28) to conduct a nesting study using a stratified random sampling technique. The technique was established in 1977 and last completed in 1979. Previously established permanent plots measuring 200M x 200M were located and searched for goose nests.

Investigators found a total of 68 nests during the study in 1982. This compares with 36 nests found in 1977 and 45 nests found in 1979. A total of 36 nests were found inside the sample plots, twice the number found in 1979. It would appear that hunting closures in the Central Valley area of California are beginning to bear fruit as evidenced by the increasing nesting population. Only three nests were found in the Gull Slide census area this year. The eastern vegetated finger of the census area is eroding at a rapid rate. An estimated eighth to a quarter of this finger, primarily at the upper end, has been lost since 1979. There is also some loss occurring on the west side of the western finger, but at a slower rate. The habitat appears to be changing also as more puffin burrows were noted.



Foggy conditions hampered search efforts, not only in locating the previously established nesting plots, but also in finding the nests inside the plots. (T.E. 1982)

Nesting activity occurred slightly later in 1982 than 1977 or 1979, based on observations of nesting activity and the hatch. It is estimated that the peak of egg laying occurred on June 4 and the peak of hatch on 3 July. Clutch size was 5.50 eggs. This represents a slight increase from 1979 when the average clutch size was 5.40.

Based on the number of nests and eggs found during the nesting study, it was calculated that 287 ± 145 pairs attempted nesting on Buldir in 1982. This almost doubles the number of pairs (150 ± 69) determined for 1979.

An estimated 1065 fledged goslings was projected for 1982, as compared with 559 in 1979. This estimate was made using production rates from previous years. Nesting success averaged 93 percent in 1975 and 1976. In 1977, it was calculated that 3.99 goslings were raised per successful pair. Since production rates remained similar in 1975 and 1976 and there was no apparent gross difference in adverse weather conditions or other factors in 1982 from other years, it was assumed that the 1982 production was similar to that of previous years of study.



As in past years, the majority of the nests were found on south or north facing sea slopes. Very few nests have been found on the interior plots. (T.E. 1982)

Based on counts in April 1982 in the Central Valley area of California, 2700 Aleutian Canada geese were in the population prior to the spring migration. The estimated 1982 gosling production added 1065 to the population. At this time, the adult and subadult mortality rates during spring migration and on the breeding ground are unknown. Investigators of other Canada goose populations have indicated that this loss is minimal. By assuming a liberal loss of 6.3 percent on 237 adults, subadults and fledged goslings, the fall population was estimated to be 3528 birds. The percentage figure used is the same as that used in 1977 and 1979. The estimate was calculated as follows:

Breeding geese (287 X 2)	574
Non-breeders (2700 - 574)	2126
Gosling Fledged	<u>1065</u>
	3765
Assumed mortality (6.3%)	237
Population Estimate	3528

The population estimate of 3528 Aleutian Canada geese compares very favorably with the 3500 birds observed on the wintering grounds in the Central Valley area of California in December of 1982.

While conducting seabird surveys in the east-central Aleutian Islands during June and July, personnel from the refuge and wildlife operations sighted Aleutian Canada geese at two localities in the islands of Four Mountains group. On June 12th and 13th, groups of three and twelve geese, were sighted approximately 1 mile south of Amukta Island. Since Arctic fox still exist on Amukta Island, it can be assumed that the geese were not nesting there.

The neighboring island of Chagulak was then circumnavigated and checked for geese. On June 15th two birds were sighted exhibiting territorial behavior. Investigators could not locate a nest. On June 16th, 62 adult birds were sighted in a loose flock on the southwest side of Chagulak. Flocking behavior of these birds, at this time of year, suggested that most of these birds were yearlings or non breeding adults.



A nesting population of Aleutian Canada geese, size unknown was discovered on Chagulak Island. Chagulak has a topography very similar to Buldir and is also fox free. It also hosts the largest northern fulmar nesting colony in the Aleutians. (F.D. 1982).

Weather and work elsewhere precluded any additional goose investigations at that time. The question of a possible new breeding population still remained unanswered. On July 10, with two additional refuge personnel, the weather allowed investigators to return to the northwest site of Chagulak. This time the question was answered when an Aleutian Canada goose was flushed from a nest containing four eggs plus an additional cold egg on the ground below the nest. This nest established the existence of the only natural nesting population known to exist in the eastern Aleutians and the only one known to exist besides Buldir Island. Needless to say it was an exciting red-letter day for all the refuge personnel involved and boosts survival chances for the endangered Aleutian Canada goose considerably.



The Chagulak nest (above) was situated just below the grassy hummock in the center of the photo below. This type of nest site is very similar to those on Buldir Island. (F.D. 1982).



In the past, hand-reared Aleutian Canada geese either from the Northern Prairie Wildlife Research Center or Patuxent, have been transplanted to Agattu of Alaid/Nizki in hopes that they would reestablish a nesting population. This was not successful, because the birds had no knowledge of the migration route to the California wintering grounds and they subsequently perished. The next step was to release a combination of hand-reared birds and transplanted wild birds from Buldir Island. It was hoped that the experienced wild adults transplanted from Buldir would serve as "guides" for their goslings transplanted with them and the hand-reared birds. The young of the year would then return to the island at which they first became capable of flight, and establish a breeding population. This combination of hand-reared and wild geese was used on Agattu in 1978, 1979, 1980 and again this year. Although many of the wild goslings returned to the island of their release, again there was little success with the hand-reared birds. Therefore, 1982 was the last year that attempts will be made to include hand-reared birds in the transplant program.

This years capture, banding and transplant work with Aleutian Canada geese was conducted on Buldir and Agattu Islands from July 28th to August 6th. Various offices in and out of Alaska including the Alaska Maritime National Wildlife Refuge, the Northern Prairie Wildlife Research Center, the Endangered Species Office, and Wildlife Research Office participated in the capture and transplant efforts.

All personnel participated in some or all of the capture efforts of wild Aleutian Canada geese on Buldir Island this season, with the exception of Forrest Lee from the Northern Prairie Wildlife Research Center. Forrest Lee arrived via chartered aircraft on August 5th, and was primarily involved with the transport and release of hand-reared geese on Agattu. The geese captured on Buldir were transported to Agattu via the charter vessel "Sea Spray" on July 31st, August 3rd, and August 5th. Birds were transported and released as soon as possible to reduce stress caused by handling and to increase their chances for survival.

Searching and capturing efforts for molting geese is based on several years experience. It basically consists of personnel walking 10 to 30 meters apart through the upper edge of the lowland tall plant association. When a bird was sighted, everyone converged on that area as other geese were generally found in the same area. The geese were either captured by hand or with a large long handled dip net.



The tall lush vegetation on Buldir in late summer makes excellent cover for the small Aleutian Canada geese. The flightless birds are well hidden and diligent efforts are needed to locate them. (F.D. 1982)



Even though the geese cannot fly, they can run! The chase can be tiring. (T.E. 1982)

When a goose was captured its age and sex was determined, and it was banded with a size 7B FWS leg band. The date and location of capture was recorded in a field log, along with the other information. It was then placed in a small burlap bag which had one corner clipped to allow the bird's head and neck to extend outside of the bag. These bags were pre-cut to snugly fit the geese and help prevent injury. The end of the bag was then tied with a short piece of rope to limit the bird's movement.



Once the flightless birds are in hand, they are aged, sexed, banded and bagged prior to transporting to the holding pen at main camp. (T.E. 1982)

The bagged geese were then placed in a burlap-lined, welded wire cage for transport to Main Camp. Three wire cages were attached to a backpack frame. Each compartment could hold 3-5 adult geese or 4-6 goslings. Unnecessary walking with birds in the pack was avoided. Usually if one particular area was worked for a time the packs were removed while crew members chased other geese. Hiking back to camp was attempted without unnecessary delays or rough treatment to the birds.

Upon return to the Main Camp at North Marsh the geese were taken out of the backpack cages and burlap bags and released into a fenced enclosure. The fenced enclosure was approximately 5 X 30 meters in size, and built of poultry wire, hog rings and metal fence posts. It also had a roof made of poultry wire. Burlap was attached to the sides to make a visual barrier for the birds. A small plywood table was put at the far end of the pen to afford the geese some protection from the elements. The area within the enclosure provided natural vegetative food and cover. Water and commercial goose feed were also provided. As an added precaution, the captured geese were tube fed about 20 cc of a nutrient solution.



Flightless geese were placed in this holding pen as soon after capture as possible. They stayed here until sufficient number were present to make up a load for transplant to Agattu. (F.D. 1982)

The tube feeding began the day after capture and occurred once daily thereafter, including the day of transport. The birds were also fed just prior to their release on Agattu. Any birds appearing to be suffering badly from shock due to handling were also tube fed the day of capture.

Just prior to transport to Agattu the birds were taken from the holding pen and temporarily placed in wooden chicken crates. The wooden crates were burlap lined and about 91 X 66 X 36 cm or 91 X 66 X 41 cm in size. The geese were taken from the crates, tube fed, banded with a blue plastic leg band and placed in similar crates lined with Elymus arenaria to await transport to Agattu for release. The blue plastic

leg band was placed on the right leg of males and on the left leg of females and was secured by gluing the plastic together. Adults and goslings were put into separate crates to eliminate the potential of the adult birds trampling the goslings during transport. The number of birds put into the wooden crates was also limited to four to six adults and six to eight goslings to prevent injury.

Once the geese were loaded into crates, they were taken out to the charter vessel "Sea Spray" and covered with a heavy canvas. All efforts were made throughout the handling of the geese to provide maximum protection to the birds.

Transport of the geese generally occurred the day after capture or the following day. The "Sea Spray" would leave Buldir Island sometime late in the night so it would arrive at Agattu in the early morning hours. The average trip took about eight hours. The exact departure time was dependent on weather and sea conditions.

Upon arriving at Agattu Island the following morning, the geese were tube fed on the boat. They were taken ashore to the release point via inflatable boats. All the geese were released in the Goose Creek drainage of Aga Cove. During the first release the wooden crates were gently turned on their sides and lined up to form a circle with the doors facing inward. This was done to create a small holding area for the geese so they could reestablish family groups prior to their actual release. The technique worked fairly well, but it was felt that a larger holding area would have worked better. On subsequent releases an irregular shaped holding pen of approximately 25 meters by 50 meters in the Goose Creek area was used. It was created by closing off an existing fenced area with some other fence material. The holding pen was approximately 100 meters from the ocean and 5 meters from Goose Creek. The birds remained in the holding pen for a couple of hours prior to their release.



After an 8 hour boat ride to Agattu, the flightless geese are ready to stretch their legs and get acquainted with their new surroundings. (F.D. 1982)

A total of 150 Aleutian Canada geese were captured on Buldir Island. Seven were banded and released on Buldir, three died in captivity on Buldir, and two died after release on Agattu. This represents a three percent mortality rate for the 150 birds handled. A total of 140 geese were released on Agattu, 138 survived and were comprised of 109 goslings and 29 adults. Again it should be noted that not all these birds represent family groups, although every attempt was made to capture entire families. Of the geese captured on Buldir and taken to Agattu, 89 individuals were released within 24 hours after capture, 31 within 48 hours and 20 within 72 hours. Even though nearly all the geese encountered were incapable of flight, they were still able to move quite rapidly over the rough Buldir terrain. The geese were often able to outrun us in open areas, especially if they were headed uphill. On several occasions the capture crew was spotted by wary geese before we saw them. The only view of these birds was of them proceeding out of the area with all expediency. They were impossible to capture with such a head start. Our efforts to circle around ahead of them and capture them proved fruitless. Although every effort was made to minimize the impact of capture and handling on the geese, some still showed signs of partial stress paralysis when they were released into the holding pens on Buldir or Agattu. Generally, however, the affected birds, seemed to have recovered within about 24 hours. A few birds sustained some minor

abrasion injuries during the handling and transport. These injuries were treated by spraying the injured area with antiseptic. In general, the birds received less injuries and showed less stress related paralysis than during previous years' work.



The OAS plane Argosy was utilized to transport the pen raised birds from the Northern Prairie Wildlife Research Center on the last flying leg of their journey from Anchorage to Shemya. (L.S. 1982)

The last of the hand-reared birds (303 individuals) from Northern Prairie Wildlife Research Center at Jamestown, North Dakota arrived at Shemya Air Force Base at 6:00 p.m. on August 5th. The crated geese spent the night in a warehouse and were loaded onto the charter vessel "Sea Spray" after daylight on August 6. Once loaded the "Sea Spray" departed Shemya at 8 a.m. and arrived at Agattu at 1 p.m.



After a night's rest on Shemya, the geese were loaded onto the "Sea Spray" to complete their trip to Agattu. (E.V.K. 1982)

The geese were off loaded immediately from the vessel, using two zodiacs. The birds were taken to Goose Creek in Aga Cove. They were tube fed a nutrient solution and then released into the same temporary holding pen used with the Buldir birds. This holding pen contained food and water and much green forage. The strategy was to let the birds settle down and reassemble into family and other age groups. It seemed to work fairly well and shortly after all the birds were uncrated, the temporary holding pen was opened at both ends so the birds were free to leave.

A total of twelve birds died between leaving Jamestown and release on Agattu. This represents a nominal four percent loss and the 291 other birds which were released appeared to be in excellent condition. The hand-reared birds were released in the same area as the wild transplant birds.



Upon their arrival at the release site on Agattu, the birds were fed a high protein liquid and released into the holding pen. They were let out of the pen several hours later, allowing time for family groups to reunite. (E.V.K. 1982)

The release site was revisited on August 8th. There was considerable evidence of grazing in the general area. As the release site was approached, a large number of geese were observed running up the steep slope on the opposite side and end of the valley. All the birds appeared to be doing well and there were no dead birds found. As 1982 ended sixty-eight percent of the wild geese we transplanted from Buldir, and seventeen percent of captive reared birds have been observed on the wintering grounds in California.

3. Waterfowl

The estimated waterfowl population use days on the Aleutian Islands Unit for 1982 is shown in Table 8. Although still an estimate of use, the confidence in these numbers is much greater than before due to a complete literature search of observations made throughout the chain in the past years. It should be noted, however, that the total number of observations found in the literature is very limited and still represent a rough estimate. As shown in Table 8, total waterfowl use days was 51,970,820. Common eider had the most use days with 8,760,000 followed closely by emperor goose with 8,718,900. The two species with the lowest estimated use days were gargany with 60 and snow goose with 30.

Additional information concerning specific waterfowl sightings made in 1982 can be found in Tables in the appendix.

TABLE 8. 1982 ESTIMATED WATERFOWL POPULATION USE DAYS, PERIODS OF USE, PEAK NUMBERS, PEAK DATES AND PRODUCTION, AIU.

<u>Species</u>	<u>Use Days</u>	<u>Use Period</u>	<u>Peak No.</u>	<u>Date of Peak</u>	<u>Prod.</u>
Whooper Swan	34,500	1-5/11-12	300	03/01	
Bean Goose	240	5-6	10	05-20	
Snow Goose	30	6	1	06/01	
Emperor Goose	8,718,900	1-7/9-12	60,000	02/28	
Brant	34,800	4-5/10-11	1,300	05-01	
Canada Goose*	364,800	4-9	3,650	08/20	900
Eurasian Green-winged teal	5,412,000	1-12	26,500	08/20	12,000
American Green-winged teal	4,550	1-12	950	08/20	450
Falcated Teal	90	6	3	06/02	
Mallard	2,332,500	1-12	14,000	08/20	8,000
Northern Pintail	1,131,000	1-12	7,000	09/30	3,000
Gargany	60	5	2	05/25	
Northern Shoveler	4,350	5-7/9-10	500	09/30	
Gadwall	12,150	2-6/12	125	03/15	
Eurasian Wigeon	16,500	1-6/11-12	400	05/25	
American Wigeon	9,600	4-6/11-12	150	04/30	
Common Pochard	750	5-6	20	05/25	
Canvasback	1,500	2-4	70	03/01	
Tufted Duck	37,500	1-7/9-12	250	05/15	
Greater Scaup	2,199,000	1-12	15,000	03/15	600
Common Eider	8,760,000	1-12	51,000	09/30	21,000
King Eider	525,000	1-5/12	7,500	03/15	
Steller's Eider	933,000	1-6/10-12	7,500	03/15	
Harlequin Duck	5,469,000	1-12	24,000	03/15	300
Oldsquaw	3,335,100	1-6/9-12	30,000	12/31	
Black Scoter	4,350,000	1-12	30,000	03/15	
Surf Scoter	9,000	11-12	300	12/31	
White-winged scoter	2,505,000	1-12	20,000	03/01	
Common Goldeneye	2,565,600	1-6/9-12	25,000	04/15	
Bufflehead	1,161,000	1-6/10-12	10,000	01/15	
Smew	9,300	1-6/12	100	01/15	
Red-breasted merganser	1,977,000	1-12	10,000	02/15	4,500
Common Merganser	57,000	1-6/10-12	400	02/15	

Total Use Days 51,970,820

*Endangered Aleutian Subspecies

4. Marsh and Water Birds

The estimated marsh and water bird use days on the Aleutian Islands Unit for 1982 is shown in Table 9. As with waterfowl use days, confidence in these numbers is greater than before due to a complete literature search of bird observations made throughout the Aleutian Chain in past years. It should be noted, however, that the total number of observations is very limited and these numbers still represent an estimate. A total of 700,155,850 marsh and water bird use days is estimated to have occurred in 1982. Fork-tailed and Leach's storm petrel had the highest estimated use days with 314,730,000 and 227,460,000 respectively. Sandhill cranes and yellow-billed loons had the lowest estimated use days with 2,350 and 32,400 respectively.

Additional information concerning specific seabird sightings may be found in section G.5 and the associated tables in the appendix.



Red-faced cormorant populations along with the common eider and the glaucous-winged gull have made remarkable comebacks on those islands where Arctic fox populations have been eliminated. (E.V.K. 1982)

TABLE 9. 1982 ESTIMATED MARSH AND WATER BIRDS USE DAYS, PERIODS OF USE,
PEAK NUMBERS, PEAK DATES AND PRODUCTION.

<u>Species</u>	<u>Use Days</u>	<u>Use Period</u>	<u>Peak No.</u>	<u>Date of Peak</u>	<u>Prod.</u>
Red-throated Loon	366,000	1-12	1,300	09/30	100
Arctic Loon	90,600	1-5/9-12	600	02/15	
Common Loon	499,500	1-12	2,500	09/30	700
Yellow-billed Loon	32,400	1-7/12	400	02/01	
Horned Grebe	322,500	1-5/9-12	3,000	02/15	
Red-necked Grebe	292,500	1-5/9-12	1,800	02/15	
Black-footed Albatross	165,000*	5-11	1,100	08/15	
Laysan Albatross	183,000*	2-9	3,000	07/01	
Northern Fulmar	112,065,000	4-9	1,408,000	08/15	
Sooty Shearwater	525,000*	4-8	15,000	07/15	
Short-tailed Shearwater	2,655,000	4-10	60,000	07/15	
Fork-tailed Storm-Petrel	314,730,000	4-11	3,290,000	08/15	
Leach's Storm-Petrel	227,460,000	5-11	1,800,000	09/01	
Double-crested Cormorant	2,145,000	5-10	2,800	09/15	
Pelagic Cormorant	10,152,000	1-12	50,400	09/15	
Red-faced Cormorant	28,470,000	1-12	210,000	09/15	
Sandhill Crane	2,350	5-7/10-11	50	06/01	
Total Use Days	700,155,850				

*Nearshore use only

5. Shorebird, Gull, Tern and Allied Species

The estimated use days for shorebird, gull, tern and allied species on The Aleutian Islands Unit is shown in Table 10. As with the two previous sections, confidence in these number is greater than before due to a complete literature search of bird observations made throughout the Aleutian Chain in past years. It should be noted, however, that the total number of observations found in the literature is limited and that these numbers still represent a rough estimate. A total 1,004,469,825 use days is estimated to have occurred on the unit in 1982. This astronomical figure points out the significance of the refuge to this group of species. Tufted puffin, least auklet and crested auklet had the highest number of estimated use days with 303,030,000, 299,700,650, and 123,210,000 respectively. Green sandpiper had the lowest estimated use days with 5 followed closely by spotted redshank, terek sandpiper, far eastern curlew, and great knot with 10 use days each.



Both species of puffin, horned (left) and tufted (right) utilize islands in the Aleutian Chain for nesting. The tufted puffin is the most common seabird on the islands. (C.F.Z.-E.V.K. 1982)

Three islands in the west-central Aleutians and several in the eastern section were circumnavigated in 1982. Little Sitkin, Rat and Tanaga Islands were surveyed from June 30 through July 5. The eastern Aleutian circumnavigations were done between June 3 and July 22. The wildlife of the coastal and near shore areas of these islands were censused from inflatable boats (Zodiacs). Each boat contained a 2 or 3 person crew equipped with binoculars (10x40 or 7x35), writing materials, and appropriate protective and safety gear. Tables in the appendix summarize the bird species seen on these surveys.

TABLE 10. 1982 ESTIMATED SHOREBIRD, GULL, TERN AND ALLIED SPECIES USE DAYS, PERIODS OF USE, PEAK NUMBERS, PEAK DATES AND PRODUCTION, AIU.

<u>Species</u>	<u>Use Days</u>	<u>Use Period</u>	<u>Peak No.</u>	<u>Date of Peak</u>	<u>Production</u>
Lesser Golden Plover	49,500	5-6/8-10	800	09/15	
Mongolian Plover	150	5-6	5	05/21	
Common Ringed Plover	135	5-6	5	05/23	
Black Oystercatcher	1,536,000	1-12	5,600	09/01	1600
Common Greenshank	170	5-6/9	4	05/20	
Green Sandpiper	5	5	1	05/18	
Spotted Redshank	10	5	1	05/20	
Wood Sandpiper	3,720	5-6/8	120	05/20	
Wandering Tattler	21,900	5-6/8-10	300	09/20	
Gray-tailed Tattler	620	5-6/8-9	15	09/05	
Common Sandpiper	525	5-6/9	10	05/28	
Terek Sandpiper	10	5-6	1	06/09	
Whimbrel	30	5-6	1	06/15	
Far Eastern Curlew	10	6	1	06/12	
Black-tailed Godwit	20	5-6	1	05/26	
Bar-tailed Godwit	6,330	5-6/10-11	250	05/26	
Ruddy Turnstone	675,000	5-6/7-10	10,000	09/25	
Great Knot	10	6	1	06/09	
Red Knot	270	5-6	7	05/31	
Sanderling	322,500	1-5/8-12	2,000	02/15	
Western Sandpiper	20	5-6	2	05/20	
Rufous-necked Stint	40	5-6	2	05/17	
Temminck's Stint	45	5	3	05/23	
Long-toed Stint	100	5-6	7	05/21	
Pectoral Sandpiper	180,200	5-6/9-11	3,000	09/30	
Sharp-tailed Sandpiper	22,800	9-11	750	10/20	
Rock Sandpiper	5,550,000	1-12	20,000	04/15	4,000
Dunlin	16,500	5-6/10-11	500	10/30	
Curlew Sandpiper	10	5-6	1	05/30	
Ruff	20	5	1	05/18	
Short-billed Dowitcher	30	9	1	09/25	
Common Snipe	1,500	5-6	50	05/21	
Red-necked Phalarope	228,000	5-9	2,100	08/15	600
Red Phalarope	69,000	6/7-9	2,000	08/15	
Pomarine Jaeger	1,600	5/9	20	05/19	
Parasitic Jaeger	75,000	4-9	700	08/15	200
Long-tailed Jaeger	30	5-6	1	05/21	
Common Black-headed Gull	1,215	5-7	25	06/17	
Mew Gull	43,680	3-5/8-9	600	02/15	
Ring-billed Gull	10	6	1	06/30	
Herring Gull	1,500	5-6	50	05/25	
Slaty-backed Gull	150	5	5	05/17	
Glaucous-winged Gull	31,206,000	1-12	123,000	08/15	35,000
Glaucous Gull	70,500	2-4/12	1,000	02/15	
Black-legged Kittiwake	26,199,000	1-11	163,800	09/15	46,800
Red-legged Kittiwake	3,135,000	5-10	21,000	09/15	6,000

TABLE 10 . (CONTINUED). ESTIMATED 1982 SHOREBIRD, GULL, TERN AND ALLIED
SPECIES USE DAYS, PERIODS OF USE, PEAK NUMBERS AND PRODUCTION

<u>Species</u>	<u>Use Days</u>	<u>Use Period</u>	<u>Peak No.</u>	<u>Date of Peak</u>	<u>Production</u>
Ross Gull	50	1	1	01/28	
Sabine's Gull	20	7	2	07/05	
Common Tern	40	5-6	4	05/27	
Arctic Tern	160,200	5-8	1,820	08/15	500
Aleutian Tern	160,750	5-8	1,825	08/15	500
Common Murre	58,380,050	1-12	406,000	08/15	116,000
Thick-billed Murre	84,276,000	1-12	630,000	08/15	180,000
Pigeon Guillemot	9,732,000	1-12	50,800	08/20	14,500
Marbled Murrelet	249,750	1-12	1,400	09/01	400
Kittlitz's Murrelet	260,850	1-12	1,500	09/01	400
Ancient Murrelet	3,766,800	1-12	45,000	06/25	18,000
Cassin's Auklet	4,020,000	1-12	28,000	08/20	8,000
Parakeet Auklet	15,630,000	4-10	175,000	07/15	50,000
Least Auklet	299,700,650	3-11	2,240,000	08/15	640,000
Whiskered Auklet	6,285,000	4-11	49,000	08/15	14,000
Crested Auklet	123,210,000	1-12	920,200	08/15	277,000
Rhinoceros Auklet	7,800	4-9	75	08/15	20
Tufted Puffin	303,030,000	1-12	2,100,000	08/15	600,000
Horned Puffin	26,181,000	3-12	175,700	08/15	50,200

Total Use Days 1,004,469,825



The "Sea Spray", a 94 foot commercial crab boat, was chartered by the Alaska Maritime NWR to assist and support the 1982 summer field season, which included circumnavigation of selected islands and open sea transects for seabirds. The summer schedule covered work along the entire 1200 mile length of the Aleutian chain. (M.Z. 1982)



Circumnavigation of selected islands was done to establish location and size of seabird colonies, such as the auklet colony on Kasatochi Island, as well as information on sea lion, seal and sea otter populations. (F.D. 1982)

A total of 28 species of migratory birds were seen during the circumnavigation/survey work conducted on Rat, Little Sitkin and Tanaga Islands during the summer of 1982. Population estimates were attempted for most of the species encountered. No estimates were made for any of the waterfowl species that were seen, since no inland transects or habitat evaluations were conducted this year. Details of the results of this year's work are contained in tables in the appendix.

Little Sitkin Island does not have an abundance of seabirds due to the presence of Arctic foxes on the island. Nesting is usually restricted to inaccessible beaches or offshore islets. Both red-faced and pelagic cormorants were encountered during the survey. Concentrations varied and few nests were found. No murre colonies were located although both common and thick-billed murres were counted. Several other species of alcids were also seen. Horned puffins were the most numerous, while the largest single concentration of alcids consisted of a raft of 106 whiskered auklets. The most numerous species seen was the glaucous-winged gull. Four species of waterfowl were seen but their numbers were low. Two bald eagle aeries and 2 peregrine falcon aeries were located. Unfortunately, not all of the aeries were mapped.

Rat Island was circumnavigated on July 1. The perimeter of Rat Island is extremely foul and has many areas of dense kelp. This combined with weather conditions which varied from good to poor, made observation somewhat difficult at times. The presence of the Arctic foxes and the island's namesake on Rat Island had reduced the number of nesting sites for seabirds. No nesting colonies were observed on the island proper, colonies being restricted to offshore islets. Both red-faced and pelagic cormorants were seen during the circumnavigation. The observers were unable to distinguish between those two species on the majority of the sightings. The most numerous alcid seen was the ancient murrelet. No murres were observed. Glaucous-winged gulls were represented by more individuals than any other bird species. Three species of waterfowl were encountered, with the harlequin duck being the most numerous. Four bald eagle aeries and 2 peregrine falcon aeries were located.

Four days (2-5 July) were required to circumnavigate Tanaga Island. Most of the observations of Tanaga were made from Zodiacs, but due to rough seas, part of the north coast was surveyed from the "Sea Spray". Because of vertical sea cliffs and deep water, the vessel was able to proceed close enough to shore (100-800M) to allow good observations to be made. Several small islands occur offshore around Tanaga. For the most part, the animals observed on these islands are included in the total count for Tanaga. Whip and Tidgituk Islands were surveyed and the resulting data were recorded separately. The observation conditions during the 4 day survey varied from excellent to poor. Strong wind, rain and rough seas made observing difficult on some portions of the island. Only one small colony of tufted puffin was sighted on the north side of Tanaga. A scattering of cormorant nests, at various points around the island, were seen. One possible tern colony, north of Tidgituk Island, was also noted. Both red-faced and pelagic cormorants were reported during the survey. Most were recorded simply as a cormorant species. The tufted puffin was the most numerous alcid counted.

Nine other members of the Alcidae family were also seen. Glaucous-winged gulls were abundant around Tanaga. Five species of waterfowl were encountered. The harlequin duck was, by far, the most numerous bird counted. Nine bald eagle aeries and 1 peregrine falcon aerie were seen. Unfortunately, once again, not all of these nest sites were located on maps. A number of individuals of both raptor species were also seen but their proximity to aeries was not noted.

Whip Island is a small islet to the southwest of Lash Bay on the south side of Tanaga. Two species of alcids were found there. One Aleutian green-winged teal nest was located as well as 1 bald eagle aerie which contained 1 chick.

Tidgituk Island is located southeast of Whip Island, near South Bay of Tanaga. Both horned and tufted puffins were seen there. Twelve pairs of northern phalaropes were found nesting on the island as well as 1 pair of bald eagles.

The islands of the Four Mountain group were circumnavigated by a crew consisting of the Alaska Maritime NWR and one person from Wildlife Operations.

Chagulak Island has the highest population of breeding seabirds of any of the eastern Aleutian islands circumnavigated this year. Like Buldir Island, in the western part of the chain, Chagulak never had Arctic foxes introduced to it. The estimated half-million northern fulmar that nest there along with other birds are not subjected to predation by foxes. Nearby Amukta Island is a target for fox removal as soon as possible to allow the seabird population to expand. It is also hoped that the endangered Aleutian Canada goose recently discovered to nest on Chagulak, will also expand to Amukta (see section G2 for more details). Other islands that are much larger than Chagulak (Atka, Amlia, etc.) support far lower populations of breeding seabirds, partly due to fox predation.

Wildlife was censused regularly (weather and personnel permitting) in the waters around Adak and on the island proper. Land surveys were conducted along the road system on the Adak Naval Station. Participants counted animal life at various points along an established route. Binoculars (10x40), spotting scopes (25x or 30x) and appropriate writing materials were utilized to gather and record data. A total of 18 vehicle surveys were conducted in 1982. Attempts were made to do these surveys twice a month but this wasn't always possible due to weather. Therefore, monthly totals shown (details shown in table in the appendix) cannot necessarily be directly compared because some constitute one survey during the month and some two surveys.

Cormorants were seen during at least one survey each month as were glaucous-winged gulls, red-breasted mergansers and common ravens. Other commonly seen species include the mallard, Aleutian green-winged teal, harlequin duck, pigeon guillemot, rosy finch and snow bunting. Species seen less than 5 times during the surveys include the red-throated loon, gadwall, northern shoveler, Steller's eider, Ross' gull and winter wren.

Twelve nearshore boat surveys were conducted from the 21 foot Boston Whaler in 1982. These surveys involve the censusing of wildlife while following a previously established route. Observers were equipped with 10x40 binoculars and appropriate protective and safety gear. Data was recorded in waterproof notebooks. Inclement weather, unfavorable sea conditions and/or lack of personnel sometimes made it impractical to do boat surveys as often as was desirable. Partial surveys were made on some occasions due to deteriorating weather and/or sea conditions.

A table in the appendix summarizes the bird species seen on nearshore boat surveys in 1982. Cormorants were seen on every boat survey that was conducted. The same can be said for bald eagles, glaucous-winged gulls and murre. Other regularly seen species include the harlequin duck, red-breasted merganser, pigeon guillemot, ancient murrelet and common raven. Other species that were seen less frequently were the northern fulmar, gadwall, common eider, black oystercatcher, parasitic jaeger and kittlitz's murrelet. There was also one possible sighting of a rhinoceros auklet.

6. Raptors

The estimated raptor use days on the Aleutian Islands unit for 1982 is shown in Table 11. A total of 786,685 use days is estimated to have occurred on the unit in 1982. The northern bald eagle leads the list of species with an estimated 621,800 use days. The northern harrier had the lowest estimated use with 10 use days.

Although the most prominent raptors in the Aleutian Islands are the bald eagle and Peale's peregrine falcon, other species such as the short-eared owl, snowy owl, gyrfalcon and occasionally rough-legged hawks can also be found. A rough-legged hawk was observed on Adak on October 16th. Individuals with the commercial birding tour, Attours, which travels to Attu Island each spring have regularly reported seeing the Steller's sea eagle and found a nest this year. A scops owl was found on Amchitka Island several years ago, a North American first for that species. A Eurasian kestrel was observed along the main road near the Adak air terminal on February 11th. This is the second sighting of this species on Adak and only the third in Alaska with the first sighting being on Shemya Island.

A population of from 200-300 bald eagles winter on the Adak Naval Station and during the summer about 50-55 pairs of eagles establish nests. In order to develop baseline information on the island's eagles, a study to monitor movements and gather baseline data on breeding biology was initiated in 1981.

TABLE 11. ESTIMATED 1982 RAPTOR USE DAYS, PERIODS OF USE, PEAK NUMBERS, PEAK DATES AND PRODUCTION, AIU.

<u>Species</u>	<u>Use Days</u>	<u>Period of Use</u>	<u>Peak No.</u>	<u>Date of Peak</u>	<u>Prod- uction</u>
Northern Bald Eagle	621,800	1-12	2310	08/15	660
White-tailed Eagle	680	4-12	4	10/15	1
Northern Harrier	10	5	1	05/18	
Rough-legged Hawk	300	7-10	3	08/15	1
Golden Eagle	240	8-12	2	10/15	
Eurasian Kestrel	25	2	1	02/11	
Peale's Peregrine	103,650	1-12	450	08/15	150
American Peregrine	4,000	3-5/7-11	25	03/30	
Gyrfalcon	23,400	1-12	110	01/01	
Snowy Owl	21,300	1-12	90	08/20	30
Short-eared Owl	11,280	5-10	75	05/15	25
Total Use Days:	786,685				

Bald eagles were captured in late January and February by the use of a rocket net and padded leg-hold traps. A total of 85 individuals were captured (Table 12) primarily by the rocket net which was set in the headquarters parking lot and baited with meat scraps from the Naval Station butcher shop. No injuries were inflicted on the eagles by the use of the rocket net.

TABLE 12. SUMMARY OF BALD EAGLE CAPTURE EFFORTS, ADAK 1982

Trap Type	#Trap Days*	Eagles Captured			#Captured/Trap Days
		Imm.	Adult	Total	
Rocket Net	10	45	18	63	6.60
Padded Leg Hold	15	13	7	20	1.33
Hand Net (dip)**	2	2	0	2	1.0
Total	27	60	25	85	

* Number of days this type of trap was used (not by number of traps used)

** Captured at the dump.

Although the rocket net proved to be the most efficient capture method, it will probably not be used in next year's capture efforts because we are unable to meet all of the special requirements set forth under Navy regulations regarding use and care of powder charges. Cost and safety are the two main requirements that are causing problems. We couldn't afford to make the changes or safely use the net under current Navy regulations. In the future, padded leg hold traps will probably be the main capture method. Other methods will also be investigated.

As in previous years, a variety of measurements were taken on captured birds. All individuals were banded with standard FWS aluminum bands and pre-numbered red plastic leg bands. The tails of adults were marked with red, green or yellow dyes to allow for later identification. A scheme was developed which divided the 12 tail feathers into 3 sections of 4 feathers each. The sections were dyed in various patterns to allow for identification. The only disadvantage to the technique is that the marking only lasted until the tail feathers were molted in late summer.

Problems with both the plastic and aluminum FWS band were noted on re-captured birds. The eagles were able to tear off the plastic band piece by piece and open the standard FWS aluminum band. We then switched to a rivet locking FWS aluminum band and designed a similar rivet locking band out of red anodized aluminum for color marking.

Figure 2 shows all of the bald eagle observations for 1982. The low numbers in February/March and August/September can at least partially be explained by food being available elsewhere on the island. Caribou hunting occurs on the south end of the island during these periods and the salmon run occurs in August/September. Both activities provide offal for the birds to feed on. The majority of the eagle observations occurred on the Adak Naval Station.

Weekly dump surveys for eagles were conducted throughout the year. A comparison of the different age classes of eagles visiting the Adak dump is shown in Figure 3.

FIGURE 2. BAR GRAPH SHOWING TOTAL NUMBER OF BALD EAGLE SIGHTINGS EACH MONTH IN 1982.

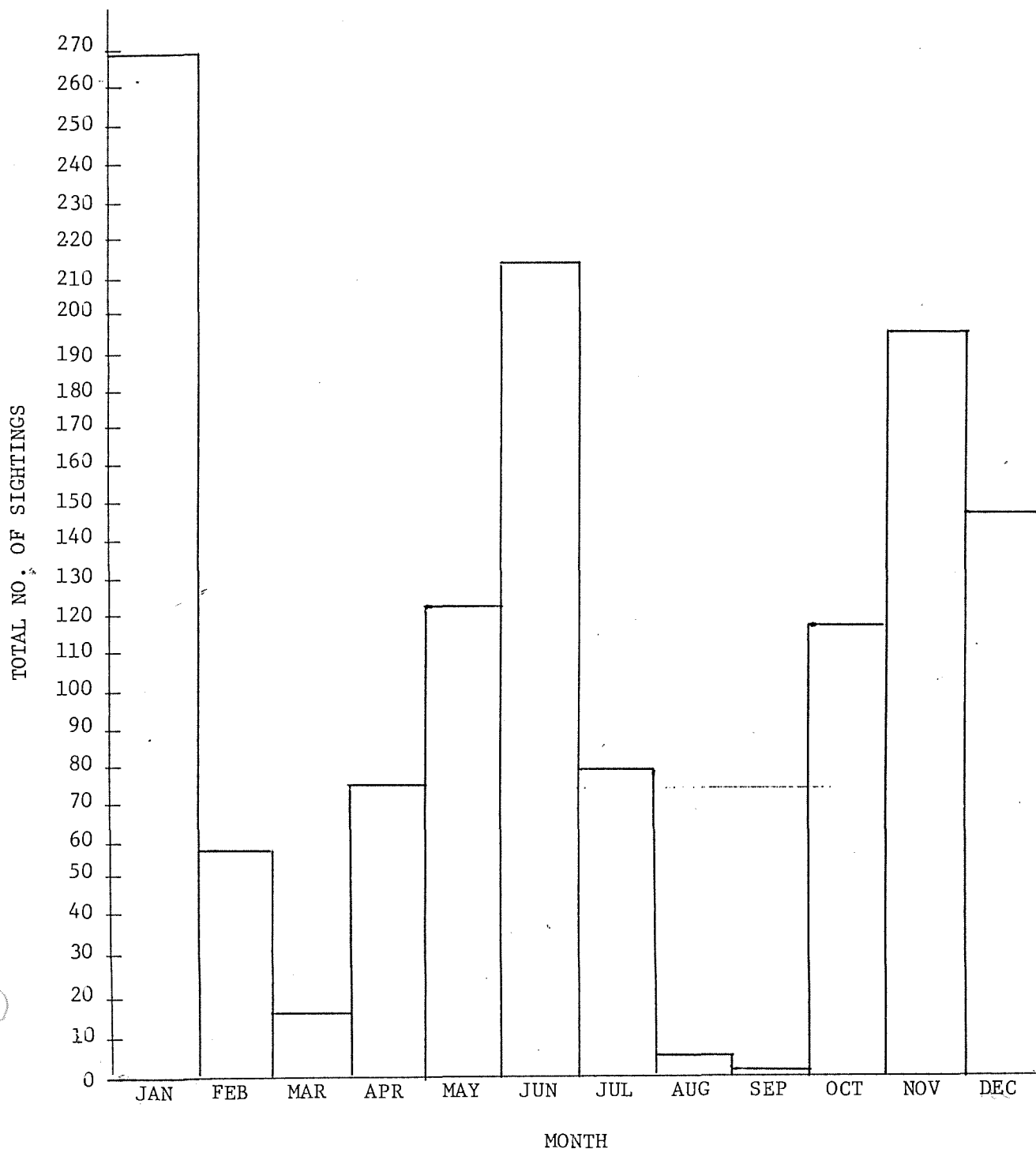
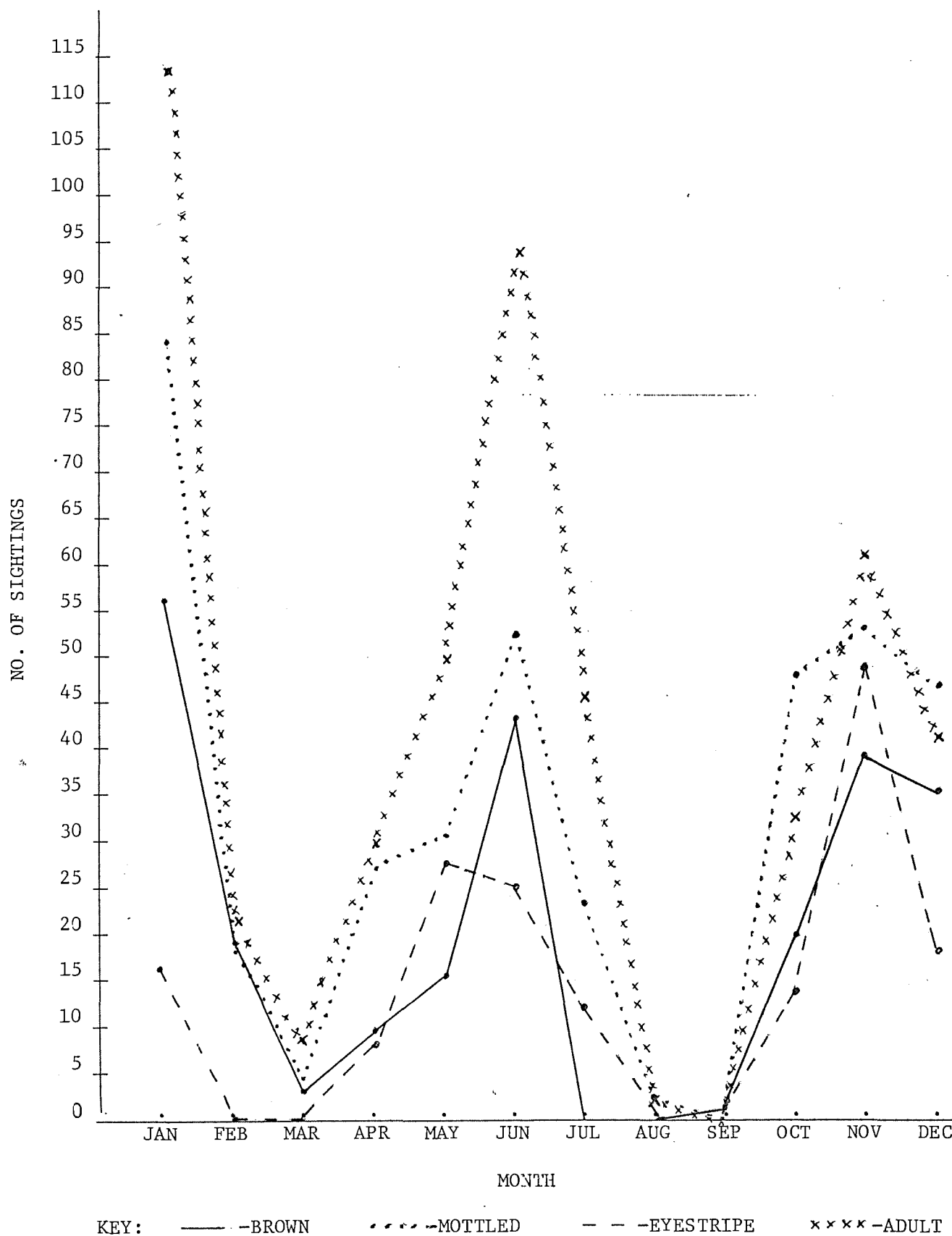


FIGURE 3. GRAPH SHOWING MONTHLY DISTRIBUTIONS OF EAGLE AGE CLASSES OBSERVED ON DUMP SURVEYS.



A bald eagle nesting survey on Adak Island was conducted during nine days in April and June using a 13' Zodiac and a 22' Boston Whaler as a support vessel. Surveys were conducted directly from the Whaler where shoreline conditions allowed, with remaining shoreline surveyed on foot. When nests were located, two observers went ashore, flushed the adult and attempted to count the eggs. Thirty-three active nests were located this year, however not all were accessible to researchers.

A rough sketch map and photo of the best access route for all the nests visited this year were developed. This will hopefully increase the safety and efficiency in visiting these nests in future years and help to minimize the impact of such visits on the eagles.

A pre-flight nestling count was conducted during 13 days in July. All accessible nests were visited to count and band nestlings. The number of young per nest were counted and, if accessible, measured and banded. A total of 25 eaglets were measured and banded with rivet locking FWS bands on the right leg and pre-numbered red, anodized aluminum bands on the left side. Only a partial fledgling count was conducted in late July due to limited personnel.

Bald eagle electrocutions continue to be a problem on Adak. Individuals are occasionally killed by high-voltage power lines when attempting to perch on poles. Several radio and television spots were aired this year to encourage island residents not to feed eagles or leave garbage unattended which attracts the eagle and increases their use of hazardous poles.

A map identifying the problem electrical poles was developed this year with the assistance of the Navy Public Works Department. Using the map as a guide, perches were installed to keep the eagle out of the wires.



After being identified as a problem pole (by the number of electrocuted eagles picked up in the vicinity), the Navy Public Works Department installed perches that effectively keep eagles out of contact of the high-voltage power lines. (C.H. 1982)

Public Works Department also attempted to place garbage dumpsters with doors at the various food services facilities on base. This helped to eliminate some of the attraction of eagles to the downtown area where there was danger of electrocution.

The combination of the public announcements and efforts of the Navy through installing perches and using covered dumpsters has considerably reduced the loss of eagles this year.

Fifteen bald eagles were electrocuted in 1982 as compared to 25 in 1981, 28 in 1980, 30 in 1979 and 50 in 1978.

Measurements were taken on all of the electrocuted eagles and the sex of each bird was determined. The initial results from these measurements shows a significant correlation between the width of the tarsus and the sex of the bird. Females appear to have a wider tarsus width than males. Further investigation of this relationship will continue during this study.

7. Other Migratory Birds

The Aleutian Islands serve as important breeding and wintering grounds and offer refuge to an international list of migratory birds. Although North American birds are more abundant, some Asiatic species have been sighted and/or breed regularly on some islands. We currently have 239 species on our refuge bird list.

A list of the uncommon bird sightings made on the Aleutian Island Unit during the year is shown in Table 13. The first of the emperor geese arrived early this year on October 30th. The last lapland longspur was seen on October 2nd.

A Christmas bird count was finally conducted on December 30, 1982 during a short break in the weather. Thirty-six different species and 3,285 individuals were recorded during the count. The 14 year average for the number of species and individuals observed is 31 and 2,831 respectively. This year's count exceeded both averages. A complete list of species observed during the count is given in Table 14.

Harlequin duck had the greatest number of individuals recorded with 563. Some of the uncommon observations made during the count were immature glaucous gulls, a gyrfalcon, a red-faced cormorant, stellar's eider and ancient murrelet. The new record number of seventeen observers helped make the Christmas bird count so successful.

TABLE 13. UNUSUAL BIRD SIGHTINGS MADE ON THE ALEUTIAN ISLANDS UNIT, 1982

<u>Species</u>	<u>Place</u>	<u>Dates</u>
Yellow-billed Loon	Adak	2/15-7/3
Laysan Albatross	At sea - Adak to Buldir	5/18-19
Sooty Shearwater	At sea - Tanaga to Buldir	5/18-19
Slender-billed Shearwater	At sea - Kanaga to Buldir	5/18-19
Brant	Adak	10/2-11/12
Gadwall	Adak	2/15, 5/30
Stellar's Eider	Adak	2/20, 2/22, 10/30, 12/30
Rough-legged Hawk	Adak	10/16
Eurasian Kestrel	Adak	2/11
Gyr Falcon	Adak	12/30
Sandhill Crane	Agattu	5/20-21
Sandhill Crane	Seguam	6/11
Sandhill Crane	Shemya	6/20, 6/24, 7/22
Lesser Golden Plover	Adak	5/17, 9/18-10/28
Lesser Golden Plover	Agattu	5/21
Common Greenshank	Buldir	6/3, 6/6
Wood Sandpiper	Agattu	5/20
Common Sandpiper	Agattu	5/21-23
Common Sandpiper	Adak	9/6
Terek Sandpiper	Agattu	6/9
Far Eastern Curlew	Adak	6/12, 6/15
Bar-tailed Godwit	Adak	10/23-11/20
Ruddy Turnstone	Adak	7/18, 7/24
Great Knot	Seguam	6/9
Red Knot	Agattu	5/25
Long-toed Stint	Agattu	5/20, 21, 24, 25
Pectoral Sandpiper	Adak	5/28, 9/11-11/11
Sharp-tailed Sandpiper	Adak	10/2, 11/13
Dunlin	Buldir	6/6
Dunlin	Adak	10/23-10/31, 11/7
Dowitcher species	Adak	9/25
Red Phalarope	At sea near Adak	7/20
Red Phalarope	At sea near Atka	7/21-22
Common Black-headed Gull	Adak	6/1-7/13
Common Black-headed Gull	Buldir	6/12
Mew Gull	Adak	1/30, 2/13, 8/30, 9/5
Ring-billed Gull	Unalaska	6/30
Glaucous (immature) Gull	Adak	2/13, 12/30
Ross' Gull	Adak	1/28
Sabine's Gull	Adak	7/4
Cuckoo (Cuculus species)	Agattu	6/22
Cuckoo (Cuculus species)	Buldir	6/28
Short-eared Owl	Adak	6/1-7/13
Belted Kingfisher	Atka	9/12-9/14
Eye-browed Thrush	Agattu	5/20-31
Dusky Thrush	Adak	10/22
Yellow Wagtail	Agattu	5/20-24
White Wagtail	Agattu	5/20-21
Indian (Olive) Tree Pipit	Agattu	5/20-21
Red-throated Pipit	Agattu	5/20
Rustic Bunting	Agattu	5/20-31
Brambling	Agattu	5/21
Common Rosefinch	Adak	6/13
Common Redpoll	Adak	5/1, 7/4-7/11
Hoary Redpoll	Adak	5/1, 7/4-7/11

TABLE 14 . BIRD SPECIES OBSERVED DURING THE 1982 CHRISTMAS BIRD COUNT

<u>Species</u>	<u>Number Observed</u>
Common Loon	2
Arctic Loon	1
Red-throated Loon	1
Red-necked Grebe	6
Horned Grebe	1
Pelagic Cormorant	124
Red-faced Cormorant	1
Cormorant species	199
Emperor Goose	44
Mallard	67
Eurasian Green-winged Teal	80
Greater Scaup	378
Common Goldeneye	146
Bufflehead	73
Oldsquaw	97
Harlequin Duck	563
Stellar's Eider	1
Common Eider	30
White-winged Scoter	50
Black Scoter	50
Red-breasted Merganser	218
Bald Eagle	180 (95 adult, 85 immature)
Gyr Falcon	1
Rock Ptarmigan	2
Rock Sandpiper	9
Glaucous Gull (immature)	2
Glaucous-winged Gull	335
Common Murre	1
Thick-billed Murre	1
Murre species	6
Pigeon Guillemot	44
Ancient Murrelet	5
Common Raven	325
Winter Wren	3
Alcid species	2
Rosy Finch	71
Common Redpoll	5
Song Sparrow	24
Snow Bunting	137

8. Game Mammals

Caribou were introduced to Adak in 1958 and 1959. The herd has grown rapidly due to relatively mild winters, lush vegetation, and lack of predators and biting insects. Many islanders hunt caribou and the world's record bull weighing over 704 pounds was taken here in 1968. Many other large caribou have been harvested from the herd since then, including a large bull in 1981. The antlers from this animal were donated to the refuge. An unofficial measurement scores them at 443 $\frac{3}{8}$ points or about twenty-eighth in Boone and Crocket.

The management goal, set by the Alaska Department of Fish and Game, is a post-season population of 150-240 animals. The danger of overpopulation is a very real and major concern of the Unit since no natural predators exist on island. Population control is accomplished by the sport hunting harvest. Continued naval support in the form of transportation for hunters and refuge staff for research is essential to proper management of the Adak caribou herd.

A major research study of the caribou herd was initiated in 1981. The objectives are to develop information on caribou productivity and range conditions and to develop an estimate of range carrying capacity. This information will also be used to develop recommendations for carrying capacities to protect wildlife and other resource values on other islands in the Aleutian Islands Unit where caribou/reindeer grazing now occurs or may occur in the future. In April of this year, a revised plan was prepared for the caribou study. The revised plan basically placed increased emphasis on herd productivity through a capture, neck collaring and telemetry effort, and additional work with the hunters.



Vegetation surveys show what plant species are present and the abundance of each. Rumen samples taken from hunter killed caribou tell us how much of what plants they eat. The two together provide the data necessary to determine the caribou carrying capacity of Adak. (D.D. 1982)

Vegetation transects were continued in 1982 to determine frequency, percent cover, and production of each species in the five habitat types. Once again, limited personnel and bad weather prevented the completion of all transects. A total of 35 transects was done, including 15 on Caribou Peninsula, and 20 in the Finger Bay to Blind Cove area. The transects were completed during the period August 10 to September 11. After discussion with Alaska Department of Fish and Game personnel, the shape of the plot frame was altered this year. In the past the sample plot was 1 m square. The current frame is 2 m long by 0.5 m wide. It has a fixed divider at one end to designate the 0.1 m square clip plot. The field sampling technique was modified slightly this year to improve efficiency. Plots that were clipped were bagged and then sorted in the office rather than in the field. Running the transects; sorting, drying, and weighing the vegetation is a very time consuming and tedious process. It is not the type of project enjoyed by most people. Hopefully, we can complete the remaining transects next year and the final results will be worth the effort.

The results of vegetation transects from this year are shown in Table 15.

While conducting seabird circumnavigation surveys around Atka, three days (July 15, 20, and 21), were taken out to gain an initial feeling on the reindeer grazing situation on the island.

On July 15 two refuge staff personnel met with Larry Dirks, President of Atxam Native Corporation. He explained that the reindeer had historically been used as a food supply for the village and that their antlers were sold to a company who resold them as an aphrodisiac in the Orient. In the past, they had also built a fence across the island to keep the reindeer on the eastern half of the island near the village, but that it didn't work. Mr. Dirks stated that it was no longer economically feasible to continue the antler harvest, so the reindeer are now used only for a food supply.

On July 20 and 21 three refuge personnel went ashore on Atka in the Vasilief and Bechevin Bay areas to gain firsthand knowledge of the fence and grazing situation. The fence is nonfunctional as it has been completely destroyed by caribou and weather in many large segments. A collection of 46 plant species was made in the two areas. In walking these areas, the difference in grazing pressure between about 2000 reindeer on Atka and 300-500 caribou on Adak was readily apparent. The grazing pressure on Atka was considerably heavier.

It has always been difficult to accurately census the caribou herd on Adak due to rugged terrain, bad weather, lack of suitable aircraft, and availability of personnel. This year started out to be no exception to that rule. A calving survey was not completed this year due to limited personnel. The majority of the refuge staff was off island in other parts of the Chain conducting work on the endangered Aleutian Canada goose and seabirds during the calving season.

Starting in July our luck began to change. On July 6 an aerial survey of about two-thirds of the caribou habitat, using a fixed wing aircraft, was completed. Although only a partial count; 183 animals were censused. Then on September 14 a helicopter survey of all significant caribou habitat was completed. This survey was accomplished using a Jet Ranger model helicopter which just happened to be in the area on a salmon survey and was loaned to us by the Alaska Department of Fish and Game.

TABLE 15. COMPARISON OF 1981 AND 1982 VEGETATION TRANSECTS, AIU.

Vegetation Type	1982 Net Production (in gm)	1982 Average Production (kg/ha)	1982 Number Plots Sampled	1982 Number Transects (N) Required, P 0.05		1982 Number Transects (N) Required, P 0.10		1981 & '82 Number Transects Required, P 0.05		1981 & '82 Number Transects Required, P 0.10	
Lowland meadow	1284.8	6.76	19	177		119		28	233	161	
Seashore	1004.7	5.58	18	34		23		21	77	53	
Alpine meadow	1784.2	9.91	17	29		25		23	74	51	
Heath	1241.0	5.91	21	12		8		30	70	48	
Fen	1204.1	5.24	23	48		33		32	100	69	
TOTALS				300		208			554	382	

This was the first "complete" caribou census for the Adak herd. A total of 274 caribou were counted on the survey. This number was considerably lower than was previously expected and caused considerable concern for the herd due to the recently increased bag and season limits. This meant that we had a pre-season population of about 330 animals instead of the expected 400-500 animals. This lower population would not be capable of sustaining the past average annual caribou harvest at a bag limit of two, let alone with a year round season and bag limit of four.

After discussing the situation with various representatives of Alaska Department of Fish and Game, the Navy, and the two Sportsmen's Clubs on Adak, the following plan of action was developed:

1. A voluntary reduction in bag limit from four to two animals was immediately initiated.
2. The caribou harvest was closely monitored and after bagging 114 animals on December 14, 1982, the season was closed by emergency action. This closure was done to maintain a post-season population of about 200 caribou.
3. For future years, it was recommended that the caribou season be changed from year round to September 1 through March 31; that the bag limit be changed from four to two; that the emergency closure clause be retained; and that a registration permit type hunt be established.

The proposed season changes have been submitted to the Alaska Game Board as a joint proposal by the Clam Lagoon Sportsman's Club, the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service. Letters of support from the Navy and Adak Sportsmen's Clubs have also been submitted. Hopefully, the proposed changes will be approved.

The refuge staff continued to work with caribou hunters to get necessary research information. Measurements, rumen samples, and some carcass weights were taken from caribou killed in September and October. No samples were obtained in November and December due to unsuccessful hunts. Analysis of rumen samples by the University of Alaska is not complete at this time. Seventy caribou jaws were collected from hunters and sent to the Alaska Department of Fish and Game for aging. Results from this project are also not back yet.



The emergency closure dashed the hopes of hunters who were searching for this trophy bull. (C.A. 1982)



Observing groups of caribou during the peak-of-rut surveys provides data on the sex and age composition of the herd.
(L.S. 1982)

A peak-of-rut count was completed during the first week of October. Refuge staff had a difficult time locating and censusing the caribou for this count due to some weather problems. It was completed on October 8 and 70 animals were censused. Of the animals observed; 11 were identified as bulls, 4 as cows, 11 as calves, 16 as yearlings, and 28 as sex unknown.



Anyone care to try their luck on age/sex classification of this herd? (F.D. 1982)



The caribou herd on Adak was surveyed by helicopter (above) on September 14. All suitable habitat was covered. Each group of caribou were counted and photographed (below). Photos were used to verify the census count.

(C.A. and F.D. 1982)



9. Marine Mammals

Marine mammals were recorded during vehicle and nearshore boat surveys at Adak, during circumnavigation surveys and from the "Sea Spray" while en route to and from other islands.

The most common species seen were the sea otter, Steller's sea lion and harbor seal. Several whales were also sighted during circumnavigation.



Steller sea lions are found on most of the Aleutian Islands. Many never see a human and could care less about our presence. (T.E. 1982)

A summary of circumnavigation data from Little Sitkin, Rat and Tanaga Islands is presented in the next three paragraphs. Detailed information is contained in the appendix.

The number of sea otters recorded around Little Sitkin Island was higher than in previous surveys. They were found both singly and in groups. Eleven percent of the otters seen were pups. The number of Steller's sea lions seen appears to have decreased. Most of these pinnipeds were counted while hauled out on beaches, rocky headlands, or offshore rocks/islets. Observers were usually not able to distinguish between the sexes. Only 4% could be identified for certain as bulls. No pups were seen. The

number of harbor seals observed this year is approximately the same as in 1965. Most of the seals were seen along the southwest coast. Females with pups were usually observed while hauled out. About 14% of the seals observed were pups.

The coastal waters of Rat Island have a luxuriant growth of kelp. Although these kelp beds sometimes made it difficult to stay near shore, they provided good sea otter habitat. The number of otters observed in 1982 was down somewhat from that of previous years. Pups made up 13% of the otters seen. The number of sea lions counted was higher than in past surveys. Most of the sea lions were seen at 2 haul-out sites on off-shore islets. Only 4% of the observed animals were observed as pups. As was the case at Little Sitkin, the number of harbor seals seen this year was approximately the same as in 1965. Most seals were seen at the western tip of the island. Once again, females with young were usually observed while hauled out. Fourteen percent of the seals seen were pups.

The number of sea otters counted at Tanaga ~~this year~~ was higher than in past surveys. There are many areas with lush kelp beds that are utilized by otters. There seemed to be a large number of otters hauled out on offshore rocks in some areas. Of the otters counted, about 14% were pups. More Steller's sea lions were observed this year than in any of the past surveys. Most were seen at 3 major haul-out sites. No pups were identified. There were nearly twice as many harbor seals found in 1982 as there were in 1965. The largest concentration of seals was in the South Bay/Cape Sasnik area. Less than 1% of the seals sighted were pups.

Two species of cetaceans were seen during the circumnavigation of Tanaga Island. A pod of 5 beaked whales (probably Berardius bairdi) was seen off the west tip of the island. Three smaller beaked whales (possibly Mesoplodon stejnegeri) were found washed up on a beach in Tanaga Bay. None of the beached whales had any apparent external injuries. A pod of about 5 killer whales was sighted while the "Sea Spray" was underway from Rat to Tanaga.



Three beaked whales were found on the beach at Tanaga. The skull from one and the lower jaw from the other two were taken to assist in identification of the species. (T.E. 1982)

Dall porpoises were often observed throughout the summer as they rode the bow wave of the "Sea Spray".

Sea otters were observed on all of the vehicle surveys conducted on Adak in 1982. The number seen varied according to weather/sea conditions, but there were always otters present. Harbor seals were recorded on most of the surveys. Again, numbers varied widely. Only 1 Steller's sea lion was seen during vehicle surveys.

Sea otters and harbor seals were the most common marine mammals seen during nearshore boat surveys at Adak. Sea lions were occasionally seen, as were Dall porpoise. One Minke Whale was also observed during a boat survey.

During 1982, three killer whales and several minke whales were seen in Sweeper's Cove, just across the street from the refuge office.

10. Other Resident Wildlife

A breeding bird census was attempted this spring, but wind, rain or a combination of the two would not allow completion of the census during the prescribed time frame. The census was undertaken in cooperation with the Alaska Department of Fish and Game. Hopefully we will have more cooperative weather next year.

Permanent rock ptarmigan transects set up on Adak in 1981 were not run this year due to limited manpower. Refuge personnel were off island in the Near Islands Group.



Rock ptarmigan are the only resident game bird present in the Aleutian Islands. (C.H. 1982)

11. Fishery Resources.

The Alaska Department of Fish and Game, Commercial Fisheries Division, initiated a two year study of the Aleutian Islands salmon resources in 1982. These islands with streams of high potential for commercial salmon fisheries were examined from Unimak Pass west to Attu Island. Basic studies on a prioritized basis included 1) Species identification and enumeration 2) Cataloging, photographing and recording physical characteristics of salmon streams, 3) Definition of spawning area, 4) Recording streams with a potential for rehabilitation and enhancement, 5) Examination of returning fish for high seas salmon tags, 6) At one major stream on each island check length/weight and age data of salmon gathered 7) Tissue samples from some pink salmon.

The streams of the various islands were surveyed using a helicopter to take researchers to various points along the stream to gather data. A large charter vessel was used as a home base and to take researchers to each island.

Adak was one of the islands surveyed this year. The major streams on the island are located on the north end of the island. Only one of significance (7,700) pinks is located at Hidden Bay on the south side. Four of the five major streams are on the U.S. Naval Station. The fifth, Gannet Cove, is the southern boundary of the facility. These five streams account for the majority of the salmon on the island each averaging 53,000 pinks.

Runs of pink salmon on Adak have been generally increasing. Past surveys of the Finger Bay stream have shown this increase from 2,300 in 1977, 14,000 in 1978, 7060 in 1980 to 28,000 in 1981. There are mixed opinions as to relative strength of odd or even year runs. It does appear however, that the runs can fluctuate greatly. The peak of the runs usually occurs in the last week of August. Refuge personnel had also surveyed the Finger Bay Stream earlier and estimated a similar number of salmon.



At times, the spawning salmon were so thick in Finger Bay Stream that a person would think they could walk across without getting their feet wet. (C.F.Z. 1982)

Finger Bay Stream is the dominant run (100,000 pinks) on the island. It has only 5/8 to 3/4 of a mile spawning area. Fish sampled from this stream weighed 3.5 pounds after having been in freshwater one to two weeks. North Hidden Bay has the only significant run of pinks (7,700) on the south side of the island. This system also supports the only run of reds (821), of consequence on the island. A sample of these reds, which were "colored up" and actively spawning, averaged 5.3 pounds. These fish, like those at Kagalaska, were primarily composed of (54%) 2.2 age class individuals. The Kokanee population in Lake Andrew was not sampled.

Development of a commercial fishery at Adak would be difficult, as the U.S. Navy cannot provide any support to a commercial operation in the area. There is restricted access to the Naval Station and the majority of the all weather anchorages are closed to civilian vessels. Any fishery would have to be completely self-supported and be based out of Dutch Harbor.

The results of the survey on other islands in the Aleutian Chain by Alaska Department of Fish and Game is shown in Table 16.

TABLE 16. SUMMARY OF 1982 MAXIMUM SALMON COUNTS BY SPECIES, BY ISLAND.

Island	Pinks	Reds	Chums	Coho
Akutan	10,500 ^{2/}	-	-	-
Unalaska	1,541,317	44,995	100	300
Umnak	295,385	805 ^{3/}	0	143
Amlia	138,258	453	772	0
Atka	578,086	3,971	1,484	825
Igitkin	0	0	0	0
Great Sitkin	7,720	0	0	0
Umak	230	0	0	0
Little Tanaga	1,550	0	0	2
Kagalaska	3,310	975	0	0
Adak	362,438	993	0	2
Kanaga	18,448	0	0	0
Tanaga	68,585	0	0	6
Semisophochnoi	400	0	0	0
Amchitka	1,248	0	0	0
Rat Island	0	0	0	0
Kiska	43,393	8	1	20
Agattu	15,000 ^{4/}	0	0	-
Attu	131,242	220	1	14

1/ Most streams surveyed between 8/12 and 9/17 for specific dates of specific stream survey see appendix tables.

2/ Harbor Creek only stream surveyed.

3/ Includes estimated abundance of reds in Village Lake at 670 based on number of spawning reeds and poor visibility at time of survey.

4/ Island not surveyed, based on stream morphology observations made by ADF&G staff and U.S.F.W.S. ornithologists observations. Estimated escapement at 10-20,000 pink salmon, possibly a few hundred coho.

5/ Partial survey approximately .4 of island potential counts may be low for Attu and Agattu, they may have an odd year cycle for pinks as occurs in Asia.

14. Scientific Collections

A special use permit was issued this past summer to Mr. Doug Forsell, a wildlife biologist with the Migratory Bird Section of the National Fisheries Research Center in Anchorage. The purpose of the permit was to research the impacts of the Japanese gill net fishery on Aleutian seabird populations. The permit allowed for the banding of up to 1000 tufted puffins on Agattu Island, collecting up to 10 common murre and eggs and 10 tufted puffins and eggs from Agattu, Buldir, one Andreanoff Island and Aiktak (total of 40 each), 5 pigeon guillemots and eggs from Agattu or Buldir and the Krinitziu Islands (total 10 each) and up to 5 fork-tailed storm petrels and eggs and 5 Leach's storm petrels and eggs from the Aleutian Islands (5 each). It also allowed for the collection of marked common species when absolutely necessary to record banding data. As part of the special use permit, Mr. Forsell was also required to assist in censusing endangered Aleutian Canada geese on Agattu and band geese on Buldir. He very aptly assisted in these projects. Final reports on the seabird research conducted under this permit have not been received.

15. Animal Control

The introduction of blue phase, Arctic foxes to the Aleutian Islands many years ago by Russian and American trappers has caused a serious reduction in the numbers of marine and other bird species on many islands, and is one of the principle reasons for the decline of the Aleutian Canada goose, an Endangered Species.

Last year an intensive research project was initiated on Arctic foxes by Dr. Robert Rudd with field investigators Dr. Edward West and Kathy West of the University of California at Davis under contract to the Fish and Wildlife Service. The study was designed to test the feasibility of a biological control technique which calls for the introduction of sterilized red foxes to Kagalaska Island and the monitoring of their interaction with the blue phase, Arctic foxes.

There is evidence red foxes will eliminate blue foxes from ranges which both species occupy. If this technique is successful it will provide a new tool for the removal of blue foxes from the islands by a biologically acceptable method. Ed and Kathy spent the first summer of the study developing a population estimate of foxes on Kagalaska and locating den sites. They planned to attach radio collars to some individuals to learn more about movements and home ranges, however, the collars proved unsuitable in tests at refuge headquarters and were not used. Attempts to use a different transmitter for foxes captured during the winter of 1982 were not realized. Additional trapping, marking and observations of Foxes were made in January, February and April of 1982.

Great difficulty was encountered in obtaining red foxes for release from the Fairbanks area. Even though the best (?) trappers in the area were utilized, they could deliver only one live red fox. They did quite well trapping foxes, but not in bringing them back alive. Thus, one extremely expensive, 3 legged, vaccinated and sterilized red fox was released on Kagalaska Island in May.

Budget reductions resulted in this study being temporarily suspended during the latter portion of 1981. These problems were temporarily overcome, but similar budget reductions forced the entire study to be terminated in June 1982.

The study pointed out some of the potential for using sterilized red fox as biological control agents to eliminate Arctic fox from selected islands in the Aleutians. It showed that there is a high degree of overlap in food, home range, and den requirements which suggest that if neutered red foxes are introduced, they will effectively outcompete the Arctic fox for access to these resources. It also disclosed that additional research is needed to determine if red fox can completely exclude Arctic fox.

16. Marking and Banding

A short summary of banding efforts on the unit is shown in Table 17 and more detailed reports of banding are included in the appropriate sections listed in the table.

Three ravens were banded incidental to the capture of bald eagles in the rocket net.

TABLE 17. SUMMARY OF MARKING AND BANDING ON THE ALEUTIAN ISLANDS UNIT OF THE NATIONAL WILDLIFE REFUGE, 1982

<u>Species</u>	<u>No. Banded</u>	<u>No. Marked</u>	<u>Section Reference</u>
Aleutian Canada			
Geese	433	424 Blue Leg Band	G-2
Common Raven	3	-	-
Bald Eagle	113	80 Red Leg Band	G-6
Ancient Murrelet	2	-	-
Leach's Storm Petrel	8	-	-
Fork-tailed			
Storm Petrel	7	-	-

The three species of seabirds listed in Table 17 were banded on Buldir Island incidental to work with the Aleutian Canada geese.

H. PUBLIC USE

1. General

Most of the people currently living in the Aleutian Islands are active duty military personnel and their dependents. The Adak Naval Air Station is located on Adak Island and consists of approximately 5,000 people. The Shemya Air Force Base and the Coast Guard Station on Attu Island add approximately another 1,000 military personnel to the island's population. Five native villages, Unalaska, Umnak, Akutan, Nikolski and Atka contain another 500 individuals.

We try to visit each native village once during the year. This gives us the opportunity to discuss the refuge programs/objectives with the native people. Part of the visit is planned around the presentation of movies and/or slide talks explaining the refuge program to the school students. Two villages, Atka and Unalaska were visited during the year.



We try to visit each of the five native villages in the Unit at least once each year. When visiting Atka, passengers fly in with the mail, food items, and other supplies. (C.F.Z. 1982)

The average tour of duty for military personnel is generally 1½ to 2 years. This provides a unique opportunity for the Unit to contact a continually changing population with interpretive, educational and informational resources.

Various I & R programs were conducted during the year in the refuge visitor center. Interpretive displays on Aleutian Canada geese, Arctic fox, seabirds, caribou, salmon, the World War II battle of Attu and bald eagles were set up at various times during the year. Articles were published in the Naval Station newspaper "Eagles Call" on a variety of topics on a regular basis. Additional articles dealing with items of special interest such as seabirds and specific hunting opportunities were also published.

The Unit also participated in producing a weekly 2-3 minute segment on the nightly news program "Island Update" during which a wide variety of subjects such as Christmas bird count results, caribou research, caribou hunting, waterfowl hunting, procedures for reserving a public-use cabin and others were discussed. These forums provided an excellent opportunity for the Unit to make the public aware of special-refuge events and regulations, and to provide some basic information on Adak Island outdoor opportunities.

Public use surveys were conducted twice a month. The refuge recorded an estimated 25,236 visits. Consumptive users totaled 41,315 activity hours, and non-consumptive use was estimated at 35,909 activity hours.

Indoctrination talks were presented monthly to incoming military personnel on Adak. Hiking, hunting and fishing opportunities, regulations, and other recreation activities were discussed.

2. Outdoor Classrooms - Students

The most popular field trip for local elementary and high school students was of spawning salmon at Finger Bay. A total of 117 students participated. Fresh and saltwater were given a taste test, water temperature was taken, adult salmon were counted and dissected, a male and female salmon were caught and fertilization was demonstrated. The children were overwhelmed by the fact that thousands of the fish will soon die.

3. Outdoor Classrooms - Teachers

A teacher's workshop was again held to explain Adak's salmon ecology and its importance to the community. The lesson plans and all activities were demonstrated. The teachers then led their classes on field trips to the salmon stream in September. A total of 5 teachers participated. The workshop was quite successful and more are planned.

6. Interpretive Displays and Demonstrations

No funds were available for professionally designed interpretive displays for the new headquarters visitor contact area. Seven temporary exhibits were utilized this year for display. These displays are rotated throughout the year. Themes of these displays include caribou, salmon, Aleutian Canada geese, Arctic fox, bald eagle, and the World War II battle on Attu.

7. Other Interpretive Programs

The World War II battlefield on Attu Island was nominated in 1981 to the National Register of Historic Places. Volunteer Historian, Rod Poole, again presented slide talks on "The Battle of Attu." The presentation and accompanying display at Refuge headquarters attracted over 200 people.

In conjunction with National Wildlife Week in March, over 19 wildlife related programs, tours and demonstrations were presented both at the Refuge and the Adak Regional School System to more than 750 people. We sponsored a draw an eagle art contest with the Adak school and awarded 21 prizes at the Refuge's open house, which over 300 people attended. There was also a general adult wildlife art contest. Best of show for this contest was a pencil drawing of Aleutian terns.



The Refuge holds an open house each year in conjunction with National Wildlife Week. Various interpretive displays are set up to explain the FWS objectives and programs in the Aleutian chain. (C.F.Z. 1982)

Several wildlife identification workshops were held for the general public this year. General information and regulations covering each group of species were also presented. These workshops covered the fish on Adak, seabird identification, caribou hunting and waterfowl identification.

The workshops drew large crowds and, because of their popularity, are planned to be held on a regular basis each year.

Eight films on various Alaskan or Aleutian Island topics were shown to the general public this year. Approximately 540 people attended. Several of the films were also offered to the schools for viewing. One general ecology film was seen by 232 students.

8. Hunting

In addition to being a Federal Reserve, the Aleutian Islands Unit is also a State Game Refuge under regulations promulgated by the Alaska Department of Fish and Game, and therefore the entire refuge is closed to hunting with the following exceptions: Umnak, Atka, Unalaska, Akun, Akutan, Sanak and Tigalda Islands are open to hunting. Shemya, Attu and Great Sitkin Islands are open to waterfowl and ptarmigan hunting. Adak Island is open to waterfowl, ptarmigan and caribou hunting. Table 18 provides a breakdown of hunting visits and activity hours.

TABLE 18. VISITS AND ACTIVITY HOURS FOR ADAK CONSUMPTIVE USES, 1982.

	<u>Visits</u>	<u>Act. Hours</u>
Hunting		
Caribou	1202	25,806
Ptarmigan	444	1,207
Waterfowl	74	268
Total Hunt	1720	27,281
Fishing	6090	13,510
Clamming	375	524
Total	8185	41,315

The Navy provides tug service to the hunting cabins on Adak Island's south side for active duty military personnel who are caribou hunting during the fall and winter months with the exception of December and January. Approximately two-thirds of the entire caribou harvest is in conjunction with tug support. Caribou hunting is generally considered to be quite good on Adak as is hunting for rock ptarmigan. Waterfowl hunting is spotty and has been attracting reduced interest in recent years.

9. Fishing

Fishing continues to be the most popular consumptive use on the Unit (Table 18). Saltwater enthusiasts angle for halibut and set crab pots in nearby waters. Stream and lake fishermen concentrate on pink, red and silver salmon, and of course, Dolly varden. The more popular fishing holes around Adak; Finger Bay, Nav Fac Creek and Sweeper Creek, were shoulder to shoulder during the runs in August. Finger Bay stream has been designated "fly fishing" only, by Naval directive, to reduce fishing pressure on that popular spot. High quality wilderness fishing is also available for those willing to do some hiking.



Finger Bay stream supported one of the largest pink salmon runs on Adak this year. With an estimated 100,000 salmon in a 5/8 - 3/4 mile long stream, a large number of fish could be caught in a very short time. (C.H. 1982)

The Recreational Services Division of the Naval Security Group Activity command on Adak has a recreational vessel "Kuluk Clipper" which takes six fishermen daily to the halibut "hotspots". Demand was incredible with the vessel being booked up months in advance. Reservations were taken on a first come basis. The vessel enjoyed good success during the summer which added to the demand.

10. Trapping

Trapping for Arctic fox is allowed on Adak Island. Permits are unlimited and free. Sixteen trappers took part in the season. Most of the trapping is limited to the Adak area and sites near the hunting cabins.



The majority of the Aleutian Islands have Arctic fox on them. They provide the sportsman on Adak many hours of outdoor activity. (E.V.K. 1982)

11. Wildlife Observation

Landscape, wildflower, and wildlife photography buffs are in their glory on a clear Aleutian day. Bald eagles are common at the Naval Station and are favorites of the local folks. It is a bit more difficult to photograph the sea otter or caribou, however they are also highly regarded prizes with the camera or binoculars. Table 19 outlines visits and activity hours for selected non-consumptive wildlife uses.

TABLE 19. VISIT AND ACTIVITY HOURS FOR SELECTED NON-CONSUMPTIVE WILDLIFE USES.

<u>Wildlife Observations</u>	<u>Visits</u>	<u>Activity Hours</u>
Hiking	4032	18,560
Land Vehicle	9755	9,805
Boat	36	72
Photography	1384	2,184
Other	1844	5,288
Total	17,051	35,909

13. Camping

The entire Unit is open to camping, however most use occurs on Adak. Five FWS backcountry cabins are available for use on a first-come reservation basis. The cabins are receiving increased summer use by backpackers and fishermen and heavy use during the fall and winter by caribou hunters.

16. Other Non-Wildlife Oriented Recreation

Cross-country skiing, sledding and tubing have become extremely popular winter activities with all 90 pairs of skis from the two Navy Recreational services being rented out on good weekends. Hiking and beachcombing are other popular activities throughout the year.



(C.H. 1982)

17. Law Enforcement

At present, most enforcement work is limited to Adak Island. The lack of logistical support makes enforcement on other islands virtually impossible at this time.

A summary of citations issued is shown in Table 20.

TABLE 20. 1982 LAW ENFORCEMENT SUMMARY, AIU.

<u>Violation</u>	<u>Number of Violations</u>	<u>Fine</u>
Fishing Closed waters	1	\$125.00
No State Fishing License	2*	\$125.00 ***
Snagging Salmon in Fresh Water	3**	\$150.00 ***
Taking Big Game With Improper License	1	\$125.00
Possession of Improper License while Hunting Big Game	1	\$125.00
Overlimit of Fish	1	***

* Includes 1 Military Person on Naval Station

** Includes 2 Military People on Naval Station

*** Does not include fines by Naval Command

All violations involving military people on the Naval reservation were turned over to the Navy command for prosecution. Military people violating regulations off the Naval reservation and all civilians were issued federal citations.

One case is still pending concerning the alledged theft of parts from wrecked World War II aircraft, primarily P-40 fighters. Two individuals chartered a Goose to Amchitka after arriving on Adak and picking up a SUP for recreational purposes. The Goose was unable to pick up the two, and several weeks later they were picked up by a charter craft from Cold Bay. Acting on a tip from a historical aircraft buff in Anchorage, Refuge Manager Martin, Mechanic Bowers, and Assistant Manager Reiswig seized a large quantity of the old parts from the local junk dealer who supposedly was hired to ship them to Indiana.

This case points out the potential difficulty of attempting to protect biological, archeological and historical resources on the Unit because of its size and the difficulty of transport to the various islands. Only the high cost of transportation frustrates the efforts of many, but not all, to visit the islands for various illegal reasons.

Two National Marine Fisheries Service enforcement personnel, visiting Adak November 9 while the U.S. Coast Guard Cutter they were assigned to was being refueled, responded favorably to our request to investigate allegations that commercial crab boat crews were damaging gear set out by Adak fishermen. Several interviews were conducted in our office spaces, giving us as well as NMFS some insight into a local problem.

18. Cooperating Associations

The Alaska Natural History Association outlet in Adak continued to grow in 1982, primarily due to greatly improved visitor contact facilities, a widely expanded informational, educational and interpretive program, and the development of an inexpensive Outdoor Recreation Guide for Adak Island which proved to be a big seller.

Sales increased from \$230.55 in 1980 to \$3196.34 in 1981, to \$3605.51 this past year. A variety of books and pamphlets such as the Alaska Geographic volumes on the Aleutians, volcanos and whales and several wildflower and bird books were sold. The biggest seller by far was the Outdoor Recreation Guide which sold 1456 copies.

All in all, we felt it was a successful year and that the Association cooperated greatly in the success of the interpretive/educational program of the Unit. The only drawback to the program is the large volume of paperwork required to conduct the Association's business.

I. EQUIPMENT AND FACILITIES

1. New Construction

Two new duplexes were added to the housing area in 1981. As was reported that year, a flooding problem developed under one of the duplexes. Sump pumps have kept the problem more or less under control, but the unit continues to settle, causing ceiling cracks and cabinets to shift inside the units.

After an on-site inspection of the problem, engineers from the Regional Office decided that an open drainage ditch around the units would intercept the water flow and move it away before further damage could occur. A construction plan was developed and approved by the Navy Command.

The plan called for a four foot wide, flat bottom ditch, to be dug around three sides of the affected duplex. The ditch would vary in depth according to terrain it passed through, but would be about four feet deep. The ditch would drain the water from the housing area into a drainage ditch some distance away. All work would be done by force account with a leased back hoe.

On paper the plan looked fine; however, once the actual work started, it proved another matter. We soon learned that a drainage ditch of this type would not work as the water table was higher than the designed ditch bottom. Once we dug into this saturated soil, the wet material flowed into the excavation, undercutting the sides, causing them to cave into the ditch. It proved to be an unending battle.

After spending \$10,000 on the project, it was decided that an open ditch was not going to work. Hopefully, a workable solution will be found to control the seepage problem.



The dotted line shows the location of the ill-fated drainage ditch. The unit in the lower left is experiencing the most settling problems.
(C.H. 1982)

2. Rehabilitation

The interior of the refuge manager's residence was completely remodeled in the interim between managers. Walls and ceilings were textured and painted. Problems with the plumbing and electrical wiring were also repaired prior to repainting.

3. Major Maintenance

Even though Maintenance Mechanic Bowers has made a big dent in the backlog of maintenance needs for the refuge, a great deal still remains to be done.

Repair and upkeep of equipment and facilities on Adak is a bit more difficult than elsewhere. The cost and time involved in obtaining parts or equipment to work with is difficult. For instance, if you need parts to repair an outboard motor or truck engine, you cannot run to the local parts store and pick them up. There are no parts stores on Adak. Parts are ordered from Anchorage or the "Lower 48" and shipped out on Reeves Airlines or Foss Barge. With the freight charge added to the original part price, the cost is high, and it may take a week or longer for them to show up. Obtaining material from the Navy is easier, if they have it, and if they can find it.

When the YACC program ended in March, this station lost their assistance in providing janitorial services in our new headquarters building, and in our facilities and equipment maintenance program. As the year ends, we are attempting to hire a maintenance helper to assist our mechanic in catching up on the backlog of repairs.

Maintenance projects included: rebuilding the engine on the small front-end loader; replacing the flywheel, starter, distributor and window glass on refuge vehicles; disassembling and thoroughly cleaning the fuel tanks on the 22 ft Boston Whaler; repair of numerous outboard motors; furnace repairs on most of the houses and headquarters building; building shelves and storage space in the new shop, rearrangement of facilities to make the most efficient use of the available space, and construction of work benches, tool racks, and lubricant storage and dispensing systems.

4. Equipment Utilization and Replacement

The carryall and 4X4 pickup put on excess last year are still with us. New shop items included an AC/DC arc welder for the auto shop and a vertical band saw and table type belt/disc sander for the carpentry shop.

5. Communication Systems



A new, twin tower TCI model 613 radio antenna, was installed this year for use with our new headquarters base set, a Sunnair GSB-900SC, high frequency single side band radio. This combination has the capability of providing radio communication with the Regional Office in Anchorage. (D.D. 1982)

6. Energy Conservation

Maintenance Mechanic Bowers attended a one week training course in Anchorage learning how the headquarters building heating system worked. After completing the course, the entire system was checked out. Many small problems were found and corrected on the spot. Repair kits were ordered to correct the few major problems. This work has improved the heating efficiency of the system. Vehicle mileage continued to remain below the Unit's 1980 quota due to excellent cooperation by staff members in holding the line on excessive vehicle usage.

In an effort to reduce energy usage in the housing area, the following projects are planned: install electric meters on the four older units (we are currently paying a flat rate which is higher than the four new metered units); install insulation on the underside of the floors; weather strip windows and doors; and rehabilitate the leaky arctic entrances. Residents are encouraged to adhere to the government energy conservation regulations.

J. OTHER ITEMS

1. Cooperative Programs

The demand, or interest, in alternate types of energy is wide spread. The Aleutian Islands, being volcanic in origin and having several active or dormant volcanoes, are a potential source for geothermal energy. The main drawback is the distance from a consumer area.

The Aleutian Islands Unit issued a special use permit to Republic Geothermal who was under contract from the Alaska Power Authority, to explore for geothermal resource potential on the slopes of Makushin Volcano on Unalaska Island.

A report by the Alaska Power Authority follows:

Results of last summer's geothermal shallow drilling program on Unalaska Island in the Aleutian chain have revealed temperatures capable of producing electrical power. Deep drilling scheduled for summer 1983 is expected to determine whether the geothermal reservoir characteristics will allow the economic extraction of heat for power production.

The geothermal potential of Unalaska Islands Makushin volcano has been the subject of an investigation by the Alaska Power Authority for the past two years. After a preliminary study of the area, the Alaska Power Authority retained Republic Geothermal Inc. to conduct a more detailed investigation of the geothermal potential in the vicinity of Makushin volcano. The Unalaska site was selected because it is the only known geothermal resource in Alaska that is close to a sizeable population center. The legislature in 1981 appropriated \$5 million for this exploratory drilling program to determine whether a low cost power source for Unalaska could be developed. Electricity at Unalaska is presently produced by diesel generators at a cost of 34 cents per kilowatt hour, and this cost is certain to increase as the cost of diesel continues to rise. With the possible development of a bottom fishing industry to complement the existing crabbing industry, the community of Unalaska/Dutch Harbor would benefit from the development of a stable, low cost power source.

During last summer's field work, Republic supervised drilling crews that sank three test holes to about 1,500 feet and recorded temperatures at various depths. Such test holes are drilled for the purpose of determining the thermal gradient at each end of the drilling sites. Thermal gradient refers to the rate at which temperature increases with an increase in depth. Temperatures in the hottest of the gradient holes measured 383°F (195°C) at a depth of 1,485 feet. According to Dr. Gerald Hutterer of Republic, these temperatures are well within the range necessary for commercial development. Once high temperatures are encountered, however it is necessary to obtain additional information regarding the extent and quality of the geothermal resource in order to determine whether the resource can be economically developed.

Republic will conduct further investigations for the Alaska Power Authority next year, including the drilling of a deep well at a site to be selected on the basis of the last summer's field work. If funding allows, a deep production well could be completed by late fall of 1983.

In June, Manager Zeillemaker visited the Republic Geothermal surficial survey camp and inspected a temperature gradient well site at the 1250' and 1975' elevation levels on the flanks of Makushin volcano. Geothermal's efforts to minimize environmental impacts were impressive. All tent platforms were elevated to prevent impacting the tundra. All personnel and equipment are moved and sited by helicopter. The drill rig with a 10-15 foot square base was positioned without modifying or scraping the site. The soil has been leveled at the next gently sloping well site, but all material was placed so that it could be returned to the site after drilling. The third, and final, site had not been chosen at the time of the visit. Former human activities, including an abandoned road, below the exploratory work and natural venting and mud slides in the vicinity of the sites have had a much greater impact on the area than the present geothermal activity. It appeared that all present disturbance will be undetectable in a short time following completion of the project.

2. Items of Interest

Early on the morning of November 12 the fishing vessel, "American Beauty", went aground at Kovurof Bay, Atka Island. It was reported that the vessel's anchor chain had broken during a storm. The owner and crew were removed by the sister vessel, "Alaskan Beauty", within 24 hours. "American Beauty's" hull had been punctured on the port side by the rocks and most of the 14,000-15,000 gallons of diesel fuel aboard leaked into the bay.

On November 16 Refuge Manager, Zeillemaker, accompanied the Peninsula Airways bi-weekly flight on its trip from Adak to Atka. He was thus able to fly over the wreck site to try and ascertain the extent of the oil leak. He reported that a thin film of fuel was evident in the bay, but there was no evidence of fuel to the east or west of the bay. No wildlife mortality was observed. After scrutinizing pictures taken during the flyover of the wreck, Zeillemaker concluded that the vessel was resting on rocks that are below the mean high tide line. The wreckage of the "American Beauty" is therefore outside the boundries of the refuge.

No further action was taken since the fuel spill was small in size and broken up by wave action, causing no significant wildlife mortality, and the wreck was not on refuge lands. Some salvage operations from the "American Beauty" has been done by the ship's owners.

Two weddings involving refuge staff occurred on Adak during the month of September. Volunteers Konrad Schmidt and Mary Stephansky took their vows on the 4th and Biological Technician Leslie Slater married Edward Feitzinger of the U.S. Navy on the 25th.



The Aleutian Islands do not experience many cloudless, sunny days; however, when we do, the weather can be as nice as anywhere in the Lower 48. Sunsets like this really put the cap on a what was a rare day in the Chain. (T.E. 1982)

3. Credits

Layout, typing, and understanding confusing rough drafts were completed by Joy Tadewaldt, refuge clerk-typist. Carol Hagglund also assisted with some of the typing and editing. The various sections of the report were written by the following individuals:

- A. Highlights - Fred Deines
- B. Weather - C. Fred Zeillemaker
- C. Land Acquisition - Van Klett
- D. Planning - Van Klett and Fred Deines
- E. Administration - Van Klett, Fred Deines, and Carol Hagglund
- F. Habitat Management - Van Klett and Fred Deines
- G. Wildlife Sections 1-4, 6-7, 10, 11, 14-16 - Fred Deines
Wildlife Sections 5 and 9 - Don Dragoo
Wildlife Section 8 - Fred Deines and Don Dragoo
Use Day Tables - C. Fred Zeillemaker
- H. Public Use - Fred Deines and Van Klett
- I. Equipment - Ron Bowers and Van Klett
- J. Other Items - Fred Deines
- K. Feedback - Van Klett

Editing of the report was done by Van Klett.

K. Feedback

When the Alaska Native Claims Settlement Act was passed in December 1971, village corporations were allowed to file village selection applications under the provisions of section 12(a) for "all of the township or townships in which any part of a village is located plus an area that will make the total selection equal to the acreage to which the village is entitled." In many instances, corporations over selected on the total acreage, choosing lands within the boundaries of National Wildlife Refuges. If this was done on purpose, hoping for the best in a trade off is any ones guess.

Irregardless of the reason, very little has been accomplished during the ensuing years since the selections were made. Studies have been conducted on lands regarding their value to the refuge system and recommendations have been made concerning lands to be traded to the village corporation and we are still waiting. Village corporations are still waiting. How long do we all have to wait? Where is the holdup?

Table A POPULATION COUNTS & ESTIMATES OF MIGRATORY BIRDS FOR LITTLE SITKIN ISLAND, 1982.

<u>Species</u>	<u>Count</u>	<u>Estimate</u>
Cormorant spp.	110i	107i (nb)
	2n	2pr
Pelagic cormorant	53i	52i (nb)
	1n	1pr
Red-faced cormorant	36i	16i (nb)
	15n	15pr
Common murre	111i	111pr
Thick-billed murre	12i	12pr
Pigeon guillemot	99i	109pr
Horned puffin	132i	330pr
Tufted puffin	80i	200pr
	6n	--
Ancient murrelet	115i	115i
Parakeet auklet	4i	4i
Whiskered auklet	106i	106i
Glaucous-winged gull (ad.)	283i	142pr
(imm.)	15i	15i (nb)
Common eider (♀)	3i	--
Harlequin duck	3i	--
Aleutian green-winged teal (♂)	1i	--
Red-breasted merganser (♂)	1i	--
Bald eagle (ad.)	4i	--
(imm.)	2i	--
(total)	6i	8i
(aeries)	2a	--
Peregrine falcon (total)	4i	6i
(aeries)	2a	--

i = individual
 pr = breeding pair
 a = aerie
 n = nest
 nb = non-breeders

Table B POPULATION COUNTS & ESTIMATES OF MIGRATORY BIRDS FOR RAT ISLAND, 1982.

<u>Species</u>	<u>Count</u>	<u>Estimate</u>
Cormorant spp.	157i	157i
Pelagic cormorant	6i	6i
Red-faced cormorant	7i	7i
Pigeon guillemot	25i	28pr
Horned puffin	11i	28pr
Tufted puffin	42i	105pr
Ancient murrelet	125i	125i
Parakeet auklet	2i	2i
Crested auklet	4i	4i
Least auklet	1i	---
Glaucous-winged gull (ad.)	384i	192pr
(imm.)	516i	516i
Common eider (♂)	38i	---
(♀)	12i	---
Harlequin duck	52i	---
Aleutian green-winged teal	2i	---
Bald eagle (ad.)	16i	---
(imm.)	2i	---
(total)	18i	14i
(aeries)	4a	---
Peregrine falcon (total)	4i	6i
(aeries)	2a	---
Black oystercatcher	1i	1pr
Parasitic jaeger	1i	---
Whimbrel	1i	---

i = individual
 pr = breeding pair
 a = aerie

Table C POPULATION COUNTS & ESTIMATES OF MIGRATORY BIRDS FOR TANAGA ISLAND, 1982.

<u>Species</u>	<u>Count</u>	<u>Estimate</u>
Cormorant spp.	546i 13n	529i (nb) 13pr
Pelagic cormorant	77i 19n	52i (nb) 19pr
Red-faced cormorant	7i 4n	2i (nb) 4pr
Murre spp.	10i	10pr
Pigeon guillemot	91i	100pr
Horned puffin	128i	320pr
Tufted puffin	235i	588pr
Ancient murrelet	118i	118i
Kittlitz's murrelet	20i	20i
Parakeet auklet	25i	25i
Crested auklet	125i	125i
Least auklet	1i	--
Whiskered auklet	1i	--
Auklet spp.	7i	--
Glaucous-winged gull (ad.)	584i	292pr
(imm.)	356i	356i (nb)
Arctic tern	1i	--
Tern spp.	13i	13i
Common eider (♂)	67i	--
Harlequin duck	1300i	--
Aleutian green-wing teal	43i	--
Red-breasted merganser	5i	--
Mallard	5i	--
Bald eagle (ad.)	54i	--
(imm.)	7i	--
(total)	61i	34i
(aeries)	9a	--
Peregrine falcon (total)	5i	3i
(aeries)	1a	--
Common raven	33i	33i
Common loon	1i	1i
Shorebird spp.	4i	--
Black oystercatcher	57i	29pr

i = individual

pr = breeding pair

a = aerie

n = nest

nb = non-breeders

Table D POPULATION COUNTS OF MIGRATORY BIRDS FOR WHIP & TIDGITUK ISLANDS, 1982.

Whip Is.:

<u>Species</u>	<u>Count</u>
Horned puffin	2i
Tufted puffin	52i
Glaucous-winged gull (ad.)	30i
Common eider (♂)	13i
(♀)	13i
Aleutian green-winged teal (♂)	4i
(♀)	4i
Bald eagle (ad.)	2i
(imm.)	1i
(total)	3i
Black oystercatcher	20i

Tidgituk Is.:

<u>Species</u>	<u>Count</u>
Horned puffin	11i
Tufted puffin	23i
Common eider (♂)	10i
(♀)	2i
Aleutian green-winged teal	4i
Bald eagle (ad.)	2i
(imm.)	2i
(total)	4i
Black oystercatcher	22i
Northern phalarope	24i

i = individual

TABLE -

Estimated Breeding Seabird Populations Kasatochi to Islands of Four Mountains, Aleutians

SPECIES	Kasatochi (1)	Koniujii	Salt (2)	Sagchudak (2)	Antagis	Nadatanak (2)	Atka (+ off- shore unnamed islets) (1)	Adia (1)	Round (2 islets)	Tanadak	Seguam (1)	Anukta (1)	Chagulak	Nunaska (1)	Herbert (1)	Carlisle (1)	Ulaiga (1)	Kaganil (1)	Chuginadak (1)	TOTALS
Northern Fulmar											3,000		500,000							503,000
Black-tailed Storm Petrel	P	200,000*	C	C	200*				400*	200*	C	P	500,000*	P		P	P	P	P	
Lach's Storm Petrel	P	50,000*	C	C	100*					400*	P	P	500,000*	P				P		
Double-Crested Cormorant																		26	30	56
Blackleg Kittiwake	40	10		16		2	30	46	6		40	40	106	80	26	120	10	34	150	756
Red-Faced Cormorant							60	30			120	50	10	130	30	24		90	400	944
Parasitic Jaeger				20															16	36
Leucous-winged Gull	40	40	400	350			190	280	60	10	20		3,000	6			20		120	4,536
Black-legged Kittiwake		2,850										85	6,000							8,935
Common Murre	300										1,300	100	700					7,000		9,400
Black-billed Murre											1,050	1,600	24,000					27,000		53,650
Pigeon Guillemot	10	60		90	10	40	400	980		50	100	170	170	30	100	80	20	52	130	2,492
Heermann's Murrelet	P	10,000*	A	C					1,000*	200*			5,000*							
Massin's Auklet			C		200*		800*			500*		P?	100,000*							
Parakeet Auklet	1,000	500		20			P			10	90	P	100			50			40	1,810
Rested Auklet	20,000	1,000											3,000							28,000
Least Auklet	15,000	2,000											100							17,100
Horseshoe Auklet	C	A	P	P	500*	P		P	P		P	C	C	C	P	P	P	P	C	
Horned Puffin	P	200	1,200	100			120	900		50	200		3,000	40	130	200	30		460	6,630
Tufted Puffin	P	20,000	3,000	200	1,200		5,600	7,100	6,000	1,000	1,160		50,000	60	120	800	10		1,040	97,290
Totals	36,390	30,660	4,600	796	1,200	42	6,400	9,336	8,066	1,120	4,090	5,045	590,186	346	406	1,274	90	34,202	2,386	734,635

P-present A-abundant C-common (1) Foxes present (2) Foxes formerly present

*Not included in Totals

TABLE F. MONTHLY TOTALS OF BIRDS AND MAMMALS SEEN ON NEARSHORE BOAT SURVEYS
AT ADAK ISLAND, ALASKA, 1982.

<u>Species</u>	<u>FEB</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>OCT</u>	<u>DEC</u>
Common Loon	-	-	-	-	2	-	-	-
Yellow-billed Loon	-	-	-	1	-	-	-	8
Northern fulmar	-	-	-	-	-	1	-	-
Red-faced Cormorant	-	-	8	-	-	-	-	-
Cormorant Spp.	227	100	240	515	433	418	621	264
Mallard	-	-	-	-	-	-	65	40
Gadwall	-	-	-	-	-	-	-	1
Aleutian green-winged Teal	-	3	34	-	4	-	42	23
Greater Scaup	-	7	-	-	-	-	1	-
Common Goldeneye	-	-	-	-	-	-	-	10
Bufflehead	80	-	11	-	-	-	13	17
Harlequin Duck	74	-	132	70	1	4	365	245
Common Eider	-	-	-	-	18	-	-	-
Oldsquaw	147	53	3	-	-	-	-	54
Black Scoter	-	-	-	-	-	-	1	-
White-winged Scoter	-	5	17	-	-	-	-	-
Red-breasted merganser	61	-	18	4	5	-	14	31
Bald Eagle	5	5	13	22	57	45	34	17
Peregrine Falcon	-	-	-	-	1	-	-	-
Black Oystercatcher	-	-	2	-	2	4	-	-
Northern Phalarope	-	-	-	-	-	53	-	-
Parasitic Jaeger	-	-	-	-	1	-	-	-
Glaucous-winged Gull	11	9	60	199	71	222	137	83
Black-legged Kittiwake	-	-	40	-	4	57	15	-
Arctic Tern	-	-	-	-	13	-	-	-
Aleutian Tern	-	-	-	1	16	-	-	-
Murre Spp.	1	1	29	278	76	40	22	44
Pigeon Guillemot	-	25	161	139	140	127	105	86
Horned Puffin	-	-	-	89	144	263	-	-
Tufted Puffin	-	-	4	152	202	135	-	2
Rhinoceros Auklet (?)	-	-	-	-	-	1	-	-
Crested Auklet	-	-	-	134	1	2	-	-
Cassin's Auklet	-	-	-	2	-	2	-	-
Least Auklet	-	-	-	-	2	5	-	-
Auklet Spp.	-	-	-	145	3	4	-	-
Marbled Murrelet	-	1	-	7	31	11	3	-
Kittlitz's Murrelet	-	-	-	-	19	-	-	-
Ancient Murrelet	-	1	86	684	64	8	8	31
Common Raven	3	1	1	6	3	25	8	2
Sea Otter	28	4	103	136	114	142	160	82
Steller's Sea Lion	-	-	-	-	-	-	15	3
Harbor Seal	-	-	9	13	28	26	4	5
Dall Porpoise	-	-	6	-	-	-	-	-
Porpoise Spp.	-	-	-	-	-	3	-	-
Minke Whale	-	-	-	1	-	-	-	-

TABLE G. MONTHLY TOTALS OF BIRDS AND MAMMALS SEEN ON VEHICLE SURVEYS AT
ADAK, ALASKA, 1982.

<u>Species</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
Common Loon	-	-	-	1	1	-	-	1	3	-	-	*
Yellow-billed												
Loon	-	1	2	2	-	-	-	-	-	-	-	*
Arctic Loon	-	3	-	-	-	-	-	-	-	-	-	*
Red-throated												
Loon	1	-	-	-	-	-	-	-	-	1	-	*
Loon Spp.	-	-	-	-	1	-	-	-	-	-	-	*
Red-necked												
Grebe	-	-	-	-	-	-	-	-	-	1	-	*
Horned Grebe	-	-	-	1	1	-	-	-	-	2	3	*
Albatross Spp.	-	-	-	1	-	-	-	-	-	-	-	*
Northern												
Fulmar	-	-	-	-	-	-	-	13	-	-	-	*
Cormorant Spp.	125	204	108	130	167	100	219	164	47	550	136	*
Brant	-	-	-	-	-	-	-	-	-	1	-	*
Emperor Goose	153	304	215	54	-	-	-	-	-	-	-	*
Mallard	50	71	6	86	29	4	7	7	1	-	-	*
Pintail	-	-	-	107	22	9	1	2	-	7	-	*
Gadwall	-	-	-	-	1	-	-	-	-	-	-	*
Amer. Widgeon	-	-	-	1	-	-	-	-	-	-	-	*
Eurasian												
Widgeon	-	-	-	3	4	2	-	-	-	-	-	*
Northern												
Shoveler	-	-	-	-	1	1	2	-	-	-	-	*
Aleutian Green-												
winged Teal	-	18	264	89	117	63	182	39	7	4	2	*
Tufted Duck	-	-	-	2	10	-	-	-	-	-	-	*
Greater Scaup	49	35	40	46	91	21	4	-	-	2	10	*
Common Golden-												
eye	79	121	24	207	-	-	-	-	-	8	59	*
Bufflehead	40	46	-	107	2	-	-	-	-	3	13	*
Harlequin Duck	205	358	108	230	143	32	9	-	-	555	118	*
Common Eider	68	12	-	-	6	-	22	22	10	3	-	*
Steller's												
Eider	-	1	-	1	-	-	-	-	-	-	-	*
Oldsquaw	153	394	76	122	-	-	-	-	-	-	12	*
Black Scoter	2	23	-	58	1	-	-	-	-	5	5	*
White-winged												
Scoter	-	113	-	-	10	-	-	-	-	-	-	*
Common												
Merganser	-	-	-	-	1	-	-	-	-	-	-	*
Red-breasted												
Merganser	72	91	62	209	93	3	15	24	16	96	90	*
Bald Eagle	39	27	26	42	31	12	18	46	8	88	131	*
Rock Ptarmigan	-	-	-	2	9	1	-	-	-	-	-	*
Black Oyster-												
catcher	-	1	-	2	-	5	-	-	-	12	-	*
Bar-tailed												
Godwit	-	-	-	-	6	-	-	-	-	-	-	*
Ruddy Turn-												
stone	-	-	-	-	-	-	-	3	-	-	-	*

TABLE G. (CONTINUED) MONTHLY TOTALS OF BIRDS AND MAMMALS SEEN ON VEHICLE SURVEYS AT ADAK, ALASKA, 1982.

Species	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Rock Sandpiper	-	-	-	-	1	4	-	1	-	-	-	*
Pectoral Sandpiper	-	-	-	-	-	-	-	-	-	7	-	*
Sharp-tailed Sandpiper	-	-	-	-	-	-	-	-	-	3	-	*
Sanderling	-	-	30	-	-	-	-	-	-	-	-	*
Northern Phalarope	-	-	-	-	19	6	18	-	-	-	-	*
Phalarope Spp.	-	-	-	-	-	-	-	2	-	-	-	*
Parasitic Jaeger	-	-	-	-	7	4	8	14	5	-	-	*
Glaucous Gull	-	-	2	12	-	-	-	-	-	-	-	*
Glaucous-winged Gull	56	362	497	514	612	623	401	805	341	645	180	*
Ring-billed Gull	-	-	-	3	-	-	-	-	-	-	-	*
Mew Gull	-	3	-	-	-	-	-	-	-	-	-	*
Blacklegged Kittiwake	-	-	-	-	-	2	2	3	-	11	-	*
Ross' Gull	1	-	-	-	-	-	-	-	-	-	-	*
Black-headed Gull	-	-	-	-	4	1	-	-	-	-	-	*
Arctic Tern	-	-	-	-	59	17	-	-	-	-	-	*
Aleutian Tern	-	-	-	-	64	41	-	-	-	-	-	*
Tern Spp.	-	-	-	-	34	13	33	-	-	-	-	*
Common Murre	-	-	-	-	2	-	-	-	-	1	-	*
Murre Spp.	-	-	-	-	-	3	31	-	-	-	7	*
Pigeon Guillemot	-	4	-	41	21	26	103	45	47	46	30	*
Horned Puffin	-	-	-	-	2	6	-	24	-	-	-	*
Tufted Puffin	-	-	-	-	4	2	-	26	46	-	-	*
Puffin Spp.	-	-	-	-	-	12	-	-	-	-	-	*
Rhinoceros Auklet	-	-	-	-	-	-	-	-	-	-	-	*
Auklet Spp.	-	-	-	-	-	-	-	40	-	-	-	*
Marbled Murrelet	-	-	-	-	35	19	-	6	-	-	-	*
Ancient Murrelet	2	-	-	1	141	111	80	-	-	-	3	*
Short-eared Owl	-	-	-	-	-	1	4	-	-	-	-	*
Common Raven	35	17	18	28	40	5	8	70	13	50	83	*
Winter Wren	-	-	-	-	-	-	-	1	-	1	-	*
Rosy finch	10	-	26	40	24	5	16	36	8	29	28	*
Red Poll Spp.	-	-	-	-	-	-	2	-	-	-	52	*
Song Sparrow	-	1	2	2	4	5	3	14	15	7	-	*
Lapland Longspur	-	-	9	-	197	49	110	228	126	-	-	*
Snow Bunting	8	3	7	14	21	2	4	7	-	89	1	*
Sea Otter	101	141	49	93	128	103	84	180	94	287	155	*
Steller's Sea Lion	-	-	-	-	-	-	-	1	-	-	-	*
Harbor Seal	7	13	3	13	49	14	19	85	4	2	-	*

*No Vehicle Survey was Completed Due to Bad Weather Limitations

Table H Marine mammal populations of individual islands, 1982.

	<u>Little Sitkin</u>	<u>Rat</u>	<u>Tanaga</u>
Sea otter			
Adult	199	193	1062
Pup	23	28	169
Total	222	221	1231
Total km shoreline	34.9	31.6	210.1
Density	6.4	7.0	5.9
Sea lion			
Bull	4	--	1
Pup	--	40	--
cow/yearling	14	--	
Other	86	910	464
Total	104	950	465
Harbor seal			
Adult	12	101	517
Pup	2	14	4
Total	14	115	521
Density	0.4	3.6	2.5