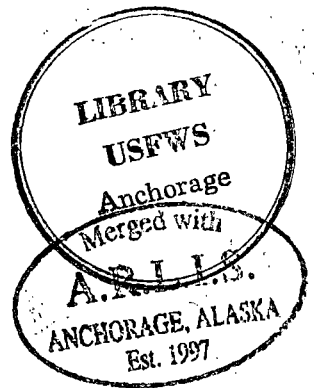


FISH AND WILDLIFE SERVICE
JUNEAU, ALASKA



REPORT OF
ALASKA WATERFOWL INVESTIGATIONS
Summer 1941
LOWER YUKON RIVER
CHEVAK
HOOPER BAY

By

C. E. GILLHAM
Biologist, Mississippi Flyway
U.S. Fish and Wildlife Service,
Department of the Interior

ARLIS
Alaska Resources
Library & Information Services
Anchorage, Alaska

INDEX

	Page
INTRODUCTION	1
NATIVE KILL - EGGS - BIRDS	6
Law Enforcement	9
Remedy	10
Education	11
Violations Other Than Natives	16
BANDING BIRDS	19
Record of Birds Banded	22
BIRD SKINS SAVED	23
Record of Bird Skins Taken	24
BIRD STOMACHS SAVED	26
Record of Bird Stomachs Saved	27
DOG DEPREDACTIONS	29
MAMMALS OF THE CHEVAK AREA	31
Mice	33
Shrews	33
Muskrats	34
Mink	35
Otter	36
Weasels	36
White Foxes	37
Colored Foxes	37
Pacific Bearded Seal	38
(Mukluk or Oog-ruk (Eskimo)	
Harbor Seal	39

ARLIS

Alaska Resources
Library & Information Service
Anchorage, Alaska

	Page
Spotted Seal	39
Sea Lion	39
Walrus	40
White Whales	42
Other Mammals	42
PLANT SPECIMENS SAVED	43
CLIMATE OF THE CHEVAK Hooper Bay Area	45
PICTURES	46
MAPS	48
WATERFOWL PROSPECT IN CHEVAK HOOPER BAY AREA	50
WATERFOWL ZONES	51
BROOD COUNTS	53
Table of Brood Counts	55
PLANS FOR FUTURE WORK	56
Transportation for such Work	57
Use of Plane	58
Chevak, Hooper Bay Area	59
More on Boats and Equipment	64
MAIL AND OUTSIDE COMMUNICATIONS	67
BIRD BANDS RECOVERED	68
AREA BELOW KASHUNUK VILLAGE	70
CHEVAK AREA	74
INLAND AREA	75
WOODED AREAS	75
RED-THROATED LOON	76

	Page
PACIFIC LOON	77
HOLBOELL'S GREBE	78
WHISTLING SWAN	78
BALDPATE	80
AMERICAN PINTAIL	80
GREEN-WINGED TEAL	82
EUROPEAN TEAL	83
CANADA GOOSE	84
CAACKLING GOOSE	85
LESSER CANADA GOOSE	86
BLACK BRANT	88
EMPEROR GOOSE	90
WHITE-FRONTED GOOSE	93
COMMON MALLARD	95
OLD SQUAW DUCK	96
SPECTACLED EIDER	97
STELLER'S EIDER	99
WHITE-WINGED SCOTER	102
SURF SCOTER	103
AMERICAN SCOTER	103
RED-BREASTED MERGANSER	104
SHOVELLER	104
GREATER SCAUP DUCKS	105
AMERICAN GOLDEN-EYE	106

	Page
BARROW'S GOLDEN-EYE	106
BALD EAGLE	107
OSPREY	107
BYRFALCON	107
WILLOW PTARMIGAN	108
RUDDY TURNSTONE	110
BLACK TURNSTONE	110
BLACK-BELLIED PLOVER	113
PACIFIC GOLDEN PLOVER	113
WILSON'S SNIFE	114
PACIFIC GODWIT	114
HUDSONIAN CURLEW	116
LESSER YELLOW-LEGS	117
RED-BACKED SANDPIPER	117
PECTORAL SANDPIPER	118
BRISTLE-THIGHED CURLEW	118
LONG-BILLED DOWITCHER	122
WESTERN SANDPIPER	123
RED PHALAROPES	123
NORTHERN PHALAROPES	124
LITTLE BROWN CRANE	124
LONG-TAILED JAEGER	128
GLAUCOUS GULLS	130
SABINE'S GULL	135
GLAUCOUS-WINGED GULL	135

	Page
ARCTIC TERN	136
GREAT HORNED OWL	136
GREAT GRAY OWL	137
RICHARDSON'S OWL	137
SNOWY OWL	137
AMERICAN MAGPIE	138
NORTHERN CLIFF SWALLOW	139
AMERICAN ROBIN	139
VIOLET-GREEN SWALLOW	139
BANK SWALLOW	140
YELLOW WARBLER	140
RUSTY BLACKBIRD	140
HORY REDPOLL	141
LAPLAND LONGSPUR	142
BIRD WITH YELLOW OVER EYE	142
ANOTHER BIRD	143
CONCLUSION	145
ACKNOWLEDGEMENTS	145
RETURN TRIP	147

INTRODUCTION

The writer left his Official Station at Edwardsville Illinois, May 12, 1941. In order to have a train-window check of the Prairie Province nesting grounds, routing was made through North and South Dakota, Saskatchewan, Alberta, and British Columbia. When Vancouver B. C. was reached, a boat was taken to Seattle, and after one day spent in checking baggage and getting equipment, a boat was taken, on May 17, for Seward Alaska.

At Seattle Washington before sailing, Mr. Frank Dufresne, Executive Officer of the Alaska Game Commission, was contacted and his aid secured in planning the work to be undertaken for the coming summer. Between boats at Juneau, the office of the Fish and Wildlife Service was visited, and maps and additional information was secured from Mr. Jewell.

Seward was reached May 23 and departure immediately made for Nenana, where the writer was expected to pick up a boat, recently transferred to the Fish and Wildlife Service by the General Land Office. This boat was supposed to be ready to take down the Yukon River, where it was planned to use it in waterfowl reconnaissance work.

On arriving at Nenana May 24, it was discovered that the boat GLO which was supposed to be reconditioned, painted and made ready for the Yukon River trip was still in a warehouse of the Northern Commercial Company and had been there for the previous 8 years. The engine reposed on the floor in a pile of other boat accessories and hardware, and certainly was in poor condition for a 1200 mile trip. The man who was supposed to fix up this boat, a Mr. Olsen, was soon found in the local "Ship Yard". He said that owing to labor shortage and the low water in the Tanana River, he had not been able to get at the work and probably it would be another ten days before he could.

The writer then caught a local freight train into Fairbanks, where Game Management Agent Clarence Rhodes was looked up. Mr. Rhodes, the writer had been told, was supposed to have hired someone to fix up the GLO for use in the Yukon Delta. Rhodes told the same story that Mr. Olsen told and said that Olsen was the only available one for the job and that there was nothing that he could do about it.

Aside from the disappointment of not having a boat for use, the writer was out considerable time in coming so far only to discover that no boat was available. Had this information reached him earlier, a plane might have

been taken from Anchorage and the Yukon Delta reached in short time and at no greater cost than the method that was necessary. Also the birds could have been studied at nesting time and about a month more work accomplished at this most critical time in bird study.

Anticipating a boat of considerable size for use, the writer brought much more equipment than he commonly takes, much of this was purchased personally.

Upon consulting Agent Rhodes, it was learned that the Kashunuk River, which leads out to the Alaska Coast from Pilot Station was probably very shallow, due to the low water level in the Yukon River. Rhodes dispatched a Radio message to George Sheppard, Trader at Chevak. Sheppard replied that the water was very low and offered to take the writer into Chevak, in the heart of the Yukon bird country, when he went in with his summer's freight. Sheppard had a flat bottom power boat and could negotiate water when but 2 feet in depth.

At Nenana the writer met Mr. Cal Townsend, formerly of the Bureau of Fisheries and now in the Fish and Wildlife Service. Mr. Townsend had quite a large boat, the "COOT", and offered to take the writer to Mountain Village on the lower Yukon, where Mr. Sheppard could be contacted. Because Townsend was heavily loaded with his own equipment, the writer sent his outfit to Mt. Village via

steamboat and on May 30 left with Townsend.

Because of undue low water in the treacherous Tanana River and being repeatedly stuck on sandbars, it was the evening of June 9 before Mountain Village was reached. Here George Sheppard was contacted, and on June 12 departure was made for Chevak on the lower Kashunuk River.

Again low water levels were encountered, and as much as thirty-six hours spent in working the capstan to get free of a particular stubborn sand bar. However, on June 21 Chevak was reached. Over twice as long a time being taken as is usual for this trip, on account of the extreme low water.

The trip with Sheppard definitely proved that to come into this area in any low water year with the GLO would have been absolutely impossible. Also the use of this particular boat with its deep draft, will never be of a practical nature in this area as all water where bird work need be done is extremely shallow. Rather, a boat of flat bottom type is needed, and that, badly needed to explore this vast nesting area. Because of high tides, a boat need be flat, or round of bottom or it will turn over when waters recede leaving it stranded on the mud, the GLO was not so constructed.

Arriving at Chevak, in a very isolated area for

Alaska, the writer gave thanks to the friendship that George Sheppard bore Agents Rhodes and Collins. Instead of living in a bull frog environment of mud, wet clothes, mosquitoes, and all possible hardships that had been endured in the past in the Arctic, almost the reverse was experienced.

Sheppard soon left for the summer and turned over his trading post as a residence to the writer. Fire wood had been hauled in from up river, and in a fine little kitchen one could prepare decent meals away from the insects, and dry out wet clothing. An adequate stock of groceries furnished provisions, a short wave radio brought in news of the world, and even a washing machine and a folding bath tub were available.

Behind the trading post the first day at Chevak, an Emperor Goose and six downy young were found, less than half a mile distant. Shore birds and many of the ducks were leading about their young. It was an ideal location.

NATIVE KILL - EGGS - BIRDS

That there is a large take of both birds eggs, and the birds themselves in the Hooper Bay, Chevak district is quite apparent. This kill of birds, or take of eggs, is considerable greater per capita than in the Western Arctic of Canada. The reason for this is that, in Canada, the birds nest out and beyond where the Eskimos do their spring muskrat hunting. When their hunting is over, the Eskimos go out beyond the bulk of the nesting birds to catch white whale and white fish. In this area of Alaska, the natives rather do the reverse of this.

Probably in the latter part of April the first of the early migrants appear, these are usually geese. At this time the spring seal hunting is about finished and the natives come inland above the tides and hunt muskrats. Above the tides also the geese nest. As goose eggs are larger than other eggs (except swan and possibly crane eggs) and as the geese also are more meat to eat when killed, than a duck, they are the chosen victims. Also the ducks as a whole are farther inland and not so easily available.

The natives of this particular Alaska district are quite primitive. In fact few of them, except right

around Hooper Bay, can speak any of the English language. Because these people have never been surrounded by mines, fisheries and such, as have been most of the Alaska Natives, their contact with the white race has been little and as a result they know little of the language. Because of no work to be offered, as is true in many places and because this district is not a high yielder in fur, these people are very poor. This year (1941) for example, was their banner muskrat year, at that no one killed as many as 250 muskrats, and the average catch per family was probably little over 100, certainly not more than 125. These muskrats average \$1.00 each in trade. The catch of mink here is fairly large, but again, for each family the average is probably not over five or six. Similarly white foxes are taken, but never in large quantities as in the Western Arctic. Probably then the total income of an average family is on the short end of \$350.00 and it would not be surprising if it were even less than half that amount.

When the salmon run comes on in June, and that the latter part of June, all the inland natives move out toward the coast to meet them, as these fish seldom come up the shallow delta streams with their high tides. Rather the Yukon, and the larger deeper rivers first admit these fish from the sea.

Waterfowl and their eggs, then, at this spring nesting time are the main food. True there is a take of needle fish and black fish, but these minute minnows that were carefully frozen and saved the previous fall for both human consumption, and dog feed as well, at this time of year are about exhausted. On the coast some walrus are taken, and then later, white whales, but the birds fill the main breach in the food gap with their eggs, and themselves.

Were all people forced to utilize these waterfowl as are these particular natives, in one year's time there would hardly be a bird left on the face of the earth. Again let it be stressed that there are not many of these people, they are almost destitute, and even in this district waterfowl in general are on the increase, some of the geese being the exception.

As a further example of the primitiveness and poorness of these natives, few of them own out-board motors. There are but a few in the whole district, probably not over half a dozen. At Aklavik, in Canada, there are probably 100 of these contrary devices. Here the Alaska natives live in rude hovels dug into the ground. It has been aptly stated to the writer, by a nurse who works among these people, that many animals have more satisfactory places to live in under wild conditions.

Law Enforcement.

The writer feels certain that probably there is no place in North America, unless it is with some of the far Northeast tribes of Eskimos that he has never visited, where the per capita kill of waterfowl is as high as in this district. However, based on the continental supply of birds it would pass without notice, and certainly only a small part of this vast area is ever visited by waterfowl eating natives during the nesting months.

Any laws that have been made known to these people pertaining to their way of life have been rather well obeyed, much better than are the laws of the land on the "outside" or in the U. S. A. However, the Eskimos know little of game laws. Mr. George Sheppard, Trader at Chevak, told the writer that through the work of Mr. Collins, Game Management Agent in Alaska, in convincing both him and the Natives that swans should not be killed, few of these birds were taken today. As a result also, there is a very heavy increase of swans reported in this part of Alaska.

As an illustration of some of the laws that these people violate in taking migratory birds, the following listed violations come to mind;

1. Taking of birds out of season.
2. Taking birds eggs for food.
3. Taking birds without bag limit.
4. Taking birds before and after closing hours.
5. Taking almost all birds with the rifle (people too poor to buy shot shells and extra guns. Most only have a 22 and a 30-30)
6. Taking birds without hunting license.
7. Taking birds without waterfowl stamp.
8. Selling parts of birds or the whole.
9. Shooting with unplugged gun.

It is doubtful if one Native in ten knows that he is violating any law in committing the above mentioned acts.

Remedy.

It is obvious that the arrest of these people with fines, or jail sentences, or both is not a solution to the above mentioned violations of the law. Rather such would result in great hardship (paying of fines) as these are a very destitute people. Also the health of a Native would probably suffer by confinement in a white man's jail. With a people so poorly versed in white man's laws and his language, it is more than possible that such arrest would result in a breaking down in the morals of these people in their obedience to other laws that they

do know. It is felt that the influence of the church and the schools have been important in teaching these people the common laws of the land, but it is also felt that such missions and schools have done little to give the natives a clearer understanding of game laws. In fact, it is felt and reported that the above mentioned institutions do not discourage violations of game laws.

Education.

Possibly through a slow system of education of these people, as in the case of Collins and Sheppard discouraging the taking of swans, is a partial solution. However, it is to be remembered that these birds and eggs are a necessity of life, and the natives could hardly be expected to do without them, unless some substitute was made. That would of necessity be in some form of a Government aid or loan, and even then it is doubted by the writer that the past practices of these people and their taste for birds and their eggs would be discontinued by a substitution of other food. Certainly not by giving them money or store food.

While not qualified to speak on the management of the reindeer in Alaska, the writer has heard much in this lower country of the great value of these beasts as food, also the poor management of them in many cases,

resulting often in the complete loss of a large herd over a short period of time. It is felt as a possible solution to aiding these poor natives and supplying them with a regular meat supply to discourage the taking of too many waterfowl, that the reindeer might be a solution if correctly managed. In such event it should be stressed to the natives that this reindeer industry and the resulting meat was made possible to discourage the killing of so many birds.

Rather than attempt arrest, and fines, or imprisonment as a method of curbing the take of waterfowl and eggs, the writer would favor no control at all in this particular area, for it is not on a large enough scale to influence the status of any species, except possibly with the swans of the Pacific coast and some of the geese.

Through the schools and missions by convincing them that the practice was to be discouraged somewhat, much good might be done. The writer does not suggest any curb in the taking of birds, or their eggs, unless something be done to substitute a food to take their place. The only criticism that is had, is that the Native does not always take only what he needs, and it is understood that in this district in particular, this is true. When the goose drives are held in the early fall, and this principally on Emperor and Cackling geese, often birds are taken that are later thrown to the dogs, because there

is such an excess of them. This feature is bad, and it, too, is a matter of education. Serious threats by game officials would go a long ways towards breaking it up. It has been suggested by some, that threats of fines, or imprisonment are much more effective than the actual thing. When once a Native is confined in a jail he finds he has little to do, more to eat than ever before in his life, and often he gets better clothing as well. To be imprisoned is no disgrace. Often the prisoner when he returns is held in considerable esteem by his listeners as he relates his comforts in the prison at Nome. It has been also observed that a Native once imprisoned has little fear of the law thereafter.

Another possible solution to the better education of the Eskimos along conservation lines, and the control of their hunting activity would be to take in vast areas of this most favorable waterfowl nesting ground into a Federal Refuge. The possibilities of such a procedure are almost too wide in scope to visualize at the moment.

In the first place, without doubt, the Eskimo uses little of any judgment in the management of his living. Until just the last few years for example, they hunted mink the year around. Much of their summer months is spent in doing absolutely nothing, when they could be putting up large stores of dried fish, white whale meat,

and berries. Cold season crops in much of this area flourish, and these people are very fond of them, yet none of them do any planting.

With this area under Federal Management, it would be possible to

1. Manage the take of fur bearers to the mutual benefit of all.

2. Introduce reindeer on the tundra for a permanent meat supply. (The main reason of failure of reindeer was that they were close herded near the villages and eaten at all opportunities, instead of being allowed to utilize the adequate supply of new food back away from the coasts. Predators are not present here and only the two legged ones are of any consequence.)

3. Furnish a few fish nets (the natives are so poor they have few nets, many of them are made by weeks of labor from whale sinews). Introduce a better method of fish drying with a protective cover or shed over the fish racks. On the Yukon this is common practice, but with the coast Natives little of any precaution is taken to guard the drying fish. This results in large losses of a very valuable food.

4. Furnish seed of cool season crops, and supervision for the planting. At Hooper Bay it was noted carrots, turnips, cabbage and the like being grown in profusion

by the Priest, Father Fox. He stated that the Eskimos were most fond of these vegetables.

5. Supervise the hunting of marine mammals. White whales, or Beluga, are most common and greatly relished. The Natives have difficulty in taking these creatures with their inadequate equipment, and when they do, much of the animal is often wasted, or poorly cared for. Seals, of the haired varieties are numerous and furnish valuable food and salable skins.

6. Native arts. Of recent date these Natives have taken up basket making, and do very well at it. The baskets are good, and in demand. Supervision of this and other native industries, such as the making of boots or Mukluks, would result in an additional income to these destitute people.

The writer noted that the Natives are eager to better their condition, but little has been done about it with these primitive people. With proper management of their food supply, fur resources, and health, the management of the nesting waterfowl would be taken care of.

This area has little of any known value except for wildlife, and in that it is most important. The supervision of it by a man that can talk the Eskimo language, such as George Sheppard, Trader at Chevak, could pay the most tremendous dividends in increased waterfowl production,

and at the same time better the status of the Eskimos many fold.

Violations other than Natives.

The writer feels, from conversations with white people in the outlying districts of Alaska, that waterfowl regulations are not well observed by them. Without doubt there is much spring shooting and considerable violations as to hours, guns used, and the like. One man was observed in returning another man's goose call to him at Fairbanks in the latter part of May. He explained with a wink, that he had been practicing goose calling out on a local river. Further conversation revealed that the Game Management Agents at Fairbanks had just apprehended a couple of the local whites killing geese in violation of the law and the return of the goose call was good testimony that the Agents of the Fish and Wildlife Service were on the job and people were getting the idea.

Game law violations in such a place as Fairbanks are absolutely unnecessary and as inexcusable as those in the States, and the writer has heard much to make him believe that the Enforcement Officers are doing a good job and breaking up much of this practice. However, there is an old time belief among white people in outlying

districts far remote from the larger places like Fairbanks, that the birds are a local proposition, and theirs through necessity, by virtue of the isolation of that particular person. The writer feels that this thing is still a bit overdone. The majority of white people are in no way dependent upon game of any kind for a living. It is a welcome change, and often one does not blame them for desiring this change in diet, but it is no necessity. A similar tempo in thought about shooting rights might be observed in the remote parts of Louisiana, where the natives of that state have something the same idea.

Without doubt the take of birds out of season by whites in Alaska is well utilized, probably with less waste than those taken by Natives in many instances, but the real necessity is not there, although without doubt the change of diet is agreeable and the shooting is not done for sport.

The writer has been informed, by miners of outlying districts, that often they had waterfowl during the Spring, Summer and Fall in their camps. They stated that usually these birds were purchased from the Natives. In some places big game animals are also utilized in this same manner.

Such is no reflection on the Game Department in Alaska. The writer feels that their work has been very

well done. With the few men that they have for enforcement work, and the isolated nature of this country, it is remarkable that such good coverage has been obtained, and such good obedience to the laws are to be had.

The writer saw on the Yukon River in early June, a box of about a bushel capacity, filled with goose ptarmigan, and duck eggs. The white man who had them stated that he bought them from a native. This practice formerly was most common but of late years has been discouraged.

Father Fox, Priest at Hooper Bay, informed the writer that transient traders formerly purchased waterfowl eggs for sale farther up river. Also the down of ducks and geese were purchased for the making of down sleeping robes. He said that the Missions, in previous years, had purchased eggs and birds from the Natives, but of late were discouraging the practice.

Of interest, in a school house, operated by the Government, the writer observed on a bulletin board somewhat the following;

"For the boys to pay for their Christmas shirts, they may bring two geese, or two dozen goose eggs."

From the above it might be noted that there is still in many places little thought given to conservation, and that the practice of buying eggs and birds from the

Natives is not entirely done away with. The school teachers of the above mentioned institute of learning were most sincere in their work, and were attempting to help the destitute Natives to solve their problems of living.

BANDING BIRDS

About the only way to band waterfowl in this area on any basis of production is through having drives of the old moulting adults, and their young. The young birds are of such a size at this time, that all that can be captured are large enough to band. With geese in particular, it has been noted that at a very early age their feet are big enough to retain a band.

It is most apparent that a crew of three or four stout-hearted fellows that are quite willing and fleet of foot can band considerable birds by simply chasing them ashore, and catching as many of them as is possible. This method has but one serious drawback, and it is serious. The large gulls and the Jaegers are ever attracted by such pursuit, and immediately congregate to feast on any youngster that escapes, or in many cases to catch the banded ones that have been temporarily abandoned by their parents. In discussing Glaucous Gulls and Long Tailed Jaegers elsewhere in this report,

is a fuller account of how these predacious birds operate.

In taking advantage of goose drives, one can, with the Natives, catch a considerable number of young geese, and adults as well. However, again difficulty is encountered. The drive is held primarily by the Natives to secure geese for food. These are put away, some salted, and saved for later use. Also it is reported that often many of these birds are wasted, or fed to dogs, skins are also taken for parkas. These geese saved for food naturally can not be banded, and that removes all chances to band the adult birds. While it is better to band the youngsters one need give the natives something to compensate them for releasing them, otherwise they too are killed. A standard precedent being \$1.00 per person engaged in the drive. This is cheap labor, and does not total much, however to successfully round up these easy birds, quite a number of natives are needed. Such a number of men removes the possibility of doing this on any extensive scale.

Again one would not want to be a party to this kind of business, of organizing such drives. If a drive is to be made anyway, as was the case of the one brought to the attention of the writer, it probably is well to take advantage of it. It does save all of the young birds, at a very nominal figure. In addition one gets them banded.

In banding ducks, and various shorebirds, often the old mother birds are not as wild as the goose mothers, and will hang around the vicinity close enough that the little ones can be captured and banded, then released all at one time, and be immediately taken over by the mother. This is fine when it works.

Usually with young ducks, they take advantage of some pond too deep for comfortable wading, and then dive in all directions, if one does go in after them. Sometimes a portion of a brood may thus be secured.

With the shore birds, the little ones are usually so well hidden, that it is unusual to find more than one of a brood, if that many. Also it has been noted here that shore birds rarely bring off their usual four offspring.

Trapping birds is entirely impractical in larger species, such as the waterfowl, excepting by the use of fish nets and drives. Some small birds, could, with proper equipment and time be trapped and banded, but the summers are all too short and the territory to be covered is too large for such intensive work.

The following table lists all the birds banded by the writer during the past summer of 1941. Several hundred might easily have been banded on the goose drive that was held by the Kashunuk Natives, but owing to small boat equipment and a continued wind for over a week, the writer

could not negotiate the rough waters and reach the village. Also because of the loss of a month's time in reaching this area, much reconnaissance work had to be done to locate the birds with a resultant loss in time that might have been spent in banding. Had the writer been in this area a month earlier, the nesting would have been located, and when time came for banding, the birds would have been located and plans made for their capture.

RECORD OF BIRDS BANDED

<u>No. of Band</u>	<u>Date</u>	<u>Locality</u>	<u>Species</u>	<u>Age</u>	<u>Remarks</u>	<u>Total No.</u>
40-736001 to 40-736015 in.	7-12-41	Chevak, Alaska	Emperor Goose	Juvenile 2 weeks		15
40-736016, 40-736017 & 40-736018	7-12-41	Chevak,	Cackling Goose	Juvenile 2 weeks		3
40-736019 to 40-736025 in.	7-17-41	9 mi. So. Chevak	Cackling Goose	Juvenile 3 weeks		7
40-736026 to 40-736033 in.	7-19-41	"	Lesser Canada	Juvenile		8
40-736034	7-19-41	"	Whitefronted Goose	Adult		1
40-736035 to 40-736039 in.	7-19-41	"	Whitefronted Goose	Juvenile		5
40-736040	7-21-41	"	Whitefronted Goose	Juvenile		1

BIRD SKINS SAVED.

The writer fully intended to collect as many of the downy young of the waterfowl, shore birds, and others, as time permitted. Many of these birds, it was realized are never seen except in this country, and their presence in many collections is entirely lacking. However, this was sadly handicapped by the fact that the supposedly prearranged plans for a boat were not carried out. The result of arriving on the nesting ground almost a full month later than planned, prevented the majority of the collection of the downy young. As it was, most of the little birds, by the time there whereabouts were discovered and the usual reconnaissance in locating a suitable place to work carried out, were too large to be classed in the downy young category. Some were found, and taken, but as a rule, few of them were to be had.

Plans to make skins of the birds common to this region were carried out so far as such was possible. In making long trips by water, in a boat entirely inadequate for such travel, there was little chance to make up skins, or even as the writer does, to skin and salt a great many. As it was, thirty-three (33) skins were saved. Twenty-two

(22) were downy young, and young not so downy, and Eleven (11) were adult birds.

In the case of many of the ducks, such as the eiders, some species were entirely absent, or the males at least were not to be had.

RECORD OF BIRD SKINS TAKEN.

<u>Place</u>	<u>Date</u>	<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Remarks</u>
Tanana River, Alaska	6-1-41	Great Grey Owl	Pe.	Adult	
Yukon River, Holy Cross	6-9-41	Red.B.Merganser	M	Adult	
Kashunuk Village, Alaska	7-2-41	Stellers Eider	M	Adult	
" "	7-2-41	" "	M	Adult	
" "	7-2-41	" "	Fe	Adult	1 yr. old
" "	7-2-41	" "	Fe	Adult	
" "	7-2-41	" "	Juv.		2 das. old
" "	7-2-41	Spectacled Eider	Juv.		1 wk. old
" "	7-2-41	Pintail Duck	Juv.		1 wk. old
" "	7-2-41	Cackling Goose	Juv.		1 wk. old
" "	7-2-41	Gull	Juv.		10 days
" "	7-2-41	Sabine Gull	Juv.		3 days
" "	7-3-41	Emperor Goose	Juv.		1 week
Chevak, Alaska		W.Ptarmigan	Juv.		5 days
" "		" "	M		
" "		L. T. Jaeger	Pe.		
" "	7-13-41	W.Ptarmigan	Juv.		2½ weeks

(Record of bird skins taken-continued)

<u>Place</u>	<u>Date</u>	<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Remarks</u>
Chevak, Alaska	7-13-41	Black Turnstone	Juv.		2 weeks
" "	7-13-41	Red Phalarope	Juv.		2 weeks
" "	7-13-41	Arctic Tern	Juv.		2 weeks
" "	7-14-41	" "	M	Adult	
" "	7-14-41	" "	Fe.	Adult	
" "	7-14-41	L.T. Jaeger	M	Adult	
" "	7-14-41	" "	Juv.		Flying
10 miles below Chevak	7-17-41	Cack. Goose	Juv.	1 $\frac{1}{2}$ #	killed by G Gull
" "	7-17-41	Glauc. Gull	M	Adult	This pair killed above
" "	7-17-41	" "	Fe.	Adult	young goose
10 M.N.E. Chevak	7-20-41	Rusty B. Bird	M	Juv.	Flying
" "	7-20-41	Small Bird	M		Flying
Chevak, Alaska	7-24-41	" Yel. Eye		Juv.	Flying
" "	7-24-41	P. Godwit		Juv.	Flying
" "	7-24-41	R.B. Sandpiper	M		
" "	7-24-41	L. Longspur	M		Found dead

BIRD STOMACHS SAVED.

The saving of all stomachs of birds taken, was religiously carried out. The saving of many of the downy young stomachs was made impossible on account of the lateness of the writer's arrival into this area, resulting in few of the young being obtained.

Any birds killed for skins were saved. A few birds were killed for food, and these utilized. In a few instances birds were noted that the Eskimos had shot, and the stomachs of these secured.

Predacious birds were taken, but not in any quantities, because by the time the writer located the main nesting grounds and the young waterfowl, the little ones were too large as a rule for predacious birds to bother to any great extent. The necessity for the taking of considerable Glaucous Gulls and Jaegers is most paramount if we are to have any actual data on the extent of the damage done by these birds.

Whenever possible, plants were taken, so that the food habits of those birds that were taken, might easily be worked out.

In all thirty-seven (37) bird stomachs were obtained, and the species, and data on them is as follows:

RECORD OF BIRD STOMACHS SAVED.

<u>Place</u>	<u>Date</u>	<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Remarks</u>
Kashunuk Village, Alaska	7-2-41	Stellers Eider	M	Adult	
" "	7-2-41	"	M	Adult	
" "	7-2-41	"	Fe	Adult	
" "	7-2-41	"	Fe	Adult	
" "	7-2-41	"	Juvenile		2 days old
" "	7-12-41	"	Fe	Adult	1 year
" "	7-12-41	"	Fe	Adult	1 year
" "	7-12-41	"	Fe	Adult	1 year
" "	7-2-41	Spectacled Eider	Juvenile		1 week
" "	7-2-41	Pintail Duck	"		1 week
" "	7-2-41	Cackling Goose	Juvenile		1 week
" "	7-2-41	Gull	Juvenile		10 days
" "	7-2-41	Gull, Sabines	Juvenile		3 days
" "	7-3-41	Emperor Goose	Juvenile		1 week
Chevak, Alaska		Ptarmigan, Willow	Juvenile		5 days
" "		"	Juvenile		1 week
" "		"	M	Adult	
" "		L.T. Jaeger	Fe	Adult	
" "		"	M	Adult	
" "	7-7-41	Am. Scoter	Fe	Adult	
" "		Pintail	M	Adult	
" "	7-13-41	Ptarmigan	Juvenile		2 1/2 weeks

Record of Bird Stomachs saved - continued

<u>Place</u>	<u>Date</u>	<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Remarks</u>
Chevak, Alaska	7-13-41	Bl. Turnstone	Juvenile		2 weeks
" "	7-13-41	Red Phalarope	Juvenile		2 weeks
" "	7-13-41	Arctic Tern	Juvenile		2 weeks
" "	7-13-41	Glaucous Gull	M	ADULT	
" "	7-13-41	L.T. Jaeger	Fe	Adult	
" "	7-13-41	" "	M	Adult	
" "	7-14-41	" "	Juvenile		Flying
" "	7-14-41	Arctic Tern	M	Adult	
" "	7-14-41	" "	Fe	Adult	
10 miles below Chevak, Alaska	7-17-41	Cack. Goose	Juvenile		1 $\frac{1}{2}$ # killed by Glauco. gulls
" "	7-17-41	Glauc. Gull	M	Adult	Killed above
" "	7-17-41	Glauc. Gull	Fe	Adult	" "
Chevak, Alaska	7-24-41	Pintail	Fe	Adult	
" "	7-24-41	C.W. Teal	M	Adult	
" "	7-24-41	P. Godwit		Adult	Flying
" "	7-24-41	R.B. Sandpiper	M	Adult	

DOG DEPREDATIONS.

As noted in Northern Canada in the past, untied dogs, abandoned dogs, and dogs purposely turned loose to prevent having to feed them, are serious factors in waterfowl nesting grounds.

Dog feed is, and probably always will be, one of the most serious food problems in the North. Practically all winter travel by the bulk of the population is with dog teams. Airplanes, snow-mobiles and power transportation while not always practical, are also very expensive. Dogs must eat, and sustaining food, preferably fish, seal, or white whale. Commercial preparations are not only too expensive, but the vitamin content and fat present is not sufficient for dogs to maintain health and do good work. Thus, dog feed, and large quantities of it, is the endless thing to be faced in the North. In Spring months, when waterfowl nest, it is a temptation to turn the dogs loose and let them feed on waterfowl eggs, and later the young and moulting adults. This practice in the past was very common. Though much has been done to discourage it.

In the Northwest Territories of recent years, Mounted Police shot any loose dogs they saw, not only as a protection to game, but because the beasts, often ferocious,

had in some instances killed children. George Sheppard, at Chevak, has done practically this same thing, with a view of saving waterfowl, and the idea has spread throughout the Natives of this area. It is understood that the Mission at Hooper Bay has also discouraged this practice.

When one witnesses a common sled dog polish off a four or five pound fish and lick his chops for more, it takes no very vivid imagination to surmise the quantities of eggs, or young birds, that such an appetite might consume in a short period of time. A dozen such dogs might account for thousands of waterfowl in one summer particularly at nesting time when the eggs were available, and it is understood by the writer that these beasts are very adept at finding the nests. At various times tied dogs have been witnessed laying in wait for song birds feeding near them, and attempting to catch them. That a dog will not eat waterfowl in the North is pure bunk. While it is true, that "outside" a dog will hardly ever touch duck meat, or goose, even when cooked, such does not hold true in this country. Adult geese for example, with hard hollow bones, are often fed to dogs when an excess of them is available. In skinning some almost inedible Eider ducks, the writer has thrown the carcasses to sled dogs and seen them eagerly devoured. That dogs avoid eating birds with their hollow sharp bones because

of possible intestine puncturing results, is pure fancy. They will eat them on every occasion, even ptarmigan being no exception, and apparently with no bad results.

MAMMALS OF THE CHEVAK AREA.

Outstanding, for Alaska, is this area, for scarcity of mammals. Not only is big game entirely lacking, but small mammals as well are greatly in the minority. Interior Alaska, where some elevation is to be had, often presents a wealth of big game that is to be hardly surpassed by any country in the world. As one leaves the timbered area, and approaches the Bering Sea Coast, all large animals are missing.

In discussing the mammals and furbearers of the Chevak area, the writer has consulted George Sheppard, trader at that place, and natives locally for much of his information. Sheppard has been in this area as the only trader for fifteen years, speaks fluent Eskimo, and is a very bright and observing man.

Often the total take, or average catch of furbearers will be mentioned in the following description and listings. This is not a proposition where the catch was divided and part of it sold here at Chevak, and the remainder at some other trading post. For a number of years there has been no other trading post to deal with these people. The

catches as listed, represent almost the entire catch of this area. The Natives are given credit at Sheppard's Store, and are then expected to pay up when they get any fur. Rarely do they fail to do so because of taking their goods elsewhere, as any other posts are entirely too far distant for such to be done.

It is to be noted that in an area of similar size, in comparable country in the Mackenzie Delta of Canada, the fur take would be many times more than is the case here. In reality furbearers are not abundant, and the writer feels that this scarcity is due to a lack of small rodents to feed them. The latter are quite scarce. Intensive hunting by the Native is not the cause, of poor fur catches. Their methods of taking animals are quite primitive, they have few traps, and still hunt the majority of their animals.

Much of the Chevak area is flat low-lying country, with tide streams cutting it into a labyrinth of narrow creeks and channels. The rise and fall in these are over six feet. In the past few years, there have been large tides, aided by west winds, that almost have covered the total of this flat area. Wildlife no doubt suffered severely from such storms, and naturally, even in normal years do not heavily populate it. Many of the more transient mammals, such as the foxes work out into this

area during the frozen months. It has been remarked that trapping is much better farther inland, fuel abundant and fishing better, yet the Eskimos of this area cling to their ancestral hunting grounds.

Mice.

One species of mouse was noted at Chevak, and one caught and skinned by the writer, has not yet been identified at this writing.

According to the natives these rodents are fairly numerous, but never to the extent that lemming are in the Canadian Arctic. Probably this small mammal scarcity is partially responsible for the shortage of white and colored foxes in this area.

Shrews.

One rather large shrew was caught in a mouse trap. It was termed locally a mole by the Natives. Whether true or not, the writer does not know, but the Eskimos claim, that while these little mammals are often fairly plentiful, foxes and predators will not eat them. George Sheppard told of a cat that caught and ate one, and became almost immediately ill and would not again touch another one, after disgorging the one it had eaten. Of interest, he said, was the fact that in his trading post,

they were far more destructive to his goods than mice. The latter cutting flour sacks and getting into things they were interested in eating. The shrews would as like as not, eat through a big bolt of cotton drill, dry goods, a 60-pound chest of tea, or anything that they could gnaw through.

Muskrats.

Muskrats are one of the common furbearers purchased at Chevak, though locally they are not present. Native hunters come inland from the coast to hunt these rodents in the spring, and must get well above the tide country to find them. There is so little protection for them in the low banked fluctuating rivers, and the shallow lakes, that through necessity, they are to be found only where water levels are more stable and lakes deep enough to prevent their freezing out.

Muskrats are much more abundant in streams and lakes closer to the Yukon River, and much larger kills made there by the spring hunters as a result. Inland from Chevak a few miles, muskrats are to be found in limited numbers and increase in abundance as higher country is encountered. Larger and deeper lakes are reported to have them in considerable number, though often the Natives spoke of finding in the springtime lakes well dotted with

muskrat houses, and no rats present, evidently freezing out.

In operating the Chevak post fifteen years, Sheppard this year purchased more muskrats than in all other years combined, about 7000 or 8000. Some Natives got as many as 200 per man. All these were shot, no trapping of these animals being done. Good Grade. Price paid, \$1.00 each.

Mink.

Mink are one of the surest fur prospects of the Chevak area, and are to be found throughout much of the country, from the Coast to the Yukon River. As many as 1200 mink are purchased yearly, (usually 500-800), in this section. Many of these animals are trapped, but some of them are still hunted and shot by the Natives. These mink are a fair grade and average about \$12.00 to \$15.00 each.

Sheppard stated that during mild winters the catch of mink is greatly increased, they being prone to hole up, or remain where they are not available to the hunters. In this country of hardpacked frozen snow of no great depth, the wind reaches high velocities, and fragments of moss and lichens often blow along the snow surface almost like dust. The Natives say that in

very cold weather when this blowing takes place, mink will not come out as they do not like the fine particles of debris in the air. The writer has noted, that when walking with the wind, this moss is dislodged and fine particles get into one's eyes with no very pleasant results.

Otter.

A few otter are taken around Chevak each year and command a good price, probably a bit above the regular market, as Sheppard has a sale for all that he catches to private individuals, for the making of women's fur coats.

All otter are shot, and none trapped. As many as fifty have been purchased at Chevak in a year, but probably on an average, a dozen or fifteen are taken. Prices this year ranged up to \$15.00.

Weasels.

Ermine are a scarce article this close to the coast. Possibly a dozen a year are brought into the trading post, and have a standard price of fifty cents each.

White Fox.

White foxes brought into this trading post at Chevak probably average about 150 yearly. In good years more are taken, and in poor years but few. A kill of twelve by a Native, in a winter is exceptional, and the average is probably about two per man per winter, and at that, much time is spent in the hunting of them.

of interest, is that foxes are never trapped here, but rather are still hunted by the Natives. Also, though a relatively small animal, all are shot with high powered rifles, 30-30's or preferably of recent years, 250-3000 Savages. Bullets are solid steel jacketed so do not expand and tear the pelt to pieces, but the size of the guns used in this work is really amusing.

Prices this past winter for white foxes averaged about \$18.00 each.

Colored Foxes.

About half of all the foxes purchased at Chevak are Red Foxes, or color phases of this species. Silvers are rare, and do not average one in the lot per winter. Also Cross foxes are much in the minority

compared to the run of them in the Canadian Arctic. The Red fox here is of fine color, and differs markedly from those found inland towards the Yukon River. These Reds are quite large, and have much redder fur than those to the east of them.

This year about \$10.00 was the average price paid.

Pacific Bearded Seal.

Mukluk or Oog-ruk (Eskimo)

This large seal is eagerly hunted by the Natives and a good price obtained for their skins, as well as seal oil and dried meat being obtained for them.

The Mukluk, or full grown species of the Bearded seal, brings the standard price of \$10.00 each locally. They are also sold at the villages on the Yukon river for boot soles, and are also utilized to some extent on the coast for the making of large skin native boats.

This same seal when younger is taken and skinned and the hair carefully scraped from it, and dried flat as is the large 'Mukluk'. This smaller, thinner skin in the trade is known as a "lovetack" and is also utilized in boot soles, particularly in winter footwear. These skins are purchased at a standard price of \$7.50 each, and the foot wants of the country takes

all that the natives can bring in and sell.

Harbor Seal.

These small seals are common to this area, and on occasion, as do the large Mukluk, come inland in the tidal rivers. They are common on the bays of the Bering Sea and are skinned out through the mouth, into a poke, and sold with the hair turned inside in this manner. They bring 75 cents each. They are mainly used in the making of tops for waterboots, and at times are skinned and the hair removed and sold dried flat at a much better price.

Spotted Seal.

These seals are killed in some quantities at the Hooper Bay area and are utilized as other seal skins mentioned above.

Sea Lion.

Three sea lion skins were brought to Chevak this summer, and the first ever seen there, they were killed off cape Romanzoff.

Walrus.

Walrus are taken off shore from Hooper Bay, though not in the quantities that they are found in heavier ice farther north.

These animals formerly furnished considerable revenue for their ivory, as well as the value of their meat. Of recent years the ivory price has been quite low, and little is realized from it. Only of the last year or so, have the primitive Natives of this region attempted working ivory for sale to shops further out to the tourist trade. Their efforts to date are quite crude.

The writer is rather alarmed at the attempt being made by the Government to induce the Alaska Natives to take up ivory carving. It is a commendable thing for the ivory of these beasts that are taken for food to be so utilized and an added income brought to the Natives. However, at present the Native is killing entirely too many walrus in order to get the ivory for these salable trinkets.

While Hooper Bay is rather out of the walrus country, the writer found two of these giant beasts dead there upon the beach with just their ivory tusks and teeth removed. These animals were drifted in by

wave action, and bore mute evidence of the traffic that there is in this ivory trade.

A transient trader that visited Hooper Bay this past spring, told Father Fox of finding forty of the dead animals along the Alaska coast and stated that the King Island Natives were slaughtering these big beasts for the ivory alone.

Walrus are not so numerous that they can long endure this persecution. It is to be noted that the Eskimos are able to kill them from small skin boats with harpoons. Now that all natives have high powered rifles, the walrus do not stand a chance. Often the hunters shoot walrus that it is impossible to immediately retrieve, saying that they will wash up some place, and someone will get the ivory.

It is imperative that some action be immediately taken to stop this wholesale slaughter of walrus. Drastic laws should be introduced, limits on these beasts set, and the making of a commercial thing of the ivory soft-pedalled. It is interesting to note that the Department of the Interior, through their Native crafts educational work probably are unwittingly responsible for this added take of walrus. By the same token, the same Department should through the Fish and Wildlife Service, make immediate steps to

restricit indiscriminate killing of these rare animals.

White Whales.

The Beluga is extensively hunted in summer months around the Hooper Bay area, and on occasion they are taken inland on streams as far as Chevak. Their oil for winter use is saved in large quantities, and the flesh of them is dried and put away for winter needs.

The skins of these mammals are rarely used for foot gear, as in the Western Arctic of Canada, being very slippery in the wet mossy tundra.

Other Mammals.

Only rarely are any other mammals ever found in this Chevak area. A stray wolverine, or Marten has been noted in many years time. Bear are seldom seen, and Caribou, moose and Mountain Sheep are absolutely unknown here. Not many miles on the airline inland, in the higher country, many of these larger animals are to be found. To the south a hundred miles, the Large Alaska Brown bears might be found, but rarely have these animals been noted in this district.

Once, many years ago, within the memory of some of the older Natives, Caribou were plentiful. Today

there are none, and only a few of their domesticated relatives, the Reindeer, are to be found around Hooper Bay, and up the coast.

Polar bears are very rare. Possibly one track a year might be reported inland from the Coast a few miles, and on account of the lack of sea ice, they are rare off the coast from Hooper Bay.

One Arctic hare was seen at Hooper Bay by the writer.

PLANT SPECIMENS SAVED

Every effort was made by the writer to save all the plants encountered in the Chevak area. As practically all plants observed were either close to the water, or in water, it was felt that any of them might be utilized by waterfowl. The only specimens not taken were the mosses and lichens, the willows, and a few other shrubby plants.

It was endeavored to get plants when in bloom, though often this was not possible, in like manner several plants were kept in earlier stages, and later found further advanced, and were retaken.

In the past, without blotters, and with a makeshift press, the taking of plants was a decided chore. This summer with proper equipment better luck was had. However,

the writer was often far from his home base, and with a boat inadequate to cover rough waters it was often almost awash, and a plant press was not carried, but the plants taken were brought home in wet condition, and then put up as best could be done. Often long spells of rain lasting several days, in one instance seventeen days without sight of the sun, made the preservation of the plants most difficult.

When leaving the Chevak area, with all the plants not dry, it was necessary, because of flying, to come out as light as possible and blotters and boards had to be left behind.

As was the case in the Western Arctic of Canada a year ago, not many plants were present, and often it appeared that most of them were utilized by waterfowl. It is hoped, that it will be possible to add to the food habits knowledge of waterfowl and other birds in this area by the taking of all the plants apparently present, and the painstaking saving of all stomachs of birds that were obtained either by the writer for their skins and future identity, or by the Natives for food.

Following are listed the identification of all the plants taken, by the Division of Food Habits, Fish and Wildlife Service, in Washington. No attempt was made to identify these plants in the field only in a

general way, though the writer had very good books of reference. Time was not available with other duties at hand. Location, and date obtained were kept for each plant specimen, and with exception of some of the Potamogetons almost all plants collected were most abundant. Plants have not as yet been identified.

CLIMATE OF THE CHEVAK Hooper Bay Area

The climate of this area, during the period worked by the writer, that is June 21 to August 12, should probably better not be described at the present writing when a rainstorm with almost gale wind, is raging. In general this period was decidedly on the wet side, and when not raining, was heavily overcast over ninety percent of the time.

Such light conditions made the taking of pictures decidedly difficult with resultant poor returns. The month of May, and the early part of June, the writer was told, was very clear and bright. It would have been possible at such time, to have made an adequate picture survey of the nests, eggs, adults, and downy young of waterfowl and shorebirds.

Temperatures were much more moderate than the Arctic of Canada. Had such bright sun been experienced, even on this flat area close to the coast, often it would

have been almost hot. Woolen clothing and underthings were worn throughout the summer, and often Natives were noticed wearing their fur clothing. One great inconsistency being the Eskimo children that often as not would be running around barefooted, and clad in fur parkas.

PICTURES

As stated above, weather was not conducive to pictures that the writer hoped to obtain, and because of the late date many of the subjects most desired were impossible to photograph. Colored still pictures were almost an impossibility, they being of necessity valuable only when extremely well illuminated by flat sunlight. As a result the writer returned with the most of these negatives unused.

Motion pictures, also taken entirely in color, were greatly restricted by the poor light and lateness of the season. However, they were taken, regardless of weather with the hope that some of them would be usable.

Black and white still pictures were greatly curtailed by poor weather because of the wish of the writer to take flying pictures of the birds, necessitating speed of shutter of at least 1/500 of a second, and preferably 1/1000.

Only a few rolls of such pictures were taken, and to get proper speed, filters had to be entirely dispensed with.

It is the writer's belief, that the possibilities of this area, earlier in the season than when visited by him, are very great, to get a very composite film of waterfowl and shorebirds. The need for such information as this is very great. Not only would such be favorable publicity in the United States to be shown before Sportsmen and other groups, but a copy of such film would be well used in Alaska by the Fish and Wildlife Service there.

There are many species of birds, such as the Eiders Emperor Geese, Cackling and Lesser Canadas, and the Whitefronted Geese, that could be better taken at this locality than any place ever visited in the North by the writer. Also many of the shorebirds are present, and sufficiently abundant, that they too might be photographed. The possibilities along the Bering Coast are also great, for the making of movies and stills of birds not commonly observed in the U. S. A.

Such film could be well used along educational lines to call to the attention of the public the value of Alaska as a bird nesting area, as well as to actually depict the summer life of many of these rarer birds.

MAPS

Maps of this area inland from the Bering sea coast are not only very poor, such as are obtainable, but in general those available are most inaccurate.

With airbases springing up in Alaska, and the need for practice reconnaissance flying, the time seems most opportune for this area, at least between the Kuskokwin and St. Michaels, and inland as far as the Yukon River, to be airmapped.

From the writer's experience in using airmaps of the 10,000 square miles of the Mackenzie Delta in Canada, and the knowledge of the short time spent in obsolete planes in the mapping of this area by the Royal Signal Corps of Canada, the idea of such an expanse of country as this so closely adjacent to the Orient and Siberia being unmapped, seems almost a crime.

Planes were observed by the writer this summer, of Military design, over the Hooper Bay area. A few round trips of such nature on a clear day might result in the complete mapping of this entire country. Such information would not only be a great value to the many hundred people that live in this district, but such mapping would be a great aid in the only transportation

possible here, and prove of great help to local flyers. From a military standpoint, such maps, plus the radio equipment in the planes, would make it instantly possible to find any plane that need make a forced landing. Such would also reveal any possible bases of an Enemy to this country, in an area so isolated that such could be more than possible.

Were it necessary to send planes long distances, at great expense here to do this job requiring but a few flying hours such ideas as airmaps might be preposterous. However with military bases at Anchorage, Fairbanks and Kodiak, and practice flights being made over this area, it does not seem unduly greedy to request that such mapping be done.

The value to the ground, or rather the water traveller of this unknown area, of such maps would be difficult to estimate. Natives would work out farther, take the short cuts as revealed by this very effective system of map making, extend their activities, and be in general a much more self-supporting people. To study this area, biologically, and geologically, such mapping would lessen the work 75 percent.

It had been the writer's intent, with his equipment and lenses for his camera adaptable for airmapping, to photograph much of this area this year. However the

planes that were supposed to be available by the Fish and Wildlife Service out of Juneau did not come into this area as planned, and such mapping was impossible.

To attempt biological work, in a country of this scope, without any maps whatsoever of the area, is a rather laughable thing. The writer was fully prepared to do this work with any airplane help whatever, and basically this is a first step, if anything tangible is to come of the investigations performed here.

WATERFOWL PROSPECT IN CHEVAK, HOOPER BAY AREA.

To give a comparison with previous years of this area as to populations of waterfowl is impossible, because the writer has never visited it before. However, from observations of others it is most evident that ducks have shown a decided increase in this district. Geese have not increased to any extent, swans have increased many fold.

The common shooting duck of this area is the Pintail, and they are to be found every place. Their broods, as compared with other ducks are large. In case of the Eiders, Green-Winged Teal, Greater Scaup, Shovellers, Mallards and the few Baldpates, broods are not large and their resultant increase should not

be fast. From all indications here, this was a normal nesting season.

Goose broods near the coast are much smaller than inland where more cover is available. This is also true of the ducks to some extent, though not so marked. It is felt that predator pressure, both as to birds and Natives have much to do with this condition. Glaucous Gulls and Jaegers are not so abundant farther inland, and the Native population practically is nil in this inland country until one gets within a few miles of the Yukon River.

WATERFOWL ZONES

As noted in the Arctic of Canada, there seems rather definite zones for nesting which the various species of ducks and geese utilize. This zone here is about the same so far as species are concerned. The main exceptions in both places being the White-fronted Geese, Pintails, and Little Brown Cranes. These birds may be found almost from the very coast inland, well within the limit of the growth of trees. Other waterfowl and birds seem to have a more definite preference.

On the salt tidal low areas close to the coast, Black Brants, Cackling Geese, Eiders, Emperor Geese, and always a few White-fronted Geese, Pintails and

Sandhill cranes are to be found.

Further inland, and where tide action is not so marked and the tundra a few feet higher, the Eiders are rare, Black Brants are entirely absent, Lesser Canada geese appear and White-fronted Geese increase. Emperor geese are rare, Green-Winged teal make their appearance, Pintails are plentiful and Cackling Geese begin to taper off.

Above the action of tides, the tundra while still almost perfectly flat is higher and has practically all the lakes of fresh water. Here the first mallards are found. Green-winged Teal are common, Greater Scaup, a few Shovellers and American Scoters are to be found and White-fronted Geese, Pintails and Little Brown cranes are still abundant. Also Whistling Swans are probably most numerous in this area, though they are to be found to some extent almost to the coast. The first Canadian Geese of the large variety are also here but in a very limited number. In fact, they are in no place numerous, and but a pitiful few are to be noted as compared with the other geese.

Inland beyond this zone the willows may attain a height of several feet, Alders are dense along the stream banks, gnarled and twisted, but are several feet in height. A few miles more and small stands of

trees may be observed. In such an area the Pintails, White-fronted geese, Mallards, the first Baldpates in any number, Green-winged Teals a few Canadas, Swans, Little Brown Cranes, Greater Scaups, Shovellers, American Sooters, a few mergansers and Golden-eyes may be commonly noted. Also a smaller species of Canada Goose is quite common. While the writer is not sure of the identity of this bird, it appears to be a Lesser Canadian Goose.

BROOD COUNTS

As previously briefly mentioned, in the inland areas, above tides, and where willows and the more abundant and dense alders offer in places an almost impenetrable jungle of vegetation, the broods of the geese and ducks are larger to a marked degree. Here one may see as many as nine or ten geese in a brood, where commonly in the tundra area the broods average about four youngsters.

The writer deems brood counts as one of the most important steps in the study of waterfowl increase in a given area from year to year. Such not only indicates the success of the nesting season as to weather, but indicates as well pressure by predators and Natives. A comparison is thus to be had. For future reference

in determining the success of a given year's breeding season.

Contrary to the finding of some, there seems little doubt in the mind of the writer, that in areas of dense cover, the broods are larger. Mammal predators are more numerous in such instances, but avian killers are at a decided disadvantage, as well as egg eating birds and egg eating Natives. Nests are much harder to find, and the young birds once hatched out have a ground protection until such time that they are too large to be taken by the average predator.

The writer has long been of the opinion, that the take of young birds in a nesting area by predators, weather, and other unfavorable factors, is about a constant thing, regardless of the type of area, or the nature of the reducing agent. For example, when Snowy Owls are making heavy inroads upon young geese, it was observed that during that particular year, the Jaeger and Glaucous Gull depredations were almost nothing. However, in this area, this particular year, there is little doubt but what the country with the more dense cover reared the largest broods of ducks and geese.

In taking brood counts, it is often impossible after the young birds reach a goodly size, and the adults are moulting to be able to separate the families

with any accuracy and determine the size of these units. It is much more satisfactory to be with the birds before hatching time and first make egg counts, and then counts of the young as they come off, and still later to make counts of the youngsters as long as it is possible to do so.

Because of getting into this area a month late, much of this work could not be done. The following table does indicate the size of the broods as found, in the different species of waterfowl. In some instances, dozens of families of waterfowl of a given species were observed. In others, but few were to be found and the average in such cases probably might vary a bit from what it really was.

Brood Counts

<u>Species</u>	<u>Young per Brood</u>			<u>Density of cover</u>
	<u>Min.</u>	<u>Max.</u>	<u>Average</u>	
Black Brant	2	6	5	Sparse (Sea Coast)
Emperor Goose	1	10	5½	Sparse to medium
Lesser Canada Goose	1	9	5	Sparse to heavy
White-fronted Goose	3	9	6	Sparse to heavy
Cackling Goose	3	8	4	Sparse
Canadian Goose	4	10	7	Heavy
Spectacled Eider	1	6	3½	Sparse
Old-sqaw Duck	1	5	3	Sparse to medium

(Brood counts - continued)

<u>Species</u>	<u>Young per Brood</u>			<u>Density of cover</u>
	<u>Min.</u>	<u>Max.</u>	<u>Average</u>	
Stellers Eider	1	5	2	Sparse
Am. Sooter	2	8	5	Heavy
Pintail	2	12	7½	Sparse to heavy
G.W. Teal	4	7	5	Heavy
Mallards	5	12	7	Heavy
Shovellers	3	7	5½	Heavy
Baldpates	4	10	6½	Medium to heavy
G. Scaup	3	8	5	Medium
W. Swans	2	6	4	Medium
L. B. Crane	2	2	2	Sparse to medium

Shorebird broods could not be taken on account of the ability of the youngsters to hide in the tundra. A few late nests observed, rarely had the usual four eggs, but more commonly two and three.

PLANS FOR FUTURE WORK.

In order to have any knowledge as to the ranges of different birds, and waterfowl, their relative abundance, and to determine from year to year their progress as to whether they are increasing or not, a gigantic task must be performed in Alaska to determine this.

From consulting Mr. Frank Dufresne, Executive Officer of the Alaska Game Commission, it is probable

that from the Aleutian Islands, northward along the Arctic Coast, even around Point Barrow to the Canadian Line a general survey must be made. In key areas detailed study will be necessary and periodic visits made at regular intervals to determine the status of birds in these areas, once basic figures have been obtained for comparison.

Transportation for such work.

Ground work must from necessity, be done by boat. Winding streams must be worked out, close adjacent potholes and small lakes must be covered afoot by much wading and travel of soft tundra. This type of work comes under the category of detailed study and horse and buggy methods need be employed.

In the Chevak Area for example hundreds of miles of streams might be covered with a boat of 20 feet minimum length, and a small folding boat, or Kayak taken to be used in very shallow areas, or portaged into lakes. The larger boat, while far from a comfortable thing, will ride the waters that are often windswept, wide, shallow, and rough, and haul a respectable camping gear. Such a boat is still not too large to pull out in country where excessive tides are present and in case of emergency a canvas top can

be rigged over the load and one can sleep aboard, and even do a minimum of cooking with a Primus stove or a gasoline stove. It might be noted that such type of stove is about all that is possible, for there is little opportunity to secure wood in most instances.

A boat of 20-foot length could often be worked around the coast line under very favorable conditions, and other areas visited. When a given district had been covered, it might be shipped via larger boats into other areas at not too great a cost.

Use of Plane.

In order to determine what are key areas, and save several years of slow arduous work from the ground in discovering them, a plane is the only present method whereby such districts can rapidly be noted for future and more detailed work.

Once these areas are located, and the ground work done, the plane would make possible the checking of practically all the Key areas in a few weeks time, by carrying a small folding boat aboard it. Waterfowl trends could accurately be measured from comparison with previous ground work data.

As previously stated, the use of airmaps for such work would be invaluable, but if necessary, were a plane

available, maps might be made with personal cameras, permitting the revisiting and measurement of an area, and the ground work located accurately enough that the areas might be reached by boat. Otherwise without fair maps, the area might never be found at all.

CHEVAK, HOOPER BAY AREA

The writer plans, if such is desired by the Fish and Wildlife Service, and the Alaska Game Commission, to work the area between the Kuskokwim River and the mouth of the Yukon from the ground, with some such equipment as above described.

To do this, it is planned to fly by Commercial plane to Chevak around May 1, before the break-up and observe the migration of waterfowl as they come into this district. Sufficient equipment has been left at Chevak, providing that a boat be shipped into that place to do this job. Outboard motors, camping equipment and scientific supplies were packed and stored at the trading post there for future needs. As it is impossible on account of the excessive cost to haul this equipment out by plane anyway, all supplies were packed and left behind. Should it be desired to do no more work in this area, the equipment must be hauled out to the Yukon River for shipment, and arrange-

ments have been made to have this done.

When this district is visited in early May the same area will be covered by the writer during the nesting season that was covered this year after that date. Egg counts, brood counts and other observations will be made. It is hoped that at such a time weather will permit the photography of nests, eggs, and downy young birds.

After the hatching season, new areas would be visited, and areas located by plane for future checking, if, and when, a plane is available.

It would be planned to leave this area early in August, or possibly by the middle of July, and return made to Juneau in order to have mail and keep contact with the outside.

Early in September, a month spent in the Aleutian Islands observing the migration of Waterfowl through that area would give a good picture of the coastwise travelling birds and their species and number. It might be possible in many cases to work out a method of estimating trend in such populations from year to year.

In addition to the Coastline of Alaska, and the myriads of birds that should be located, the interior of Alaska produces many waterfowl, of which little is

known as to their abundance, locations, and species. At least one summer need be spent, with such boat equipment as mentioned above, to dig out these various areas. The Yukon flats, the upper Andreafsky, Upper Kuskokwim and many other rivers are without doubt large producers of both ducks and geese.

The writer feels that for interior work in waterfowl reconnaissance there is a great need, but to jump into that, with all the equipment here on the ground in the coastal area seems hardly the thing to do at this time.

From Frank Dufresne, it was learned a complicated migration of waterfowl took place through much of the interior. Some of the birds going almost north in the Fall, probably in order to hit low passes and eventually work into other Flyways other than the Pacific. There is little known of this, and the writer has discovered from talking with residents along the Yukon, that such is true.

There will be, with detailed study, and adequate equipment on the Alaska Coast, many new species of birds of Asiatic origin discovered. The greater part of these will be closely adjacent to the Bering Sea coast in areas that it was impossible to reach with small equipment this past year.

The use of a plane for contact between the ground work and the outside cannot be overemphasized. Not only could the greater part of the work actually be carried out from the air and landings made in small aircraft to do this, but such things as supplies and mail could be brought in, and the poor devil on the ground relieved as to the status of his family "outside".

It has been noted that to do much work with waterfowl, once the adults have reached the moulting stage, and the young become quite large, it is most difficult. The old birds at such times are most adept at foot work, and in the flat country can see one so far, that when attempt is made to approach them, they keep so far distant that little can be learned of them as to numbers or habits. The young, too, at this time are able to keep out of the way almost as well as their parents.

At this time, during the latter part of July and the month of August, one not only does not accomplish much, but loses heart in the whole work. Then, too, at such a time one has been out alone for a considerable time, and outside world contacts are desirable. For these reasons, it is planned by the writer, that for any future work that he does, to either have much better outside contact, and that is only possible via air, or to divide the summer's work into two trips. A

period of about a month might well lapse between them.

In the Western Arctic of Canada through the much shorter season of the birds being in their breeding grounds, usually a little over two months was sufficient to make about all the observations possible. In Alaska the birds as a whole remain longer in their nesting ground, with that great gap in the middle of their stay, when little can be done with them.

By reaching any nesting area in this vicinity before the waterfowl actually start with the incubation of their eggs, the question of predator damage might well be settled once and for all. That is as far as avian predators are concerned.

The spring take of these Natives is another thing that might be better studied, and may prove to be of much greater importance than supposed. For example, the ducks are little bothered by the Natives, and are very heavily shot outside, yet they are making a good comeback. By contrast, fewer geese are shot outside than commonly supposed, and in the nesting grounds of all the North ever visited by the writer, are heavily shot whenever opportunity presents itself. From consulting Natives and Whites of this locality, it seems that the geese here are not doing so well, and that their increase, if any, is in nowise with that of

the ducks. It would be desirable to learn more of the Native Spring take of geese.

More on Boats and Equipment.

The writer figures that his efficiency for the period spent in the Chevak area was cut fully in half by the lack of an adequate boat. The equipment used was a personally owned folding boat that would carry about a full ton under ideal smooth water conditions. The beam of this boat was about four feet, and the length twenty feet. The height at the bow was twenty inches, at the stern fifteen inches, and the sides about sixteen inches.

Such a boat is very valuable when nothing else might be had. It can be hauled in a medium sized plane that will carry two parcels of 100 pounds each and $6\frac{1}{2}$ feet long, however it has many disadvantages. It is too low to prevent the shipping of a great amount of water when even medium white caps are encountered. With use and age it spreads out, banding in the ribs until it lacks its normal freeboard, or side height. It is a cranky thing to attempt to get in or out of, being overly flexible, giving one the feeling that he will step clear through the bottom of it. An acrobat or a near one is about the only possible

person who can, over a period of time get in and out of this boat without falling either overboard, or all over the equipment in the boat. The latter procedure being very destructive to breakables such as cameras, mosquito guns, radio equipment and the like.

As all rivers here are extremely crooked, and the wind maintains a high velocity the most of the time, it is almost impossible to pick weather when off shore wind will be the only one encountered. There are long stretches where severe wave action is encountered and often in a run of thirty miles one travels toward all four points of the compass. Such rough water not only causes great damage to equipment as it is impossible to keep the outfit dry, but wet bedding, tents, plant press and the like are neither conducive to good health, or good work. Also the tail board and the 2 x 4 keel in this boat would at times barely stand the strain upon it in such wave action, and often it was more than possible that the whole rig would fly apart. Such would without doubt, result in the drowning of an Eskimo as few of them can swim, and the rivaling of Leander at the Hellespont by the writer, in saving his own hide. The prospects of walking, then, out to any settlement would be anything but pleasant.

For above reasons, in the usual heavy weather, it

was necessary to do much unnecessary walking, laying up to wait for weather and the like. The writer had made arrangements with the Kashunuk Eskimos to attend a goose drive that they were holding the last week in July. It was found that when that week arrived, for a period of seven days it was impossible to leave Chevak on account of high winds, day and night. As this boat would take no motor larger than a 5-horse without collapsing it was necessary that advantage be taken of all tides, and they are high and swift of current. It was impossible to travel against such tides especially when the wind was also adverse. The resultant waves being too large to negotiate.

The pictures of such a goose drive not only would have been the only thing of such nature in existence, but might have been well used by the Fish and Wildlife Service in determining future policy to be practiced in Native country where such practice is carried out. The banding of a great amount of juvenile geese would have resulted, and probably more than trebled the banding done by the writer at considerable foot work during the whole summer.

It has been noted by the writer, that the tougher the assignment was in field work, usually the tougher was the equipment. As compared with the Western

Arctic of Canada, the work thus far experienced in Alaska is definitely easier. There is food here to be had, airplane facilities, radio (if one has a radio) connections, and cheapness of gasoline and shipping of equipment into an area to be worked. Airplane charters here are \$40.00 per hour for a 5-place plane. In the Canadian North such is \$75.00 minimum and goes up to \$150.00 per hour when out-of-the way trips need be taken. Certainly a \$300.00 boat and possibly a \$200 radio sending and receiving set would not be out of line for field work here, as compared to the cost of working with next to nothing in the Arctic.

MAIL AND OUTSIDE COMMUNICATIONS

One mail was received by the writer after the Yukon River was left early in June. The latest of it was mailed on June 18. No other mail was to be had until departure had been made in August.

It was believed that mail would be brought in once or twice at least, by planes of the Fish and Wildlife Service in Alaska. Such, however, did not appear, either to bring the writer some knowledge of the welfare of his family, or to do preliminary reconnaissance work over this unmapped area. Had it

been known that such would be the case, arrangements at personal expense would have been made for one mail at least, and one hour's flying over some of this Chevak area.

Bird Bands Recovered.

The Eskimos of this district are not adverse to turning in bird bands that they recover. Some are given to local traders, and some go to the Missions. However, there are few recoveries other than geese as these people do not hunt ducks to the extent that they do geese, as ducks are not so available. Most of the duck bands are taken above Chevak in the area that spring muskrat hunting is carried on. This is as a rule above where tides are apparent and nesting cover is denser.

There was some speculation among the Natives, as whether the reporting of bands might get them in trouble, especially spring taken bands, or those taken out of season. Also some had the belief that the bands were worth something. One fellow from Hooper Bay reported that he gave a band to one of our Biologists a couple years ago, and was never given the data on it, that is, where it was banded. These people are extremely interested in birds, and are curious as to where the

banded birds they kill are banded. By giving them this data more bands would be reported.

Of especial interest to the writer, was a brass band taken on a swan, this bird was killed in the Fall of 1939 near Chevak,

The following bands were recovered:

38-508602, Green-winged Teal, banded October 22, 1937 at Malheur Refuge, Burns, Oregon by George M. Benson; killed near Marshall, April 15, 1941

38-508002, Green-winged Teal, banded October 20, 1937 at Malheur Refuge, Burns, Oregon by George M. Benson; killed near Mt. Village, May 1, 1941

A-703572, Whistling Swan, banded October 18, 1930 at Malheur Refuge by George M. Benson; killed near Chevak, Fall, 1939

38-623555, Pintail, banded November 2, 1938 at Lake Merritt, Oakland, California by E. W. Ehmann; killed 10 miles above Chevak, Fall, 1939

A-569790, Scaup, banded January 23, 1938 at Nehalem, Oregon, by S. M. Batterson;

36-624415, Scaup, banded December 21, 1937 at Nehalem by Mr. Batterson; killed 10 miles above Chevak Fall, 1939.

AREA BELOW KASHUNUK VILLAGE

With no maps whatever available of this region, it is difficult to describe the locality in which one works. However, leaving Chevak, the Kashunuk River is followed about 25 miles, as it winds it's way towards the Bering Sea. At the end of the 25-mile trip, a summer fishing village of about nine families of Eskimos is reached. Below this point a couple of miles a river, quite small, takes off to the right. This is the river on which the Kashunuk Village is situated. Below this point another five to eight miles, another small river takes off into the mud flats to the left. It is hardly fifty feet wide at high tide, and at such time is some ten feet deep. At low tide it is practically dry. This river was followed inland into the low salt water flats a distance of about three miles. From here, where camp was made, the low area was visited on foot.

Often it was necessary to wade shallow sloughs, more of the nature of ditches. These ditches may be almost dry at low tide, and the reverse, when the tide is in. Between these cuts in the flats, are hundreds and thousands of little lakes. Some but a few feet in diameter. It is extremely difficult to describe this

place. In addition to the "ditches" of steep sides and very muddy bottoms, there are little winding grassy bordered ditches also, that are not affected by the tide, and end often as soon as they start. Some are but a few feet in length, and possibly 18 inches in depth. Others wander aimlessly, and crookedly sometimes for several hundreds of yards. Also small lakelets are found, some only a few feet in width, others as wide as 200 feet. These too, have very grassy margins and are not affected by tide action.

In visiting this area around July 1, the following species of birds were observed, Cackling Geese, Black Brants, White-fronted Goose, Emperor Geese, Whistling Swans, Steller's Eider, Spectacled Eider, Pintails, Old Squaws, Glaucous Gulls, Glaucous Winged, Sabine Gull, Arctic Tern, Red Backed Sandpiper, Red throated loons, one Hudsonian Curlew, and a few Scaups, presumably Greater, Jaegers and Sandhill Cranes.

This area is a favorite of the Eskimos of the Kashunuk Village as a hunting ground, and it is here that they have their goose drives in the early fall. Yet young birds were plentiful, excepting that as a rule, the broods were small. Whether this small number of young was due to early egg eating tactics of the Eskimos, or to the predations of the gulls and Jaegers,

is not known. Possibly it was a combination of both. However, it was noted that in the case of Black Brants, in particular, that these birds were most numerous in the near vicinity of the Kashunuk Village, and their number of young seemed quite normal. This normality, being based on the observations made by the writer in the Western Arctic of Canada, where Black Brants averaged a little over four young per nest. Particularly hard hit, in that their broods were small, was the Eiders, both Spectacled and Steller's.

On account of this area being criss-crossed with winding tidal streams, the most of them not navigable except at high tide, and because of danger of being stranded with the boat on the mud. Walking was necessary, and but relatively little of the country could be observed. Wherever observations were taken, the birds seemed about equally abundant. The need of an airplane to determine the size of this great nesting country is quite acute.

The writer suspects there are thousands of square miles of fine habitat in the area between the Kuskokwim and the main mouth of the Yukon. Also it is far from being devoid of bird life. It is full of birds so far as observations were made. The great mystery of it all is where so many birds come from, and where they all go.

To determine bird populations in such an area as described above, is next to impossible. Because of the extreme flatness of the country, such sharp birds as the geese brants and sandhill cranes can see one coming from afar. They simply move on ahead and one never comes up to any of them. This is true also because of the small streams that wind throughout the area that the birds can swim, but the observer cannot.

Of especial interest is the muddy banks of all these small streams. Although the tide daily washes these banks slick and clean, nevertheless, they are almost a solid mass of goose and duck tracks. On the land, around the thousands of small lakes, the droppings of the birds are so thick, that it appears as if one was looking on a barnyard, where many fowl were kept in close confinement.

The above description was given of this area to picture somewhat the general appearance of this land closely adjacent to the coast. It is presumed that practically all of this zone or strip between the Kuskokwim River and Kwikuik on the Norton Sound are of similar nature. Also this area is one of the Key spots to be visited in future years.

CHEVAK AREA

A second key spot is in the immediate vicinity of Chevak. Here the land is higher, more of a tundra type, and the whole of the country is not subject to floods in extreme high tide. Dotted with countless lakes and many winding streams that are still subject to some 5-foot tides, it is however a higher land than the area below the Kashunuk Village. Here on higher ground the Eskimos gather salmon berries and the shorebirds nest in profusion.

Loons and Old Squaw ducks inhabit the lakes, the Elders are in a large part, absent. Over the rolling tundra one is almost constantly flushing Willow Ptarmigan. A few Emperor Geese nest this far inland, and Little Brown Cranes, a few Swans and Geese (presumed to be Lesser Canada) are in evidence. Pintail ducks are common, and other ducks of the "tipper" class begin to appear. Protuberant willows and alders are still absent, but the country is high enough that one is not afraid to pitch a tent lest he be afloat with an extreme tide.

INLAND AREA

The inland area is about forty miles above Chevak by the winding Kashunuk River, and possibly only fourteen miles by air. It is broken by channels that run into the Kashunuk and wind back into hills, some of them possibly 100 feet in height. Along these streams are tundra banks profuse with mosses, lichens and berries. On low bank sides of these streams are pockets of aquatic plants, and at times the stream cuts through a small lake. Here, in such shallows, pond weeds flourish. Often willows will attain three or four feet in height and alders form dense patches of cover.

Here one may find many common species of ducks, White-fronted geese, a few Canadian Geese, scaups and Scoters. Shorebirds and Ptarmigan use the open tundra area, and waterfowl inhabit the thicket fringed streams.

WOODED AREAS

Beyond the Inland Area where some growth of willows and alders is manifest, comes the wooded area. This continues on the Yukon, and beyond, indefinitely. Here trees are of such a size that one may make a log cabin, cut firewood, and run into thickets of under-

brush and timber so dense that one can only go through them with difficulty.

In this type of country the rivers are the only place where waterfowl may be noted. There are countless lakes, but these remain hidden by the heavy growth of trees along the river bank. In such environment one finds the Pintails, Mallards, American Golden Eyes, Sooters, Scaups, Shovellers, Baldpates and some of the smaller Canadas.

Throughout these four types of nesting country, the writer attempted to list the birds he observed that he was positive of identification. Anything observed about these birds that was thought to be of value or interest was recorded. The following descriptions of the various species as witnessed is anything but complete, and no doubt several species were not noted that possibly are common to these areas, particularly true is this of the shorebirds.

Red-Throated Loon
(*Gavia Stellata*)

These birds were quite common in all the area visited between the Yukon River at Pilot Station and out to the Bering Sea coast. Several of their nests were observed after the eggs had hatched in the little lakes throughout the tundra, and in the salt flat

lakes as well.

Several of the broods of two young were observed and appeared to be a bit later in hatching than the geese and Eider ducks, as the young were distinctly smaller and appeared much younger, at least a week or more.

The skins of these birds are sometimes used by the natives in making skin parkas. Eskimos of the Canadian Arctic say that this bird killed an old woman, thus the red splotch or mark upon its throat.

Pacific Loon
(*Gavia Arctica Pacifica*)

These loons were commonly noted between the Yukon River at Pilot Station, and the Bering Sea coast. Some were seen on the Yukon River as far up as Holy Cross Alaska. In areas visited by the writer, they were considerably more abundant than the Red-Throated Loons. Often one might see bunches of up to a dozen in the Kashunuk River.

These birds are also more adept at hiding their young than the Red-Throated Loon, and though adults were more numerous than the latter, the young were not often in evidence. One nest of the Pacific Loon was observed on July 12, and as yet the eggs were not hatched, and the old one was still incubating.

Skins of this bird are reputed by the natives to be very tough and make good parkas. Frequently they are taken by the Natives in their fish nets, and always the skins are saved for the making of garments.

Holboell's Grebe
(*Colymbus grisegena holboelli*)

A few of these birds were observed on the upper Kashunuk River, none were noted in the country subject to tides. At one Lake adjacent to the Tanana River, but a short distance from Nenana, a pair of these birds were noted one evening.

Whistling Swan
(*Cygnus columbianus*)

This bird was observed from the middle of the Yukon flat country, out almost to the coast proper. The broods noted averaged a little over four per pair of adults.

In the past, according to George Sheppard, these birds were heavily hunted. The kill on them was not excessive, due to the intelligence of the birds, and the poor hunting equipment of the natives. Considerable missionary work has been done among the Natives to discourage killing swans, and according to Sheppard, few of them are killed today. As a result, the swans are increasing noticeably throughout this area. The

writer personally found them as numerous as in the Western Arctic, where they are deemed as abundant.

The writer has little fear of the extinction of this bird either in the Canadian or Alaskan nesting grounds, provided that it is given protection. The Natives formerly killed swans on all occasions, and it is felt that they can stand considerable pressure by virtue of their keen intelligence. They probably are the most difficult of water birds in the nesting grounds to capture and band. Ever vigilant, they see their enemies from a goodly distance. With young of only a few weeks of age, these birds can outrun a saddle horse in the soft tundra. Consistently they keep ahead of a pursuer and always seem to have their route of flight so planned that the maximum number of lakes, streams and other obstacles are encountered. Also they always seek a fair wind, and with wings extended and flapping they take advantage of the breezes to such an extent that they almost fly as they scurry across the tundra.

That swans of this species are overly numerous in parts of the wintering grounds of the United States is without question, but the opening of a season on them would certainly have a bad psychological effect on the Northern Natives if they ever found it out. A swan to them is a large prized package of food, and it is only

of recent years that the killing of them has been discouraged in the breeding areas. Though extremely wary, the large size, and conspicuous color makes them ever vulnerable to gunners. Of especial detriment to them in the far north is the use of rifles in the shooting. Most of the Natives do not own shotguns, and during that period when their young are small, they can often be approached within rifle shot. With a shotgun, it is hard to get close enough to kill these large birds.

Baldpate
(*Mareca americana*)

On the Tanana and Yukon River, as far down as Holy Cross, the Baldpate was the most common of all ducks noted. On the Kashunuk, between Pilot Station and Chevak, a few broods were seen, but they diminished in plentitude rapidly as the flats were reached. One Widgeon was noted at Chevak, and none beyond towards the coast. Brood counts averaged about six birds per female. All birds seen were checked carefully but the European species was never observed.

American Pintail
(*Dafila acuta tzitzihoa*)

All along the line, down the Tanana, on the Yukon along the Kashunuk, and out on the flats toward the

Bering sea, the pintails were most common. This bird by far outnumbered all other single species in the lower Yukon area. For example, on June 16 on the Kashunuk River, the following broods were noticed and numbered as indicated, 6,6,7,8,8,8,8,8,10,9,9,9,9,10, 11,8,9,7. On this same date but four other broods of ducks of other species were observed. The Pintails in this instance averaged over eight per brood, much higher than ever observed previously by the writer.

One brood was noted at Chevak with 12 little ones in July. A late nest of six eggs was found July 7, and hatched July 9; this had six eggs and five hatched.

That pintail broods are larger than the broods of many of the other ducks seems questionable. However, the mother of this species seems better able to bring off all her eggs to a successful hatch, and guard her youngsters thereafter. This bird has long been believed by the writer to be the most abundant duck in North America, and the fact that she is so able to conceal her nest, and later her young no doubt is one of the major factors for this plentitude. The diversity of this bird and ability to nest generally over the main portion of North American of course tends to assure its continual perpetuation. But the fact that it is so adept at having a successful hatching season is a factor not to be over-

looked. Many other ducks seems to lay equally large clutches of eggs, but are poorer mothers and do not bring their broods through to flying age with such regularity.

As a food bird the pintail is generally considered one of the best, though in this particular locality, where the natives are poor, ducks nesting inland, and geese much more abundant, not many of these birds are taken for food. The larger fowl are more easily procured, at much less cost per pound. Also pintail eggs, while readily eaten by the Natives are not so large as those of the geese, are hard to find, and are not unduly molested. One Pintail was observed with her young at Chevak that nested and successfully brought off her young within less than 100 yards of the trading post. This area throngs with Natives in the spring nesting time, and yet this canny mother escaped their most vigilant eye.

Green-Winged Teal
(*Nettion carolinense*)

Green-winged teal were not plentiful at any place visited by the writer. Some were noted on the Tanana and the Yukon, and they were seen on occasion on the Kashunuk River. One pair with young were seen ten miles above Chevak on the Kashunuk River on July 7. Of interest

which will be mentioned possibly more in detail in another part of this report, was the fact, that many of the common ducks previously observed by the writer in Northern Canada, did in this vicinity have the drake accompanying the female and the newly hatched young. Previously it had been noted that the males usually left the females at nesting time.

European Teal
(*Nettion crecca*)

But one of these birds was observed in the Chevak area. It was noted, a male, only half a mile from the Eskimo village. The white longitudinal line, or bar, on the wings just above the speculum was easily distinguished, and the absence of the white crescent in front of the wing, as is common with the Green-winged teal was conclusive.

While a female teal was noted in a lake nearby, it was impossible to tell whether she was a Green-winged or European teal.

In the Chevak, Hooper Bay area, one has the feeling that probably he is seeing many European teal, but because of the preponderance of females at nesting time, one is never sure as to what species he is seeing.

Canada Goose
(*Branta canadensis canadensis*)

Four of this large species were noted on the upper Kashunuk on June 19. Mr. George Sheppard, trader at Chevak, told the writer, that the Eskimos knew of a few of these large geese nesting within some fifty miles of Chevak. Mr. Sheppard said that a couple of years ago he, personally, saw this species nesting in an area, where small islands dotted a rather large lake. Here on these tiny islands he found the nests of a few of the large common Canadian Geese.

The Eskimos of Chevak stated that these large geese were never plentiful, and only in this one lake area were they ever noted. Also they said that the Canada did not pass through this area on migration, so it is felt by the writer that this area about marks their Northern limit in Alaska.

These birds are reported to nest in the same locality as the Bristle-thighed curlew, near some rather large isolated lakes. Only rarely are these lakes ever visited by man. It is thought that because of this isolation, a few Canadas do nest there. It is planned to check up on this if the area is again visited by the writer.

Cackling Goose.
(*Branta canadensis minima*)

This bird first observed below Kashunuk Village, in the same area as occupied by the Black Brants, Emperor Geese and some of the Eider ducks. The salt flats being their chosen habitat.

In this unprotected area, the broods were small, and while not many newly hatched young were seen, those that were noted averaged possibly four to the brood. One brood of eight young were seen, but three were common, and many broods of two and a few of four were observed.

The goose drives commonly held in the vicinity of Kashunuk Village usually result in about 50 percent of all geese being taken as Cackling. The balance are principally Emperor Geese. That these birds are hunted with vigor for food, in the Spring months is quite apparent, and their eggs are gathered for food. At that, in the vicinity of Kashunuk Village, there were many Cackling Geese noted, within some four miles of the Eskimo settlement, and the greater part of these were with young.

Because of the close proximity to the ocean the nests of the Cackling geese are ever threatened by excessive high tides and windblown waters. In this

respect they are similar to the Lesser Snow Geese of the Canadian Arctic. It is felt, because of the narrow range in which these birds breed, that a severe storm might cause a very poor hatching season through the wholesale destruction of their nests.

The Eskimos reported a storm several years ago that covered several hundred square miles of this low flat coastal land. Such a thing would without doubt destroy a large percent of that year's supply of Black Brants of that vicinity, but as their distribution is much wider, such a threat to the young of the year would not be so marked. That such storms do untold damage to ground nesting waterfowl closely adjacent to the coast is without question. This was noted in a large Snow goose colony in the Canadian Arctic, by the writer in 1936. A similar instance was reported as reliably happening at the mouth of the Anderson River the same year--destroying thousands of nests of Black Brants.

Lesser Canada Goose
(*Branta canadensis leucopareis*)

This bird was first seen on the Yukon River, as far as Ruby. It was never numerous on the Yukon, but was far from uncommon.

When the Kashunuk River was entered at Pilot Station and the trip down it towards the Bering Coast was begun, this goose was by far the most common one observed. Young were first noted on June 17, and broods were counted that numbered 5,5,7,7,6,5,6,6,7,6.

By the generous use of the binoculars, many mated birds and their broods of young were seen along the grassy margin of the Kashunuk, that would not make themselves conspicuous by flying up; rather, by looking well ahead one might see an entire family slip out of the edge of the river in the grass some eighteen inches high, and entirely disappear. By the time the boat came along, the heads of the adults would not even be in evidence, as the birds crouched, completely hidden, and waited for the boat to move past.

From their abundance, it was felt by the writer, that the Lesser Canada Goose was more prone to nest farther inland than the Cackling Goose. The latter seeming to prefer the lower tide flat country and were much more abundant there. It was extremely difficult to tell these two species apart in flight until a place was found where both were present. That both are present, and distinctly different, there seems little doubt. The Eskimos recognize the difference in the size, and even know of the still larger Canada Goose.

Black Brant
(*Branta nigricans*)

Black brants were noted commonly below Kashunuk Village, some six miles. They appeared more numerous on this area, than they were ever noted in the Western Arctic. While no observations were possible during the incubating time, the old Brants and their few day old young, were in larger bunches than ever before observed in Canada.

True with other previous observations, the Brants seemed to average about the same number of young as in the Western Arctic. These birds have previously been described by the writer as especially good parents. Compared to the Lesser Snow Geese for example, the brants always are far ahead of them in completely incubating their eggs, and in bringing off their young to flying age.

Black Brants, are called "the black geese" by many of the Eskimos here, and are utilized for food, and their eggs taken when the chance presents itself.

Of especial interest in regard to these birds, the writer has been informed that the most of them come into this area from inland in the spring, that is, down the Yukon. As this part of Alaska swings well westward out into the Bering sea, it is believed by the writer,

that these birds on their north Spring migration, cut cross country, possibly from the east end of the Aleution Islands and come inland to reach their nesting grounds because of the more directness of, the route.

Until this was directed to the writer's attention, it was believed by him that black brants invariably followed the seacost. It was rare that any were ever observed in the Arctic inland over a few miles, and those were simply cutting across points then, in following the coast line of the Arctic ocean. In August of 1936 large flocks of these birds were noted near Herschel Island, out to sea some 10 miles and migrating coastwise towards Point Barrow. It was suggested at that time, by Natives, that this bird always follows the sea in migration, often as not considerable distance off-shore.

If these black brants of the Yukon Delta do make this inland flight in the spring, and there seems little doubt but what they do, they travel overland at least 300 to 400 miles in so doing.

Their fall migration, from all reports does not follow the spring migration, but at that time, rather, is a coast-wise proposition.

Emperor Goose
(*Philacte canagica*)

The first emperor geese noted were on some lakes of the Kashunuk River, some 55 to 65 miles inland from Hooper Bay. This was on June 20, and as the birds were paired, they were presumed to be nesting adults.

On June 22, directly behind the trading post of Chevak, the writer found an old emperor female and her brood of six young. As she was but a few hundred yards from this place and the surrounding tracks of dogsleds, Eskimos, and other marks of civilization, it was first presumed by the writer that these birds were abundant and tame. It was soon discovered that apparently there was not another emperor brood within two or three miles of this place, nor were any more discovered until the latter part of June, when the area 30 miles or more down stream, in the vicinity of Kashunuk Village was visited. Before this camp was reached, a few emperor geese and their broods were noted, in the tundra type of country. Then a gap in their abundance was experienced, for some seven miles, and again they were found farther out toward the coast in the salt flats frequented by the Black brants and the Eider ducks.

At no place did the emperor geese seem gregarious in their nesting habits, but were more like the White-

fronted geese, in that they were well scattered, and more evenly distributed throughout their range than possibly any other species of goose.

George Sheppard said that while he did not care personally for the flesh of these birds, they were considered very good by the Eskimos. They not only utilize the eggs of this bird, but the flesh as well. In the fall the Kashunuk natives usually hold goose drives, and these are also held at Hooper Bay, it is understood. About half of the geese taken in such drives, are emperor geese. The skins of these birds are also used for the making of parkas. It might be well to state here that the making of bird skin parkas has not been discontinued, but on the other hand such are not considered anything to be desired if reindeer skins, imported rabbits, arctic hares, muskrats, or possibly squirrel skins are to be had. The bird skin clothing is invariably found used by the most destitute of the natives. Anyone able to purchase other material will use it by preference. Even the hair seal are used for such clothing. One Eskimo who could talk a bit of English replied when he was questioned by the writer, if he ever used bird skin parkas- "no, me I am not so poor, I use reindeer skins". It also seems to be a mark of poverty and, in a way, degradation if one must

resort to this type of clothing. It is also stated that the birdskins in nowise compare to the skins of mammals for durability.

It is felt, after questioning natives and other, that the Emperor geese are not near as abundant as they have been in the past. This evidently is the result of Native depredations in this country, for they are not hunted any place else for sport or food. They might be truly indicated as the Eskimo's bird, so far as the Alaska Natives are concerned, and no doubt they are the ones who have reduced them. That emperor geese are killed to any greater extent than the cackling geese, for example, in this district, the writer questions. The Cacklers are more diversified in their nesting, and range over a wider area of country, and no doubt are more abundant. That emperor geese were ever abundant, as compared to many other species of geese, the writer doubts.

Contrary to previous reports, the emperors were found to be as intelligent as the average other geese found in this area. They do have the careless habit of usually flying rather low, putting them within shot-gun range of a hunter when they chance to fly his way. However, they are probably even wilder than the Lesser Canada and the cackling geese, and those noted, compared

favorably with the White-fronted geese for sagacity in caring for their young.

From the brood counts taken, it is indicative that these birds also incubated their eggs and raised their young with more success than any of the other geese in this lower more open country. Broods of 5,5, 6,5,6,6, were noted. Conover (Auk April, 1926) wrote of the tameness of these birds when incubating eggs, and after the young had hatched out. This is probably true, but it might be remembered at this period the birds are not hunted to any extent by the Natives, and does indicate the closeness with which they guard their young, and their nest.

The writer was impressed with the emperor geese, in many ways having similar habits to the lesser snow geese and the blue geese. In particular, the first sight of an emperor goose makes one think of a blue goose, and in a way they strongly resemble one another.

White-Fronted Goose
(*Anser albifrons albifrons*)

These sly birds were seen on the lower Yukon first, in early June, and when the Kashunuk river was entered about the middle of that same month, were more or less common the length of it, and out to the coast.

On June 19, on the Kashunuk, the first brood of

young were noted, seven in number. From then on, a few were seen at various points, on even below the Kashunuk Village, in the flat salt country frequented by the Black Brants. So canny is the White-front, that only by looking well ahead on the vast flat expanses, could they be noted, then always in full retreat with their offspring.

This bird, as elsewhere, is greatly liked by the Natives for food. However, due to their lack of gregariousness, they are well distributed and scattered, so that it is almost impossible to greatly damage their existence by egg eating, or by goose drives. In their flight around the tundra, they are rather careful and much harder to kill than any of the other geese, with the exception of the Swans. Being prone to flush more wildly and fly at higher altitudes.

White-fronted geese averaged about six young per brood. One bunch was captured well up towards the sand-hills above Chevak and demonstrated their ability to hide in the heavy cover. Of some fifteen youngsters driven ashore (probably two broods) but six were captured. Some of them were found hiding in the heavy fringe of alders along the stream, and others were noted lying prone upon the open tundra with no concealment whatever. Some of these birds were in this "frozen" attitude of

concealment for at least half an hour.

The writer believes that this area in Alaska probably has more white-fronted geese than any other similar one in North America. While this bird was not uncommon in the Canadian Arctic, they were never found to be so abundant as in this particular part of Alaska.

Natives, with their present guns, are not the serious threat to this species, as they are to the tamer varieties. Not many shotguns are to be found in this locality among the native people, and those that are present are in most cases single shot, cheap varieties. It was observed that some of the Natives still buy bulk shot and powder and load their own shells in brass cases, as was common 40 years ago in the United States.

Common Mallard
(*Anas platyrhynchos platyrhynchos*)

Mallards were commonly seen on the Tanana and Yukon Rivers. On the Kashunuk several youngsters were noted between June 15 and June 20. As surveys were extended on towards the Bering Sea coast, no mallards were observed below Chevak. Inland from the coast some 40 miles several pairs and their young were noted in July. One brood on the Kashunuk had twelve young in it, and large broods were very common. It is

to be noted that any mallards found beyond the growth of trees out towards the coast were only casuals. Their nesting seems to coincide with the growth of trees, and they are only rarely found where there is not at least a good fringe of alders along the shoreline of streams.

On all streams in interior Alaska where tree growth is present, the writer has observed some mallards. In fact they seem to rank second only to the pintail in their wideness of distribution.

Old Squaw Duck
(*Clangula hyemalis*)

This bird was commonly seen on all the area visited below Pilot Station in the country between that point and the Bering Sea. On the tundra it was, as is usual in the Western Arctic, most numerous. The writer has often wondered where all of these birds winter, so common are they throughout all the northern regions.

Old Squaw ducks do not seem to be too successful with the rearing of their young. In previous years, their egg clutches were noted, and seemed to be of a fair size, as many as eight or nine eggs being common, and the average being somewhat in excess of six. However, in this area, it is common to see broods of 2,3, and often only one youngster. Three broods were

noted near Chevak with 5, one of 4, five of 3, three of 2, and two of one. Due to the open nature of the country, and poor concealment of the nests, these birds eggs, and their young are under the constant eyes of predatory birds. It was noted that young Old squaws were unusually active, both in feeding, and in diving to escape from the writer when they were discovered. Downy chicks, not over two days old at the most, would dive, and stay submerged for long periods of time, then come up, and immediately dive again. Little downy squaws that were less than a week old were repeatedly noted feeding in some of the brackish pools, and diving with the regularity of the old birds accompanying them.

It was commonly noted also, that with the female and downy young, the male bird was often present.

Squaw duck eggs are eaten by the natives, whenever they are found. Also this bird is killed for food at times, when geese are not readily available. Often the skins are saved for the making of feather parkas.

Spectacled Eider.
(*Arctonetta fischeri*)

This bird was observed in the same habitat as the Steller's Eider. While it is supposed to only be found within a mile or so of the coast line, the writer

observed them in considerable amounts much farther inland. Probably twenty miles or more from the coast line, and possibly farther. In fact, this was the most common duck noted in the area below Kashunuk Village.

True to its name, the spectacled eider is not difficult to recognize. Even the downy young of but a few days in age have the "specs" most pronounced. They are inclined to be more of a buff color than the steller's young, and while none were observed younger than possibly three days in age, they were not nearly so black as the steller's.

Again in the case of this bird, broods seemed to be small. One was observed with five young, but the majority had from one to three little ones. The first female observed, had but one young, and was most devoted, allowing the writer to approach within thirty feet or less, while she swam around in a small pool with the lone chick. While taking photos of the old bird and young, the mother frequently preened her feathers, and acted most natural, even though the camera was grinding away, not over 30 feet distant. In the small pool used by this bird, was also a pair of young red-throated loons, and they were twice as wild and agitated as the mother eider, even though they were but a few days old.

One downy young of this bird was collected and the stomach was also saved.

When skinning the downy youngster it was observed that the skin was very tough for such a small bird, and the Eskimo said that this species of eider was a very fine one to use in making feather parkas, because of the toughness of the skin.

Steller's Eider
(*Polysticta Stelleri*)

This bird was first noted, a single male, on June 19, inland towards the Yukon River from the Bering Coast, some 150 miles. Between this inland point and Chevak, no more of these birds were noted. Intensive field observation in the Chevak vicinity failed to reveal a single bird of this species.

On June 30 the writer went some thirty miles or more down the Kashunuk River, below the village of that same name, and turned off the Kashunuk into a stream at high tide, but 50 ft. in width. Here running against the tide, the flats were entered, until the water dropped from 10 ft. in depth, to about one foot. Then with line the boat was towed another mile and camp made. In this region steller's eiders were observed in considerable number.

Female birds predominated, and many were young of

the previous year and did not apparently nest. The Eskimo guide said that "the woman duck did not nest until the second year". Contrary to previous observations on this bird recorded by other observers, a few males were noted and two females collected on July 2.

Most of the females did not have young, and in fact those that did, certainly kept them well hidden. One was found, a downy chick. He apparently was not over one day old, but was a bright youngster, little larger than a silver dollar, and coal black. He took, readily, any insects that he found upon the water, and the distracted mother bird hovered near, making guttural noises the meantime. This downy youngster was so small, and among the earlier downy chicks to be noted, that the writer did not collect it, but rather made such photos as was possible under the extremely poor light conditions. However, after a full day among the birds, without even so much as seeing a single young Steller's Eider, the writer realized that these young birds were few, and hard to find.

Accordingly the Eskimo was sent back to the place the youngster had been noted, and after considerable time came back with him. He stated that he "found chicken dead". This was due probably to an over zealousness in taking pictures. The little fellow became

chilled through having to remain in his small pool so long, and deserted by the mother soon chilled and died. The skin of this chick was saved, and it was noted that not all of the yolk of the egg had been consumed by it's little body. However, the stomach was saved, as the little fellow was observed to be eating insects, and should reveal something of his first day's feeding.

In collecting the four adult birds, the writer found them extremely wary, and hard to approach. One pair, discovered in a small lake some 80 yards in diameter, were scared by the Eskimo, and forced to fly towards the writer. The drake was first shot, and then the female put on such a burst of speed, and dodging, that two shots were fired at her, before she finally fell. Her dodging antics, were not unlike those of a green-winged teal that had been fired upon.

Throughout the area frequented by steller's eiders, spectacled eiders, pintails, red-throated loons, small canadas, white-fronted geese, black brants, and a few emperor geese were noted. The country is hard to describe. Close to the sea, all the water is extremely salt. For miles one can see across the perfectly flat country, but a few inches above high tide. In fact, high tides with winds, might readily cover the whole of the area, and drown out many nesting birds. All of

this flat country is intersected by ditch like cuts, varying from a couple feet, to ten feet in depth. With high tide, many of these fill with water. Over all the area, small lakes, and queer little potholes are to be found by the thousands. Some of them but a few feet across may harbor a brood of geese or ducks.

As previously noted, the steller's eiders seem to have few young in this area. It was observed also that Spectacled eiders, and many of the other birds had few young. This seems due to depredations of gulls (Glaucous) as these predators are to be seen every place, and usually being chased by some shore bird. It was noted that all adult birds with young seemed to hasten closer to their offspring when these birds came near, and manifest considerable agitation when the gulls were in the vicinity.

White-winged Scoter
(*Melanitta deglandi*)

This bird was seen on the Tanana and Yukon Rivers in limited numbers, but were not uncommon. A few pairs were also noted on the Kashunuk River shortly after leaving Pilot Station on the Yukon. As the flats were entered and most of the timber had disappeared, the white-winged scoters were no longer in evidence.

Surf Scoter
(*Melanitta Perspicillata*)

A few surf scoters were seen on the lower Yukon River, and on the upper Kashunuk. Like the white-winged scoters, they dwindled as one went towards the coast, and after the tundra and flat country was encountered, were entirely absent. They were never a common bird. The range of both the white-winged and surf scoters, as near as the writer was ever able to discover, is practically the same.

American Scoter
(*Oidemia americana*)

This bird was seen on the Kashunuk River, and as far below as Chevak. They were commonly noted in pairs between June 14 and June 25. Inland, 15 miles above Chevak, a nesting female was noted on July 7. Also three nonnesting females, and a male. One of the females was taken and weighed $2\frac{1}{2}$ pounds.

This scoter has not been mentioned in literature to any extent, it looking more like a common puddle duck than the other scoters. It sits on the water with head up, and with a less thickened bill than other near relatives, is very misleading in summer plumage, particularly the females, as to just what kind of an "eating duck" it might be. The one shot

by the writer, a female in summer plumage, was killed because it was not readily identified at shotgun range. While not a desirable food bird, it is eaten by the Natives of this area whenever they chance to get them. This particular bird being taken for food by a native woman, and the skin carefully saved for a "parka skin". It was especially desirable for the latter use, as it was remarked to be a very tough skin and enduring. It was not saved for a scientific specimen, as several shot had cut the bill almost in two. The stomach was saved.

Red-breasted Merganser
(*Mergus serrator*)

This bird was commonly noted on the Tanana, and as far down the Yukon river as Holy Cross. One specimen, a male, was collected near Holy Cross on June 4. On the Kashunuk River this bird was not observed.

Shoveller
(*Spatula clypeata*)

But two shovellers were noted in the Chevak area, and while they are not common, they are known to the Eskimos. A few "Spoonies" were seen on the upper Kashunuk in the vicinity of Pilot Station.

Greater Scaup Ducks
(*Nyroca marila*)

Owing to the difficulty of telling the Greater Scaup from the Lesser, unless the bird is actually taken, the writer cannot accurately say that both these species were present in the areas visited. Many scaup ducks were observed, on the lower Yukon in early June, and some seen as far inland as the Tanana River.

On the Kashunuk in June, scaup were commonly observed, and were believed in the most part to be greater. None were taken on account of the difficulty in picking them up from the craft on which the writer was travelling. Ten days was consumed in making some 300 miles of the Kashunuk during one of the lowest water stages in its history. Beset with snags and sandbars, and wind of considerable velocity, much of the time, it was impractical, and dangerous to the travel of the boat to kill ducks and attempt to pick them up. It would usually result in becoming stuck again. As it was, the writer put in a bit of time with the Eskimo crew working a very back-breaking windlass on many of the bars, and additional windlass work was not looked forward to.

July 7, one scaup female, appearing to be a lesser

was observed in a lake inland from Chevak 15 miles. This bird apparently was with young, or had a nest, from her actions, but the little ones could not be discovered. The drake was not around, though it was noted that with many of the scaup females, and those apparently nesters, the drakes were with their female companions. Often the boat would scare up a nesting female along the short willows of the Kashunuk. Almost invariably this bird would be joined by a male, that often would be noted swimming in the river ahead.

American Golden-Eye
(*Glaucionetta clangula americana*)

Golden-Eye were noted on the Tanana River, and as far down the Yukon as Holy Cross. Though not abundant, they were by no means a rarity. Particularly they were seen when stops were made for fresh water in some of the larger creeks and little rivers running into the Yukon river. None of these birds were seen in the flats between Pilot Station and the Bering Coast.

Barrow's Golden-Eye
(*Charitonetta albeola*)

One pair seen, in a creek above Holy Cross on the Yukon some 100 miles. These birds passed within 30 yards of the writer and were readily recognized.

Bald Eagle
(*Haliaeetus leucocephalus*)

Bald eagles, while common in South Alaska, were entirely absent, so far as the writer's observations went, in the Chevak, Hooper Bay area. A pair of them were seen just above Marshall on the Yukon River. Apparently they were nesting on the rocky peak of a mountain that was close by the river.

Osprey
(*Pantion haliaetus carolinensis*)

A few of these fish eagles were seen on the lower Yukon river below Holy Cross. Also one was observed on the upper Kashunuk river not far from Pilot Station. It was of interest, that few hawks were seen all summer in the areas visited, only two species being observed, and they were extremely rare.

Byrffalcon
(*Falco rusticolus*)

Three or four of these birds were noted along the upper Kashunuk River about the middle of June. They seemed to be of a very light color, the white on them predominating. As it was but a few weeks since the ice had gone out, the writer was of the opinion that these birds, while not ptarmigan inclined as to changing their plumage, were birds that had wintered

in a very cold exposed country.

Willow Ptarmigan
(*Lagopus lagopus*)

These birds were most common throughout the Chevak Area. Repeatedly while walking over the tundra and even out in the salt flats within a very few miles of the Bering Seacoast, these birds would be put up, usually pairs of adults and their offspring.

The cackling hysterical chuckle of the cock ptarmigan rather disrupts the crackling stillness of a remote land, when one suddenly almost steps upon him. The action of startling the observer as practiced by the cocks during the summer months might be a very successful defensive, or distracting procedure, to allow the little ones to make themselves scarce, did not the foolish bird almost immediately come back to the observer. Frequently one will flutter and act "wounded" coming up within four or five feet of a person. Often, when a pair of these birds and their young were flushed, the writer would lay flat on the tundra, and cheeping to imitate their young, bring the cock bird, and often the female, back within but a few feet of him. The Eskimos are most adept at this practice, and the writer has a feeling that such procedure is often employed to kill the adult birds.

A bow and arrow being adequate for such close shooting.

Willows in the Chevak area are at the most a few scant inches above the ground, but in stomachs taken from willow ptarmigan, it was observed that they were feeding on these, and on berries.

Ptarmigan broods were noted, some of only one or two youngsters, and others with as many as fifteen. From very early age the youngsters fly, and while quite small, when flushed, make but short flights. Often part of such a young brood might flush while others of the same family were captured as they hid in the short grass. By the time these birds are the size of Bob-White quail, they will, when put up, make long flights, frequently of a quarter of a mile.

From evidence, such as feathers and bones noted on the tundra, Ptarmigan are almost a universal feed for many predators. Foxes and mink, also Snowy Owls commonly utilize this most abundant bird. Also they are killed in great quantities by the Native people, and are a boon to the residents of this country in furnishing a variation in diet, and often, in case of near starvation, to a foodless man upon the trail. Feathers of these birds around Eskimo camps indicate that many of them are utilized. Strange, possibly due to the

the windswept nature of this area, they are not snared by the Natives, as they are in the Canadian Arctic.

From the habit of nesting in an area commonly utilized by Jaegers and Glaucous Gulls, it is more than probable that many of the eggs and young ptarmigan are taken by these birds. Eskimos value ptarmigan eggs highly for food. It was noted in the lower Mackenzie last year, a Long-tailed Jaeger taking one of the young ptarmigan on the wing, that the writer flushed.

Ruddy Turnstone
(*Arenaria interpres morinella*)

This bird was not observed at Chevak, but a few were seen some twenty miles above this place on July 7. One in particular was extremely noisy and repeatedly came up close to the writer fussing about. No doubt this bird had young concealed nearby.

Black Turnstone
(*Arenaria melanocephala*)

These birds were quite common nesters around Chevak and were commonly noted between June 22 and the first of July. It is presumed that around July 1 the young hatched, for there was a period of several days when the adults were not in evidence around the small

stream margins where they commonly fed at ebb tide.

In the late night in June the writer frequently heard a peculiar sound of a bird high in the air, like that of the mating Wilson's snipe, that indescribable winnowing sound. After several nights of vainly searching the skies, the bird was observed that was carrying on the acrobatics. It was a black turnstone.

After June 10, the young of the black turnstone was in evidence, and they grew with great rapidity. About July 20 some eight of these young birds took up their residence in between the Chevak trading post, and a wood pile some fifty feet distant. Here they waded in a shallow pool that had been made by the endless rains, and frequently they alighted on the wood pile. The back door of the trading post led into a very dark woodshed, or snow shed, and a door from that opened into the kitchen. One evening the writer chanced to look out of the half open kitchen door and saw five black turnstones exploring the boards of the woodshed floor. One of them even hopped up on the door sill that led on into the kitchen. It is honestly believed that these birds would have gone throughout the house if they had not at that time been disturbed by the entrance of a group of Eskimos coming from down river to trade.

Of interest was the way these turnstones hung around

the camp of a family of Eskimos. One very old chained sled dog was entirely ignored by this bunch of young birds, and frequently they would almost walk upon him as they ran about the camp. An Eskimo child not quite three years of age frequently chased them and threw very inaccurately at them a miniature harpoon that his father had made him. The birds rarely flew over twenty feet away from the child after he had disturbed them.

The Eskimo woman of this camp had a rack of fish drying close beside her tent. One day it was observed that the turnstones were feeding on these fish. Daily they became bolder, alighting on the tent itself, then flying on to the rack of fish. Often the writer would notice that fully one fourth of each individual fish had been devoured and the bones picked bare, from the tail some three inches forward.

One day while the Eskimo woman was removing her partially destroyed fish, she chanced to notice the writer watching her. Evidently she sensed that he was wondering what her thoughts were about the nervy birds. Holding up one mutilated fish, she scrutinized it with a rueful grin, then shrugging her shoulders she carefully baled up the lot and put them away for her children's winter food supply.

Black-bellied plover.
(*Squatorola squatorola* (Linnaeus))

These birds were a common sight on all the tundra area in the Hooper Bay Chevak district. They were not noted at any time on the tide flat country that was subject to overflow, or where the water was salt or brackish. They were noted in all the higher area. The first young of flying size was noted about July 25, and by the first week in August were becoming quite common in family groups, flying about the tundra.

Pacific Golden Plover.
(*Pluvialis dominicus fulvus*)

None of these birds were observed by the writer until the 26 of July in the Chevak area. It is believed that they do not nest any place on the tundra in the low flat country, but rather are to be found in the foothills of the adjacent mountains.

When first observed, these birds were in goodly number and young of the year were present. On July 25 none were seen at Chevak. The following day several were noted, and quite wild, and three bunches, probably family groups were observed flying quite high in a southerly direction, coming from the direction of the hills.

One specimen was taken on July 26 at Chevak.

Wilson's Snipe.
(*Capella delicata*)

The first of these birds was observed in the Chevak area on June 22, and was believed from its actions to be a nesting female. However, later attempts to put up this bird were without success, and she was never observed again. It was first believed that this snipe was most abundant on account of the flight songs that were heard. However, these were a bit off-tune, and it was soon discovered that the zooming antics, and the accompanying flight noise was made by the Black Turnstones, which were most common.

Pacific Godwit.
(*Limosa lapponica baueri*)

This bird was a common resident of the tundra area in the vicinity of Chevak and was noted inland about 100 miles via the Kashunuk river. While not abundant, several would be noted each day while the writer was afield. Similar to a Hudsonian Curlew in observing an intruder, the male bird would usually come to meet one, and often alight on a hummock some thirty yards distant to scold. One nest was discovered, June 25, and the eggs were starting to pip. It was on the open tundra, in a hollowed depression, with little effort being made to line it with any nesting material.

On June 26 and 27, the nest was again visited, and the pipping of the eggs noted as being farther advanced than the day before. It was on June 28 that the young finally hatched. Only two chicks were observed, though the remains of the shells of the eggs were in evidence about the nest. One of the remaining chicks was dry and running around the nest, while the other had just recently emerged. Whether the other two wandered off, or were gobbled by the Glaucous gulls and Jaegers is problematical.

Two pairs of these adult birds were noticed almost daily near Chevak, and without doubt from their actions, had their young closely present on the tundra. However, they were nowhere found.

It was noted with the Hudsonian Curlew nest, found July 3, 1939 in the Western Arctic, and with this nest of the Pacific Godwit, that between three and four days were necessary after pipping commenced, for the young to finally emerge.

Above Chevak some 40 miles by river, several Wilson's snipe were observed in the latter part of July. After July 25 four were put up beind the Chevak trading post a half mile or such a matter. Wilson's snipe were not observed anywhere in any number. Probably eight or nine were noted during the whole of the summer.

Hudsonian Curlew.
(*Phaeopus hudsonicus*)

A few of these birds were noted, but exceedingly wild. They were observed from Kashunuk village, inland as the river winds about 100 miles. Hardly a day would pass without one or two being seen, but they were never abundant. More often it was single birds that were seen, though three were noted on July 7 apparently travelling cross country. Single birds were seen previous to July 7 but did not leave the immediate locality, but certainly were hard to approach. It was felt by the writer that because of the extreme flatness of the country, one of the parent birds simply attempted to lead him away from the vicinity of the nest or the young. In the Western Arctic in 1939 when the nest of this bird was found on July 3, it was because of the rolling nature of the tundra, allowing the writer to approach the incubating female to within 200 yards of her before being discovered. Incidentally this nest was hatching on that date.

There was no mistaking the call of this bird from that of the bristle-thighed curlew. Their notes are decidedly different.

Lesser Yellow-Legs.
(*Totanus flavipes*)

On July 20, the writer saw what he supposed to be a Lesser Yellow-Legs 10 miles North East Chevak, Alaska. A high wind was blowing, and this bird was noted on the tundra, along shore. Approaching to collect the bird in the boat, it bobbed behind the knoll on which it was perched and never seen again. Both species of Yellow-Legs are well known to the writer and have been observed countless times and it was felt that this was a Lesser, though there was nothing to compare the size with, and under these light conditions, often a thing looks abnormally large. A large Glaucous Gull at half a mile, even beneath sullen skies, often looks as large as an approaching boat and is frequently taken for one. Many times they are confused at a distance with swans, though the latter is many times larger. This bird was the only Yellow-Legs observed during the summer.

Red-Backed Sandpiper.
(*Pelidna alpina sakhalina*)

These birds were seen around Chevak on the tundra, and were one of the most numerous of the shorebirds. Unlike many of the shore birds, they were also present below Kashunuk village, in the tide flats commonly frequented by the eider ducks, geese and brants.

After July 28, these birds were observed migrating in large flocks, often numbering two or three thousands. They had a favorite spot on the open tundra for stopping, and almost every afternoon, for a period of a week, from a thousand to three or four thousands of these birds would alight there.

Pectoral Sandpiper.
(*Pisobia melanotos*)

These little shorebirds were noted throughout much of the tundra area. Within fifty yards of the trading post at Chevak, one nest of this bird was discovered with three eggs. Rarely was any shore bird nest found that had the full four eggs that they are supposed to have.

Bristle-Thighed Curlew.
(*Phaeopus tahitiensis*)

This bird, reputed to winter in the South Pacific, and migrating to Alaska over the open sea, probably makes its first stop on the Kenai Peninsula. However, it does not tarry here but goes on inland to nest.

At Chevak, the writer was told that early in the season, around the middle of May, this bird is common in that area, but soon disappears and does not return until early in August when the young are with them.

As this is the last bird in the north whose nest

has not been discovered, the writer gave some attention to running down this mystery. It is definitely felt that in another year this discovery will be made. It is to be remembered that somewhat the same prediction was made regarding the Ross' Goose, and, by comparison, the curlew nest will be relatively easy. In making this statement, the writer realizes that he could be wrong, but a similar method was employed with the bristle-thighed curlew, as was with the Ross' Goose. The natives were shown the bird's picture, and through Mr. George Sheppard as interpreter, a lengthy discussion was held regarding the curlew.

When Frank Dufresne, O. J. Murie, Jack Warwick, H. W. Brant, and H. B. Conover made a trip to the summering ground of birds in the Yukon Delta, they found the bristle-thighed curlew in the neighborhood of Chevak. Also some of the Natives interviewed by the writer remembered this expedition and assisted them in holding a goose drive. Also one native remembered the bristle-thighed curlew. Through him, and a picture of this bird, it was accurately described to the natives. Immediately came their response. They had seen them, after their yearly spring appearance at Chevak, inland, not a great many miles, where the muskrats are hunted up to the end of the season, June 1.

They had not seen the nest of these birds, but were

sure that they were present, as they stated they would see the bird hovering over the ground where they presumed the female was hidden. Owing to the necessity of hunting all that is possible in the short time available, they did not seek to find the nests. Also the eggs are smaller than the waterfowl eggs commonly utilized at this time of year for food, and it was not necessary to hunt the eggs.

The writer knows from experience with the Hudsonian curlew, the difficulty of finding the nest. The hovering antics described by the Eskimos aptly describes the procedure of the hudsonian. Two days were spent, mostly on the hands and knees, to find a hudsonian curlew nest in the lower Mackenzie region. The parent birds, both would see the writer from a distance of half a mile or more, and fly fussing to meet him. They would in nowise approach within 200 yards of their nest, even though the eggs were pipping at the time, and the young curlews could be heard a distance of several feet away.

The Eskimos were probably wrong in assuming that the female was hidden below the hovering bird. The writer believes that both the parent birds were seen, and no doubt at a considerable distance from the actual nest, as was observed habitual with the hudsonian curlew.

It is to be regretted that so much delay prevented

the writer from reaching this area until after the nesting time of these birds, or it is more than possible that they would have been found this year.

In visiting the natives of the Lower Yukon in the vicinity of Mountain Village, Marshall, and Pilot Station the writer discovered that they did not know this bird. It was then fairly evident that the Bristle-thighed curlew nested some place between the main Yukon River and the village of Chevak. Evidently this is the case, but another year will be necessary to actually determine this.

On July 20, two families of bristle-thighed curlews were seen fifteen miles above Chevak. The following day a group of five were noted on what is known as the sandhills. On July 28 another family group were noted at Chevak, and a flock of some twenty birds were seen at Hooper Bay on August 10.

That these birds nest fairly close to Chevak seems most apparent to the writer. It will probably be necessary to go to them in the Spring with dog team and the usual kayak on the sled, because they do not nest next to any navigable streams. The trip need be made with dogs while there is yet snow for the trip, or much portaging need be done with kayak from lake to lake in order to reach the nesting area. An airplane, in such instance, would do in a few minutes what will require several days

to do in, the line of transportation.

Long-billed Dowitcher,
(*Limnodromus griseus scolopaceus*)

This bird was first observed on June 22 near Chevak, Alaska. The writer, at first, thought it a Wilson's Snipe, and hastened to find the nest as the bird fluttered away. However, the nest was not found, and then, upon closer observation, it was perceived that a distinct white patch appeared on the back of this bird when in flight.

Without doubt, this bird is the long billed variety, and is not the Eastern Dowitcher as previously seen by the writer. The difference in the length of bill is easily noted, even in the field, and the specimen does not need be collected to prove this fact. However, one was taken.

Apparently this bird prefers the inland part of the Yukon Delta for it's nesting. Around Chevak they were common, while but 25 miles out toward the coast, not a single specimen was observed. In fact, it is believed that almost all the shorebirds prefer the somewhat higher country for their nesting. While many species of shore birds were noted below Kashunuk Village, they were in great minority over the area around Chevak. Here, while elevations were but a few feet above tide, they were safely above tide. The mossy hummocks furnished ideal nesting habitat for shorebirds and the margins of small

grassy lakes, and the tide flats along the main streams seemed to furnish ideal feeding places.

In their selectivity of nesting sites, the shore birds do choose a country sufficiently high as a rule, to preserve their nests from extreme tides. The brants and many of the geese do not seem to have this foresight. Especially true, then, is it of the long-billed dowitcher, while closely adjacent to tide marshes, the nest seems invariably safe above the highest of tides.

Western Sandpiper.
(*Ereunetes maurii*)

These little fellows were one of the most common shore birds in the Chevak area. Also they were very tame. One mother bird, while her offspring were hatching, would allow the writer to approach within three feet of her, so great was her concern over one minute featherless chick.

Red Phalaropes.
(*Phalaropus fulicarius*)

These agile little birds were noted in the Chevak vicinity quite commonly. The tiny little lakes that dot the tundra, with a corresponding fringe of marshy margins, seems most ideal for these birds. In early July, many of the adults were in their moult and frequently it might be noticed some in winter plumage, while another

would be in breeding plumage in the same flock. Often as many as dozen or 20 of these birds were noticed, by middle July, flying in flocks, and feeding as a flock, without apparently having offspring.

Northern Phalarope.
(*Lobipes lobatus*)

These birds were common around the Chevak area, and frequently were noted feeding with the Red phalaropes. Also, by the middle of July many of them were in their winter plumage.

Nests of the Northern and Red Phalaropes were not discovered, because of the lateness in getting to this area. However, judging from the adult birds, phalaropes are decidedly numerous throughout all this region. Previously, in the Canadian Arctic, these two species were not noted together and no doubt the red phalarope does not extend its nesting range to the degree that the norther phalarope does.

Little Brown Crane.
(*Grus canadensis canadensis*)

These birds were noted commonly over the area between possibly 100 miles inland from the Bering Coase, on out to the tide flats. They seemed to be in no place plentiful, but so well were they distributed over this large area that they must have numbered into the thousands.

One young crane was caught on the tundra below Chevak on July 12. It appeared to be possibly two weeks old, and stood probably 15 inches in height. It was a reddish brown, and the same species as the one found in the Western Arctic of Canada in 1940 and photographed. Much of the fine downy reddish fuzz was gone, and was being displaced by rather scraggly looking reddish brown feathers, or the down was coming out, giving the appearance a bit of being mangy. Pinfeathers showed up profusely through the down.

One young crane, found in 1936, of the approximate size as this one on the south shore of Great Slave Lake in Canada, had little of the reddish coloration. In fact, it and the adults were closely observed and were almost identical in color, being a slate blue, as are all of the large sandhill cranes.

The Little brown cranes, incidentally not so small, and appearing almost as large as the big sandhill cranes in the wild, are a distinct reddish color, even the adults, and the small birds, are almost a brick red.

The writer has never found a pair of the little cranes together, though it is the rule for the adult to have but two eggs. Almost invariably one little one has been found, and never the second. The Eskimo remarked that he had noticed this, and that many of his people

believed that each parent bird took one young to raise. While this seems doubtful, in that both parent birds are most apparent when one of the young has been discovered, it seems possible that the two adult birds do each take a youngster while feeding on the tundra and have them so far apart that when one is found, the other has opportunity to escape notice.

The Little Brown youngster, as was the young of the Larger Sandhill crane, is quite aggressive when cornered, and will peck sharply at an outstretched hand, or the boot of his discoverer. However, the Little Brown seems less aggressive, than his larger relative.

George Sheppard told of finding the nest of a Sandhill Crane with two eggs, and that the parent bird immediately deserted it at his approach. After looking at the eggs he withdrew, and the mother bird immediately started back to the nest, and hastened her steps as she saw a Jaeger approach. The jaeger, however, succeeded in getting one of the eggs before the old crane could arrive to protect it.

Possibly the predatory birds may be responsible for so many single young of this bird, but it is felt that were such the case, in most instances, both eggs would have been devoured. It was observed, many times, pairs of adult cranes, though surprised by the approach of

the writer in a boat, and the birds in quite open country, with the aid of good binoculars, no young were apparent. It is felt that their egg loss is quite high.

While these birds are eaten by the Eskimos, and their eggs as well, according to reports from the Natives and others, they are in nowise depleted, and appear to be making an increase in abundance. George Sheppard in particular remarked upon the large concentrations of Little Brown cranes that he noted this past spring. That their distribution is very restricted seems doubtful, as the writer observed them in considerable numbers in the Lower Mackenzie River of Canada, and even recorded six adult birds on Victoria Island in 1938. Around the Arctic Coast, between the mouth of the Mackenzie and the Coronation Gulf, they were reported common by the Natives and Whites. Also they were reported as being found on Banks Island.

The young little brown crane, even several weeks of age, is a wabbly-legged creature. This weakness being most apparent. Frequently, when under observation his knees will buckle in a rather amusing fashion, and he will give up the attempt of standing at attention, and in a resigned mood, sit down. In walking, this weak kneedness is not apparent, though they are not hard to overtake, and cannot run through even tall grass, with the speed

of young geese or ducks.

Long-Tailed Jaeger.
(*Stercorarius Longicaudus*)

These birds were noted all over the tundra area, and to the coast of the Bering Sea. They were most abundant every place visited. The Natives tell of the great destruction to the eggs of waterfowl by the jaegers, and their reputation for this is universal.

The writer has made mention of the destruction by jaegers to eggs before, having secured considerable data on the subject in the Western Arctic of Canada. Also the Eskimos of that vicinity told of the tactics of this bird, or rather a group of them in attacking nesting geese and brants, and so harrying them, that their eggs were exposed to fellow jaegers, who immediately devoured them, and destroyed the nest completely. Also previously it was noted, and photos made of a long-tailed jaeger male that devoured his own young. The stomach of this bird being secured with the young bird in it.

It is seldom that jaegers are reputed to eat the young of waterfowl, the Glaucous gull being so proficient in this respect that he hogs the whole of the limelight for such tactics, and the jaeger escapes notice. However, on July 12, after banding several young emperor geese the size of mallards, one little goose was attacked by a

jaeger, and would without doubt have been killed, had not the writer caught the little goose and driven the intruder away.

Stomachs of jaegers, some 16 in number secured in the Western Arctic, showed in the greater part, a full 100% animal matter, and this was entirely eggs, and fresh hatched young of the Lesser Snow geese during the nesting and hatching period. As the writer was unable to get into this area at the time of nesting, it is impossible to determine the extent of jaeger damage. However, from indications it would appear quite high. In the first place, there is little other animal matter for these birds to feed on in this vicinity, and secondly there are many more jaegers here than were ever observed in the Western Arctic. One jaeger killed in Canada before the nesting season, contained a mouse, but such rodents are extremely scarce in the Alaska area where jaegers most abound, and where excessive tides evidently make the mucky land uninhabitable for small burrowing creatures.

It has been noticed also that all birds, waterfowl, shorebirds, and even the willow ptarmigan manifest great concern at the approach of a jaeger. In fact, fully 90% of a jaeger's life seems to consist in being pursued by some of the guardian nesting birds.

Glaucous Gulls.
(*Larus hyperboreus*)

These large beautiful birds, are without a doubt, a serious factor in the nesting grounds of young geese and ducks. All of the Natives, without exception, immediately volunteer information about what "bad birds" the gulls are. When an interpreter is at hand to disseminate their knowledge, they will go into great lengths to tell of the depredations that they have witnessed.

George Sheppard told of instances by the score, when he observed these large gulls killing young geese. It seems that little geese of all species are taken, and none seem to be much more immune from attack than the other. That this gull is greatly despised because of his killing tactics is without question, as the Natives will shoot their most cherished ammunition at these birds whenever opportunity presents itself. One instance told of by Sheppard, was watching a pair of Glaucous gulls wipe out a family of Canadian geese. One gull engaged the parent birds, and made swooping attacks on the both of them. The other gull grabbed the scattered young, one at a time, Carrying a single bird at a time, at considerable height, would fly across the river and drop the unhappy fledgling upon a sand bar, and return for another. All of the young geese were

taken, despite shots at the flying gulls with a 22 rifle.

On July 12, the writer and Eskimo, succeeded in running down and catching 14 baby emperor geese at one time. Probably four broods figured in this chase. Immediately, glaucous gulls appeared, and commenced to harry the few remaining geese. An adult emperor came to the rescue, and took the remaining youngsters into the river in a compact bunch. The gulls immediately sat down upon a mud-bar to await developments. All of the young geese were banded, and were almost as large as mallard ducks. When they were released, they were turned loose en masse, and then only after a parent goose had appeared to guard them. Also in releasing the little birds, they were put in a small lake, and the writer and the Eskimo immediately withdrew, to allow the old goose to approach, and to prevent the young, still badly frightened, from scattering.

On the same date as mentioned above, three cackling goose youngsters were driven ashore and caught, and banded. Immediately, from nowhere in particular, appeared two adult glaucous gulls. The young geese had just been released in the river, the parents, being several hundred yards away. It was only with great difficulty that the writer could save these young geese, and then it was only after one gull had been killed on wing with a 22 rifle by

a most fortunate shot, that the other withdrew, and started combing the tundra for other victims.

That the disturbing factor (man) plays an important part in making these young geese available to the gulls, is without question. Banding birds in some places is utterly impractical because the predators will catch the youngsters and devour them before the parent bird dares return to them. Any disruption, such as a boat passing along a stream, will often give the opportunity to the waiting gulls, to swoop down and get the little geese.

It is also apparent that these birds prey on little geese, without the added disrupting influence of man. They are too adept at their killing trade for this business to be a casual one, when opportunity does arrive. Also the small broods of young birds, in many instances but one, and the birds noted without broods at all, are mute testimony to the fact that the predators are making serious inroads upon them.

The writer is not prepared to make recommendations at this time, as to the control method needed, if one should be undertaken. That the Natives do recognize the hazard of this bird to waterfowl, and attempt control of the species in their own way, is apparent, and no doubt does a bit of good to the young fowl. It was difficult

to secure stomachs of this bird, at the time they should have been taken, so no recommendations can be made at this time upon that basis.

It is to be noted, that geese and ducks always manifest great alarm when glaucous gulls come near them and their offspring.

That this bird is very destructive to young waterfowl is without question in the writer's opinion.

On July 17 a pair of glaucous gulls were observed with one young about flying age. The young walked ahead on tundra and the parents squawked about following him. About this time the writer caught seven young cackling geese and banded them, the gulls were not near. Continuing on across the tundra, the gulls followed the writer for almost an hour. Returning three hours later one little banded goose was found killed by the gulls. Both the gulls were shot and the stomachs saved.

This little goose that was killed weighed $1\frac{1}{2}$ pounds and little of it was eaten, but left abandoned floating in a small stream. The bird was killed by being pecked in the back, just ahead of the hip junction of the leg, and a bit to one side of center. This small goose and the gulls skins were saved, the former to show the method used by the gulls in their killing.

In discussing these glaucous gulls with George Sheppard

trader at Chevak, the writer inquired what the result would be, to pay the Natives of this region a bounty on these birds, and what bounty would be adequate.

Mr. Sheppard knows these people and has been with them 15 years, and speaks their language most fluently. He stated that for possibly 25¢ each, and maybe a bit less, that the Natives would almost clean them out of this district.

While without doubt these birds do prey on the young of many species of ducks, and in particular geese, the writer is not advocating bounty, or other control of these birds at this time, though it is possible that locally in heavy nesting areas, their control might result in a great increase in the desirable species of geese, and at the same time in nowise impair the status of the glaucous Gull. These predators, to say the least, are most abundant in this area, and whether by chance or not, it is unknown, but they are most numerous where the nesting geese are to be found.

It is believed, that with hunting, the glaucous gull might eventually avoid the better sections of the nesting country. It is to be noted, however, that should they change to other localities, their pressure there might be increased and result in even more disastrous results upon other species of waterfowl.

Sabine's Gull.
(*Xema sabini*)

These birds were quite abundant from the Bering Coast inland, to a distance of probably fifteen miles, being more abundant near the coast. They were much more numerous in Alaska than in the Arctic of Canada where they have been previously observed by the writer. A beautiful bird, and apparently harmless so far as depredations to other birds and eggs. The Sabine's gull, to the writer, is a typical part of the fauna of Arctic America.

Glaucous-winged gull.
(*Larus glaucescens*)

Glaucous-winged gulls are quite common in the Chevak area. Their nests were frequently observed in the low country closely adjacent to the coast. So far as the writer was able to observe, these gulls were not preying upon other bird's young, or their eggs. It was noted, however, that shorebirds in particular pursued these gulls with the same vigor that they did the larger glaucous gull, whenever they came near their nests. Frequently, too, geese were disturbed by the presence of the glaucous-winged gull. However, no observations were made that would in any way incriminate this bird in the nesting grounds.

Arctic Tern.
(*Sterna paradisaea*)

Arctic terns, as in the Canadian Arctic were found quite abundant. Similar to the Sabine's gull, they seem a necessary part of any Arctic picture. Very graceful of flight, and quick as lightning in swooping to the waters to capture a small fish, these birds have always been a constant source of pleasure to the writer, in the far North.

One Arctic tern was observed this year, catching a small fish, probably one and one half inches in length, and then flying to a height of about thirty feet above the water, dropping it, and catching it in the air again before it reached the water. Whether this was simply a procedure of play, or whether the fish was being manipulated into a better position for the swallowing of it, caused some speculation to the writer and his Eskimo companion.

Great Horned Owl.
(*Bubo virginianus*)

One of these great owls was heard calling on the Tanana River in early June. On June 15, while going down the Kashunuk River, a family of three young of flying age were seen at Reindeer River crossing. Below this wooded section no other great horned owls were seen,

and never have they been noticed, beyond the growth of trees.

Great Gray Owl.
(*Scotiaptex nebulosa*)

A great gray owl was collected on the Tanana River early in June. When the writer arrived at Chevak with it, the Eskimos were greatly interested in the bird and carefully examined it, as they had never seen one before. Even at Mountain Village, on the Yukon River, where trees still abound in some abundance, the Natives were eager to examine this bird, that was strange to them.

Up the Porcupine River, extending into the Yukon Territory, the writer has, in previous years, observed a few of these great fluffy owls.

Richardson's Owl.
(*Cryptoglaux funerea richardsoni*)

One of these owls was noted at Pilot Station on June 13, while the boat, on which he was travelling down the Kashunuk River, was tied up to the bank and being loaded with wood. The Eskimos handling the wood said that they often saw these small owls in that vicinity.

Snowy Owl.
(*Nyctea nyctea*)

No Snowy Owls were noted in the Chevak area during

the summer of 1941. Pellets of these birds were found in a few instances on little low knolls throughout the tundra area, proving that at times they are fairly abundant. The writer in 1939 found these birds preying upon young Lesser Snow geese in the Arctic of Canada. A visit to this same area in 1940 and at the same time of year, did not reveal a single owl present. It might be noted that the depredations by gulls and jaegers during 1940 were much more severe than the summer of 1939 when the owls were present. Such often leads the writer to wonder if there is not, in such remote places, something of a standard given loss through predators, and when one is abundant, others are not. In this Chevak, Alaska area this year, gulls and jaegers were very plentiful, and certainly in case of the former, their depredations were severe.

American Magpie.
(*Pica pica hudsonia*)

A few of these birds are as far north as Nenana, Alaska. They were observed by the writer four years ago on the Richardson highway between Valdez and Fairbanks. A Native of Nenana told the writer that several magpies had shown up in that district.

That this bird is extending its range northward, there seems little doubt.

American Robin.

The writer is undecided as to what subspecies this bird belongs. It was probably the most common land bird noted along the Lower Yukon River and on the Kashunuk, so long as one was within the belt of timbered country.

Northern Cliff Swallow.
(*Petrochelidon albinfrons albinfrons*)

These birds were noted early in June at Nulato on the Yukon River, where they were mentioned by the Priest there, as nesting under the eaves of his church, and how they were sadly hampering a painting program of that edifice. These birds were also noted a year ago at Fairbanks, Alaska, gathering mud in the street (before the street was paved) and flying away, presumably to build their nests.

Violet-Green Swallow.
(*Tachycineta thalassina lepida*)

These swallows were noted from time to time, in general the length of the Yukon River, between Tanana and possibly Marshall, Alaska. None were remembered as far north as Mountain Village.

Bank Swallow.
(*Riparia riparia riparia*)

Bank Swallows were observed on the Yukon River, and on the Kashunuk River, within 50 miles airline of the Bering Sea. At Reindeer River, on the Kashunuk, a colony of these birds were utilizing the steep bank there. While our boat was tied up in this vicinity, one swallow attempted to enter the two-inch exhaust pipe of the stopped motor. Possibly the hole of the dusky pipe resembled the bird's dingy dwelling.

Yellow Warbler.
(*Dendroica aestiva*)

Several of these birds were seen in early June at Mountain Village and no doubt are abundant throughout that region.

Rusty Blackbird.
(*Euphagus carolinus*)

This bird was noted July 20 ten miles Northeast of Chevak. It was taken and poorly skinned by the writer. It appeared to be a juvenile, a male, and was the only one noted for the summer. On airline, this bird was probably not over 14 miles from the Bering Sea coast. The Eskimo with the writer stated that he had seen the bird before, so evidently a few stragglers do occur this far north.

This bird was very wild, and was scratched down at some 60 yards. It appeared to either be poorly feathered, or in a moult, as the feathers fell out badly upon being skinned. While many miles of similar inland streams were checked over during the summer, no other bird even resembling this one was noticed. It might be stated here, that the small songsters in this low region are only a few, and practically all of them are song sparrows. A bird of this size would be readily noticed. Possibly farther inland where trees are present the Rusty Blackbird may be fairly common, though none were noted in the ten day trip down the Kashunuk, or during the previous ten days on the Tanana and Yukon Rivers.

Hory Redpoll.
(*Acanthis hornemanni*)

Two of these little birds were noted on July 26 and were believed to be transient ones, as there are no trees in the Chevak area where they could nest. The white underparts of these birds were most apparent, and they were in nowise as dark as the writer supposed that they would be. When noted there was no gun with which to take a specimen, save a 12 guage and large shot. A windstorm had been blowing severely for several days, and the redpolls had found a protected place between two

mossy hummocks. Out of the wind, they were busy eating salmon berries and were tame enough that a good view could be had of them.

Lapland Longspur.
(*Calcarius Lapponicus Lapponicus*)

These colorful little birds were common all over the tundra area visited by the writer. Frequently they were noted hopping about on the sawdust pile at Chevak. In the Canadian Arctic they were most plentiful also. Like the Arctic Tern, willow ptarmigan, and the glaucous gull, they are constant fixtures on any Arctic landscape.

BIRD WITH YELLOW OVER EYE

(Skin to be identified) This bird, evidently a song sparrow, was commonly observed in the territory surrounding Chevak. Particularly along small winding streams, where tide action was most evident, in the heavy fringe of grasses and sedges along such stream margins, these birds were most abundant. From the tail flicking action in flying, it was supposed that they were song sparrows, though the yellow marking over the eye, and the small size might also identify them as warblers. However, no picture of this bird could be found in the books that the writer had with him.

A skin was saved of one of these birds for identi-

fication. Again, as in case of the rusty blackbird, the feathers fell out badly, or were not present to begin with, much of the breast and neck being entirely bare. Possibly this may be one of the most common of American birds in the Alaska north, but in order to be sure that nothing was overlooked a specimen was taken.

ANOTHER BIRD.

This small bird was noted in less abundance than the above mentioned. At first it was supposed by the writer that the above were juvenile, and this an adult of the same species. However, after collecting one, it was decided that it probably was a different species. A skin, minus many feathers, as usual, was saved and should prove the identity of this bird.

The habitat was almost identical with the above mentioned song bird. In both instances, that is, with both of these birds, it was impossible to tell in the field any difference between them as to sex. They would not stay still long enough for one to have a look. Usually they flushed from the tall grass and again alighted in the same where they could not be seen. Both birds were killed on the wing with a small shotgun after a miss on each of them. Their erratic flight, just above the grass, though not swift, makes them a most difficult target.

Without doubt both above mentioned species, (or the one bird if the same) are summer nesters of this vicinity and were noted during the entire stay in the Chevak area. Much of the country where they were observed is entirely without trees of any sort, or shrubs of over a foot in height, so evidently they are ground nesters.

No doubt there are many more species of birds common to the Chevak, Hooper Bay area than those previously described. Another year will probably increase the list. However, it is to be noted that once the limit of trees has been passed, small song birds are decidedly few as to species and number.

Along the wooded Yukon River, and other Alaska streams within the timbered zone, there are many birds. In getting into this district a month late, the writer made a hasty trip down the Yukon and Tanana Rivers, and only two or three stops were made where one could get ashore and observe any of the flora or fauna.

It is not the desire to give the reader of this report the erroneous idea that because much of Alaska is north of the Arctic Circle, that bird life there is not abundant. Rather the reverse of this is true. The summers are warm in interior Alaska. Berries, insects and other food are most profuse, and there is little to

disturb these feathered creatures. Everywhere water is abundant. Really it is an ideal place for birds to rear their young.

Conclusion.

It is not the intent of the writer to review the whole of this report and pick out the high lights, or parts that he deems most important and repeat them. Rather an adequate index has been provided in the front part and by scanning this, anything of interest may be quickly looked up.

If this area is visited again much need not be repeated, that was thought necessary to mention in this report. It should be remembered and stressed that this is a large and a most important area, particularly to the Pacific Coast States so far as waterfowl is concerned. This report merely scratches the surface of one isolated district, though it is thought a region of great area might be typical of the Hooper Bay, Chevak area.

Acknowledgements.

The writer is indebted to the Alaska Game Commission, Executive Officer, Frank Dufresene, and his assistant, Mr. Homer Jewell for their aid in planning this trip and

for their advise. Game Management Agents Clarence Rhodes, Sam White, and Collins, also added any help and suggestions that they deemed important, and such was found to be most accurate.

Without the help of Cal Townsend, formerly of the Bureau of Fisheries, and Mrs. Townsend, it is questionable whether the writer would have reached the Chevak area before the middle of the summer.

To George Sheppard, trader at Chevak, the writer is most grateful. Mr. Sheppard not only turned over his trading post to the writer as headquarters, but loaned him his boat, transported him and his freight for a most nominal sum into the flats, and acted as interpreter on countless occasions. Sheppard's knowledge of the country, the Eskimos, and the wild life was great, and his help was cheerfully given at all times. In Addition, Sheppard put in many hours on his amateur radio set to assist the writer in making contacts with planes, supplies and mail.

Father Fox, Priest at Hooper Bay, also was of great assistance in helping to contact the Eskimos, and on one occasion furnished transportation to the writer over a considerable distance. His observations were most accurate and helpful.

To Mr. and Mrs. Thomas Schultz, school teachers at

Hooper Bay, thanks are also extended. For several days they provided the writer with living quarters and food while he was waiting at that village for a plane to pick him up.

To Charlie Peterson, mail carrier between Mountain Village and Hooper Bay, the writer also extends his thanks. Peterson also acted as interpreter and was very valuable as a go-between in contacting the Eskimos.

Return Trip.

Return was begun from Hooper Bay August 12. The writer had to wait a week beyond the appointed date for the Star Airways to pick him up. The reason for this being severe weather. When the flight was at last made, it was done at about 150 feet altitude in an old plane that was spilling about 10 gallons of gasoline per hour down through the motor on account of a bad gasoline line. The low flying was done in order to be able to make a quick landing, should the thing catch fire. Bethel was reached the first night. The plane could not be repaired there, so the following day the writer flew in it to McGrath. Here it was found that all boats sailing from Seward were booked to capacity, so on August 14 flight was made into Fairbanks with the Jim Dodson lines in a plane that was somewhat airworthy,

FISH AND WILDLIFE SERVICE
JUNEAU, ALASKA

All plane bookings out of Fairbanks were filled, but with the aid of Sam White it was possible to crowd into a plane for Juneau, providing that no baggage was carried. Juneau was reached the night of August 16.

At Juneau it was found that all transportation on boats and planes out of there had been reserved for several weeks ahead of time. In the early morning, at 2 a.m. the writer took steerage passage on a Canadian Line for Prince Rupert, B.C.

From Prince Rupert a train was taken via Edmonton and Winnipeg, and the writer's official Station was reached on August 22.

