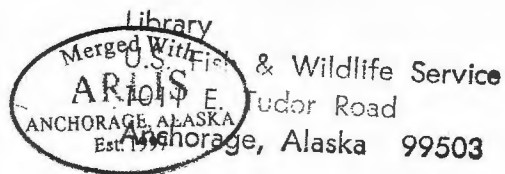


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REFUGE NARRATIVE REPORT

January 1, 1972 - December 31, 1973

ALEUTIAN ISLANDS NATIONAL WILDLIFE REFUGE

AND

BOGOSLOF NATIONAL WILDLIFE REFUGE

Staff:

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U.S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Adak, Alaska

US FISH & WILDLIFE SERVICE--ALASKA



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On a clear day the majestic volcanic peaks of the Aleutian Islands present an awe-inspiring panorama for the adventuresome hiker. A major portion of the Aleutian Islands National Wildlife Refuge has been proposed for inclusion in the National Wilderness Preservation System. This scene is from Agattu Island.

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I. GENERAL

A. Physical Description

The Aleutian Islands National Wildlife Refuge consists of all but seven of the more than two hundred Aleutian Islands which stretch in a 1,100-mile arc from the tip of the Alaska Peninsula westerly toward the Kamchatka Peninsula. The refuge encompasses 2,720,430 acres of land area, making it the third largest refuge in the National Refuge System. Most of this area is proposed for wilderness designation.

The Aleutians are the emergent peaks of a submarine mountain range and may have appeared as islands as early as 8,000 years ago when the surrounding seas rose. Most of the islands are mountainous and the larger ones are dotted with lakes and cut by streams. Irregular shorelines have boulder or sand beaches, rocky cliffs, and offshore islets and reefs. The Aleutian climate is characterized by fog, persistently overcast skies, frequent, often violent cyclonic storms, and high winds.

At one time the Aleutians were the home of about 16,000 Aleuts, but their numbers were severely decimated following Russian discovery of the islands in 1741. Today, only two active villages exist on the refuge. Approximately 6,000 transient military and civilian personnel reside on the two major installations located on the refuge.

B. Weather Conditions

Weather data in the Aleutian Islands is recorded at two locations. The U. S. Weather Bureau maintains a station at Shemya, in the western Aleutians, and the Naval Weather Service Environmental Detachment maintains records at Adak.

At Adak, in 1972, total precipitation was significantly below normal during the first 8 months of the year, but an exceptionally wet fall and early winter made up the deficit, so that total precipitation for the year was near normal (Table 1). Snowfall during the year was 42 percent below normal. Temperatures averaged near normal throughout the year.

Precipitation in 1973 was 16 percent below average and temperatures for 10 months of the year were below normal (Table 2). Cool temperatures were especially evident during the summer. For example, during the 5-month period, May-August, average monthly temperatures were 2.4^oF. below normal (Range, 1.3 to 4.0).

C. Habitat Conditions

1. Water. A natural resource encountered in overflowing abundance in the Aleutians! Water management is not practiced on this refuge.
2. Food and Cover. Nothing of significance to report.

Table 1. Climatological Summary for 1972, Adak, Alaska.

Month	Precipitation			Temperature (°F.)				Wind (Knots)	
	Snow	Total	Avg.*	Mean	Max	Min	Avg*	Max	Avg. Monthly
January	14.8	6.23	6.54	33	42	17	33.8	59	15
February	0.2	4.66	5.52	32	42	20	33.3	39	8
March	7.0	3.32	6.75	35	45	18	35.3	54	11
April	1.0	2.37	4.80	38	50	26	37.9	49	12
May	0.1	3.01	5.01	41	59	30	41.9	42	9
June	0.0	3.02	3.77	45	59	32	45.2	38	9
July	0.0	2.38	3.22	49	62	40	49.3	31	6
August	0.0	3.79	3.92	51	60	37	51.8	40	8
September	T	7.66	5.81	47	58	31	48.5	47	10
October	T	8.26	7.20	41	51	30	42.7	57	9
November	9.8	15.29	8.38	40	49	13	37.4	47	12
December	25.4	8.37	7.73	34	45	17	34.3	47	11
Totals	58.3	68.36	69.29	40.5	62	17	41.0	59	10

*based on 20 years data

Table 2. Climatological Summary for 1973, Adak, Alaska

Month	<u>Precipitation</u>			<u>Temperature (°F.)</u>				<u>Wind (Knots)</u>	
	<u>Snow</u>	<u>Total</u>	<u>Avg.*</u>	<u>Mean</u>	<u>Max</u>	<u>Min</u>	<u>Avg*</u>	<u>Max</u>	<u>Avg. Monthly</u>
January	8.4	2.71	6.54	31	47	15	33.8	69	13
February	21.4	4.28	5.52	32	43	10	33.3	62	11
March	11.6	6.06	6.75	34	50	18	35.3	51	12
April	3.5	2.51	4.80	37	45	26	37.9	58	10
May	1.7	2.74	5.01	37	46	29	41.9	41	10
June	0.0	2.93	3.77	44	62	31	45.2	32	8
July	0.0	2.74	3.22	47	60	36	49.3	42	8
August	0.0	5.31	3.92	49	65	41	51.8	53	12
September	0.0	7.83	5.81	46	56	35	48.5	61	12
October	4.3	4.60	7.20	43	58	32	42.7	61	12
November	T	8.67	8.38	40	50	26	37.4	74	12
December	21.8	8.01	7.73	33	47	19	34.3	64	12
Totals	75.7	58.9	69.29	39.4	65	10	41.0	74	11

*based on 20 years data

II. WILDLIFE

A. Migratory Birds

1. Swans. Whistling Swans occur in the eastern Aleutians, and a few nest on Unimak Island. The largest concentrations occur during the fall migration, in September and October. A few Asiatic Whooper Swans winter in the western and central Aleutians, wandering as far east as Atka Island. The birds arrive in October, reach a peak population of perhaps 300 birds by mid-December, and depart by mid-April.

2. Aleutian Canada Goose. This endangered race (Branta canadensis leucopareia) once bred from the eastern Aleutian Islands to the central Kuril Islands of Asia.

In about 1836 the Russian-American Company began introducing foxes to Aleutian Islands that had formerly been fox free, and the practice was continued by U. S. citizens until about 1930. As foxes became established ground nesting birds, especially Aleutian Canada Geese, were decimated. By 1936 Aleutian Canada Geese had greatly declined in numbers and range. By 1963 a single breeding population, estimated at 300 birds, remained. This population was discovered on Buldir Island in the western Aleutians, one of the few islands in the former range of the Aleutian Canada Goose to escape introduction of foxes.

In 1949 the Aleutian Islands National Wildlife Refuge began conducting experiments to eliminate introduced foxes from selected islands, and by 1967 Amchitka and Agattu Islands were fox free.

To provide a stock of Aleutian Canada Geese for reintroduction to prepared habitat, goslings were captured on Buldir in 1963. These birds were initially held at Monte Vista Refuge, Colorado and later moved to the Patuxent Wildlife Research Center. At Patuxent the geese bred, and by 1971 seventy-five birds were available for release on Amchitka. The release was accomplished, but the full-winged birds apparently left the island before breeding.

In 1972, Glen Smart, Chief of the Section of Propagation at Patuxent, came to the Aleutian Islands to look for geese on Amchitka and to capture goslings at Buldir. BSF&W research biologist Carl Abegglen, Mr. Smart and Assistant Refuge Manager Vernon Byrd spent two weeks looking for returning

or remaining geese at Amchitka. The surveillance included primarily ground searches, but one helicopter survey was made. We saw no geese, and Mr. Smart concluded that the release had not successfully established a population on Amchitka. On June 30, 1972 Smart, Byrd, and Dr. Clayton M. White, Professor of Zoology at Brigham Young University, departed Amchitka for Buldir aboard the M/V ALEUTIAN TERN. We were accompanied by the Wilderness Survey team composed of Palmer Sekora, Daniel Gibson, and Allen McCartney. Our objective was to capture Aleutian Canada Goose goslings to take to Patuxent to bolster the gene pool of the captive flock. A storm kept us at Kiska Island for several days, but then the wind abated and we were able to cross the 80-mile pass to Buldir. Master/Engineer George Putney and Cook/Deckhand Laslo Hanko handled the vessel in their usual competent manner.

On the morning of July 5 we established a shore camp at Buldir (see photo section). It was immediately apparent to us upon landing at Buldir that many species of birds were benefiting from the absence of foxes. Hundreds of thousands of seabirds nested on cliffs, under boulders, in burrows, and inland on the island's surface. Passerines were also very common.

The search for goslings proved as difficult as expected. Buldir is mountainous, and rank vegetation extends to unusually high elevations. These factors, combined with persistent dense fog, limited our effectiveness, and only six broods (totalling 22 goslings) were located in three days of walking over the island. We wanted to catch 25 goslings, but when Master/Engineer Putney radioed from the ALEUTIAN TERN that a storm was approaching, we decided to leave Buldir. Buldir has no harbor, so the TERN would have no place to hide from rough seas. Also, Glen Smart was anxious to take the goslings to Patuxent as soon as possible. We arrived at Amchitka just as the storm caught us, and the geese were safely moved to the Bureau lab ashore. Glen left Amchitka with the goslings on July 10 for Patuxent. All arrived safely.

In 1973 Acting Refuge Manager Byrd went to Washington, D. C. to work with the Office of Endangered Species and the scientists at the Patuxent Wildlife Research Center on a recovery plan for Aleutian Canada Geese. The document

includes an annotated listing of anticipated tasks necessary to restore the goose to a non-endangered status within its historic range. The four main objectives listed in the plan are to:

a. Maintain the wild population of Aleutian Canada Geese on the nesting area at desirable levels.

b. Return the optimum number of geese to the breeding area by providing the essential requirements for the birds during migration and on the wintering area.

c. Ensure gene pool survival.

d. Re-establish Aleutian Canada Geese in four locations within their historic nesting area other than Buldir Island.

3. Emperor Goose. About 80,000 Emperor Geese, or 75 percent of the total world's population, winter on the refuge. The geese arrive in the eastern Aleutians by the first week of September, and first arrivals are noted in the central Aleutians during the last week of September or early October. Numbers build up rapidly in December and January, and the birds are at their population peak during February and March. During this period Emperors congregate in loose flocks in which each family group maintains its separate identity. The birds are most frequently encountered on offshore rocks and islets where they feed on marine algae, barnacles, and other invertebrate matter. Heavy migratory movements occur during April, and most of the wintering population has departed the refuge by the end of that month. Occasional stragglers may be seen through the end of May.

We have assumed that the origin of birds wintering in the Aleutians was from the North American breeding grounds in the Yukon-Kuskokwim Delta region of western Alaska. Following departure from their breeding grounds, the birds stage at Izembek Lagoon on the tip of the Alaska Peninsula before moving westward into the Aleutian Chain with the advance of winter. Understanding Emperor movements in the Chain is complicated by the existence of a breeding population in eastern Siberia. There is some evidence to indicate that this population moves southeasterly from its breeding grounds, entering the Chain from the west and moving easterly; however, details of the Emperor's migratory movements remain to be solved. Banding large

numbers of birds during the winter would seem to be the logical solution to the problem, but we have been unable to devise an efficient capture technique for this marine goose.

David I. Eisenhauer, a graduate student at Purdue University, spent the period March 6 to April 1, 1973 at Adak studying the winter behavior and ecology of the Emperor Goose.

In 1972, Emperors were present at Adak in numbers until the end of April with occasional birds observed through mid-May. A very late pair was seen there June 7. The first fall observation was of a family group of five on September 30, but concentrations were not noted until mid-December. In 1973, most geese departed Adak abruptly during the second week of April. Only occasional flocks were noted through April 29. The first fall observation of Emperors at Unalaska Island (eastern Aleutians) was on September 21, and the first birds were noted at Adak on October 6. No further observations were made at Adak until November 3, when a sizeable flock was noted. Emperors arrived in numbers at Adak during the period of December 7-10.

4. Other Geese. The White-fronted Goose may occur regularly as a straggler in the extreme eastern Aleutians; but a single bird observed near Clam Lagoon, Adak on June 10, 1973 and photographed near the Naval Station on June 18 by E. DeWayne Ash is the first record of this species for the central Aleutians.

The Bean Goose, a rare straggler to the western Aleutians, was observed on three different occasions at Adak. Joseph W. Taylor observed one bird on May 26, 1972; David I. Eisenhauer observed four birds on March 26, 1973; and John L. Trapp observed a single bird on May 15 and 28, 1973. These observations represent the second through fourth records of this species for the Aleutian Islands, all of them since 1971.

5. Ducks. Thirty-two species of ducks have been recorded on the refuge. Although spectacular concentrations of waterfowl are seldom observed, birds are well-distributed throughout the Chain. During the period of maximum winter concentrations numbers probably exceed 200,000 individuals. Of particular interest are a number of Asiatic species occurring regularly on the refuge, but occurring only as

accidentals elsewhere in North America.

Surface-feeding Ducks. Mallards are residents throughout the Chain and breed commonly on the larger islands wherever suitable habitat occurs. Small numbers of Gadwalls occur on the refuge in all months of the year but they are not known to breed. The Pintail is found on the refuge throughout the year and breeds sparingly. Peak numbers of dabblers occur in May and June during spring migration. Exceptionally large numbers of Pintail were noted at Adak and Amchitka during May, 1973, where concentrations were about five times greater than normal. Recent evidence indicates that there is a significant movement of Pintail between North America and Siberia during years of severe drought conditions in the Canadian prairie provinces. A portion of this migration probably occurs along the Aleutian Chain. Falcated Teal were seen at Adak in June 1972 and in May 1973. Green-winged Teal (Anas crecca) are the most abundant dabbling ducks nesting on the refuge. Two races occur, the North American race (A. c. carolinensis), mainly in the eastern Aleutians, and the Aleutian race (A. c. nimia) in the central and western Aleutians. These two races may hybridize where their ranges overlap, as birds having plumage characteristics intermediate between the two races are occasionally observed. The European Wigeon occurs regularly on the refuge at least as far east as Adak, with peak numbers generally in the spring. This species was particularly numerous during the spring of 1973. As many as 21 were recorded at Adak on May 9, and a maximum count of 16 birds was recorded at Amchitka on May 18. Nearly all birds observed were paired and courtship was observed; breeding is suspected but has not yet been confirmed. The American Wigeon is uncommon in the eastern Aleutians, and occasionally observed as far west as Amchitka. The Northern Shoveler is an uncommon migrant in the Aleutians.

Bay Ducks. The Common Pochard is an Eurasian species that has been recorded only in the Pribilof and Aleutian Islands in North America. First recorded in the central Aleutians in 1969, there were six observations of this species from three different locations on the refuge during 1972-73. In 1972, a single adult male was present at Adak June 10-13, and a single female-plumaged bird was observed at Amchitka on June 29. Record numbers were observed in 1973. As many as eight birds were present at Amchitka May 1-14, a like number was observed at Adak May 13-June 15, and a single female-plumaged bird was seen at Attu on May 28.

Two female-plumaged birds observed at Adak on October 16 constitute the first fall record of this species for North America. Canvasbacks winter regularly in small numbers at Adak. The birds normally arrive in the central Aleutians by mid-December and depart by the end of April. Greater Scaup occur on the refuge throughout the year, though most abundantly during the winter months. Scaup breed in small numbers on Amchitka, and perhaps other islands in the western Aleutians. Wintering birds normally arrive in mid-October and remain in numbers through April. The Common Goldeneye is an abundant winter resident, arriving in mid-October and departing in May. It is especially numerous on Clam Lagoon, Adak, and receives a major portion of the heavy hunting pressure which occurs there. Moderate numbers of Bufflehead also winter on the refuge.

Sea Ducks. Harlequin Ducks are found in numbers throughout the year, but apparently do not breed anywhere in the Chain. Maximum concentrations are found in the winter months when an estimated 50,000 birds are present. The Common Eider is an abundant resident throughout the Aleutians, being most numerous in the central and western Aleutians. Ten Common Eider nests at Adak contained 59 eggs between June 16 and July 12, 1973, for an average clutch size of 5.9 (range, 4-9). Both Black and White-winged Scoters are abundant winter residents on the refuge; the birds arrive in October and most have departed by the end of May, though a few non-breeders may remain throughout the summer. Peak populations of about 30,000 Black and 20,000 White-winged Scoters are attained in late winter. The Surf Scoter occurs only as a straggler in the eastern islands, and observations in the central Aleutians are extremely rare. The only record of this species on the refuge during the period was of two females observed at Adak on November 3, 1972.

Mergansers. The Smew, a small Eurasian merganser, has been recorded numerous times from the Aleutians in recent years, but was formerly considered accidental in North America. There were a number of reports of this species on the refuge in 1972-73. In 1972, a single female was observed at Amchitka on February 16, two males were seen at Attu on June 3, and two females were present at Adak October 17-23. Record numbers of Smeews were seen at Adak in 1973. A female first observed on March 16 was present

until May 16; a single high-plumaged male joined the female on May 12 and was last seen on May 21. No further sightings were made until November 4, when three females appeared. Four female-plumaged birds were subsequently observed December 12-15. Common Mergansers breed in small numbers in the eastern Aleutians, and occur sparingly in winter throughout the Chain. An adult male (UA3355) collected at Adak March 15, 1973 was identified as the North American race, M.m. americanus. Red-breasted Mergansers are permanent residents in the Aleutians, and breed in small numbers.

6. Shorebirds, Gulls, and Terns. Fifty-four species of shorebirds have been recorded on the Aleutians Islands N.W.R. Most of these occur as migrants or wind-blown stragglers. The Black Oystercatcher and Rock Sandpiper are the only resident shorebirds breeding commonly on the refuge. A number of significant shorebird observations were made during 1972 and 1973. Two Ringed Plovers collected at Amchitka on May 15, 1973 represent the first Aleutian Islands record for this Eurasian species. A single Semipalmated Plover collected at Amchitka on June 13, 1973 is the first record of this species west of Unalaska. A single Western Sandpiper, previously unrecorded in the central Aleutians, was collected at Adak on July 28, 1972; one was observed at the same location October 9-10; and two birds were seen there December 16-17. The second North American record of Long-toed Stint was a single bird collected at Amchitka on May 16, 1973. Incredibly, another was taken May 30 at Attu. Single Baird's Sandpipers were seen at Adak on August 1 and October 19, 1972. Observations of recent years suggest that the Sharp-tailed Sandpiper is a regular fall migrant through the Aleutians. An exceptionally large movement was noted in the fall of 1972; as many as 25 birds were present at Adak, September 28 to November 2, and at least 300 birds were at Amchitka on October 8. Although the 1973 migration did not approach the magnitude of the previous year, birds were observed regularly through November 21, surpassing the previous late record by nearly three weeks. A single Red Knot was observed at Adak on June 25 and July 13, 1972. These are only the third and fourth records for the refuge. A Long-billed Dowitcher collected at Adak on September 16, 1973 is the second record for the Aleutian Islands. A Spotted Redshank observed at Adak on May 30, 1972 is the second record for the Aleutians, and a Greenshank recorded at Attu on June 8, 1972 is the first for that species. The first Adak specimen of Lesser Yellowlegs was collected June 18, 1972. Wood Sandpipers have been recorded with increasing frequency

in the Aleutian Islands since the late 1960's. In late May, 1973 G. Vernon Byrd observed 20 paired and courting individuals at Attu Island, and in late June Dr. and Mrs. Gerald Maisel, of Los Angeles, California, photographed two downy young there. This species was not known to breed in North America until 1969 when downy young were observed at Amchitka (White, C.M. et al. 1973. Tringa glareola--a new breeding species for North America. Auk, in press). The Bar-tailed Godwit is considered a regular spring migrant through the Chain. The first fall observations of this species were made in 1972 and 1973, when small numbers were present during the month of October in both years. A single Far Eastern Curlew, the first Aleutian specimen, was collected at Adak on June 18, 1972, and up to two birds remained in the area until June 26. Glaucous-winged Gulls breed in numbers on nearly all islands of the Chain, while Glaucous Gulls are rare winter residents. Mew Gulls winter on the refuge in small numbers, and Herring Gulls occur as stragglers throughout the year. The only Black-headed Gull observed during the period was a subadult male collected at Adak on June 23, 1972. Black-legged Kittiwakes nest in notable concentrations on a number of islands; major colonies are located on Attu, Agattu, Buldir, Koniugi, Chagulak, Bogoslof and Amak Islands. Especially exciting was the discovery of two breeding colonies of the Red-legged Kittiwake on the refuge. Large numbers were found nesting on Buldir Island in 1972, and a small colony was located on Bogoslof Island in 1973. This species had previously been known to nest only in the Commander and Pribilof Islands.

7. Other Migratory Birds. Among the highlights of the past two years have been a number of observations of passerine birds which are rare or accidental in the Aleutians, including one species new to North America, and one new to the Aleutian Islands. A cuckoo collected at Adak on June 13, 1972 by D. D. Gibson and G. V. Byrd was later identified as a Common Cuckoo (Cuculus canorus canorus), and it is the first North American record of this species. A second specimen was taken at Kiska in July 1972 and cuckoos were seen at Amchitka and Attu that spring. Equally exciting were two Skylarks at Attu May 26-31, 1973; the first record of this species in the Aleutian Islands. The following species, of rare or accidental occurrence in the Aleutians, were also observed during 1972-73: Yellow-billed Loon, Sandhill Crane, Tree Swallow, Wheatear, White Wagtail, Yellow Wagtail, Water Pipit, Northern Shrike, Brambling, Common Redpoll, and Savannah Sparrow.

B. Upland Game Birds

Willow and Rock Ptarmigan are found in the eastern Aleutians, but only Rock Ptarmigan occur west of Unimak Island. Eight recognized subspecies of the Rock Ptarmigan inhabit the refuge, with distinct races found on each of the major islands, or island groups. These serve as an excellent example of the process of natural selection at work. Little is currently known about population sizes on the various islands.

C. Pelagic Birds

The Aleutian Islands N.W.R. was established "as a preserve and breeding ground for native birds," among other things, and the most striking feature of many of the islands is large seabird colonies. From recent surveys, an estimated minimum of 4,000,000 pelagic birds breed on the refuge.

The Northern Fulmar nests on Buldir, Gareloi, Segum, and Chagulak Islands. The 450,000 fulmars nesting on Chagulak make that one of the largest known colonies of this species in North America. The nocturnal Fork-tailed and Leach's Storm-Petrels nest commonly throughout the Chain.

Pelagic and Red-faced Cormorants nest abundantly throughout the islands, but reach their greatest breeding densities in the Near Islands Group. The Double-crested Cormorant nests in limited numbers in the extreme eastern Aleutians.

The marine bird family Alcidae consisting of the murre, guillemots, murrelets, auklets, and puffins reaches its greatest abundance and diversity in the waters of the North Pacific. Thirteen of the twenty-two living members of this family occur regularly on the refuge. Both Common and Thick-billed Murres nest in colonies throughout the Chain, with the former greatly outnumbering the latter. Some of these colonies exceed 100,000 birds. The Pigeon Guillemot nests on nearly all islands of the Chain, but numbers are difficult to estimate because of its solitary nesting habits. Of the three murrelets, the Ancient Murrelet is the most abundant as a breeding bird on the refuge. Kittlitz's Murrelet is frequently observed but there are no recent nesting records. Pairs of Marbled Murrelets engaged in courtship are commonly seen in the central Aleutians and breeding is suspected, but has not yet been confirmed. Parakeet, Crested, Least, and Whiskered Auklets nest on the

refuge in considerable numbers, and Cassin's Auklets occur less commonly. Major auklet colonies are found on Buldir, Kiska, Segula, Semisopochnoi, Careloi, Oglodak, Kasatochi, Koniuji, Yunaska, Chagulak, and Ulak Islands. Horned and Tufted Puffins nest on nearly all islands of the refuge, and are perhaps the most abundant breeding birds found here. Tufted Puffins outnumber Horned Puffins at most colonies.

D. Birds of Prey

Bald Eagles and Peregrine Falcons are permanent refuge residents. Large numbers of Bald Eagles are found on Amchitka, Adak, Umnak, and Unimak Islands, and they also nest on smaller rocks and islets. Extremely large congregations of Bald Eagles are found at Adak during the winter months, where they are attracted to garbage dumps. On November 10, 1973, 232 birds were counted (200 of them concentrated at a single garbage dump), and 265 birds (173 immature, 92 adult) were observed on December 15, 1973.

Studies conducted on Amchitka reveal that the Peregrine Falcon is reproducing well in the Aleutians, fledging an average of 1.36 young per nest (Williamson, White, and Emison. 1973. Amchitka Bioenvironmental Program. Studies of the avifauna on Amchitka Island, Alaska: Annual progress report July 1, 1971 - June 30, 1972. U. S. AEC Report BMI-171,149.).

Similarly, Bald Eagles successfully fledged 1.30 young per active nest at Amchitka in 1971 (Williamson, et al., ibid.). This success rate is higher than that reported elsewhere in the breeding range of the Bald Eagle (Sprunt, A., IV., et al. 1973. Comparative productivity of six bald eagle populations. Presented at the 38th N. Amer. Wildl. and Natural Resources Conf., Wash, D. C., March 18-21).

A Marsh Hawk observed at Adak during February and March, 1972 is one of the few records of this species in the Aleutian Islands.

E. Big Game Animals

1. Caribou. Caribou were introduced to Adak Island in 1958-59 when 23 calves were successfully released. From this nucleus, the herd had increased to over 350 animals in October 1972. A total of 99 caribou were harvested during

the 1972-73 hunting season, while about 110 have been harvested in the fall of 1973.

As resident big game, the Adak caribou herd is the management responsibility of the State of Alaska. The refuge cooperates fully with the Alaska Department of Fish and Game in this endeavor.

2. Reindeer. Reindeer were introduced to Atka Island in 1914 to provide a subsistence food source for the Natives of the island. The animals are harvested primarily by the Atkians, although there has been limited hunting by parties from Adak in recent years. There is no closed season or limit on the herd, but the annual harvest is probably fewer than 200 animals. The isolation of Atka has prevented any attempt to wisely manage this herd. The same isolation has interfered with attempts to census the herd.

F. Other Mammals

The Arctic Fox is indigenous only to Attu in the Aleutian Islands, but by the early 1940's it had been introduced on nearly all islands of the Chain, for commercial trapping. The foxes effectiveness as a ground predator enabled it to substantially reduce the islands' bird populations, especially that of the Aleutian Canada Goose. The successful restoration of this goose in the Aleutian Islands must necessarily be preceded by the elimination of foxes on selected islands. Red Foxes are native to the Fox Islands group of the eastern Aleutians, where they are still numerous.

Steller's Sea Lion is the most abundant pinniped in the Aleutian Islands, with an estimated population of about 100,000 animals. Sea lions are well-distributed throughout the area, with especially large concentrations occurring on Bogoslof, Buldir, Ugamak, Agattu, and Attu Islands. Harbor Seals are also well-distributed throughout the Aleutians; no population estimates are available.

About 70,000 sea otters are believed to exist on the refuge at the present time, with the greatest concentrations found in the Western Andreanof and Rat Island groups.

G. Fish

Sport fish management has been practiced at Adak for nearly 20 years. From 1954 through 1960 military personnel

operated a hatchery, and approximately 263,000 Rainbow Trout were stocked in various lakes. The program did not appreciably increase sport fishing opportunities and the hatchery was closed.

Alaska Department of Fish and Game biologists conducted physical, biological, and chemical surveys of several Adak lakes during 1968-1972. This resulted in the stocking of Rainbow Trout and Silver Salmon. Some rainbows and silvers were subsequently caught by fishermen, but the created fishery only slightly enhanced sport fishing opportunities on the island.

In 1973, the Alaska Department of Fish and Game requested assistance from the Bureau in managing Adak's sport fishery. Division of Fishery Services personnel, Jon Nelson and Ed Crateau, made several visits to Adak in 1973. They gathered pertinent biological, physical, and chemical information; and they made an effort to determine the demand for particular types of sport fishing.

In October, 1973 a Fishery Management Proposal for Adak was submitted. In the initial stages of the proposed management program, Grayling would be stocked in two inland lakes. Periodic growth and survival checks would be made, and if the introductions prove successful, the stocking program would be expanded.

The objective of the management program is to provide increased sport fishing opportunities for the nearly 5,000 people who live at the Naval Station, Adak.

Sockeye, Chum, Pink, and Coho Salmon all spawn in freshwater streams of the Aleutian Islands, with major runs occurring on Unimak and Attu Islands. The Attu salmon provide important recreational opportunities for military personnel stationed at isolated Attu and Shemya Islands. Dolly Varden is the most abundant freshwater fish native to the area, while rainbow trout have been introduced to some freshwater lakes to enhance sport fishing opportunities. Rock Greenling and Halibut abound in the coastal waters.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Adak. Since 1948 the Aleutian Islands N.W.R. has been managed from headquarters at Cold Bay, Alaska, 30 miles east of the refuge's eastern boundary. The Cold Bay office also administered Izembek, Bogoslof, Semidi, and Simeonof National Wildlife Refuges.

In 1972 the decision was made to establish refuge headquarters at Adak, near the center of the refuge, from which the Aleutian Islands and Bogoslof refuges would be managed. A surplus Army T-Boat, a 65-foot steel-hulled vessel, was converted for use as a refuge research vessel and a Master/Engineer was hired. A Refuge Manager Trainee was also hired, and since the refuge had no facilities at Adak, a room in the Navy's Bachelor Officer's Quarters was rented to serve as a combination quarters/office.

In July, 1972 the Atomic Energy Commission started their demobilization and restoration program at Amchitka Island, the site of three nuclear tests. Office trailers and vehicles were declared excess property and some of this equipment was obtained by the refuge. The U. S. Navy, who also received equipment from Amchitka, hauled the refuge's trailers and trucks to Adak. The trucks were useable upon receipt, but the trailers required major remodeling. Our plan is to convert these trailers for use as residences for refuge personnel and as a refuge office.

Available funds allowed for remodeling only the refuge office trailers. This job was completed in September, 1973. A temporary Biological Technician and a part-time Refuge Clerk were employed, and the refuge office was opened to the public in October, 1973.

The trailers destined to be used as residences have been set on foundations and they have electricity, but funds for remodeling these units are not yet available.

A 30' X 60' metal warehouse was disassembled at Amchitka and moved to Adak for the refuge. Funds are not yet available to re-assemble it.

2. Amchitka. From 1964 through 1971 the Department of Defense and the Atomic Energy Commission engaged in nuclear testing on Amchitka Island. In 1972-73 the Atomic Energy Commission honored a commitment to the Department of the Interior to restore Amchitka as nearly as reasonably possible to its pre-nuclear testing state. The listed objectives of AEC's demobilization and restoration program were: (a) to demobilize and remove all AEC-constructed facilities except those the Bureau of Sport Fisheries and Wildlife requested be left, (b) to restore disturbed areas as closely as possible to their natural state or to take actions necessary to enhance natural restoration, and (c) to insure that no radioactive surface contamination exists that will restrict use of the island.

Because of the large number of people involved in the nuclear testing programs, hundreds of buildings and thousands of pieces of equipment were on Amchitka. Over 100 disturbed areas were identified; they ranged from less than 1 acre to over 60 acres in size and totaled more than 500 acres. Most of the buildings were concentrated near the runway and Constantine Harbor on the eastern end of Amchitka, but a "command post" was established for "Project Cannikin" at the western end of Amchitka, nearly 40 miles west of the runway. Disturbed areas were scattered along the island's main road for over 20 miles.

From May, 1972 through August, 1973 hundreds of workmen disassembled buildings, capped drill holes, picked up cables, removed fences, loaded barges with equipment and scrap metal, cleaned up litter, contoured disturbed areas, and planted grass seed. Refuge Manager Byrd monitored AEC cleanup activities and accepted each job when it met Bureau standards.

By September, 1973 only a few buildings and vehicles remained on Amchitka, and on September 8 the last working party left the island.

The AEC plans to periodically send a group of scientists back to Amchitka to continue the long-range bioenvironmental monitoring program, designed to determine the effects of nuclear testing on the environment. When this monitoring program is complete, equipment remaining on the island will become refuge property.

B. Plantings.

As part of the AEC's restoration program at Amchitka, approximately 150 acres of disturbed area were planted with a seed mixture containing two races of red fescue, Bering hairgrass, and annual rye. Each plant form in the mixture is conspecific with Amchitka plants.

The Bureau-approved mixture was based on the recommendations of Dr. Bill Mitchell, University of Alaska Agricultural Experiment Station, Palmer, Alaska. Dr. Mitchell has conducted revegetation research on Amchitka since 1970. Also according to Dr. Mitchell's recommendations, a nitrogen-rich fertilizer was used.

Most of the planting was done in June and by mid-July a thick green mat covered the formerly bare areas (see photo section).

C. Collections.

A total of 68 individuals of 29 species of birds were donated to various scientific institutions during 1972. In 1973, 49 individuals of 23 species were donated.

D. Control of Vegetation.

Not practiced on this refuge.

E. Planned Burning.

Not practiced on this refuge.

F. Fires.

None.

IV. RESOURCE MANAGEMENT

A. Grazing

Grazing has been permitted on Caton, a small island of about 4,414 acres located in the extreme eastern Aleutians, for a number of years. The operation is limited to a maximum of about 100 head of cattle. The grazing permit is currently held by Knute Anderson of False Pass. The refuge receives an annual payment of \$150.00 for the grazing rights.

The U. S. Navy was given permission to pasture about 11 horses on the southern half of Adak Island during the fall caribou harvests of 1972 and 1973. The horses were used for the transportation of hunters and meat, and generally enhanced the quality and efficiency of the caribou hunt on Adak.

B. Haying

None.

C. Fur Harvest

A few military personnel trap Arctic Foxes at Adak, but the low prices being offered for fox pelts limits the recreational potential of this activity.

D. Timber Removal

Trees are not indigenous to the Aleutian Islands.

E. Commercial Fishing

The offshore waters of the Aleutian Chain are plied by the fishing fleets of a number of nations. The primary species harvested are salmon, halibut, and king and tanner crabs. Although this offshore fishing industry does not occur on the refuge proper, an unknown percentage of the salmon caught are produced in the freshwater streams of the refuge.

Of more immediate interest is a new seafood-processing plant being built by a private firm on 10 acres of land leased from the U. S. Navy at Finger Bay, Adak Island. The owners of the Adak Aleutian Processors, Inc. plan to process king and tanner crab, halibut, salmon, herring, and other commercial fishes.

F. Other Uses

A number of military reservations and navigational stations, created by various Executive Orders and Public Land Orders, exist on the refuge. The largest of these is the U. S. Naval Station occupying the northern 61,000 acres of Adak Island. The U. S. Air Force maintains facilities on the entire 3,520 acres of Shemya Island, and the U. S. Coast Guard maintains small navigational stations on Unimak, Adak, and Attu Islands.

The U. S. Atomic Energy Commission's use of Amchitka Island as a test-site for the underground explosion of nuclear devices terminated in September, 1973. Under the supervision of refuge personnel, the AEC completed a thorough clean-up on Amchitka during 1973. There is little sign remaining of the construction activities and debris generated by activities on the island, and Amchitka may once again serve the purpose for which it was originally intended, as a refuge for migratory birds and sea otters. Teams of scientists will continue to visit the island periodically to monitor the effects of the nuclear detonations on the environment.

V. FIELD INVESTIGATIONS

A. Wilderness Study

From 1969 through 1972 studies were conducted on the Aleutian Islands N.W.R. to determine the suitability of refuge areas for inclusion into the National Wilderness Preservation System. Because of the remoteness of the refuge little biological information was available. Wilderness Biologist Palmer Sekora considered the refuge under two separate proposals; Unimak Island, the easternmost and largest island (which is faunistically and floristically an extension of the Alaska Peninsula) was considered under one proposal, and the remainder of the refuge was considered under another.

Field investigations prior to 1972 involved mainly ground survey work on the larger, more accessible refuge islands. In 1972 the research vessel M/V ALEUTIAN TERN was put into commission and Mr. Sekora, his staff, and refuge personnel engaged in a summer-long evaluation of those refuge islands not previously evaluated as potential wilderness.

The 1972 expedition involved a basic reconnaissance of over 40 islands extending from the Fox Islands group in the eastern Aleutians to Buldir Island in the western Aleutians. Particular emphasis was placed on recording seabird colonies and concentrations of marine mammals. The vessel proceeded around each island as close to shore as possible. Actual counts of marine mammals were made and the number of birds using each nesting colony was estimated. In addition, Dr. Allen McCartney, the archeologist on the survey team, located Aleut midden sites; and Palmer Sekora made notes on geology and possible future uses of each island. Landings were made on few islands because time was limited.

The data obtained during the expedition, along with information obtained in previous field seasons and from pertinent literature were incorporated into the voluminous "Aleutian Islands N.W.R. Wilderness Field Report," which was completed in 1973.

Of 1,720,719 acres in the area considered for wilderness (excluding Unimak Island), 1,395,357 acres were deemed suitable. The unsuitable areas include those lands withdrawn for military or lighthouse purposes, used by the military or Coast Guard by agreement with BSF&W, requested by the military for exclusion from the proposal, eligible for native selection under the Alaska Native Claims Settlement Act, and where World War II refuge is evident.

Public hearings on the Aleutian Islands Wilderness Proposal will be held in early 1974.

B. Field Investigations at Bogoslof N.W.R.

On March 2, 1909 President Theodore Roosevelt set aside the volcanic islets known as the Bogoslof Islands as a preserve and breeding grounds for native birds. In 1940 the name of the preserve became Bogoslof National Wildlife Refuge. In 1970 the refuge was designated a Wilderness Area.

Bogoslof N.W.R. presently consists of two islands; Bogoslof, about 120 acres and Fire Island, less than eight acres. These islands are geologically perhaps the newest in North America. C. Hart Merriam (1910, Bogoslof, our newest volcano. In, The Harriman Alaska Series. Vol. II. Smith. Inst. Publ. No. 1991) wrote:

"A small spot in Bering Sea about thirty miles north of the island of Unimak and forty miles west of the northern corner of Unalaska, has been in recent years the seat of more violent volcanic activity and has undergone greater changes of form than any other part of North America. In this spot, early in May, 1796, accompanied by thunder, earthquake, and steam, a volcanic island was suddenly thrown up from the depths of the sea; and again, no longer ago than the summer of 1883, the waters were once more convulsed, and shrouded in steam and fog, a companion volcano was born."

Volcanic disturbance has apparently occurred commonly in the area since Merriam was there, and other writers have recorded at least five major changes in the land form.

The refuge is administered by the Refuge Manager of the Aleutian Islands N.W.R.. Not until the M/V ALEUTIAN TERN was acquired did the logistical capability exist to safely reach this isolated refuge in the Bering Sea. So the first visit to this refuge by refuge personnel was made in June, 1973. We visited Bogoslof to document its present form, to census the birds and marine mammals using the refuge, and to vegetatively map the island.

The most recent map of Bogoslof currently available is based on a report made by Byers (1947) as part of the Geological Survey's investigations of Aleutian volcanoes. We found Bogoslof to be nearly the same shape as when Byers mapped it, but about 25 percent of the land area is now eroded away. A salt water lake was present when Byers was there, but that had drained prior to our visit.

Early writers mentioned large numbers of murres on Bogoslof, so we were prepared for the clouds of birds that greeted us from their cliff perches. Determining how many murres used the refuge was a problem. Murres normally lay their eggs on narrow ledges of cliff faces and, in the absence of mammalian predators as at Bogoslof they also use sloping tops of cliffs for nesting. They do not build nests, so the only alternative is to count individual birds. This seems easy enough until one is faced with thousands of birds huddled close together (see photo section). To make matters more difficult for the counter, birds are continually arriving and departing at the cliff. Diurnal activity at breeding colonies has not been calculated for murres in the North Pacific, so the birds we counted on the cliffs represent an unknown percentage of the total population using the islands. Considering all these variables, we decided to use as many census methods as possible and compare the results. Since previous estimates of cliff nesting birds had been made in the Aleutians from our research vessel three observers made independent estimates of each cliff segment quickly from the deck. Then the boat was stopped at each colony and each of the three observers was given as much time as he required to formulate his best count from the boat. Simultaneously each cliff segment was photographed with a 50 mm lens and a 200 mm lens. After the entire

island of Bogoslof had been censused in this manner we went ashore. In the next few days we were able to carefully count the murres on some of the cliffs with a tripod-mounted scope from the beach. These counts were the most accurate obtained, but to compare them directly with the counts from the photographs may cause error, since the time of day was different for each process. An average of the estimates and counts indicates that over 80,000 murres were present during our stay.

The second most common birds on the cliffs were kittiwakes. We expected to see Black-legged Kittiwakes, and nearly 2,000 active nests were counted. To our surprise and delight over 100 nests of the rare Red-legged Kittiwake were also found. This discovery is significant, because only three other nesting localities of the species are known in the world.

As we moved inland from the cliff faces, both onto the vegetated interior plateau (see photo section) and onto the central basaltic dome, Glaucous-winged Gulls and Tufted Puffins became common. Puffins were difficult to census because they nest in burrows. We counted burrow entrances in a sample area and calculated that over 5,000 burrows were present. We could not determine the percentage of burrows occupied by birds, nor could we determine whether more than one pair of birds used a common burrow entrance. In addition, Tufted Puffins nested in crevices in the basaltic dome. We could form no accurate estimate of their numbers, but gained the general impression that over 5,000 Tufted Puffins nested at Bogoslof.

Over 1,500 Glaucous-winged Gulls were counted at Bogoslof. They nested on the vegetated interior plateau and on the basaltic dome.

The only other bird species present in large numbers was the Fork-tailed Storm-Petrel. About 30 minutes after dark each night their calls were the dominant sound. We estimated 500 birds using the area on the northern facing slope of Bogoslof's plateau. The species may also have nested in crevices of the basaltic dome, but we were unable to confirm this.

Other avian species recorded in the area included: Pelagic and Red-faced Cormorants, fewer than 150 nests;

Harlequin Duck, six seen; Bald Eagle, a pair with nestlings; Herring Gull, a single adult; Pigeon Guillemot, a single bird; Parakeet Auklet, four; Horned Puffin, at least 10; Snowy Owl, remains of a bird; Winter Wren, at least four on the basaltic dome; Common Redpoll, a single bird; and Song Sparrow, several on the dome.

The only marine mammals encountered were Steller's Sea Lions. These animals occupied every beach at Bogoslof and 5,628 animals were counted.

Plants have spread over most of the interior plateau and on parts of the basaltic dome of Bogoslof since the last major volcanic activity. We vegetatively mapped the plateau.

We plan to return to Bogoslof in about five years to repeat our censuses and attempt to determine population trends.

C. Winter Banding of Passerine Birds

Gray-crowned Rosy Finches and Snow Buntings are the only abundant winter passerines at Adak. With the approach of inclement weather in October and November they gather in loose flocks for the duration of the winter. These flocks roam the island in search of food and are easily attracted to feeding stations. Especially during conditions of cold and windy weather when the ground is snow covered, the birds are easily captured in funnel traps or modified Australian crow traps.

A limited amount of banding was done at Adak during the early months of 1971 and the effort was increased during 1973. To date, 580 rosy finches and Snow Buntings have been banded (Table 3). In both species there has been a preponderance of males, a condition also noted elsewhere in the species' ranges. In the Gray-crowned Rosy Finch we found a positive correlation between sex ratio and cumulative number of individuals banded. This is largely related to the fact that females are more prone to enter funnel traps (Table 4) and therefore make up a larger proportion of the early captures. As trapping intensity increases, the majority of the females in the population have been banded and the proportion of males increases as the more elusive males are finally captured.

Table 3. Summary of winter banding of passerine birds at Adak, Alaska (1971 and 1973).

Species	No. of Males	No. of Females	No. Unknown	Percent Males	Total
Gray-crowned Rosy Finch	253	86	33	74.6	372
Snow Bunting	169	39	0	81.2	208
Totals	422	125	33	----	580

Table 4. Trap Responses of Gray-Crowned Rosy Finches at Adak, Alaska, January-March, 1973

Sex	Mean Number of Captures/Bird	Mean Number of Captures for Birds Caught Two or More Times	Recapture Rate	Days Elapsed Between First & Last Capture
Male	1.57	1.52	.38	29.68
Female	2.26	2.40	.51	31.00
Unknown	2.06	2.25	.47	25.75

Five of eighty-two rosy finches banded prior to January, 1973 were recaptured during 1973. This represents a return rate of 10.2 and 5.6 percent for males and females, respectively, and suggests better survival of males. The sample size is small, however, and final conclusions on relative survival in the two sexes must await the accumulation of further data.

Two Snow Buntings captured on December 22, 1973 at Adak had originally been banded at Cold Bay, which is located about 600 miles east of Adak. Male No. 110-198398 was banded on January 8, 1972 and was recaptured at the same location on December 15, 1972. Female No. 110-198836 had been banded at Cold Bay on February 9, 1972.

Throughout our banding program at Adak we have emphasized the collection of accurate weight and measurement data from all birds handled. The effort expended is now beginning to produce results. Preliminary analysis of the data reveals that male rosy finches average significantly larger than females in wing, tarsus, tail, and body length measurements, but not in bill length (Table 5). A similar relationship is found in the Snow Bunting (Table 6).

A total of 170 individual rosy finches were weighed 260 times during January, February, and March, 1973. The number of weights per individual ranged from one to nine. Body weight ranged from 40 to 74 g, and showed much individual variation depending upon the sex of the bird, the time of day, and the calendar date. Males averaged 54.6 g, while females averaged 53.1 g (Table 5). This difference is not significant. There was a progressive decline in weight from the end of January through the end of March, with males averaging consistently larger than females. On the average, males lost 26 percent of their original weight during the 59-day period; the comparable figure for females is 25 percent.

To determine what effect, if any, the stress of repeated trapping and handling had on the birds, all rosy finches handled two or more times were divided into two groups, those captured two times, and those captured more than two times. As a criterion of the condition of the birds, we determined the mean weight loss per day for all individuals. The null hypothesis of no difference in daily weight loss between the two groups was tested using the Man-Whitney U-Test. This revealed a significant difference in the distribution of mean daily weight loss between the two groups. It appears that those individuals which fed regularly at the traps were able to maintain their body weight at a more stable level than other birds.

Table 5. Summary of Gray-Crowned Rosy Finch Weights and Measurements at Adak, Alaska,
January-March and November-December, 1973

<u>Measurement</u>	<u>Males</u>			<u>Females</u>		
	<u>n</u>	<u>Mean</u>	<u>Range</u>	<u>n</u>	<u>Mean</u>	<u>Range</u>
Wing Chord (mm)	200	118.1	113-125	63	112.5	108-118
Tarsus (mm)	200	25.02	22.0-26.0	63	24.56	22.5-26.0
Exposed Culmen (mm)	111	14.43	13.3-16.0	38	14.32	13.2-16.0
Tail (mm)	111	87.2	78-102	37	82.3	75-88
Total Length (mm)	111	201.0	188-219	38	193.8	180-203
Body Weight (g):						
Jan-Mar	175	54.6	40-74	83	53.1	41-66
Nov-Dec	160	52.09	42.6-67.6	56	47.98	43.8-57.4

Table 6. Summary of Snow Bunting Weights and Measurements at Adak, Alaska
January-March and November-December, 1973

<u>Measurement</u>	<u>Males</u>			<u>Females</u>		
	<u>n</u>	<u>Mean</u>	<u>Range</u>	<u>n</u>	<u>Mean</u>	<u>Range</u>
Wing Chord (mm)	143	114.2	108-121	28	107.9	103-113
Tarsus (mm)	143	23.18	21.3-25.0	28	22.71	21.4-24.1
Exposed Culmen (mm)	143	11.49	10.0-13.5	28	11.22	10.3-12.4
Tail Length (mm)	143	76.7	71-90	28	76.9	66-82
Body Length (mm)	143	178.5	162-197	28	176.0	163-189
Body Weight (g):						
Jan-Mar	7	56.6	51-62	5	51.4	46-56
Nov-Dec	193	51.4	41-65	47	46.7	37-53

D. Clam Lagoon Biological Survey

Clam Lagoon is located on the northeast coast of Adak Island and encompasses some 1,200 acres at high tide. It is unique in being a shallow, sandy-bottomed, salt-water lagoon; there are fewer than half-a-dozen similar lagoons scattered along the Aleutian Chain. Although not actually a part of the refuge (refuge boundaries are delineated by the mean high tide line), it is surrounded almost entirely by refuge lands, and forms a focal point for much of the wildlife-wildlands oriented recreational activities of the island's 5,000 inhabitants. The lagoon also serves as a wintering area for large numbers of waterfowl, and its extensive mudflats attract migrant shorebirds in both spring and fall.

From July 1972 to July 1973 a survey of the fish fauna of Clam Lagoon was made by Max J. Hancock while he was stationed at the U. S. Naval Communications Station, Adak. Fish collections from anywhere in the Aleutian Islands have been fragmentary, at best, and this represents the first year-round survey of the fish fauna of a given body of water in the Aleutians. Selected beach areas were sampled periodically using a seine net. Max is currently attending Florida Atlantic University and is preparing the Clam Lagoon data for eventual publication.

In the fall of 1973 we instituted weekly surveys of the birds and marine mammals of Clam Lagoon. This will eventually give us a precise picture of the seasonal and yearly fluctuations in wildlife usage of Clam Lagoon. The limited data collected thus far do not warrant further discussion at this time.

VI. PUBLIC RELATIONS

A. Recreational Uses

Hunting, fishing, beachcombing, and photography are the chief pursuits on the refuge. Over 6,000 people live on military bases on this refuge and they account for the majority of the public use.

In 1972 and 1973 a total of 16 birdwatchers, in three groups, visited the refuge to view the unique Aleutian avifauna.

B. Refuge Visitors

Most refuge visitors live on the refuge. Only those who made a special trip to the refuge are listed.

<u>Name</u>	<u>Organization</u>
Daniel Gibson	University of Alaska
Joseph Taylor	American Birding Association
David Eisenhower	Purdue University
David Spencer	BSF&W, Area Refuge Supervisor
Gordon Watson	BSF&W, Area Director
Loren Croxton	BSF&W, Deputy Area Director
Jerry Sexton	ADF&G
Robert Tamburelli	ADF&G
Robert Dejong	ADF&G
Angus Robertson	ADF&G
George Divoky	BSF&W, Research Division
Ed Crateau	BSF&W, Fishery Services Division
Jon Nelson	BSF&W, Fishery Services Division
John Mack	BSF&W, Engineering Division
Robert Pollock	NMFS, Portland
Fred Vincent	BSF&W, Fishery Services Division
Karl Schneider	ADF&G
Dr. and Mrs. Gerald Maisel	Birdwatchers
Palmer Sekora	BSF&W, Wilderness Studies
Will Troyer	BSF&W, Wilderness Studies
Lael Morgon	Free-lance journalist
Dr. W. Laughlin & party	University of Connecticut

Refuge Visitors (continued)

<u>Name</u>	<u>Organization</u>
C. Richard Asher	Bird Bonanzas Tour
Maurice V. Barnhill	Bird Bonanzas Tour
William P. Blakeslee	Bird Bonanzas Tour
Paul G. Dumont	Bird Bonanzas Tour
Harold Morrin	Bird Bonanzas Tour
Harvey and Marion Mudd	Bird Bonanzas Tour
Carroll and Catherine Pinckard	Bird Bonanzas Tour
Robert and Billie Pyle	Bird Bonanzas Tour
Hugh Willoughby	Bird Bonanzas Tour

C. Refuge Participation

Numerous slide shows, illustrating the fauna and flora of the Aleutians, were presented to various local clubs and organizations at Adak during the period. In November, 1973 the Bureau movie, "The Sea Otters of Amchitka" was shown to about 190 students of the Adak High School, and was received very well. Several short articles on the cultural and natural history of the Aleutian Islands were prepared for local distribution. Refuge Manager Byrd represented the refuge at a number of official Navy functions at Adak during the period; these included ground-breaking ceremonies for the new sewage-treatment plant, and Change-of-Command ceremonies.

Christmas Bird Counts have been conducted at Adak during six of the past seven years. Observers have recorded an average of 3,350 individuals per count; representing 53 species. Over a period of years these counts will provide long-term population trends for the common species, and accurate information on species composition and relative abundance of early-winter bird populations in the central Aleutian Islands. The counts have been published in the appropriate issues of American Birds.

Refuge Manager Byrd serves as co-editor of the Alaska region column in American Birds, and all significant bird observations are included in that publication.

Biological Technician Trapp is preparing early-winter distribution range maps for Greater and Lesser Scaup in conjunction with a project sponsored by the National Audubon Society and Fish and Wildlife Service.

C. Refuge Participation (continued)

Refuge Manager Byrd attended the First Annual Alaskan Migratory Bird Workshop - April 2-3, 1973 in Anchorage. He briefly reviewed the status of the Aleutian Canada Goose, and outlined some potential refuge research projects.

Miss Chris Card, a senior student at Adak High School, began working with refuge personnel on a cooperative basis in November, 1973. This is part of a state-wide program in which students receive on-the-job training in an area of interest. Chris' activities include assisting in weekly waterfowl surveys, the winter bird-banding program, and various chores around the office.

The refuge staff cooperates with Alaska Department of Fish and Game personnel in their various activities on the refuge. Our contribution has been primarily in the form of logistics support.

D. Hunting

Caribou, ptarmigan, and waterfowl hunting occurs on the refuge. The Adak caribou herd provides island residents with high-quality hunting opportunities. The average hunter spends nearly 20 hours in pursuit of his quarry.

The pursuit of ptarmigan results in more recreational visits and activity hours than any other form of hunting, largely because of the 8-month open season. Most hunting effort is at Adak, though some also occurs at Attu, Atka, and Unimak.

Most waterfowl hunting on the refuge occurs on Clam Lagoon, Adak, where as many as 25 hunters may gather on a given day. Mallards, Pintail, and Green-winged Teal are hunted heavily during the first few weeks of the season, but thereafter bay and sea ducks receive most of the hunting pressure, with Common Goldeneye contributing to the bulk of the hunters' bags. We have little waterfowl harvest data available for the refuge. In 1973 we instituted a program to collect waterfowl wings from hunters in an attempt to obtain such information.

E. Violations

One game violator was apprehended during the period. Mr. Don Sorrel was cited for releasing four Bobwhite and seven Chukars at Adak.

F. Safety

No vehicle accidents or personal injuries occurred during 1972-3.

VII. OTHER ITEMS

A. Miscellaneous

A number of tragedies, or near-tragedies, occurred on the refuge during the period, with the loss of many human lives.

On October 20, 1972 Ensign Robert F. Varney, USN became separated from his caribou hunting party near Three Arm Bay, Adak. When he failed to rejoin his party an intensive search was organized. On November 10, a helicopter pilot discovered Varney's body, and suicide by shooting was ruled the cause of death.

CTT2 W. J. Martin, USN disappeared while hiking in the vicinity of the Naval Communications Station, Adak, on January 21, 1973. His body was discovered on January 27 within a few hundred yards of an occupied military installation. Exposure was listed as the probable cause of death.

CSSN Jerrett B. Mah, USN became separated from his partner while ptarmigan hunting at Adak on March 26, 1973. A search began when Mah failed to return, and his body was found at the bottom of a 400-foot cliff near Lucky Point.

The R/V Resolution, research vessel of the Alaska Department of Fish and Game, ran aground on Asuksak Island, near Great Sitkin Island, on February 28, 1973. The vessel sustained major damage, but was towed safely to Adak by a Navy tug. None of the crewmen aboard were injured.

A. Miscellaneous (continued)

Seaman Apprentice Kevin F. Dilles, USN became separated from his party while hunting caribou in the area of Boot Bay, Adak. An intensive search has failed to locate his body.

A U. S. Navy C-118 cargo plane, enroute from Elmendorf AFB to Adak, crashed on Great Sitkin Island on the evening of December 11, 1973. Wreckage was found scattered over a wide area at the 4,700 foot level on Mt. Sitkin. There were no signs of survivors, and all 10 crewmen are believed to have been killed.

B. Credits

The narrative was prepared by G. Vernon Byrd and John L. Trapp and typed by Dorothy Ash.

C. Photographs

All photographs were taken by G. Vernon Byrd.

Submitted By

G. Vernon Byrd
Acting Refuge Manager

Date _____

Approved By _____

David L. Spencer
Area Refuge Supervisor



Figure 1. Refuge headquarters was moved from Cold Bay to Adak in 1972. Excess trailers were obtained from the Atomic Energy Commission and erected at Adak to provide residence and office facilities. This is a view of the office trailer shortly after being remodeled in September, 1973--not pretty, but functional. Skirting was later placed around the bottom of the trailer to improve its appearance.



Figure 2. The interior of our newly-remodeled office trailer--
open and ready for business.



Figure 3. One obvious benefit of the Atomic Energy Commission's nuclear testing program on Amchitka Island was the accumulation of a great deal of biological information previously unavailable from the Aleutian Islands. Biological investigations were facilitated by the use of helicopters.



Figure 4. The Aleutian flora blooms luxuriantly under the influence of long summer daylight and abundant rain, as this photograph from the south side of Adak Island attests.



Figure 5. During July, 1972 an expedition was made to Buldir Island to capture goslings of the endangered Aleutian Canada Goose for captive breeding purposes. Expedition members pose aboard the M/V ALEUTIAN TERN with fog-enshrouded Buldir in the background (l to r): George Putney, Master/Engineer; Allen P. McCartney, Wilderness Survey Team; G. Vernon Byrd, Acting Refuge Manager; Clayton M. White, Brigham Young University; Daniel D. Gibson, Wilderness Survey Team; and Palmer C. Sekora, Wilderness Survey Team.



Figure 6. Buldir Expedition members disembarking from the Aleutian Tern as they prepare to go ashore in the dory. Members of the expedition are (l to r): Sekora; Glen Smart, Chief of the Section of Propagation, Patuxent Wildlife Research Center; White; and Gibson.



Figure 7. Bogoslof National Wildlife Refuge was established in 1909 and was designated a Wilderness Area in 1970. The first visit to this isolated refuge by refuge personnel was made in June, 1973. This view of the island looks northwest towards the basaltic dome. Steller's Sea Lions occupy the sandy beach in the center of the photograph, and Glaucous-winged Gulls wander among the loafing animals in search of food scraps. Two Tufted Puffins sit on the turf in the left foreground.



Figure 8. Castle Rock, Bogoslof Island rises in the right background, while the vegetated plateau extends to the left. The camp site is visible on the lower slopes of the plateau.



Figure 9. Common and Thick-billed Murres cover the cliffs of Castle Rock. Anyone care to guess how many birds are in the photograph? Obtaining an accurate count of these gregarious cliff-nesters is difficult, but it is estimated that more than 80,000 mures nest on Bogoslof and nearby Sea Lion Rocks.



Figure 10. Gray-crowned Rosy Finches and Snow Buntings are easily captured in funnel traps during the winter. Birds captured are banded, weighed, measured and released to be captured another day. The Adak winter bird banding program is now in its third year.



Figure 11. The Aleutian Islands National Wildlife Refuge serves as the nesting grounds for a number of North Pacific seabird species. The Red-faced Cormorant, here occupying a typical nesting cliff on Amak Island, is a common breeding bird throughout the Chain.



Figure 12. Black-legged Kittiwakes nest abundantly in the Aleutian Islands, with major colonies located on Attu, Agattu, Buldir, Koniuji, Chagulak, Bogoslof and Amak Islands. Most exciting was the discovery of small numbers of Red-legged Kittiwakes nesting on Buldir and Bogoslof Islands. The species had previously been known to nest only in the Commander and Pribilof Islands. This colony, containing both species, is located at East Cape, Buldir Island.



Figure 13. The Aleutian Tern, despite its name, is uncommon and localized in the Aleutian Islands. It has been found nesting only on Umnak, Adak, Amchitka and Attu Islands in the Aleutians.



Figure 14. In a matter of a few weeks this downy young Aleutian Tern will be winging southward on a several thousand-mile journey to the species ancestral wintering range off the coast of Japan.



Figure 15. The elegantly plumaged Tufted Puffin nests on virtually all islands of the Aleutian Chain. It may be the most abundant breeding bird on the refuge.



Figure 16. About 70,000 Steller's Sea Lions use the sand and gravel beaches of the Aleutian Islands for rearing their young. This young pup was whelped at Bogoslof in late May.