REFUGE NARRATIVE REPORT

January 1, 1971 - December 31, 1971

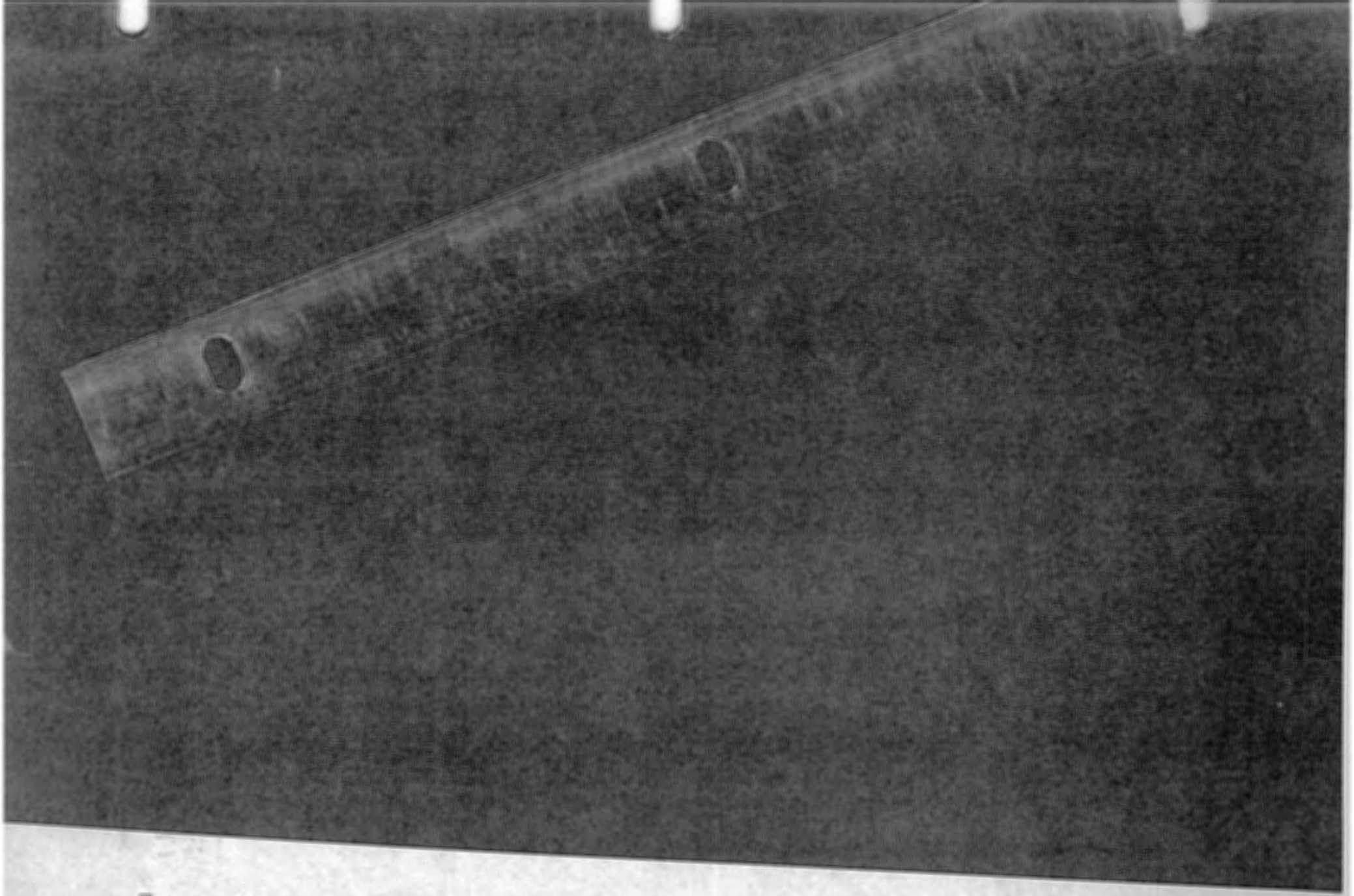
ALEUTIAN ISLANDS NATIONAL WILDLIFE REFUGE
Simeonof NWR Semidi NWR
Bogoslof NWR

AND

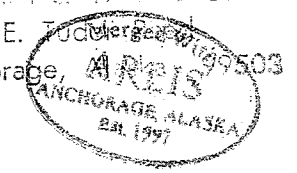
IZEMBEK NATIONAL WILDLIFE RANGE

COLD BAY ALASKA


38



The year 1971 was the coldest ever experienced since records began 30 years ago. All of Cold Bay froze over in March, necessitating a Coast Guard ice breaker to clear a path for a supply freighter from Seattle.



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Staff:

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U. S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Bureau of Sport Fisheries and Wildlife
Cold Bay, Alaska

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PUBLIC RELATIONS

OTHER ITEMS

GENERAL

Weather Conditions

Weather data in the Aleutian Islands are recorded at three roughly equidistant points along the 1,100 mile archipelago. The U.S. Weather Bureau maintains a station at Shemya, near the western end, and at Cold Bay, located near the tip of the Alaska Peninsula. Records from Adak, approximately in the center of the Aleutians, are furnished by the Navy.

At Cold Bay, refuge headquarters, 1971 will be remembered for severe weather. The past year's mean temperature, 37.9°F, was 3.3°F below average, making it the coldest year recorded. All months were below average in temperature except for December, and the mean temperatures for April, May, June, August, and September established new records. March experienced the coldest weather when it dipped to -13°F, breaking the previous station record by 4°F (Table 1). Below zero temperatures coupled with high winds often effected chill factors of -50°F. Protracted cold finally froze all of Cold Bay in March, requiring a Coast Guard ice breaker to escort a supply freighter from Seattle. Cold Bay freezes over only about once every 25 years!

Inspection of Table 2 reveals Adak is characterized by warmer temperatures, more precipitation, and less wind than the other two stations. Adak's mean temperature was 39°F, 1° below normal, and snowfall was 31 per cent below average. Winds averaged 10 knots.

Shemya also established a new record low temperature of 7°F, surpassing the previous mark by 5°F (Table 3). New low temperatures were registered for 6 individual months during the year, and the annual mean of 37.4°F equalled the previous coldest year. Shemya's temperatures ranged only 45° during the year, which is practically equivalent to diurual ranges in some regions.

Persistant cloud cover and wind dominate the climate in the Aleutians. Shemya averages only 6 clear days (<30% cloud cover) a year with 89 per cent sky obscuration, but Cold Bay at the eastern end of the archipelago is little better with 12 clear days per year and an average of 88 per cent sky cover. Clouds and fog are heaviest in July with an average of 98 and 94 per cent sky cover at Shemya and Cold Bay, respectively. What little clear weather occurs in the Aleutians usually comes in midwinter with high winds and low temperatures.

Habitat Conditions

Water. Above average precipitation and the coldest spring and summer on record resulted in high stream and lake levels on the Izembek Range, and some snow banks remained at low elevations all summer.

Table 1. Climatological Summary for 1971, Cold Bay, Alaska.

	Precipitation(inches)			Temperatures(°F)				Wind(mph)	
				Mean		Extremes			
Month	Snow	Total	Average**	Max	Min	Max	Min	Max***	Avg
January	19.9	1.34	2.32	27	18	38	0	44	19
February	10.5	2.17	3.17	31	21	45	0	47	19
March	3.9	0.59*	1.75	27	14	44	-13*	56	17
April	6.1	0.43	1.46	33	23	44	13	42	18
May	9.3	3.75	2.29	38	30	45	23	39	18
June	0.5*	6.67	1.95	45	36	60	33	46	19
July	0.0	2.27	1.82	53	42	71	36*	44	16
August	0.0	2.76	4.25	53	44	71	40	42	19
September	0.0	3.86	4.32	50	39	59	31	44	17
October	T	3.28	4.59	43	34	56	27	48	19
November	2.1	5.11	3.79	37	28	49	16	46	19
December	9.3	4.87	2.59	38	27	49	11	55	21
Totals	61.6	37.10	34.30	39.6	29.7	71	-13*	56	18.4

* New station record.

** 27 years (1943 - 70).

*** Fastest mile (highest velocity for 1 minute duration).

Table 2. Climatological Summary for 1971, Adak, Alaska.

	Precipitation(inches)			Temperatures(°F)				Wind(Knots)	
				Mean		Extremes			
Month	Snow	Total	Average*	Max	Min	Max	Min	Max**	Avg
January	7.6	3.65	6.54	37	31	48	21	61	10
February	9.2	2.10	5.52	30	24	48	6	42	08
March	18.5	6.80	6.75	40	27	49	13	56	11
April	9.5	4.69	4.80	42	30	48	22	56	11
May	7.3	2.55	5.01	45	32	51	20	32	08
June	T	2.90	3.77	50	37	57	33	42	09
July	0.0	3.36	3.22	50	38	57	33	30	11
August	0.0	2.85	3.92	55	43	68	39	64	09
September	0.0	6.82	5.81	51	45	60	37	46	10
October	T	5.47	7.20	47	38	55	31	51	11
November	3.4	10.47	8.38	43	32	57	17	63	13
December	13.1	9.70	7.73	40	30	47	13	63	13
Totals	68.1	59.86	69.29	45	34	68	6	64	10

* 17 years (1949 - 65)

** Peak gust

Table 3. Climatological Summary for 1971, Shemya, Alaska.

	Precipitation(inches)			Temperatures(°F)				Wind(mph)	
				Mean		Extremes			
Month	Snow	Total	Average**	Max	Min	Max	Min	Max***	Avg
January	5.6	1.36	2.50	33	29	37	19	67	21
February	7.7	1.04	2.28	31	26	38	7*	46	23
March	4.6	3.35	2.57	33	27	39	11*	59	22
April	2.4	2.16	2.06	37	31	40	26	46	20
May	2.6	0.77	2.40	40	33	44	27*	38	15
June	T	1.88	1.32	44	39	48	27*	48	16
July	0.0	3.62	2.15	46	42	50	40	39	15
August	0.0	3.96	2.12	49	44	52	41	39	12
September	0.0	4.15	2.25	49	44	51	36	40	17
October	0.1	3.13	2.76	44	38	47	30	71	22
November	8.6	6.27	2.72	40	33	46	16*	53	24
December	13.9	2.73	2.14	36	29	42	15*	75	24
Totals	45.5	34.42	27.27	40.2	34.6	52	7*	75	19.3

* New station record

** 27 years (1943 - 1970)

*** Fastest mile (highest velocity for 1 minute duration)

Food and Cover. Summer was virtually nonexistent. Heath and grasses failed to turn green until late June, and alders near sea level leafed out in mid-July. Above 1,000 feet elevation alders *(Alnus crispa)* remained beneath snow much of the summer and never fully leafed out. The paucity of salmonberries *(Rubus spectabilis)* and beach strawberries *(Fragaria chiloensis)* was marked, and even crowberry *(Empetrum nigrum)* production was very poor. The former two species are sought by bears while the latter is utilized heavily in the fall by Canada and Emperor Geese.

Eelgrass *(Zostera marina)* production on Izembek Lagoon was noticeably less than normal, but an excess is always available for waterfowl.

WILDLIFE

Migratory Birds

Swans. Whistling Swans occur on the Izembek Range and on some of the eastern Aleutian Islands. A few nest, but the largest concentration occurs during fall migration. A few Asiatic Whooper Swans winter in the central and western Aleutians.

Canada Geese. Three races are found in this area. On the Izembek Range Taverner's Canada Geese are abundant in fall, reaching peak numbers in October. On November 5 large flocks of these birds left Izembek Lagoon and headed southward, but the next day strong southerly winds prevailed, forcing them to return. The last flock of Canada Geese was observed on November 17. A few Cackling Canada Geese migrate through the Izembek Range, and one Aleutian Canada Goose, the endangered race which breeds only on Buldir Island in the Aleutians, was spotted in November.

Black Brant. This year's fall brant observations revealed 10,259 adult and 5,696 juvenile birds for a total of 15,955. Young birds are distinguished from adults by white edgings on their wing coverts and duskier flanks. Juveniles comprised 35.7 per cent of the birds compared to a mean of 28 per cent (Table 4). A total of 295 families ranging from one to six and averaging 2.40 young were observed in 1971 (Table 5). This year saw the lowest average brood size yet recorded, but the juvenile ratio was the third highest on record. The late, cool summer may have produced smaller clutches.

Juvenile ratios varied 17 per cent between this year's two principal observation points, Grant Point and Round Island (Table 6). Considerable variation in ratios at different locations also have been noted in previous years. Traditionally Grant Point and Round Island have shown the greatest spread in ratios (Table 7). Grant

Table 4. Brant observations and juvenile ratios 1963 - 1971.

	Total brant observed	Standard deviation	Mean per cent juveniles
1963	5,211		24
1964	19,670	5.604	29
1965	34,034	7.322	21
1966	21,193	4.711	40
1967	19,362	5.814	18
1968	21,278	2.145	18
1969	21,627	8.352	26
1970	26,366	8.378	38
1971	15,955	5.276	36
Total	184,696		28

Table 5. Record of brant family groups observed.

Number of juveniles	Number of families observed					
	1966	1967	1968	1969	1970	1971
1	31	53	19	48	17	69
2	44	133	54	89	32	102
3	66	115	46	88	34	65
4	34	42	20	53	41	49
5	16	9	5	12	18	8
6	4	3	0	3	3	2
7	0	2	1	0	3	0
8	0	1	0	0	0	0
9	0	1	0	0	0	0
Total families	195	359	145	288	148	295
Mean family size	2.85	2.57	2.55	2.66	3.20	2.40

Table 6. Brant juvenile component in different areas in 1971.

Area	Per cent of total sample	Per cent juveniles	Deviation from mean(%)
Grant Point	57	41	5
Round Island	33	24	12
SE Applegate Cove	5	44	8
Halfway Point	4	48	12
Other	<1	-	-

Table 7. Brant juvenile ratios in different areas from 1963 - 1971.

Area	Per cent of total sample	Per cent juveniles	Deviation from mean (%)
Grant Point	19	38	10
Round Island	28	23	5
SE Applegate Cove	27	24	4
Halfway Point	12	26	2
South end Applegate	14	31	3

Point has yielded the highest juvenile component in 5 of the past 8 years; the lowest ratio of juveniles has been recorded in the Round Island area for the last 3 years. Table 7 illustrates that with over 184,000 brant recorded since 1963 only the Grant Point ratio deviates substantially from the mean. Curiously, Grant Point appears more favorable for family groups, at least in some years. This area has been closed to hunting since 1969, but other distant, isolated spots in Izembek Lagoon are less disturbed than the Grant Point area. Also, Grant Point favored more families in some years prior to when it was closed to hunting, and in 1966 this area had the lowest percentage of juveniles while Round Island had the highest! Thus in some years family groups seem to show selectivity for certain areas on the lagoon rather than disperse randomly throughout the population. More different observation points are needed to completely understand distribution patterns of age classes, although marked or telemetered birds would be the best way to analyze movements and distribution.

This year most brant left Izembek Lagoon after dark on November 7. They have departed as early as October 21 (1963) and as late as

November 14 (1965), but for the past 5 years they migrated between November 7 and 11.

Emperor Geese. A significant effort to record Emperor Goose age composition commenced in 1969 at Cold Bay. In late August and early September when Emperors begin arriving on the Izembek Range and eastern Aleutians, age determination is a simple matter at great distances. Adults have white heads and white on the backs of their necks while juveniles have gray heads and necks. As winter progresses the young lose the gray feathers on their heads and become increasingly similar to adults. By December distant identification of some young is difficult. However, a few flecks of gray on the head or neck can invariably be detected with a 30 power telescope in good light. Also, juveniles can be distinguished by their bill and feet colors as well as by other subtle plumage differences. Though very difficult and time consuming, juveniles still can be distinguished in April before migration.

A total of 11,648 geese were counted in 1971 (Table 8), compared to 14,655 last year. Juveniles constituted 30.0 per cent of the birds compared to 33.5 per cent in 1970. In a sample of 480 families the number of juveniles ranged from one to nine and averaged 2.71; the modal brood size was 2 (Table 9). In 1971 average clutch size on the Clarence Rhode Refuge, where most Emperors nest, was 4.16, and the mean of 180 broods recorded was 3.43 young ("Nesting Ecology of the Emperor Goose" by D. I. Eishenhour, et al, unpublished report, Purdue University, October 1971 and Clarence Rhode NWR Monthly Narrative for August 1971). Although the decline in both mean brood size and per cent juveniles suggests lower productivity in 1971, large numbers of young non-breeding birds from the previous 1 or 2 years must be taken into account in subsequent ratios.

To determine if the ratio of juveniles changes as the fall progresses, all Emperor Goose observations in 1971 were divided into three segments - September, October, and November through December. The proportion of juvenile birds remained approximately 30 per cent from September through December. This was not the case in 1970, however, as the ratio of juveniles increased from 27 per cent in the September segment to 38 per cent in December, suggesting that more family groups arrived later in the fall. No trend was noted in 1969, but significant counts did not begin until November that year.

Juvenile ratios in the fall of 1971 varied 21 per cent in different areas of significant sampling (Table 10), compared to 13 and 11 per cent in 1970 and 1969, respectively. Like in brant, random distribution of age classes apparently does not exist with Emperor Geese. During the past 3 years locations such as Outer Marker seemed to be preferred by family groups, while adults predominated in other areas like Round Island (Table 11). Evident selectivity of certain areas

Table 8. Age composition of Emperor Geese on the Izembek Range during fall.

	Years					
	1966	1967	1968	1969	1970	1971
Adults	699	1,457	1,195	4,149	9,722	8,142
Juveniles	265	585	584	2,952	4,933	3,506
Total	964	2,060	1,779	7,101	14,655	11,648
Per cent juveniles	27	28	33	41.6	33.5	30.0
Number of families	132	66	40	161	383	480
Mean family size	2.5	3.3	2.8	3.3	2.9	2.7

Table 9. Emperor Goose family sizes 1969 - 1971.

Number of juveniles	Number of families observed		
	1969	1970	1971
1	13	69	95
2	35	104	137
3	49	88	129
4	34	77	65
5	22	26	36
6	5	8	15
7	2	4	1
8	0	5	1
9	0	0	1
10	1	2	0

Table 10. Observations of Emperor Geese in different areas in 1971.

Location	Per cent of sample	Per cent juveniles	Deviation from mean	Total birds
Kinzaroff Lagoon	14	31	1	1,642
Stapp Creek	24	38	8	2,810
Grant Point	10	37	7	1,042
Round Island	18	18	12	2,112
Halfway Point	01	49	19	98
Outer Marker	11	39	9	1,307
Nurse Lagoon	10	17	13	1,181
Mortenson's Lagoon	12	28	2	1,456

Table 11. Observations of Emperor Geese in different areas 1969 - 1971.

Location	Per cent of sample	Per cent juveniles	Deviation from mean	Total birds
Kinzaroff Lagoon	10	32	2	3,351
Stapp Creek	19	37	3	6,401
Grant Point	18	38	4	5,867
Round Island	15	26	8	4,911
Applegate Cove	<01	38	4	231
Halfway Point	04	39	6	1,246
Outer Marker	16	40	8	5,270
Nurse Lagoon	09	26	4	3,076
Mortenson's Lagoon	09	30	4	3,096
Totals	100	34 (mean)		33,449

by age classes makes more balanced observations at different locales necessary.

Emperor Geese are usually difficult to find around Cold Bay after December, since Izembek Lagoon and parts of Cold Bay freeze. Also, differentiation of juveniles is possible only under ideal conditions in late winter. No Emperors were seen this winter until spring migration in May because of severe ice conditions.

In 1971 an attempt was made to count Emperor families by aircraft in areas inaccessible for ground counts. In early fall when young birds are readily distinguishable, aerial surveys to determine average family size should be employed regularly in future years.

Other Geese. Until 1971 no White-fronted Geese had been observed in the Cold Bay area for 3 years, and no Snow Geese had been sighted for 5 years. This fall we saw 12 Whitefronts and two Snow Geese, and other reports of Snow Geese on the Izembek Range also were received. Most Whitefronts were juveniles mixed with Emperors; one juvenile which was watched for a considerable length of time definitely seemed to be part of an Emperor family with three other young. One adult Whitefront joined a flock of Canada Geese.

Biologists at Amchitka reported a Bean Goose *(Anser arvensis)*. This is the first record for this Old World species in the Aleutians.

Ducks. Unusual observations made at Adak Island by Vernon Byrd, Navy Conservation Officer until joining the refuge staff in October, included Chinese Spot-billed Duck, Garganey, Falcated Teal, American

Widgeon, Smew, and Common Pochard. A Surf Scoter was seen at Cold Bay. The Aleutian Islands checklist now contains 32 ducks, many of which are stragglers or accidentals from Europe and Asia. Undoubtedly many more species would be added if there were more observers on the Chain, especially at Kiska and Attu.

Upland Game Birds. Willow Ptarmigan were very abundant on the Izembek Range this year. Rock Ptarmigan inhabit higher elevations but are infrequently encountered. In the Aleutian Islands the Willow Ptarmigan is generally replaced by the Rock Ptarmigan west of Unimak. Ptarmigan nesting on the Izembek Range was about a month later than usual because of the record cold spring. Despite the adverse weather survival appeared good. This may have been partly attributable to last winter's rabies outbreak which nearly annihilated the fox population on the Alaska Peninsula.

Big Game Animals

Brown Bear. Fifteen bear hunting permits again were issued for Unimak Island, but only four bears were reported taken, all in the fall. The average reported yearly kill on Unimak since 1961 is six. Also, four bears reportedly were taken on the Izembek Range compared to an average of 12 prior to 1969 when the Board of Fish and Game established a 124,000 acre bear sanctuary around Cold Bay. Prior to the hunting closure most bears around Cold Bay were killed along roads and near dumps, and most were small. Now for the past 3 years bears are readily available for people to see and photograph along salmon streams.

The Alaska Department of Fish and Game is proposing elimination of the bear sanctuary because of pressure from outside elements for more hunting opportunities. The refuge conducted a public opinion survey of all Cold Bay residents. The overwhelming majority want the bear sanctuary to remain. Hopefully letters and a petition with 100 names sent to the Board of Fish and Game will save the closure and maintain the necessary balance between hunters and bear watchers and photographers. If the state disregards local public sentiment and abolishes the sanctuary, the Bureau plans to create its own bear closure on the Izembek Range.

The community of Cold Bay did an excellent job of hauling garbage to the dump daily in June when bears appear in quest of food. Consequently no bears were shot in town this year, but two were killed at the nearby Air Force radar site because of food and garbage associated with a contractor's temporary construction camp cook trailer. Hungry bears cease prowling around habitation when salmon runs begin in July and berries ripen.

The number of bears on the Izembek Range and Unimak Island is not known, and the refuge does not have an aircraft for surveys. Based on past aerial counts we estimate about 80 bears on Unimak.

Caribou. Caribou are increasing on the Alaska Peninsula and Unimak Island. In October Alaska Department of Fish and Game biolgists counted 4,400 caribou from the air on Unimak. The island is too isolated for meaningful harvest. Caribou, however, are rarely seen around Cold Bay with its few miles of roads because of heavy localized hunting.

The herd on Adak Island, which originated from an introduction in 1958-59, now numbers about 230. Hunters killed 46 this fall.

Reindeer. Reindeer were introduced to Atka Island at about the time of creation of the Aleutian Islands Refuge in 1913. Some are regularly harvested by natives at the Aleut village of Atka, but the population may be too large. Navy tugs from Adak periodically visit the island with hunting parties, and as many as 40 animals were taken each trip. The Navy plans to make aerial surveys of the island's herd.

Fur Animals, Predators, Rodents, and Other Mammals

No wolves were spotted on the Izembek Range or Unimak Island this year; one wolverine was encountered near Frosty Creek. We saw only three foxes around Cold Bay during the last 6 months of the year because of endemic rabies.

Birds of Prey

Besides Bald Eagles, Common Ravens, and Black-billed Magpies, nine hawks have been recorded in the Aleutians or Izembek Range. Of these, only the Rough-legged Hawk, Gyrfalcon, and Peregrine Falcon are readily observed and breed here. Banding of Bald Eagles at Adak by Navy Conservation Officers and Peregrine Falcon and Bald Eagle studies at Amchitka by Dr. Clayton White continued in 1971.

Other Birds

New species in the Aleutians recorded this year besides the aforementioned waterfowl included Great Knot, Rufous-necked Sandpiper, Common Sandpiper, Wheatear, Hawfinch, Dusky Thrush, Bohemian Waxwing, and Tree Swallow. With exception of the thrush and waxwing which were recorded at Amchitka, these birds were observed at Adak by Vernon Byrd. The revised Aleutian list now contains 176 species.

Mist-netting revealed five new species for the Izembek Range: Gray-cheeked Thrush, Orange-crowned Warbler, Black-capped Chickadee, Northern Waterthrush, and Tree Sparrow. Two Rusty Blackbirds also were seen near the mist-netting site, and several Sharp-tailed Sandpipers were sighted at Izembek Lagoon. The first checklist for the Izembek Range, containing 141 species, was submitted for publication.

Fish

Five species of salmon, Dolly Varden, and a few steelhead inhabit refuge waters. Sport fishing on the Izembek Range is principally for coho or silver salmon, dog or chum salmon, and Dolly Varden.

From May 1 through September 8 sport fishermen at Adak were asked to report their catches. A form supplied by the Navy Conservation Officer requested bait used, number of hours fished, and size of fish caught by species. Only 239 reports, a very small percentage of the number of fishing days, were received. Kokanee, landlocked red salmon, were the most heavily harvested, accounting for 73 per cent of the 2,032 fish reported, and they averaged only 7.6 inches in length. Dolly Varden were the next most abundantly caught, and greenling and rainbow trout were taken consistantly. Only 10 anadromous salmon were reported. Earth worms were most commonly used for bait; lures and salmon eggs were also popular. Fishermen averaged 2.4 fish per hour, and the last week in May was the peak fishing period.

Herpetofauna

Because of year-around low temperatures no reptiles or amphibians inhabit the Aleutians or Alaska Peninsula.

Disease

The severe rabies outbreak among red foxes on the Alaska Peninsula which began in the summer of 1970 finally subsided after decimation of the fox population. Twenty-three of the 30 foxes killed at Cold Bay or nearby villages that we sent to the Arctic Health Research Laboratory in Fairbanks were rabid. People in Nelson Lagoon, roughly 60 miles north of Cold Bay, reported killing at least 150 abnormally behaving foxes, and a rabid land otter, the first recorded in Alaska, was killed at another village. Many dogs attacked by foxes had to be dispatched, but no people were bitten. The last rabid fox in the Cold Bay area was shot in June. Fortunately the epizootic did not spread to Unimak Island where fox numbers remain high.

REFUGE DEVELOPEMENT AND MAINTENANCE

Physical Developement

In December we finally secured a part time maintenanceman. This addition to our staff will alleviate the large backlog of

maintenance needed on refuge buildings and vehicles. A temporary laborer did considerable cleanup and painting around headquarters in October. The refuge entrance sign on the Grant Point road also was refinished, and considerable time was spent picking up litter along refuge roads.

RESOURCE MANAGEMENT

Grazing

Grazing on the refuge is permitted only on Caton, a small island 60 miles south of Cold Bay. The operation is limited to a maximum of 100 cattle. A flight over the island in October revealed about 70 head.

Fur Harvest

Some recreational trapping for mink, land otter, wolverine, and fox occurs on the Izembek Range, and a few people trap Arctic foxes at Adak Island. This year a trapping permit was required for the Izembek Range in order to obtain information on the number of trappers and their take. Only five permits were issued, but some people trapped off the refuge rather than secure a permit.

Harvesting of sea otters in the Aleutians is conducted by the Alaska Fish and Game Department, and the pelts are sold at public auction.

Timber Removal

There are no trees indigenous to the Aleutians or southern part of the Alaska Peninsula because of low summer mean temperatures.

Commercial Fishing

Fishing and crabbing, governed by state regulations, are the chief economic enterprises in this region, but none takes place in refuge waters because the refuge boundary is delimited by mean high tide. The Izembek Range's significant contribution to the local fishery is depicted in Table 12. Chum and red salmon are the principal species spawning in Izembek lakes and streams, while pink salmon are most abundant in the Aleutians. This year's catch in Izembek and Moffet Bays was good, but escapement was below average.

Table 12. Number of salmon caught by commercial fisherman and number entering streams to spawn in Izembek and Moffet Bays between 1963 and 1971 (Source: Glenn Davenport, Alaska Fish and Game, Cold Bay).

	CATCH (thousands)						ESCAPEMENT (thousands)					
Year	King	Red	Coho	Pink	Chum	Total	King	Red	Coho	Pink	Chum	Total
1971	0	6.9	0	0	36.3	43.2	0.2	3.5	0	0.1	54.8	58.6
1970	0	3.1	0	0	10.0	13.1	2.1	7.5	no data	0	53.4	63.0
1969	0	6.1	0	0	4.5	10.6	6.9	14.0	9.0	2.3	94.4	126.6
1968	0	11.1	0	0	48.8	59.9	1.8	9.5	6.5	1.5	136.5	155.8
1967	0	8.1	0	0	9.9	18.0	1.2	10.8	1.2	0.2	23.2	36.6
1966	2.4	0	0	0	8.9	11.3	0	6.6	0	0.4	46.4	53.4
1965	0	0.4	0	0	4.7	5.1	0.1	5.6	no data	0	10.4	16.1
1964	0	4.7	0.1	0.1	60.2	65.2	0	48.2	no data	0	95.0	143.2
1963	0	1.7	0	0	3.2	4.9	0	40.0	no data	0	145.0	185.0

Other Uses

This year hopefully marks the last nuclear test on Amchitka Island. On November 6 the Atomic Energy Commission detonated a 5 megaton warhead 6,000 feet beneath the island's surface. "Cannikin," as the test was called, caused no known drastic alteration of the island's environment. The greatest toll to wildlife was sustained by sea otters. Perhaps several hundred were killed, but evidence quickly vanished at sea because of high offshore winds on the north side of the island at the time of the explosion. The A.E.C. currently is terminating operations on Amchitka, and less than 200 of the former 700 personnel remain on the island.

There are several military installations on the refuge. Besides the 5,000 Navy personnel and families at Adak, the Air Force maintains a 1,200-man radar and communication base at Shemya Island and a 100-man radar site at Cold Bay. The Coast Guard has navigational stations at Attu, Adak, and Unimak Islands.

FIELD INVESTIGATIONS

Mist-netting

Mist-netting, which began in 1970, continued this year. Between April 12 and December 30, one to four mist nets were erected in alders along Russell Creek. During the approximate 200 days of operation, 526 birds representing 17 species (Table 13) were captured. In 1970, 486 birds representing 14 species were captured in approximately 95 days of mist-netting. Compared to mist-netting in other parts of the country, the number of birds and species captured may seem unduly low with the extensive effort involved. However, the habitat and climate here are not conducive to this activity, for there are no trees, and the wind, often accompanied by rain, averages 17 mph. Sheltered spots in alder patches must be sought, and adverse weather still frequently disrupts operations. Moreover, brown bears wreak havoc with the project, as nets often are in shreds and poles in splinters. Checking nets along streamside alders where bears sleep during salmon runs necessitates caution and some hasty retreats. Once in September a brown bear was unknowingly approached so closely that it was heard breathing. When finally discovered, it awoke, and 10 feet of bear rose out of the bushes a few feet from a mist net, whereupon both mist-netter and bear crashed through the brush in opposite directions!

Since mist-netting is a good random sampling technique for passerines inhabiting alders and willows, the only shrubs in this region, the capture of only 20 species during the past two summers (Table 14) illustrates the limited diversity of terrestrial birds

Table 13. Summary of mist-netting at Cold Bay, April 15 - December 30, 1971.

Species	Number captured	Per cent of total	Number banded	First & last date captured
Savannah Sparrow	221	42	111	May 13-Oct 13
Common Redpoll	88	17	11	Apr 15-Dec 30
Yellow Warbler	66	13	30	Jul 2-Sept 11
Golden-crowned Sparrow	45	9	21	Jun 5-Sept 19
Wilson's Warbler	43	8	11	Jun 24-Sept 8
Lapland Longspur	16	3	15	May 1-Sept 28
Fox Sparrow	16	3	10	Jun 4-Sept 11
Bank Swallow	7	1	5	Jun 8-Aug 21
Water Pipit	6	1	4	May 10-Sept 3
Hoary Redpoll	4	0	1	May 9-Sept 26
Orange-crowned Warbler	4	0	0	Aug 31-Sept 7
Gray-cheeked Thrush	3	0	3	Jun 13-Sept 5
Rock Sandpiper	2	0	0	Jun 18-Jun 24
Tree Sparrow	2	0	2	Sept 13-Oct 10
Northern Waterthrush	1	0	1	Aug 30
Black-capped Chickadee	1	0	1	Aug 19
Least Sandpiper	1	0	1	June 11
Totals	526		227	

Table 14. Summary of mist-netting at Cold Bay, summers 1970 - 1971.

Species	Number captured	Per cent of total	Number banded	First & last date captured
Savannah Sparrow	398	39	176	May 13-Oct 31
Yellow Warbler	168	17	52	Jun 8-Sept 18
Common Redpoll	141	14	20	Apr 15-Dec 30
Golden-crowned Sparrow	80	8	33	May 28-Sept 19
Wilson's Warbler	80	8	16	Jun 11-Sept 8
Bank Swallow	58	6	14	Jun 6-Aug 21
Fox Sparrow	33	3	20	May 28-Sept 17
Lapland Longspur	18	2	17	May 1-Sept 28
Water Pipit	9	1	5	May 10-Sept 3
Hoary Redpoll	7	1	1	May 9-Sept 26
Orange-crowned Warbler	4	0	0	Aug 31-Sept 7
Rock Sandpiper	3	0	1	May 30-Jun 24
Gray-cheeked Thrush	3	0	3	Jun 13-Sept 5
Northern Shrike	2	0	1	Oct 2 & 3
Tree Sparrow	2	0	2	Sept 13-Oct 10
Hermit Thrush	2	0	1	Aug 31-Sept 17
Northern Waterthrush	1	0	1	Aug 30
Black-capped Chickadee	1	0	1	Aug 19
Least Sandpiper	1	0	1	Jun 11
Tree Swallow	1	0	0	Jun 16
Totals	1,012		365	

in this treeless region. Also, for two summers Savannah Sparrows, Yellow Warblers, and Common Redpolls comprised 70 per cent of the birds captured. In 1971 five new previously mentioned species (Page 12) were caught. All five normally range from the base of the Alaska Peninsula to the interior of Alaska. Three species (Northern Shrike, Hermit Thrush, and Tree Swallow) were captured in 1970 but not this year. Again this year only one species, White-crowned Sparrow (one individual), was seen in alder thickets but not captured.

As mist-netting is possible only in alder thickets, common open terrain species like Water Pipits and Lapland Longspurs are not properly represented. Song Sparrows remain strictly near the beaches, and Snow Buntings and Gray-crowned Rosy Finches evidently never stray into shrubs.

Of the common species in this region Bank Swallows remain the shortest duration, for they first appear in early June and leave in late August. Bank Swallows were scarce this summer, as only seven were caught compared to 51 in 1970. This probably reflects the exceedingly cool summer and the consequent paucity of insects. Like in 1970, all Wilson's Warblers except for one bird were captured in late August, indicating primarily fall migrants pass through this area. Most Common Redpolls were caught in May and September, suggesting that few nest here. So far this year redpolls have remained in winter. The capture of other species like Savannah Sparrow and Yellow Warbler was fairly evenly distributed throughout the summer until late August when a substantial influx of birds was detected. The average number of birds caught per day between about August 20 and September 10 tripled; up to six warblers and 19 Savannah Sparrows were caught on a single day during this period. The earlier fall migration in 1970 was between August 8 and September 1. Spring arrival of most species in 1971 also was about 2 or 3 weeks later than the previous year.

Daily mist-netting totals when compared with weather changes illustrated fall migrants passed through the Cold Bay area with northwesterly winds following passage of storms. Comparatively few birds were captured ahead of storms with prevailing southerly winds. Spring migration was much less obvious, and relationships with weather were unclear.

Three of the 138 birds banded in the summer of 1970 were recaptured this year. One Savannah Sparrow banded June 13, 1970, was recovered June 5 this year, and also in June two of the 10 Fox Sparrows banded a year before returned to the same nets! Both Savannah and Fox Sparrows winter primarily from southern British Columbia south to Mexico.

Because of more cold, wet, and windy weather mist net losses increased from 10 per cent in 1970 to 16 per cent this year. Many birds in shock were revived by administering water with an eye dropper.

After 2 years of comparisons of the effectiveness of different colored nets, dull black was the most effective because of minimum light reflection. Green, however, worked equally well in late summer when alders were fully leafed. Yellow or brown nets were more visible and were useless.

Winter Banding of Passerine Birds

During winter Gray-crowned Rosy Finches and Snow Buntings are the only abundant passerine birds in this region. As winter approaches, the finches and buntings gather in flocks which remain intact until disentegration in April or May. The first Lapland Longspur flocks arrive in May. Trapping is possible only under cold, windy conditions when the ground is snow-covered. Winter flocks are then hard pressed to find food and readily enter traps to procure seed. Finches prefer to perch on and then drop into a cage; so they are most easily caught using an Australian crow trap. Buntings, on the other hand, are reluctant to enter the above type of trap, and a walk-in funnel design works best with them.

About 600 rosy finches, buntings, and longspurs were banded this year, bringing the total since 1969 to over 1,500, and 178 returns (13 per cent) of birds banded prior winters have been recorded (Table 15). A preponderance of males was captured in all three species. The paucity of female longspurs indicates earlier arrival of migrating males. The excess of male Snow Buntings is attributable to largely segregated winter flocks; this was documented in Greenland by Tinbergen in 1933. The band return rate for male buntings and finches is roughly double that of females, suggesting better survival of males. Four of the 39 birds banded 3 years ago returned this winter. None of the birds banded in 1969 were sexed; this is reflected in the band return percentages in Table 15. With only 11 per cent band returns of buntings compared to a 30 per cent return rate for rosy finches, it appears that the latter species is more sedentary. Moreover, whereas the number of finches in the area is about the same throughout the winter, a large influx of migrant buntings occurred in March in 1970 and in April this year. Migration was a month later in 1971 because of the severe, prolonged winter. Up to 65 birds were caught in a single suitable trapping day (snow and low chill factor) during these months compared to earlier averages of roughly 10 per day. Some of these birds which probably migrate from the Western states or Canada may remain here to nest, but most of the flocks continue their migration with the advent of milder weather.

Northern Shrikes which plagued the trapping operation for the previous two winters curiously failed to appear this year, perhaps reflecting the milder winter experienced so far.

At least 15 rare McKay's Buntings have been seen so far this year, and six were banded.

Table 15. Summary of winter banding and returns of passerine birds at Cold Bay (February 1969 - January 1972).

	Number of birds banded*						Returns of birds banded previous three winters (returns of birds banded prior to November 1971)						
Species	Number of males	Per cent males	Number of females	Per cent females	Number unknown	Total	Number of males	Per cent males recaptured	Number of females	Per cent females recaptured	Number unknown	Total	Per cent returns
Snow Bunting	696	75	211	23	17	924	73	13	9	6		82	11
Gray-crowned Rosy Finch	185	60	99	32	26	310	70	39	18	20		88	30
Lapland Longspur	233	80	59	20		292	6	4	1	5		7	4
Northern Shrike					14	14					1	1	33
McKay's Bunting	5		3			8							
Totals	1,119		372		57	1,548	149		28		1	178	13

*Winter banding totals:

February 1969 = 39
January - May 1970 = 676
November 1970 - June 1971 = 642
November 1971 - January 31, 1972 = 186

Nelson Lagoon Biological Reconnaissance

Nelson Lagoon lies on the north side of the Alaska Peninsula about 90 miles northeast of the peninsula's western tip. The lagoon opens into the Bering Sea and is fed at its southwestern end by the confluence of Sapsuk, Caribou, and David Rivers, and the northern fringe is bounded by the Kudobin Islands and a peninsula. The area surrounding Nelson Lagoon is low, marshy grassland which rises gradually toward the Aleutian Range to the south. The fishing village of Nelson Lagoon occupies the tip of the peninsula bounding the lagoon on its northern side. At the time of our survey about 10 families were living in the village.

An aerial survey of the area was conducted on August 28. The most abundant birds were Steller's Eiders and Black-legged Kittiwakes, approximately 20,000 of each. Pintails were next in abundance, followed by American Widgeons, Emperor Geese, and Common Goldeneyes. The lowland area surrounding the lagoon was also surveyed. Whistling Swans, Common Scoters, Greater Scaup, and Mallards were the chief species, but none was present in large numbers. A ground survey was conducted October 22-25. Steller's Eiders were present in about the same numbers as in August, but most other species had increased. Emperor Geese numbered about 20,000 (Alaska Department of Fish and Game recorded 19,400 during a September 25 survey), and White-winged Scoters and Common Eiders numbered several thousand. Several trips were made up the rivers leading into Nelson Lagoon, and Mallards, Green-winged Teal, Gadwalls, and Common Goldeneyes regularly were seen. This river system with its associated lakes is a major salmon spawning area and perhaps an important waterfowl nesting area. Caribou and brown bear are common in this wilderness setting, and wolverine and wolves are present. Additional trips to Nelson Lagoon are planned this summer; pair and brood counts will be made.

The following birds were observed at Nelson Lagoon in August and October:

Common Loon	Greater Scaup	Sandhill Crane
Arctic Loon	Common Goldeneye	Ruddy Turnstone
Red-necked Grebe	Oldsquaw	Rock Sandpiper
Pelagic Cormorant	Harlequin Duck	Sanderling
Whistling Swan	Steller's Eider	Glaucous-winged Gull
Canada Goose	Common Eider	Mew Gull
Emperor Goose	King Eider	Black-legged Kittiwake
White-fronted Goose	White-winged Scoter	Common Murre
Mallard	Common Scoter	Common Raven
Gadwall	Red-breasted Merganser	Dowitcher sp.
Pintail	Bald Eagle	Black-billed Magpie
Green-winged Teal	Gyrfalcon	Common Redpoll
American Widgeon	Willow Ptarmigan	Snow Bunting

PUBLIC RELATIONS

Recreation Uses

Hunting and fishing are presently the chief persuits in the Aleutians and on the Izembek Range, but wildlife observation, photography, beachcombing, and other non-consumptive activities are increasing. Recreational use in the Aleutians is mainly by military personnel stationed at Adak, Shemya, Attu, and Unimak Islands. At least half of Izembek's public use is by Air Force men stationed at a radar site located on the range. During hunting seasons large numbers of visiting military personnel use this radar site with its boats and vehicles to facilitate hunting. Reeve Aleutian Airlines also flies charters with civilian waterfowl hunters from Anchorage.

Wildlife films periodically were shown at the village theater, school, and Air Force radar site.

Refuge Visitors

Name	Organization
Mel Zahn	National Marine Fisheries Service, Kodiak, Alaska
Jim Branson	" " " "
Robert W. McVey	National Marine Fisheries Service, Juneau, Alaska
Dr. & Mrs. William McLaughlin	University of Connecticut, Storres, Connecticut
W. A. Evert	NOAA, Amchitka, Alaska
Dr. Ron Smith	University of Alaska, College, Alaska
Keith Morehouse	" " " " "
Dr. Keith Miller	" " " " "
John Kelley	" " " " "
Mary Neibert	" " " " "
Michael Gottschalk	" " " " "
Dave Boisseau	" " " " "
Ken Turner	" " " " "
Dr. J. Goehring	" " " " "
Al Paulson	" " " " "
Dr. Brina Kessel	" " " " "
John C. Moore	Division of Aviation, Anchorage, Alaska
Robert French	National Marine Fisheries Service, Seattle, Washington
Dave Cline	Wilderness Biologist, BSF&W, Anchorage, Alaska
Palmer Sekora	" " " "

Name	Organization
Don Oliver	National Broadcasting Company, New York, New York
Dr. & Mrs. Allen McCartney	University of Arkansas, Fayettville, Arkansas
Mike Yarborough	" " " "
Dr. Max Thompson	Southwestern College, Winfield, Kansas
Gordon Watson	Area Director, BSF&W, Anchorage, Alaska
David Spencer	Refuge Supervisor, " "
Ray Tremblay	USGMA, " "
Theron Smith	Pilot, " "
Don Orcutt	River Basins, " "
Herman N. Reuss	Pilot/Engineer " "
Clay Hardy	Wildlife Biologist " "
W. R. Hourston	Director of Fisheries, Canadian Wildlife Service, Vancouver, British Columbia
Miss Pat Kling	Court Reporter, Anchorage, Alaska
Robert Price	Regional Solicitor, Department of Interior, Anchorage, Alaska
Jim Faro	Alaska Department of Fish & Game, King Salmon, Alaska
Dan Timm	Alaska Department of Fish & Game, Juneau, Alaska
Glenn Davenport	Alaska Department of Fish & Game, Cold Bay, Alaska
Floyd Short	Alaska Department of Fish & Game, Cold Bay, Alaska
Mike Uttecht	Member Alaska Board of Fish & Game Cold Bay, Alaska
Major H. O'Connor	Commander, U.S.A.F., Cold Bay, Alaska

Hunting

Although some bear, caribou, and ptarmigan hunting occurs, waterfowl accounts for most hunting, especially on the Izembek Range. This fall considerable effort again was expended contacting waterfowl hunters. At Cold Bay 239 hunters were checked by refuge or state personnel, and records were obtained from the "duck camp" at the Air Force radar site, yielding combined bag data from 348 hunters. This year hunters also were asked to provide crippling loss figures.

Though less abundant in fall than brant or Canada Geese, Emperor Geese comprised 53 per cent of the 926 geese bagged and crippled compared to 51 per cent of the 663 geese bagged in 1970 (Table 16). Emperor Geese apparently have always taken the brunt of hunting pressure at Cold Bay, as in 1960 and 1961 they accounted for 73 and 63 per cent of the geese killed. Furthermore, nearly all geese killed in the Aleutians are Emperors.

Table 16. Summary of fall 1970 and 1971 waterfowl bag checks.

Species	Number bagged 1970	Number bagged 1971*	Species	Number bagged 1970	Number bagged 1971*
Emperor Goose	340	488	Common Scoter	1	0
Canada Goose	186	227	American Widgeon	1	1
Black Brant	136	221	Greater Scaup	6	7
White-fronted Goose	1	0	Bufflehead	5	0
Mallard	87	21	Steller's Eider	4	3
Pintail	30	27	Oldsquaw	1	0
Shoveler	3	0	Common Merganser	2	0
Green-winged Teal	26	23	Common Goldeneye	14	0
Common Teal	1	0	Harlequin Duck	2	0
Gadwall	0	8	Unidentified ducks	0	5
Total geese: 663 (1970) 926 (1971)*			Total ducks: 183 (1970) 95 (1971)*		

*Includes reported cripples

Canada Geese constituted 24 per cent of the reported goose kill this fall compared to 28 per cent the previous year and 23 per cent 10 years ago. Black Brant are the most numerous species in Izembek Lagoon, but they are the most difficult to hunt, comprising only 23 per cent of the known geese killed this fall and 21 per cent in 1970. Brant made up 14 per cent of 727 geese bagged in 1961. Despite reportedly high crippling loss and wanton waste, brant evidently are only lightly harvested at Izembek Lagoon. Reported crippling loss for each of the above three species was about 11 per cent in 1971.

Duck hunting this year was very poor, manifesting the low production in Alaska caused by the retarded spring. Although nearly 30 per cent more hunters were contacted this year than in 1970, only half as many ducks were reported killed. The Mallard kill dropped from 48 per cent of the ducks killed in 1970 to only 22 per cent this fall. Pintails comprised 20 per cent of the reported kill, including cripples, compared to 16 per cent the previous year. Examination of 10 year old

bag data showed Gadwalls made up 22 and 34 per cent of ducks bagged in 1960 and 1961, respectively. Oddly, no known Gadwalls were shot in 1970 and only eight were recorded this fall.

Waterfowl hunters averaged 2.9 birds a day this year compared to 3.1 birds per hunter day in 1970. In 1961 the average was 6.5 birds per hunter day.

Violations

While transporting bear hunters, a registered guide and retired Air Force Colonel illegally used a lake on the Izembek Range situated near the Air Force radar site as a mooring and fueling site for his float plane. His fuel drums, pump, and oil were seized, and he was later cited for prohibited use of aircraft and littering.

A Cold Bay resident was cited for an overlimit of ducks. A bear was illegally killed out of season and inside the Cold Bay closed area, but the culprit was not apprehended. Unfortunately many local fishermen regard bears as Western cattlemen do coyotes. Every year some unfortunate bears caught on open beaches during daylight are shot from fishing boats.

Safety

No vehicle accidents or personal injuries occurred in 1971; 1,100 days have elapsed since the last lost-time accident.

OTHER ITEMS

Miscellaneous

The Unimak Island wilderness hearing was conducted at Cold Bay on December 14. In attendance were 14 adults and 19 school children. Two persons testified against the proposal, and one letter favoring the proposal was read into the record.

On December 14 a Japanese ship caught fire near Adak Island. The 340 foot stern trawler containing 400,000 gallons of diesel fuel was brought into the harbor at Adak, but the fire could not be controlled. The Navy fleet tug then towed the burning ship 12 miles northwest of Great Sitkin Island, where it sank in 1100 fathoms. The Navy tug reported a 1 mile diameter oil slick which quickly dissapated in the rough sea. The wind at the time was 20 knots from the west, and thus the oil drifted north of the Chain. Navy flights over the area for several days after the incident reported no visible oil.

Refuge manager Jones was away much of the year doing graduate work at the University of British Columbia.

Finally after several years we again have a maintenanceman! In December Calvin Reeve was secured on a part time (7 hours/day) permanent basis. Cal came to Alaska in 1933 as a stowaway on a freighter. He comes to us with an interesting and varied background in Alaska. He has lived off and on in Cold Bay for nearly 20 years, and his wife Susan is Cold Bay's Postmaster.

Credits

This report was compiled by Edgar Bailey and Vernon Byrd and typed by Margaret Schmidt.

Photographs

Photographs were taken by Bailey and Byrd. Black and white prints were made in the refuge darkroom, and the color prints were made commercially.

Submitted by:
Edgar P. Bailey
Edgar P. Bailey
Acting Refuge Manager

March 15, 1972

Approved:
David L. Spencer

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Izembek National Wildlife Range

Year 1971 ~~1996~~

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
14 weeks Sept 1 to Dec. 14	348	2,088	Emperor Goose (436), Canada Goose (203), Black Brant (187), Green-winged Teal (23), Pintail (22), Mallard (21), Gadwall (7), Greater Scaup (7), Steller's Eider (3), American Widgeon (1).	910	111	1,021	1,156	3,391

(over)

Adak Naval Station is the planned new headquarters of the Aleutian Islands Refuge. Izembek Range headquarters will remain at Cold Bay.

Emperor Geese feeding beneath the awesome specter of the Aghileen Pinnacles, a Registered National Landmark on the Izembek Range.

How many sea lions are there on Sea Lion Rock?

Probably 50,000 sea otters reside in the Aleutians. During the severe winters of 1971 and 1972, hundreds of sea otters died of starvation when the Bering Sea ice pack pushed to Unimak Island. Many remained stranded on the ice while others struggled inland on the Alaska Peninsula toward the Pacific Ocean in quest of open water. Some others traveled 10 miles across the tundra before finally succumbing. Thirty four sea otters found near the village of Cold Bay were rescued and transported to open water in Cold Bay.

Land otters inhabit many lakes and streams on the Izembek Range and Unimak Island.

The brown bear sanctuary around Cold Bay permits ready observation and photography of these magnificent animals.

White-winged Scoters are common winter residents west to Adak Island.

Ruddy Turnstones are common migrants in the Aleutians and Alaska Peninsula.

Lovely King Eiders visit Izembek Lagoon, Cold Bay, and the eastern Aleutians during winter.

The Izembek Range was originally created largely for the protection of resting Black Brant. However, the brant habitat, Izembek Lagoon and its eelgrass beds, belongs to the State of Alaska; refuge jurisdiction ends at mean high tide.

The Red-faced Cormorant, a peripheral species, nests in the Aleutians.

Snow Buntings nest in crevices and beneath rock generally between 1,500 and 3,000 feet elevation on the Izembek Range.

This permanent refuge monument on Amchitka Island marks the spot where 6,000 feet below a fine 5 megaton nuclear device called "Cannikin" was detonated on November 6, 1971, all for the nominal cost of a reported $550,000,000! How many Refuge Benefit Units should we get for this earthshaking output?

Except for Southeast Alaska Bald Eagles are probably most common in the Aleutian Islands.

Cold Bay (population 200) is headquarters for the Aleutian Islands Refuge and Izembek Range. Unfortunately the magnificent surroundings remain cloud-covered much of the time. In 1971 Cold Bay recorded only 10 clear days (<30% cloud cover).