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ALEUTIAN ISLANDS AND SOUTHWESTERN ALASKA

April 23—September 19, 1936

by

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DIVISION OF WILDLIFE REFUGES

OBJECTIVES

Instructions received by wire and by letter covering the expedition to the Aleutian Islands stressed the importance of a general biological survey of the islands with a view to obtaining all possible information on which to form a basis for effective management of the Aleutian Island Reservation. These instructions were construed to cover all interests in the Aleutian Islands such as fox farming, preservation of the bird rookeries, the sea-otter, and the conservation of any other interesting mammal forms which might occur there. Consideration was also given to the scientific value of the Aleutian chain, and general interest in these islands from various viewpoints, and attention was given to the welfare of the natives.

It soon became apparent that the most important problem confronting us was the conflict between fox farming and the preservation of the Aleutian avi-fauna. As the work progressed, it was found necessary to bend all our efforts to securing the necessary data on which to predicate a solution. We had an opportunity to give some attention to the sea otter situation, and since this mammal is a part of the Aleutian fauna— a very important and interesting part - we thought it desirable to spend considerable time studying this species.

Since vegetation is a necessary element in any ecological appraisal, we undertook to obtain a comprehensive view of the vegetation of this district, not only by the collection of specimens, but by field notes detailing the composition of the flora of each island.

We also soon found that the invertebrates could very easily become an important element in fox farming and had intended to make a thorough study of them by collections; but, as we had feared, we soon learned that time did not permit much work in that direction.

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We were well aware of the importance of bird collections in the Aleutian Islands and of the great interest among ornithologists in the question of speciation and insular forms. Hence we collected specimens at every opportunity, but since the ecological relationships proved so very important, we found it necessary to curtail our collecting activities in order to spend more time on the more immediate needs. It is greatly regretted that certain opportunities for collecting interesting forms had to be passed by this time.

This will briefly outline our general objectives, based on a study of the situation as we found it early in the enterprise.

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DIVISION OF WILDLIFE REFUGES

ITINERARY

Having received telegraphic instructions concerning the proposed expedition to the Aleutian Islands, I immediately assembled a field outfit and proceeded to Seattle, Washington, where I was joined by Mr. C. S. Williams, who was to be assistant in the scientific work. Together we made necessary purchases at Seattle, got in touch with Capt. John Sellevold, and in a few days had completed all preparations and the motor-ship "Brown Bear" left Seattle northbound on the evening of April 23rd. Arriving at Juneau, Alaska, there were a few more days of final preparation, and we were joined by Mr. Homer Jewell and Mr. Douglas Gray who represented the Alaska Game Commission to look after any phases of the enforcement work which might arise during the expedition, and were to assist in the general activities of the investigations.

After a conference with Mr. Terhune and Mr. Dufresne, and some final preparations, we left Juneau on May first, and proceeded westward along the Alaska Peninsula, stopping at Yakutat, Cordova, Seward, Anchorage and Kodiak. On the way to Anchorage we took the opportunity to visit Chisik Island. En route to Kodiak we stopped at Ushagat Island, one of the Barren Islands, where we did some collecting. We also stopped at Afognak Island where we inquired about the introduced "Roosevelt Elk" and observed some of them. Proceeding westward we stopped at Chignik on May 14th; from there we went to the Shumagins and visited Nagai, Unga, and Popof Islands. We did a little collecting here and took some field notes. We also made a short stop at Belkofski, then continued to Unimak Island where we visited False Pass and Ikatan Peninsula.

We were held up a short time by bad weather, but on the morning of May 21st we started around Unimak Island and headed eastward again towards Bristol Bay, where Mr. Jewell wished to attend to business for the Alaska Game Commission. During this visit to Bristol Bay, we took the opportunity to do some collecting at Snag Point, Ugashik River, Nelson Lagoon and Amak Island, and made a short stop near the west end of Unimak Island just before arriving at Akutan. We arrived at Unalaska on June 1st, this being our first contact with the territory we specially wished to investigate.

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On June 4th we left Unalaska and proceeded westward along the Aleutian chain, visiting the various islands and making our natural history collections throughout the remainder of the month. During the first week of July we found it necessary to return to Unalaska for fresh supplies, and taking advantage of a necessary delay in that part we investigated a number of small islands in the vicinity of Unalaska and Akun Islands. Then we returned to the westward and, during the month of July, reached the end of the chain at Attu. We had planned to visit a number of islands on the return trip, but having received word that the boat was to proceed to Nunivak somewhat earlier than originally planned, it became necessary to pass by some of the westernmost islands and hurry back to Unalaska, where we arrived early in August. We proceeded to Nunivak Island on August 11th, also visited Nelson Islands, and returned again to Bristol Bay were we picked up Mr. H. Sarber, a warden who was to be transferred to Southeastern Alaska. En route westward along the Peninsula, we stopped at Port Moller, visited Akutan very briefly, stopped again at False Pass, and proceeded eastward with various stops along the Alaska Peninsula, the Shumagin Islands, Kodiak, Cook Inlet, and reached Juneau on September 13th. Arriving at Seattle on September 19th, after a few days spent in packing and shipping specimens, we left Seattle September 23rd and I reached Jackson, Wyoming on September 25th.

The period from June 1st to August 11th was spent among the Aleutian Islands proper, while the remaining time was consumed in travel to various points in Bering Sea and southern Alaska as indicated above. During the time of travel outside the Aleutian chain, we took advantage of every opportunity to observe the local fauna and collect and note the vegetation every time we went ashore. Furthermore, at Nelson Island, several places along the Alaska Peninsula, among the Shumagins and in the Kodiak-Afognak group, we were able to make some special investigations. While traveling between points we made what observations were possible on water birds. All this miscellaneous information will be duly recorded below, in addition to the special report on the Aleutian Islands.

METHODS

It will be readily understood that to cover all of the Aleutian Islands with any degree of thoroughness is a time-consuming task, and far too large a project for one season even with a much larger personnel than was available to us. We were faced with two alternatives: First, we might have proceeded with a thorough investigations of each island seriatim, obtaining a moderately complete knowledge of the vegetation and fauna with their ecological relationships, and stopping at the end of the season with whatever number of islands we might have been able to cover during this time. It was apparent that the total number of islands visited by this method would be small. Second, the other alternative was to pick out what appeared to be the most important islands, to give each only a brief investigation - enough to gain some idea of the essential ecological facts - and thus proceed more rapidly throughout the chain and secure

a comprehensive view of the Aleutian fauna as a whole. Our first contact with this fauna clearly indicated that we had before us a serious conservation an administrative problem. It seemed best, therefore, to obtain this comprehensive, although technically more or less cursory view of the situation in order that we might be able to handle the immediate administrative difficulties involved, and formulate some sort of policy for the reservation.

Our method of procedure was to anchor in the vicinity of an island, and then to explore the shore-line with a dory. Wherever possible, one of us would go ashore and cover as much of the land as possible during the brief time we could allot to the island, while the others cruised about the shore in the dory, noting any bird colonies, kelp-beds, beaches, or other indicia of value to the work. Sometimes several days were spent on an island, especially when we were storm-bound and could go nowhere else, while the other extreme was reached when we could spend only a few hours at an island. In some cases we did not even go ashore. Collection of specimens was made whenever it was thought necessary for identification, or when an opportunity was presented to obtain desirable species. In this manner, giving what time we could to each island encountered and skipping an island now and then as necessity seemed to dictate, we worked our way throughout the entire length of the Aleutian chain. Having assured the completion of this synoptic type of investigation, we undertook to revisit certain islands for additional needed information. As the work progressed, we found it possible to gain a fair knowledge of the avifauna of an island in a remarkably short time. This was true in general. However, there were some species which required more thorough investigation, such for instance as the petrels. This will be apparent in the discussions following. In general, our most vital concern was with the shoreline, where bird colonies are found, although of course there were exceptions.

Incidentally, photographs were taken of the islands as weather conditions permitted, and we made rough sketches to show the physiographical features; and Capt. Bellevold assisted in the work materially by making very helpful sketches of the many islands. In many cases the captain followed with the "Brown Bear" at a safe distance off-shore, while the dory cruised along the beaches close in. In this way the captain was able to follow the movements of the dory and be ready with assistance in case of mishap. At the same time he took bearings on the points of the island, estimating distances, and when he had made the circuit he had a fairly accurate map. These sketches were far superior to those on the charts.

Needless to say, we lost no opportunity to interview natives as well as the whites encountered among the Aleutians, and they gave us some very valuable data and suggestions which we were careful to check with our own investigations and conclusions. We had with us an ample supply

of United States Refuge signs, and Mr. Jewell ably superintended the placing of such signs on most of the islands we visited.

I wish to express my appreciation of the whole-hearted cooperation given by all members of the party. Mr. Jewell's services were valuable especially because of his familiarity with administrative matters in the territory and with social conditions throughout the areas visited. Mr. Gray gave us his enthusiastic and intelligent assistance in any work that came his way, whether it be as engineer in our dory, or assisting in the collection of specimens and observation of birds. The members of the crew did everything they could to help, and Capt. Sellevold deserves special credit for the enthusiastic manner in which he sought to help in accomplishing the objectives of the expedition. He had a great responsibility in taking the ship through the entire length of the Aleutian chain in uncharted waters, contending with the ever-present fog, and seeking out various obscure islands which are rarely visited. We all felt grateful for the able manner in which he navigated these waters and brought the ship safely back to port. Mr. Williams prosecuted his work with greatest enthusiasm and ability, and was eager to take responsibility. He was chiefly responsible for the collection of plants and invertebrates. He has turned over to me his field notes and other material; we have discussed the problems and results of our expedition thoroughly, and the present report should therefore be considered virtually a joint report with Mr. Williams.

From time to time Mr. Jew ell, Mr. Gray, Mr. Williams and myself conferred regarding various islands visited, and we prepared a preliminary report on each island, while the facts were still fresh in our minds. I believe these are on file in the Juneau office. In the present discussion it is planned to go into much greater detail; and in some cases, conclusions and recommendations based on subsequant conferences, may be slightly different from those expressed in the preliminary reports. Accordingly, the material here presented should supersede that preliminarily given.

Before leaving Juneau we were furnished with files and information from the office, and these were a great help to us. It is to be noted, however, that most of the information on the islands given to the Bureau in former years by various people was entirely unreliable and, in the light of our findings, should not longer serve as a basis for administration. On the other hand, some previous reports by members of the Biological Survey, such as those by Stevenson, Terhune and Dufresne, are very helpful.

PHYSIOGRAPHY

Physiographically, the Aleutian Islands should be viewed in conjunction with the Alaska Peninsula, and even the adjacent Alaskan coasts. With this viewpoint we may trace the rugged mountain masses of the coast ranges of southern Alaska westward, follow their continuation along the Pacific side of the Alaska Peninsula and on through the Aleutian chain.

Similarly, the low flat Bering Sea coastal plain of Western Alaska continues along the north, or Bering Sea, side of Alaska Peninsula and this low coastal plain is represented on the north side of Unimak Island. It is significant that along the western portion of the Peninsula deep bays in a number of places almost divide it into several additional islands. Unimak Island is, in fact, cut off by only a narrow strait.

To the westward of Unimak this dual physiographic feature is largely lost. The islands are irregular in form, but largely mountainous. Mountain peaks are the rule. Many of the islands are characterized by a commanding volcanic peak. On larger islands there may be flat meadows or valleys of gentle relief, varied with miscellaneous mountain masses. In some cases, such as Amchitka and a large part of Kanaga, there are fairly level and extensive plains. A few small islands are low and flat.

As a rule, the shore lines of the islands are steep and precipitous while sandy beaches are relatively scarce. Often the shore is characterized by rounded boulders or angular blocks. In many places there are numerous off shore rocks and pinnacles and in the surrounding waters dangerous half hidden reefs are a constant menace to navigation. From the soundings which have been made the ocean bottom is apparently very irregular in depth.

Each island will be described in the following account.

METEOROLOGY

No attempt will be made to discuss the weather and precipitation in detail. We made no extensive records based on instruments, beyond what was recorded in the ship's log.

Briefly, the summer was characterized by fog. Early in June it did not hinder navigation greatly, but was present in the form of clouds almost continually hiding the mountain tops from view. But we could still see the basal portion of the islands. But later on, especially in July and early in August, the fog settled down in earnest and most of the time the islands were completely concealed from view. It was only by the utmost caution and patience that we were able to move about and eventually

find each one. Occasionally the fog would lift for a brief interval. Sometimes fog banks loomed out darker than the surrounding mist and on several occasions were mistaken for land, and would return an echo from the ships whistle. This persistent fog is characteristic of the summer season, often referred to as the fog season. During this period the weather is relatively calm. Furthermore, rains were infrequent.

According to local information there is a period in the autumn and early winter including December and part of January when the weather is much more clear and not abnormally stormy, this being considered a favorable time for navigating and for trapping foxes. Later in the winter the storms are terrific and rainfall heavy.

Precipitation is heavy in late winter and spring. There is a certain amount of snowfall but it remains moist and except for short periods it does not become deep. However, the volcanic peaks become deeply covered with snow. They were still white-capped late in June.

VEGETATION

The plant collection made in the Aleutians has not yet been identified. Therefore the discussion of flora must be very general. Many of the plants were recognized from previous work and as a rule the genera can be given. But a more detailed consideration of the plant life must await a later opportunity.

With the exception of some groves of Sitka spruce transplanted on Unalaska Island, the Aleutians as well as most of the Alaska Peninsula are treeless. The largest form of vegetation on the western Alaska Peninsula is alder, Alnus fruticosa, which is present in irregular thickets, some of which grow rank and dense. These are accompanied by willows in favorable situations. Unimak Island, also, supports alder thickets and willows. However, at Unalaska only a few large willows were observed and few alders. To the westward of Unalaska shrubs were of the dwarf variety and the largest forms of plant growth were certain grasses and umbellifers.

The general character of the flora was remarkably uniform throughout the Aleutians. The same associations were found repeatedly on island after island. At the beaches we encountered heavy growths of wild rye, Elymus sp. This grew abundantly and often very rank, not only on the beaches, but often extending up the banks and in some cases far up the slopes, where these slopes arose in an unbroken line from the beach. However, where the ground leveled off from the top of a bank or bluff, although Elymus sometimes persisted for some distance, it soon gave way to other species.

Elymus, generally in association with Heracleum, Conioselinum ~~Ostericum~~ gmelini, and similar Umbelliferae, formed dense vegetative masses on various knolls which were sites of ancient villages. Such sites are readily recognized by these green, dense masses. Presumably the soil of such places of human occupation had been enriched by refuse acting as fertilizer. Similarly, on certain ridge tops, summits of small islands, or other favorable place where gull colonies were nesting, these same plants grew rank, probably in this case sustained by guano and other food refuse.

Another grass, which we provisionally identified as an Agrostis, often grew closely associated with Elymus, frequently quite near the beach, but oftener farther back and roughly seemed to occupy the next zone beyond the Elymus. This grass was very abundant throughout the Aleutians as well as on the Alaska Peninsula.

In interior valleys, flats and uplands sedges, of several species, were abundant locally. These occupied areas, as a rule, where vegetation was of low growth. And in the valleys and lower slopes was a variety of flowering plants, Cerenium, Anemone, Ranunculus, Orchis, Lupinus, and many others.

A very common plant association was a heath composed largely of Empetrum nigrum, Vaccinium, Arctous, moss, sometimes a few lichens, and other plants common to such associations. Such plant growth was on higher ground, on high benches or exposed slopes, and up to high elevations where it gave way to a more strictly rock-loving flora. Very little work was done, but in several cases it was noted that vegetation became very sparse on high, rocky situations.

Along the beaches, particularly sand beaches, there were a few characteristic plants, such as Lathyrus, Senecio pseudo-arnica, and Ammodenia peploides major. These were usually the first plants encountered near the water, on beaches where they occurred at all, sometimes mingled with the first of the Elymus zone.

On a few islands, notably Amchitka, there was a considerable amount of lichens, Cladonia sp. and related forms, associated with moss, sedges, and other plants.

Dr. Eric Hultén, who is publishing on the Aleutian flora, in a preliminary statement has called attention to the fact that many American forms have extended their range part way out through the Aleutians, westward. Another group of Asiatic species have come eastward and have become established on the western portion of the Aleutian chain.

A somewhat more detailed statement will be given in the discussion of the individual islands.

BIRDS

In this list are included observations throughout the entire trip. Many birds were noted from the ship, flying by or swimming in the water and while at times these could not be identified with certainty, nevertheless we were able to record many species in this manner. Various stops were made on business other than ornithology, but advantage was taken of all such stops and such incidental studies produced several nesting records and extensions of range.

An effort was made to obtain the Aleut names of birds and these are included here with some hesitancy, since time did not permit us to pursue this subject to a satisfactory degree of accuracy. It is extremely difficult to record Eskimo or Aleut syllables with the English alphabet. It is difficult to even hear the spoken syllables correctly, and this is the greatest obstacles The names are here attempted phonetically, as they impressed me, and not by any standard system used by Ethnologists.

Final ch as in the German Buch.

The endings of some words were very difficult, being very soft, somewhere between h and ch, sometimes apparently with an "r" sound.

R is very guttural, and glided over, sometimes accompanied by an h to emphasize this quality.

I as in it.

E as in let, unless marked long.

A as in Ah.

There are three Aleut dialects, indicated here as Attu, Atka and Unalaska dialects. Very few names in the Unalaska dialect were obtained.

Gavia immer immer, Common Loon.
Attu dialect: "Hah-goo'-gich
Atka dialect: "Kri'-guch"

Few loons were seen enboute to the Aleutians. Three or four were noted April 24 just south of Seymour Narrows and next day two flew by the ship just north of Bella Bella, B.C.

May 11 a loon flew past the ship near Ushagat Island, of the Barren Island group.

As we entered Nushagak River, in Bristol Bay, I recorded at least 5 or 6 loons. Mr. Williams noted "about 12".

Among the Aleutian Islands we did not see many. Several were seen on Adak Island July 2; one on Three Arm Bay, one on Bay of Waterfalls, a pair not far from this bay on a large lake, and another on a small lake west of the large lake. On July 3 an unidentified loon was seen in Kulik Bay, of Adak Island. Nowhere else did we see as many common loons as on Adak Island. It might be mentioned that there are many lakes on this island.

One was seen at Kiska Island July 26.

Chief Kodikoff, at Attu Island, informed us that common loons arrive there in April, nest, and depart in October.

Common loons probably occur sparingly throughout the Aleutian chain, undoubtedly chiefly on the larger islands, but may prove to be less common than stellata.

Gavia adamsi, Yellow-billed Loon.

An attempt was made to describe the yellow-billed loon, by means of pictures, to the chief of the Attu village. He appeared to recognize the bird and stated that this species occurs there very sparingly. However, this needs verification for there is some doubt about correct identification. None were seen by us.

Gavia arctica pacifica, Pacific Loon.

On April 27 loons were common in Wrangel Narrows, at least 25 or more being noted. These were in immature or winter plumage, but three were acquiring the spotted summer plumage.

On May 29 I found at least 8 pairs of Pacific Loons, evidently nesting, among the numerous lakes on the flats bordering lower Ugashik River. Later in the day three more were seen flying over the river.

On August 14 several were seen at Nunivak Island and I found an adult with a single young in a pond near the village.

Among the Aleutians our records for this species are rather indefinite. The chief at Attu did not appear to recognize the pictures of this loon and declared it does not occur there. We saw 3 loons flying by on Atka Island on June 22 but we were not certain of the species. I saw another on a lake farther inland and in Kanaga Island, June 29, another was seen, possibly of this species, but in no case was positive identification possible.

It should be recalled that Turner records the species at Attu in the winter of 1880-81 and says they breed in considerable numbers on Semichi Islands, which we were unable to visit on this trip.

Gavia stellata, Red-throated Loon.
Attu dialect: Ka-ka-dra'-Cha or Ka-ka-dra'-ka
Atka dialect: Ka'-knch.

The native name is derived from the loon's call. The chief at Attu referred to it as the "fresh water loon" and said it nests on Attu Island, but does not winter here.

A pair was seen July 2 at Adak Island, swimming off shore at Bay of Waterfalls.

They were found on Amchitka Island, a pair on July 24, one taken for a specimen, and a pair in a pond at the northwest end August 1. No young were seen.

Three were seen July 26 among some ponds on Kiska Island.

Turner records this as an abundant species among the Aleutians and according to Turner, Dall and other observers, Red-throated Loons are particularly common on Amchitka, Agattu, and Semichi Islands.

Colymbus grisegena holboelli, Holboell's Grebe.

Two Holboell's Grebes were seen in Seymour Narrows, B.C., April 24 and on April 27 between 20 and 30 were seen in Wrangell Narrows, Southeastern Alaska. Again, on May 29, one was found apparently nesting in a pond near lower Ugashik River, and another swimming in the river.

Among the Aleutians this species was noted only once. This was on June 18, when a pair arose from the water near the northeast shore of Seguam Island.

Colymbus auritus, Horned Grebe.

A few were observed in Seymour Narrows April 24, several at Port Chatham, Kenai Peninsula May 6, and 2 at Ushagat Island, of the Barren Island group, on May 11. None were seen in the Aleutians, but Turner says they used to occur there in winter.

Aechmophorus occidentalis, Western Grebe.

Enroute to Alaska, on April 25, both south and north of Bella Bella, B. C., we observed occasional western grebes, in twos and threes. We noted 20 or 25 at least. Some were calling.

Diomedea nigripes, Black-footed Albatross.
Attu dialect: A-la-grĕ-gich
Atka dialect: A-ga-lĕ-gach.

Black-footed albatrosses were first seen May 23on the Gulf of Alaska, where they are commonly met with and again near Kodiak Island on May 11. Subsequently we saw them often throughout the Aleutian chain, where they are common some distance off shore. On June 21, while passing westward near Amlia Island, we counted 12 in sight at one time. In this case they were attracted by codfish offal, thrown overboard by the deckhands. They were sometimes noted about tide rips, where fulmars and other birds were feeding. Mr. Williams had counted 12 albatrosses on another occasion, June 18, west of Seguam. Evidently the Aleutian district is a favorable summer home for this species.

The white coloration about the base of the bill was usually quite noticeable and in many cases considerable white was observed about the base of the tail, although in many others this latter marking was not noted.

Two specimens were taken, one near Sequam Island on June 17 and another late in July which Mr. Williams saved for a skeleton. The former was a female, with undeveloped ovaries, weighing 6½ pounds and with a wing spread of 85 inches.

According to at least two old Aleuts there is a tradition that albatrosses used to nest, in winter, in small numbers high up on the top of Bobrof Island. While incubating, ice would form on the beak of the bird, apparently icicles, judging by the descriptive gestures of one informant. Although this all sounds improbably, could it be possible that a few albatrosses tried to nest there? At least the tradition has the proper nesting season for this bird, our winter.

Diomedea albatrus, Short-tailed Albatross

This species was scarce among the Aleutians. The mate, Mr. Martin, saw one between Seguam and Chagulak Islands on June 21. On July 31 we all had a good view of one sitting on the water at a moderate distance from the ship, between Buldir and Kiska Islands, and later in the evening another was seen nearer to Kiska Island.

Mike Modikoff, chief at Attu Island, says they occur only rarely among the westernmost Aleutians.

Puffinus tenuirostris, Slender-billed Shearwater.
Attu dialect: A-la-mech.

Shearwaters of the north Pacific are notoriously hard to identify in life and our observations are here included under this one heading for

convenience. Unfortunately very few specimens were collected. Frequently when we encountered flocks of these birds the water was too rough to pick up birds, or we hesitated to stop the ship because of the need for haste in travel. A few specimens were taken and the remains of several were found on beaches or in bald eagle nests.

A few shearwaters were seen as we crossed the Gulf of Alaska, on May 8. A few more were seen at the entrance to Cook Inlet on May 10 and a single one was seen near Barren Islands May 11.

On May 14 shearwaters were numerous between Sutwik Island and Cape Kumlik and a large flock was drifting about as we entered Chignik Bay. They strung along for surprising distances and at times the horizon appeared to be lined with them.

On May 15 a few were seen near Nagai Island, in the Shumagins.

Shearwaters were particularly abundant May 17 to 19, near Ikatan Peninsula on Unimak Island. The remains of one were found on Sankin Island, where a bald eagle had fed on it.

On May 22 shearwaters were plentiful in Bering Sea off the Alaska Peninsula between Mt. Pavlof and Port Moller and beyond toward Bristol Bay. A single individual was seen in Nelson Lagoon.

On May 31 Mr. Williams secured a specimen near Cape Point on the north side of Unimak Island.

On the return trip, on August 29, we encountered shearwaters about Simeonof Island, in the Shumagins, and between that point and Kupreanof Harbor on the mainland. Next day they were noted again between Kupreanof Harbor and Chignik. On September 1 we passed through a dense mass of shearwaters north of Karluk, in Shelikof Strait. They appeared so full of food they could hardly fly to avoid the ship, spattering over the water with difficulty. Several dived and appeared to use the wings to swim under water, but they did not dive very deeply.

A specimen was taken near Kodiak September 3, another one which appeared either too surfeited with food to fly away or diseased.

Shearwaters were observed casually here and there in other places and Mr. Williams has other observations not recorded here, but it may be stated that shearwaters were found most abundant about the Alaska Peninsula and Unimak Island, with Ikatan Peninsula and Unimak Pass and vicinity of Chignik notable as concentration areas.

Comparatively few were seen among the Aleutians to the westward of Unimak Island. June 29 the remains of several shearwaters were found in two bald eagles' nests at Kanaga Island; remains of one were found on the beach of Tangik Island on July 16, another on Oglinga Island on July 23. Apparently these birds are often sought by the eagles as food.

Chief Kodikoff, of Attu Island, appeared to know the shearwater and declared that formerly many nested on Agattu Island, but "not many" there now. A few were seen on Semichi Islands in 1932. According to Mr. Williams' records, Attu Island is also included as a nesting ground. The chief's information on the nesting sites was a little confusing, some nesting on "level ground, some in clumps of grass". He stated that as soon as the young were able to fly they left the nesting grounds.

According to the chief, the decrease in numbers of shearwaters is due to the introduction of blue foxes. It is of interest to note that Lucien M. Turner, about 1879, learned from the natives of Atka that xxxx slender-billed shearwaters "breed plentifully on the Semichi Islands."

One of the greatest disappointments of the trip was our inability to run down this information on nesting shearwaters. The necessity of turning back about the end of July did not leave time to visit some of these critical islands. It is important, first, to learn whether shearwaters actually do nest on those islands and what species they are. And we should know what effect fox farming has on the birds and take the necessary steps for their protection.

Fulmarus g. rodgersi, Pacific Fulmar.
Attu dialect: Kil-i-ghoo-kin
Atka dialect: Ah-ga-luch

The Atka name for the fulmar should not be confused with their name for killer whale, which I have recorded as "A-ga-loh," a word pronounced with shorter syllables, as I understood it.

Fulmars were plentiful among the Aleutian Islands. On the Pacific side we first found them at Unimak Island, partifularly Unimak Pass, on May 21. Mr. Williams, who made the most detailed observations through the Pass, stated that about 50% of the birds were white. On the Bering Sea side of Unimak Island (when I finally emerged after an attack of sea-sickness) I found the majority white, although there were some dark ones and I saw at least one band nearly all dark.

They were less abundant along the north side of Alaska Peninsula, from Mt. Pavlof eastward beyond Port Moller, although a few white ones were seen, on May 22, and next day one or two were noted on the outer part of Bristol Bay.

Subsequently, we found fulmars at various points throughout the Aleutians, at the following places, among others:

Umnak Island, North side--June 5. A large flock, all dark. At least one dead one found on Bogoslof Island.
Nagamil Island--June 8,9. Several, all dark.
Carlisle and Herbert Islands--June 13-14.
Chagulak Island--June 15. Extremely numerous, nesting.
Amukta Island--June 16--abundant, nesting.
Adak Island--July 3--large flock, including 3 or 4 white ones.
Kagalaska Island--July 4--a large flock.
Igitkin Island--July 5-6--3 or 4.
Kasatachi Island--July 7--a dozen or fifteen, one white one.
Atka Island--July 8. Quite a few.
Islands of Four Mountains--July 9--quite a few, including a white one.
Baby Islands, Rootok Island--July 15--a few.
Gareloi Island--July 21--a few.
Buldir Island--July 27--two white ones found dead on the beach, one with a little oil in the plumage.
Unalga Island--August 4--a few.

A few fulmars, including some white ones, were seen here and there in Bering Sea enroute from Unalaska to Nunivak and Nelson Islands, south to Bristol Bay and around to False Pass, from August 11 to August 23.

Several were seen between Simeonof Island, Shumagins, to Kupreanof Harbor on the mainland.

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One of the most interesting finds on this trip was the nesting of the fulmars. On June 15, as we approached Chagulak Island, fulmars were particularly numerous, feeding in the tide rips. Presently it appeared that they were swarming about some of the cliffs of the island itself, the first time we had found them closely associated with land. Going around to the south side we found more definite evidence of nesting and we made a landing with the dory.

There were small recesses in the red, crumbly rock strata, each one occupied by a fulmar incubating a single egg. Many were nesting on ledges of the cliffs, others on the slopes and judging by the milling of hordes of birds, they were nesting all the way from sea level to the high snow line. No nests were constructed, the egg being laid on the bare ground, where we observed them.

When we went off shore in the dory we had a good view of this island. Fulmars were flying about the slopes and a surprising number of birds were circling about the mountain top and other swarms were whirling about a short distance away, the topmost ones being mere specks against the blue sky. I can make no attempt at an estimate, beyond stating that there were many thousands of fulmars.

Chagulak Island has not as yet, fortunately, been leased for fox farming and of course it should be held for the fulmars and other birds.

Amukta Island, visited June 16, proved to be another nesting place for fulmars. I did not visit this colony, which appeared to be largely confined to the west side of the Island, but Mr. Williams, who cruised along that shore with the Captain, Gray, and Jewell, reported them nesting in thousands on the cliffs of that side, just as on Chagulak.

These two were the only nesting colonies actually observed by us. Some natives of Atka assured us that fulmars used to nest on Careloi Island, on the cliffs of the east and west sides, and on Chugul Island, near Kiska Island. We could find no fulmars on Careloi, during our brief visit, and Chugul Island was not visited. The chief of Atka village assured us that fulmars nested on certain outlying rocks at Unalga Island. We examined those rocks and found no fulmars nesting. This was on August 4. They are said to nest on Agattu Island.

On many occasions we noted fulmars picking at the large brown jelly fish which inhabit these waters and these appear to furnish a dependable source of food. However, we believe that small crustacea are probably very important as food. On numerous occasions we found fulmars feeding, in company with other birds, in tide rips, where the water would seem to be stirred up sufficiently to bring the desired food to the surface.

In a number of bald eagle nests we found remains of fulmars, indicating that these birds are either very palatable or easy to capture. There is also the possibility that these are found on the beaches, since we found several dead ones along the shores.

Pterodroma inexpectata, Scaled Petrel.
Attu dialect: Lé-vi-dré-chĕ.

The native name for this bird is given here only provisionally. There was apparently some confusion in my mind on what species were meant at times when talking with the natives and the names of petrels should be checked up at the first opportunity.

Scaled petrels were not seen by us but on arrival at Attu Chief Hodikoff described for us three species, including one with "gray" in the plumage, and which he insisted was different from the Fork-tailed Petrel and Leach's Petrel. The bird is believed to be Pterodroma.

The chief says this petrel breeds abundantly on Attu Island, near the beaches, and flies only at night. It arrives in March and nests early. There was no time to investigate further.

Oceanodroma furcata, Fork-tailed Petrel.
Attu dialect: Á-la-ma-gó Kĕ-kŏch
Atka dialect: Kí-ki-tich-noch

The Atka name apparently includes both this form and Leach's Petrel.

This was the only petrel we observed alive. The first petrel seen on the trip was near Kagamil Island on the morning of June 8. It was identified as O. furcata. That night, while we were anchored at the north end of the island, petrels were flying about, chirping, attracted by the ship's lights. No doubt they nest on Kagamil Island.

On Chuganadak Island, when I was walking back to the ship along the shores, late at night, at least three different petrels fluttered past my head. Probably they nest on this island.

At Yunaska Island, on the evening of June 14, many petrels were flying about in the beam of the search light. Two struck the rigging and one was caught.

On Chegulak Island, on June 15, I found a wing of O.furcata. Evidently it nests there.

On June 16 I found a nesting colony apparently all furcata, in the lava beds of Amukta Island. There were numerous wings lying about and many fox droppings collected contained largely petrel remains. The foxes were evidently living on this colony. Judging by the large number of wings lying about, if fox farming should be intensified on this island, the petrel colony would disappear. We went ashore at dusk and while Mr. Jewell remained aboard and played the search light over the landscape, we walked about in the lava beds and observed the fluttering birds in the beam of light. They were chirping in the air about us and under the ground at our feet. It appeared that birds which had been away during the day were coming in to relelve-their mates.

The eggs were placed in natural cavities in the jumbled lava rock. The ground was scantily clothed with moss and entrances to the nesting crevices were usually rimmed with vegetation, which showed a slight degree of wear from the passage of the birds. A number of eggs were found, some warm, others cold and deserted. One was fresh and two others were well incubated. A bird taken from the nest in the afternoon was a male.

During the night of June 18 the Captain saw many petrels while passing Chagulak Island and on until day-break, well past Yunaska.

On June 20 I found some fox dens on Uliaga Island where an abundance of petrel remains was in evidence. Feathers also were the principal item in the droppings. Along the beach petrel wings were found in at least seven places. Evidently petrels constitute an important item in the food of these foxes. Here, again, we are confident that intensive fox raising will eliminate the petrel colony in time.

A number of holes were found on Uliaga, which might have been petrel nest places, essentially crevices, although there was some soil present. In one of these was found a cold petrel egg, but no live birds.

About daybreak, June 21, the mate saw a number of petrels while passing Segusm Island.

In the morning evening of July 6, while anchored at Igitkin Island, we heard petrels chirping over near the shore and the Atka chief said they nest there. Some were seen near Ulak Island nearby. The chief also said they nest on Kasatochi Island.

On July 18 we visited Egg Island, not far off the southeast part of Unalaska Island and on one slope among some cavities in the loose rock, I found at least two eggs and 3 or 4 Forked-tailed Petrels.

Quite a few petrels were seen at night while passing opposite Great Sitkin Island on the night of July 20.

Petrels came flying about the boat on the nights of July 21 and 22 at Ogliuga Island, several going into the fo'c'sle.

At Careloi Island on August 6 and at Kobrof Island on August 7 numerous remains of this petrel were found, where foxes had fed on them. Evidently they nest on both of these islands and on both they were being destroyed in large numbers by blue foxes. At Careloi Island they flew about the ship at night, attracted by the lights.

A native of Atka Island told me petrels nest on Chugul Island, near Kiska Island, on Amlia and Ilak Islands and that formerly they nested on Salt Island, but have been destroyed by the foxes there.

The chief at Attu Island stated that the Forked-tailed Petrel nests on Agattu Island, but only a few on Attu, and that they arrive late in April, much later than the other two species.

Several natives said the Forked-tailed Petrels and Leach's Petrels nest together on various islands, and this is the information given by Grinnell, Bent and others. The only petrels we found nesting were the Forked-tailed Petrels. Mr. Bent also mentions seeing large numbers of petrels at sea, enroute to the Aleutians. We saw very few. Petrel colonies are hard to find and the task is time-consuming. This is one bird on which we do not have sufficient data. However, in view of a possible general decrease in numbers and the known fact that petrels furnish the principal item of food for blue foxes in some cases during the nesting season, it is imperative to take precautions to insure the preservation of this bird. In some cases fox farming should not be permitted. This matter will be discussed under the head of the individual islands.

Outside of the Aleutians petrels were noted casually only twice. While anchored at Unga in the evening of August 25, Forked-tailed Petrels were attracted by the ship's lights, flew into the rigging, and several fell on the deck.

On August 29, when leaving the Shumagins, a Forked-tailed Petrel was seen flying, opposite Big Koniuji Island in the evening.

Oceanodroma l. leucorhoa, Leach's Petrel.
Attu dialect: Ka-kech
Atka dialect: Ki-ki-tich-noch?

Although several natives assured us that the "black" petrel as well as the Forked-tailed one nested "everywhere" among the islands, we obtained no definite nesting record. Wherever we found petrels nesting, they were invariably furcata. On such nesting grounds, while there were numerous wings left by the foxes, none of these were of leucorhoa. I did not see a single live bird of this species, neither did Mr. Williams. However, the Captain and the mate, who were constantly at the wheel when traveling, observed them on a number of occasions, according to their descriptions.

On July 9 the mate, Mr. Martin, said he saw "black" petrels with "whitish tips to the wings" somewhere near Seguam Island. This description, though very general, involves black and white in the plumage and suggests leucorhoa.

Mr. Martin reported seeing another black petrel, with white rump patch, on July 31 between Buldir and Semichi Islands. I found the wing of one on Buldir Island July 27. Byerdam (1936) reports obtaining specimens at Unimak and Unalaska Islands in 1932.

Other records of this species are less definite. The Attu chief says Leach's Petrel arrives there in March.

The status of all the petrels is very uncertain. It is hard to locate the nesting grounds among so many islands and these birds require more time for study than in the case of any other species. However, fragmentary as our information is, the prevalence of petrel remains in fox droppings is sufficient to make it imperative to take necessary precautions for their preservation.

Phalacrocorax a. cincinatus, White-crested Cormorant.
Attu dialect: Kuch-tirch
Unalaska dialect: T'chung-ahh.

The White-crested Cormorant is pretty generally distributed but nowhere abundant. It is found all the way from Cook Inlet and Barren Islands westward to Attu Island.

This species was first seen at Yakutat on May 2, when two were noted. One was fishing and was seen swallowing a small fish.

On May 7 several were seen on the west side of Chisik Island in Tuxedni Bay. Some sat in the grass on the top of the high cliffs, others were perched in the alders there. Evidently they nest there.

On May 11 several were seen at Ushagat Island, of the Barren Islands group.

On August 29 at least 2 were seen at Simeonof Island, of the Shumagins.

In 1925 I found a colony of these cormorants nesting on a low rock islet in Isanotski Strait, this being, of course, the eastern-most colony among the Aleutian Islands proper. We did not visit this colony this year. None were found on Amak Island, either this year or in 1925.

Several, probably less then a dozen were seen at Unmak Island on June 7 and a male, weighing 7 pounds was taken, No. 3846 C.J.M.

On June 8 we found these cormorants nesting on Kagamil Island in limited numbers. Their nests were placed on lofty ledges on the sheer cliffs on the north and west sides of the island. Some of the birds exhibited fine white crests.

Mr. Williams reported this species on Uliaga Island on this date, especially on the west side. They were seen here again on June 20.

On June 13 we found a small colony on the southwest side of Carlisle Island, nesting in company with red-faced cormorants, on ledges of cliffs and in caves. Another colony, also on cliffs with urile, was found at the westernmost point of the island.

On June 14 two or three were seen about Herbert Island and 7 nests were found on the cliffs of the south side, near a colony of P. urile and P. pelagicus.

On July 16 five of these cormorants were perched on low rocks at one of the little island we designated "Puffin Island" in Trident Bay of Akun Island.

The natives at Atka assured us that this cormorant does not occur in that part of the Aleutians. But the chief of Attu village was familiar with it, had a name for it in the Attu dialect, "Kuch-birch" and said this species used to be abundant there, but only a few remain now.

As these notes indicate, the White-crested Cormorant is comparatively scarce in the Aleutians, the least common of the three breeding forms. Undoubtedly their nesting places are such that they are protected from foxes and their scarcity may possibly be due to competition among the three species of cormorants. The colony in Isanotski Strait is located on low islets, where the nests are simply placed in the grass on a gentle slope. Would such unprotected nesting sites be chosen among the Aleutians in general, thus enlarging the possible nesting area, if foxes were not present? It is possible that protected nesting sites are at a premium and that P. pelagicus and urile have the upper hand. This is only a suggestion. The limiting ecological factors are not known.

Phalacrocorax p. pelagicus, Pelagic Cormorant.
Attu dialect: Kri'-li-ti-kch or Kri'-li-ti-kich ?
Til'-i-toch - young, 1 year old.
Atka dialect: Agh'-i-uh (possibly cormorant in general)

This was probably the most widely distributed of the cormorants and the one most commonly met with, although it was generally far outnumbered by urile in the nesting colonies. Generally these two species nested together, occasionally all three species on one cliff.

Not all occurrences were listed, but the following data indicates their general distribution enroute to the Aleutians: April 24, an occasional one east of Vancouver Island; April 25, a few in and near Millbank Sound; April 27, an occasional one in and north of Wrangel Narrows; May 5, several at Seward; May 6, three or four at Port Chatham, Seward Peninsula; May 7, 15 or more noted at Chisik Island, Tuxedni Bay, in breeding plumage; May 10-11, Several in the Barren Islands, especially near Ushagat Island; May 13, an occasional one between Kodiak and Afognak Islands; May 14, several at Sutwik Island and Chignik Bay; May 16, a few were preparing to nest on the cliffs on the south side of Belarof Harbor, at Unga in the Shumagins, in company with a large colony of Red-faced Cormorants; May 21-23, an occasional one was seen around Unimak Island and along the Alaska Peninsula to Bristol Bay; May 31, a few on Amak Island, where most cormorants are urile, and a small group was noted at Cave Point, Unimak Island; Aug. 29, common at Simeonof Island, in the Shumagin group.

Among the Aleutians proper we had an opportunity to note more particularly the actual nesting places of these cormorants. Almost invariably a small number of pelagicus was found nesting in company with a much larger number of urile, generally side by side on the ledges of the same cliff face, as the following records show. Often an occasional cormorant was seen at some distance from an island and such casual observations often escaped our notebooks in the press of work and are not recorded here.

Unalaska: An occasional cormorant was noted in that vicinity in early June.

Bogoslof Island: A few noted (Williams recorded 4) on June 5.

Kagamil Island: A few nesting in company with urile on ledges of the cliffs, June 8.

Uliaga Island: Mr. Williams found a few nesting June 8. On this date Williams and I both noted individuals with light brownish streaks in the scapular regions, apparently sub-adults.

Carlisle Island: On June 13 a number of pelagicus were found about Carlisle Island, most abundant at the south end.

Herbert Island: June 14 a few were noted at intervals about Herbert Island, some nesting on the south side, in the cliffs in company with urile. A number of brownish individuals, apparently immature birds, were seen.

Yunaska Island: June 14 they were found sparingly. On the northwest side were at least two rookeries of urile which included a few pelagicus.

Chagulak Island: June 15 both pelagicus and urile were found nesting on cliffs at the southwest and southeast points of the island, some nesting back in caves or dark clefts.

Amukta Island: June 16 Williams recorded them as numerous around Amukta Island but did not note any nests.

Seguam Island: June 18 we found them at intervals alogg the shores. On a cliff at the east point were 15 nests of urile and two of pelagicus.

Little Tanaga Island: June 28 a few were noted in Kazan Bay.

Kanaga Island: June 29 a number were seen among the outlying rocks of this island.

Adak Island: On July 2 a small group was noted in Three Arm Bay. Williams, Jewell and Gray found large numbers in Bay of Islands. Williams estimated 400 near South Island, where they were nesting. A few P.urile were nesting with them. A mixed colony was nesting also on the cliffs of North Island, where P. urile was more in evidence. A nest was found on the southernmost of the Entrance Islands.

This is one of the few instances we found where we found cormorant rookeries in which P. pelagicus outnumbered P.urile. A number of the nests had young birds. One nest which I was able to reach contained 4 eggs.

Kagalaska Island: July 3, a few were noted in the pass between Kagalaska and Adak Islands and a dozen or more on Selak Island, a rock between Kagalaska and Little Tanaga Islands. The Atka chief stated they nest on Selak Island.

Umak Island: July 5, a few on the south side, but none found nesting.

Kazuk Island: July 5. A few nesting on the south and west sides.

Aso Island: July 5. Common about the island. On the southeast side in a recess in the cliff were 60 to 75 birds nesting. Some nests may have had eggs, as we could see no young from below, others had young of various ages and at least 2 full grown young flew off from nearby rocks.

Umak Island: July 5. Two or three were seen.

Igitkin Island: July 6. About 50 or 60 cormorants of this species were seen about the island, many at the east end, where some were nesting.

Ulak Island: July 6. Twenty or more were nesting among the cliffs.

Koniuji Island: July 7. One or two were seen, but the island was observed only at a distance.

Salt Island: July 8. Common about the island, a colony of about 10 birds seen on the cliffs at the west end. Two young were seen in one nest.

Atka Island: July 8. A few noted near Cape Korovin.

Baby Islands: July. Very few were seen about Koschekt and Adakt Islands of this group.

Egg Island (near Unalaska Island): July 15. A small nesting colony was found, but the species was not identified.

Poa Island: July 16. A few were seen.

Tangik Island (near Akun Island): July 16. Less than half a dozen noted.

Kasatochi Island: July 20. A small colony on the west side.

Careloi Island: July 21. About a dozen were nesting on the northeast side.

Ogliuga Island: July 23. About 25 birds were seen about the island but no sign of nesting.

Kiska Island: July 26. A small colony of P.pelagicus and P. urile was found on a cliff on the northwest side.

Buldir Island: July 27. A colony of 12 nests was found on the northwest side.

Attu Island: July 29. Williams, Jewell and Gray saw 100 or more between Chichagoff and Holtz Bays. The chief stated both species are common here.

Amchitka Island: Aug. 1. A few were nesting in a colony of P.urile on the northwest side and 15 others were noted on an outlying rock.

Amatignak Island: Aug. 2. Ten noted.

Tanadak Island (near Ulak Id.) Aug. 3. Four seen.

Unalga Island: Aug. 3. Common in small groups.

Kavalga Island: Aug. 4. A few seen.

Bobrof Island: Aug. 7. A small nesting colony was found.

This species is widespread and common, its ecological niche is fairly well filled and the nesting places are protected from foxes.

Mr. C. J. Rhode, who was a fellow traveler for a time, observed a colony of about 50 cormorants on islands in Okilak Lake, on Kenai Peninsula. The species is doubtful.

Phalacrocorax urile, Red-faced Cormorant.
Attu dialect: Ing-a-tohh or Ing-a-torh
Atka dialect: Ing-a-tohh

Walrus Island in Bering Sea appears to have been accepted as the chief nesting place of the Red-faced Cormorant in Alaskan waters. The present investigations, as well as my own more restricted observations in 1925, indicate clearly that this species nests commonly throughout the Aleutian chain as well as at several points eastward of those islands. As a matter of fact, in the rookeries themselves the Red-faced Cormorant greatly outnumbered the Pelagic Cormorant, although, curiously enough, those observed away from nesting places, fishing in tide rips or passing the ship, were generally of the latter species. Could it be that the more robust urile was able to appropriate most of the available nesting places on the cliffs, to the exclusion, in a large measure, of a rival species? In such case the foxes would take care of any attempt to ~~xxx~~ nest elsewhere than on the cliffs. Studies to solve such an ecological problem would be interesting and useful.

The following occurrences were noted:

Unga Island (Shumagins) May 16. Possibly 300 Red-faced Cormorants were nesting on a rocky cliff on the south side of Delarof Harbor, near Unga. Nesting was just beginning, some of the birds carrying nest material. Only a few P. pelagicus were present. This is probably the easternmost nesting record we have.

Ikatan Peninsula, Unimak Island. May 20. A single bird flew by us at East Anchor Cove.

Amak Island: May 31. I visited the large colony of Red-faced Cormorants which in 1925 I had estimated at four to five thousand. Conditions were much the same, so far as I could tell. They were busy carrying nest material. This is the largest colony found.

Kagamil Island: June 8. Small groups were nesting on the cliffs at the north and west sides of the island, in company with a smaller number of pelagicus.

Carlisle
Umiaga Island: June 13. Scattered individuals were noted at frequent intervals, especially on the west side, and a colony was found on the southwest side and another at the western-most point of the island. In each case there were some White-crested Cormorants on the same cliffs.

Uliaga Island: June 8. Mr. Williams reports some nesting on Uliaga Island.

Herbert Island: June 14. A few were noted at intervals and a colony of 50 nests on the south side, together with a few of P. pelagicus and P. a. cincinatus.

Yunaska Island. June 14. Found around the island, but especially on the northeast and northwest sides, where the following rookeries were recorded: 15, 50, 8, and 60 nests. Among these were a few pelagicus.

Chagulak Island. June 15. Small colonies were found on the southeast and southwest corners of the island.

Amukta Island. June 16. Williams, Gray and Jewell found them abundant around the island, nesting in several places on the northwest side. A small colony with the murres on the west side. About 100 were seen on an offshore rock on the north side.

Seguam Island. June 18. An occasional Red-faced Cormorant and a colony of 15 nests on the east end.

Kanaga Island. June 29. At least two identified as P.urile among outlying rocks.

Adak Island. July 2. Williams, Gray and Jewell discovered a colony of 150-200 nesting cormorants on North Island, in Bay of Islands, mostly P.urile. This species was also nesting ~~kkk~~ with the more numerous P. pelagicus on South Island.

Igitkin Island: July 6. Two or three were seen at the east and the west sides of the island.

Ulak Island. July 6. About 50 nests were found among some high steep cliffs.

Kasatochi Island. July 7. Three were seen near the island.

Baby Islands (in Akutan Pass). July 15. A colony of about 500 nests was found on Adokt Island, of this group, many, probably most, containing young. There was another colony on Excelsior Island.

Poa Island (Trident Bay, Akun Island.) July 16. About 100 nests on this island.

Tangik Island (Trident Bay, Akun Island.) July 16. About 150 nest on this island.

Careloi Island, July 21. A few were nesting at the northeast side, together with a few Pelagic Cormorants.

Kiska Island. July 26. A small colony, including P. pelagicus, on the northwest side.

Attu Island. July 26. The chief says this species is common at Attu Island.

Amchitka Island. Aug. 1. A small colony, mostly this species, was found in a rocky cave near the northwest end.

A Amatignak Island. Aug. 2. Thanwere seen.

Unalga Island. Aug. 3. A few were nesting on the west side, probably the southernmost nesting locality for this species,(together with Amatignak Island, where they probably also nest.)

All nesting sites were on ledges of cliffs, often under overhanging rock or in caves, where they are well protected from foxes.

Under present conditions the three cormorants are likely to survive. It seems probable that if foxes were not present some of the cormorants would nest on low flat areas, as they do elsewhere, and thus increase their numbers. I might cite the colony of White-crested Cormorants on the low islands in Isanotski Strait, and in 1925 I found Pelagic Cormorants trying to nest on a low sand island, virtually on a sandy beach, at the entrance to Izembek Bay. We know, then, that these two species at least will nest on low, level areas.

However, it appears that the cormorants are doing fairly well and do not need the protection from foxes that some other species do.

Ardea herodias fannini, Northwest Coast Heron.

On April 27 at least 4 or 5 were seen while passing through Frangel Narrows, southeastern Alaska, and the mate reported seeing one early in the morning of May 8, in Cook Inlet, not far from Anchorage. No data on this species was obtained anywhere to the westward.

Cygnus columbianus, Whistling Swan.
Attu Dialect: Kon-kirch
Atka dialect: Ko-kín-yeh or Ko-kín-e-reeh?

Swans nest in various localities along the Bering Sea shore and the Alaska Peninsula. According to reports from local residents swans nest on small islands in ponds near Ugashik River and up the river from Nelson Lagoon. At Chignik I was informed that swans nest in Black Lake, the "second lake" up Chignik River.

At Ikatan Peninsula, on Unimak Island, Mrs. Arthur Neuman gave us a swan's egg which had been picked up on Ikatan Flat "between May 15 and 25, 1936." She stated it had rolled out of the nest.

Eskimo informed me that swans nest in ponds and lakes north of Baird's Inlet, near Nelson Island, but do not nest on Nunivak Island.

Apparently swans have not been considered members of the Aleutian avifauna. Dall states they do not occur there and Turner mentions a vague report of some wintering at Attu, on the western Islands.

Possibly conditions have changed. At any rate we obtained definite evidence of their occurrence in the Aleutians. Natives on Atka Island told us swans winter in the Aleutian Islands and mentioned specifically Kanaga and Amchitka Islands, where they spend their time on the lakes. There was some doubt as to Kanaga now, since fox farming was introduced, according to our information. During our visit at Amchitka Mr. Jewell found remains of swans among the native buildings and we learned from our pilot that about 20 had been killed there during the past winter.

On June 16 we found a swan skin in a house, from a bird evidently killed the previous winter.

The chief on Attu Island said swans winter abundantly on that island, among the lakes on the south side, occurring in flocks of "8, 10 to 26" as he put it. In 1932 "hundreds and hundreds" of swans were seen on the south side lakes. In 1924 they are said to have walked among the houses of the village. Now they are seen only in small groups. Apparently the natives on Attu do not kill many swans, if any, possibly due to the influence of the chief.

Mr. Jorgensen, a trapper at Port Moller, said he has seen swans lingering about Nelson Lagoon as late as the latter part of November. "Five years ago" he saw a flock of 30 leaving the country, in the latter part of November. He has seen them come back in March when Nelson Lagoon was still frozen.

At Attu Island they are said to arrive late in October and leave the last part of April.

The trapper at Port Moller said he has actually seen a swan rebuff a red fox and did not believe foxes could get many of them, if any. In the Aleutians nesting is not involved and possibly the blue foxes get very few or none at all. However, the fox hunters, who are placed on the islands in the fall and taken off in the spring, undoubtedly get some and the greatest danger may lie in that direction. From native reports there does appear to have been a decrease in the last few years, from some cause.

Branta canadensis subsp. Canada Goose.
Attu Dialect: Legch
Atka Dialect: Luch or Lug- ach

On April 27 a flock of about 250 geese flew over Admiralty Island, northward, high in the air.

Among the Aleutian Islands it appears that a few geese, probably cackling geese, still nest. On June 15, at the southwest point of Chagulak Island, Captain Bellevold and the mate saw a Canada Goose swimming by the ship.

The chief at Attu Island stated that Canada Geese, known throughout the Aleutians and Alaska Peninsula as "land geese" used to nest in some numbers on Attu, Agattu, and other western islands but have become very scarce since fox farming was developed.

Bill Dirks, chief of the Atka Village, stated that these geese used to nest on Tanadak Island, a small flat island near Ulak Island. He looked over the island thoroughly and found no sign of geese.

We examined Buldir Island with much interest, for that island has been said to be an outstanding breeding ground for geese. The Atka chief said once his father obtained 50 young geese on Buldir Island, took them back to Atka and fattened them until fall, when he used them for food. For years I have heard from several sources that geese nest "on the top of the mountain" on Buldir.

Our first visit on Buldir was July 27, but no sign of geese was found. On the second visit, July 31, I climbed to the top of the mountain and on this occasion found fresh goose droppings and a few feathers, where a brood had been feeding. This was in a moist depression characterized by fine sedges and other low vegetation and some bare ground. There were other such draws and depressions about the mountain summits, but I found no more sign of geese.

Among the eastern Aleutians and the Alaska Peninsula we found no proof of nesting. On Nunivak Island these geese do not nest, according to the Eskimo. But at Nelson Island, according to local Eskimo there, and on "Kri-gō-gak" Island in the entrance to Baird Inlet the geese nest plentifully. Mr. Jewell informed me that in June, about 1919, he visited Baird Inlet and found numerous nesting geese. He said the shores were "lined with them."

On August 14 a flock of six cackling ? geese flew southward over Nunivak Island. They arrive there in the fall and linger on the south side of the island, according to Eskimo. I was informed at Port Moller and at False Pass that geese arrive about September 1 on the southward flight and remain until about November 1 before continuing south. They also appear at Metrofane Bay and Mallard Bay, in the Chignik area, spring and fall and at Simeonof Island, in the Shumagins.

In 1925 much information was obtained on that point. According to my notes of that year, the average time of appearance of these geese is September 1, but they do not become abundant until a week or two later. Then they congregate in Izembek Bay, Urilia Bay, Swanson Lagoon, St. Catherine Cove, some at the head of Morzhovoi Bay, Nelson Lagoon and Moller Bay in surprising numbers (as of 1925) and fatten up. They feed

so extensively on crowberry (Empetrum nigrum) which is particularly abundant in these areas, that they have earned the local name of land geese, to distinguish them from the beach loving Emperor Goose, called beach goose. Late in October, about November 1, or even much later according to some reports, the geese leave for their southern wintering places.

Mr. Donald Stevenson, former warden of the Aleutian Islands, informed me in 1925 that the geese from the western Aleutian Islands come eastward in the fall and join the throngs about Isanotski Strait. Natives at Atka Island assured me that these geese move eastward in the fall, (in August, one said) corroborating Mr. Stevenson's information. Chief Ermeloff also reported that they pass Unmak, eastward, in the fall. Incidentally, it is of interest to note that Nick Kristensen, who has lived many years on Unimak Island, believed that the geese arrive at Urilia Bay before they reach St. Catherine Cove, and wondered if this would indicate that they "came from Siberia somewhere," since Urilia Bay lies west of St. Catherine Cove.

In the spring the migration is not so striking. The geese do pass through Isanotski Straits and Morzhovoi Bay in more limited numbers, also Izembek Bay, Nelson Lagoon and Moller Bay, as well as other localities mentioned, such as Simeonof Island in the Shumagins and Metrofane Bay and Mallard Bay near Chignik, but since they pass through quickly and do not linger as in the fall, they give the impression that very few geese are present. There is also a westward migration along the Aleutians according to the Atka natives and the Unmak chief, passing Atka Island in April. An informant at Port Moller gave April as the month for the spring migration at that place.

Among the Aleutian Islands, at least, it seems practically certain that Branta canadensis has become very scarce. Our own observations indicate this and reports of natives show the same thing. It is interesting to note that a trader at Atka has not seen geese migrating by there in the years he has been there, nor has the school teacher, who spent one year there.

The natives invariably attribute the decrease to fox farming. Mr. Schroeder, the trader at Attu, who has several fox islands leased, said the same thing. It seems probably that the more intensive fox farming of recent years has been a factor. However, Tanadak Island, ~~apparently~~ has no foxes and we found no geese. Buldir Island, apparently the last stronghold for geese, has no foxes and very few geese. It seems likely that in the past few years the geese of the Aleutians have shared in the general decrease of waterfowl throughout the country, for they go south to the winter hunting grounds, and are also hunted about Unimak Island and the Alaskan Peninsula. It is not surprising that a restricted goose population should fail to stand all that pressure.

Branta Nigricans, Black Brant.
Attu dialect: Agru-gē´, da-ghē´
Nelson Is. Eskimo: Huk-hla-ra-nak

On April 24 we saw several flocks of brant south of Seymour Narrows, B.C. One of these contained about 150 black brant.

On April 25 a single flock was seen on Queen Charlotte Sound, B.C., flying northward. The northward migration was in progress.

One of the outstanding finds of the expedition was the nesting of black brant near Nelson Island. Eskimos informed me that these birds nest on Nunivakchak and Krigegak Islands, situated in the channel to Baird Inlet, and nest on Koomuloongak Point, nearby. In earlier days the brant nested chiefly on Nunivakchak Island, before that island began to wash away. It has been greatly reduced in size by water action and now the brant are nesting chiefly on Krigegak.

Every precautian was taken to identify the bird under discussion, by drawings and description. The Eskimo name given me, "Nuk-hla-ra-nak", is not essentially different from the "Nuk-lu-nuk" of Hooper Bay, or the "Nuk-lu-gu-nuk" of a more inland dialect, which I obtained in 1924. Nelson gives it "Luk-hlug-u-huk" for some dialect. There can be no question about the identity of the bird and the Eskimo were very familiar with the exact nesting locations. Natives of Nunivak Island also informed me that brant nest "over on the mainland."

The accompanying map shows the locations of the brant nesting grounds. It would be well worth while to give this area some attention, looking to the encouragement of such a colony.

On August 14 brant had already appeared in southward migration at Nunivak Island, according to Eskimo. They said they remain among the ponds of the interior of the island for about two months in the fall, or until some time in October, and are much harder to stalk than the Canada Geese.

At Port Moller on August 20 I was told that the brant were due there then and that they remain until about November 1 before moving south. They remain at Izembek Bay also, to fatten up in the fall.

The brant are said to appear again in April, at Port Moller, on the return north, when they are also seen near Chignik.

Chief Hodikoff of Attu Island was familiar with ~~kaak~~ brant and said they appear there sometimes in the fall, occasionally associated with Emperor Geese.

Philacte canagica, Emperor Goose.✓
Attu dialect: Il-á-ghirlich
Atka dialect: Ka-ghu-mung

Apparently Emperor Geese do not nest on most of the areas we covered, not even on Nunivak Island, where they are only migrants. They do nest, however, in places near Nelson Island, particularly on some of the islands well up the channel to Baird Inlet. Only a few nest on Krigegak and none on Nunivakchak Island, I learned. Swarth, quoting Harrold, states that Emperor Geese first appeared on Nunivak Island August 20, and were present

there at least as late as October 29,1927.

The principal wintering place of this goose is the Aleutian chain. They become very abundant about the western end of the Alaska Peninsula in the fall. Many spend a good part of the winter as far east as Port Moller, arriving there in the latter part of August and remaining as long as there is open water. They leave when water freezes over but come back as soon as it opens up and may stay as late as June before going north. A few winter near Chignik and as far as Simeonof Island, in the Shumagins. However, many of those which spend the autumn about the western end of the Alaska Peninsula move on westward for the winter. This is all based on reports received from local residents interviewed on this trip and data I obtained in 1925.

The natives among the Aleutians all agree that these geese are very numerous there in winter. Specific localities mentioned were Umnak, Atka, Kangga (very numerous) Ogliuga (plentiful) and Attu Islands, "millions" about Attu, according to the chief. He says they arrive at Attu late in October and leave early in April.

Remains of Emperor Geese were found on Amukta Island, where trappers had killed them in winter, a wing on the shore of Seguam, bones and a tub of feathers in a house on Adak Island, numerous remains in a fox pen on Kavalga and bones at a barabara on Kiska Island. I found remains of an Emperor Goose on Bogoslof, evidently eaten by a Raptore, and feathers of one at Unalaska on June 3. These were recent kills. We saw 3 smallffocks in Nelson Lagoon May 22, two or three small groups at Ugashik River May 27, and Mr. Williams reported a flock of about half a dozen at Uliaga Island June 8. All of these spring records are no doubt late spring migrants, non-breeders, such as I found in 1925.

At Kanaga Island I was told that these geese feed on kelp and the green shoots of Elymus, which are found even in winter underneath the dead vegetation.

So far as we could learn foxes do not prey heavily on Emperor Geese in winter, although at least one native, the chief of Atka village, declared they do capture some. However, there is some shooting of geese by the fox trappers and indications point to the probability that the birds are shot not only for human consumption but also to feed the foxes kept for a time in pens. While inroads on these geese are not serious at present it must be kept in mind in the future that the Aleutians are the chief wintering area for this unique goose and precautions for their preservation should be taken in the event of any unusual developments that might be inimical to their welfare.

Anser albifrons, White-fronted Goose./
Attu dialect: Kog-a-la-gich'

As many as six pairs were seen on the tide flats near Ugashik River, where they undoubtedly breed. Sometimes when disturbed single pairs would unite to form a small flock, circling about and calling.

The natives of Attu Island said that a goose of this description occurs there but is scarce. They have been seen in September but do not spend the winter there.

Anas p. platyrhynchos, Mallard.
Attu dialect: Argh-ich
Atka dialect: Ag-ich (probably the same name)

Mallards were noted enroute to and from the Aleutians. On April 27 a dozen or more were seen in Frangell Narrows, half a dozen at Port Chatham, Kenai Peninsula, on May 6, a pair at Chisik Island, Tuxedni Bay, May 7, and a pair at Anchorage May 9. We were informed that mallards nest on Unimak Island. A single male was seen at Ugashik River on May 29, the only one seen there, and a pair was seen in a little pond at Unalaska on June 3. At Port Moller I was informed that mallards nest around Nelson Lagoon. I saw two mallards in a pond on Simeonof Island on August 29 and the rancher said they nest there. On Afognak, September 2, 14 mallards were seen in a lily pond.

At Atka the natives informed us that mallards occur there summer and winter. At Attu, also, we were informed that mallards nest there, near streams, and also winter there. On Nanaga Islands mallards spend the winter and congregate on certain favored ponds, which were pointed out to me. On June 26 a mallard wing was found in a trapper's house on Little Tanaga, good evidence of wintering.

I was informed that mallards winter on Unimak Island. When bays and lakes freeze, the mallards go back on the streams in the interior of the island, which never freeze. When it warms up again they return to the lowlands.

Fresh water ducks are not plentiful along Alaska Peninsula or the Aleutians, but this data shows that they do nest there, sparingly, and winter there.

Mr. Petrik Wardem of the Bureau of Fisheries, informed me that in 1922 there were hundreds of mallards up Chignik River. Now they are very scarce.

Chaulelasmus streperus, Gadwall.

The gadwall has been considered only "accidental" in Alaska, based on its occurrence on St. Paul Island. It was therefore of particular interest to find it common thm on the marshes about Ugashik River, May 27-29. They were obviously courting and preparing to nest among the numerous ponds. Generally a female would be flying about pursued by two, or more, males. On May 28 I noted it as "the principal duck seen" and on May 29"they and the scaups made up most of the duck population."

A pair was taken for specimens.

At Port Moller I was informed that gadwalls nest plentifully in the lakes up the river from Nelson Lagoon.

Referring to my notes of 1925 I find that four were seen on Urilia Bay on May 8 and two males were taken. They were also seen in Izembek Bay as late as July 25. This establishes an Aleutian Island record.

This duck is therefore a regular and common nesting species on the Alaska Peninsula at least, and should be looked for on other parts of the coast south of the Kuskokwim.

Mareca americana, Baldpate.

Very few baldpates were seen. One was seen in Wrangell Narrows April 27, one at Seward May 5. On May 27 two or three were seen on the tide flats at Ugashik River and 2 males were seen there May 29. Possibly the females were already nesting.

Dafila acuta tzitzihoa, American Pintail.

Few pintails were observed. Mr. Arthur Neuman of Ikatan Peninsula said pintails nest on Unimak Island and I observed them there in 1925 and also found them nesting in Izembek Bay. Mr. Williams records a pair on Amukta Island June 16. However, except for the large eastern islands, pintails are scarce in the Aleutians and the Aleuts did not appear to recognize the bird from pictures.

May 23 two pintails were seen near Dillinghan, Bristol Bay, and May 26 two were seen near Snag Point.

An occasional pair was seen on the flats near Ugashik River, May 27 -29. They evidently nest there.

Two pintails were seen on Nunivak Island August 14. They are no doubt common there.

Nettion crecca, European Teal.
Attu dialect: Cherrh-ook
Atka dialect: Krech-choer-tha

Teals are common in many places throughout the Aleutians, apparently the commonest of the so-called "river ducks". In 1925 I found them on Unimak Island. This year they were reported common on Umnak Island, ~~Unalaska~~ and on Atka Island.

June 23 a male was seen on Little Tanaga Island.

On Kanaga Island we were informed that teals nest there commonly and remain through the winter.

On July 3 a male and later a female with 2 downy young were seen in a shallow grassy pond in Kuluk Bay, Adak Island.

On July 4 three males and a female were found in a lagoon on Kagalaska Island. A male was collected.

On July 23 we saw at least 5 or 6 female teals and at least 3 broods on Ogliuga. One young was banded. On a later visit teals were seen again.

On August 3 a female was seen on Tanadak Island, near Ulak Island.

On August 4 several females, apparently with young, were found on Skagul Island, adjacent to Ogliuga.

On July 24 a dozen or 15 were seen, and a moulting male collected, on Amchitka Island.

The chief of Attu Island said the teals nest on that island and spend the winter there.

The teals collected were apparently crecca and since other ornithologists have established such records frequently in the Aleutians it may be assumed that the European teal is the Aleutian form.

These ducks occupy small "weedy" shallow ponds, or lagoons, or ponds heavily bordered with sedges. Such habitats are found on the low, flat islands, such as Unmak, Amchitka, Kanaga, Ogliuga, etc. Undoubtedly Agattu and Semichi Islands will prove specially favorable when they are examined. Other islands, such as Atka and Kagalaska, are more or less mountainous, but there are places which are low and marshy, thus affording teal habitat.

Teals occur elsewhere. We were informed that teals nest up the river from Nelson Lagoon and two males were seen at Ugashik River on May 29. Previous investigations show that they occur also in Izembek Bay. This may be carolinense.

The teals of the Aleutians are of particular interest. Apparently we have here a resident population of the European species, not merely a few accidental stragglers, but a well distributed, permanent element of the avifauna.

The status of the species presents a problem. Presumably foxes would prey on these birds. On small islands, such as Ogliuga and Skagul, undoubtedly a fox population large enough to be profitable would almost certainly destroy any such nests. We did find nesting birds on Ogliuga,

but at present foxes are extremely scarce there. On the other hand, we found a fair number of teals on Amchitka and on that island several hundred foxes have been taken in a season. This, however, is a large island and it appears that birds survive in large areas. With respect to the teals and other ducks special attention is needed. This will be discussed further under the head of the several islands.

Spatula clypeata, Shoveller.
Attu dialect: Koo-chú-tuh or Koo-chú-thoh

The natives of Attu Island seemed to know this duck and had a name for it, if identification is correct. They recognized a picture and agreed on the spoon-billed beak. They said the shoveller nests on Attu Island. We obtained no other Aleutian records.

A male shoveller was seen in a pond among a lot of other ducks at Ugashik River, May 29.

Nyroca americana, Redhead.
Attu dialect: Ka-vé'im-much

We were surprised to get evidence of the presence of this duck in the Aleutians. I had a glimpse of a pair rising out of a pond on Amukta Island, near the beach, on June 16. Then, on arriving at Attu Island, chief Hodikoff declared that a few Redheads nest there and also remain in winter. He recognized a colored picture of a Redhead and gave me the Aleut name, Ka-ve (head) im-much (round), thus, "round head." He persisted in his statement that the duck in the illustration (by Allan Brooks) was the duck nesting there.

Nyroca marila, Greater Scaup.
Attu dialect: Man-ó Ka-vé-toc

No specimens of scaups were taken and the data is presented under this head since those of the Aleutians are undoubtedly this species.

Scaups are said to nest on Unimak Island and Mr. Jewell informed me that during the fishing season they gather about the docks at False Pass and feed on offal.

In 1925 I found them nesting about Izembek Bay, which is not far from Unimak Island.

On June 22 I found 7 scaups, mostly males, on Corwin Lake on Atka Island.

On Kanaga Island I was informed that "blue bills" are plentiful there in winter and become very tame about the dock.

On Kiska Island, July 26, I counted 30 scaups in one flock on a lake.

The chief of Attu said these ducks nest there and also spend the winter.

These ducks were noted elsewhere. Eskimo informed me that they nest on Nelson Island. They were common, flying about in pairs, near Ugashik River May 27-29. Mr. Petri, warden of the Bureau of Fisheries, said that scaups are holding up in numbers better than other ducks in the vicinity of Chignik at least. Two were seen near Chisik Island May 7. On April 24 a flock was seen south of Seymour Narrows and on April 27 a few flocks, numbering about 20 to 30, were seen in Wrangell Narrows.

I was informed that numerous scaups, among other ducks, winter at Petersburg and become very tame.

Glaucionetta clangula americana, American Golden-eye.
Attu dialect: Ha-mĕ Sakh-oi-a.

When shown colored illustrations, the Attu chief picked out the American Goldeneye and said they are plentiful there in winter, arriving in November and, he thinks, leaving early in March.

Glaucionetta islandica, Barrow's Goldeneye.

Occasional flocks, totalling 100 or more, were seen through Wrangell Narrows on April 27. Several were seen at Seward May 5; a dozen or more at Port Chatham, Kenai Peninsula, on May 6; two at Chisik Island May 7; and a male at Kodiak Island May 13.

Charitonetta albeola, Bufflehead.
Attu dialect: Chirr-u-nuga Sakh-oi-a
Atka dialect: Mith-i-mĕ-thruh

A number of Buffleheads were seen enroute to the Aleutians. At Bella Bella, B.C., a female was noted in the distance April 25. A total of 50 or more were seen in Wrangell Narrows April 27. At Port Chatham, Kenai Peninsula, at least half a dozen were noted May 6. At Chignik Mr. Petri said buffleheads come there in the autumn.

At Ikatan Peninsula, Unimak Island, 2 females were seen in a pond May 19.

At Umnak Island Ray Clark, the store keeper, said "butter balls" remain there in winter.

At Atka Island I was informed that they winter there also.

The chief of Attu village also said they winter there, but also said they nest there, "up high." It would be of great interest to follow up that information.

Clangula hyemalis, Old-squaw
Attu dialect: Ang-lach
Atka dialect: A-lang-ach

We saw Old-squaws enroute to the Aleutians. April 27 there were large flocks totalling probably well over a thousand in Wrangell Narrows, chiefly up near Petersburg and on north, a few near Admiralty Island. Many were quite white-headed, but an occasional one had summer plumage.

One or two flocks, undoubtedly in migration, were seen on the Gulf of Alaska May 2.

At Chisik Island, in Cook Inlet, we saw about 150 on May 7.

A flock of about 30 in Shelikof Strait May 13.

In Kushagak Bay, on May 23, an Old-squaw was seen among a lot of White-winged Scoters.

At Ugashik River two were seen on the tide flats May 27.

At Atka Island I was informed that Old-squaws used to nest there, but not "since the foxes came." They still winter there. They are said to winter abundantly at Kanaga Island. Bill Dirks, the Atka chief, assured us that they nest on Amchitka Island. He has seen the young, but never found the nests. The chief of Attu Island said they do not nest on Attu Island but that other natives have told him that they nest beside the lakes on Agattu. They are abundant in winter.

It appears, from this data, that Old-squaws nest in moderate numbers in the Aleutians, probably in greater numbers formerly, and still winter there in large numbers.

Eskimoes informed me that Old-squaws nest on Nelson Island and a few on Kri-ge-gak Island nearby.

I was informed that Old-squaws arrive at Chignik "late in the fall."

Histrionicus h. pacificus, Western Harlequin Duck.
Attu dialect: Kagh-i-ach
Atka dialect: Kach-a-thi-ga
Unalaska: Kang-a-rich

The harlequin duck is the commonest duck in the Aleutians in summer and the most evenly distributed. Practically at all the islands visited we found Harlequin Ducks, singly sometimes, but generally in small groups, sometimes in larger flocks. Almost invariably they were in kelp beds or near them, and among reefs or a rocky shore, riding the turbulent water unconcernedly.

Repeatedly natives stated that these ducks nest in the Islands, and several had the same story, that the nests were believed to be places under

stream banks but that the nests had not been seen. Several islands such as Adak, for instance, have ideal streams which might be suitable nesting habitats, but we saw no indications of nesting and saw no broods of young birds, either in streams or in salt water.

It was a subject for much speculation among us whether fox farming was interfering with nesting in recent years or whether these secretive birds were able to produce their annual broods and keep up the supply of non-breeders which are so common about the islands. We thought it strange that we should not have met with any in the streams, the usual nesting habitat, nor seen any sign of nesting or young about cliffs, if they should nest there. Our investigations were too rapid to settle questions such as this.

Eastward of the Aleutians we observed Harlequin Ducks at Unga, Nagai, and Simeonof Islands, among the Shumagins, Barren Islands, Afognak Island, Port Chatham on Kenai Peninsula and at Seward, as well as at Amak Island in Bering Sea.

According to the natives Harlequin Ducks are more numerous among the Aleutians in winter.

Polysticta stelleri, Steller's Eider.

Eskimos told me that Steller's Eiders nest on parts of Nelson Island and on Eri-ge-gak Island, nearby. Two were seen at Nunivak Island on August 14 and the Eskimos there had killed two.

To the southward of these islands we obtained no information that would indicate nesting. In Nelson Lagoon we saw several sizeable flocks of Steller's Eiders. These were very probably non-breeders, for in 1925 I found some flocks spending the summer in Izembek Bay. There was no sign of nesting and they were apparently non-breeders.

We saw no Steller's Eiders among the Aleutians, found no evidence of whatever that they nest there, and the chief of Attu, when questioned and shown a colored picture, stated that they do not appear at Attu, even in winter.

Somateria v-nigra, Pacific Eider.
Attu dialect: Kaf-segh'-ich, male, Cha-is, female, Ku-ku-toch, young
Atka dialect: Ka-sam-ich, adult, sex?
Ku-ku'-toch, young

Pacific Eiders were observed at practically every island of the Aleutian chain visited and are as universally distributed as the Western Harlequin Ducks, but not as abundant. They were often seen in small groups but generally in pairs. Apparently they nest throughout the Aleutians, or try to nest.

The following nesting colonies were observed:

Little Tanaga Island. June 28. There were three small rock islands in Nazan Bay which seemed out of reach of foxes and on which eiders were nesting. The islands are grass covered and Mr. Williams estimated 100 nests of eiders. Nests contained 2, 4 or 5, up to 11 eggs in one case. Glaucous-winged Gulls were nesting on the same islands and had destroyed the eggs in at least 11 nests.

Kanaga Island. June 29. Eiders were found, apparently nesting, on a grass-covered rock in Sand Bay. It was observed at a distance.

Adak Island. July 2-3. A few eiders appeared to be nesting on a small island in Three Arm Bay, and many were seen in Bay of Islands. At least 50 males, probably more, flew away from vicinity of South Island in this bay and at least 6 nests on the grassy top of an adjecent rocky islet were seen. Three of these contained only 3 eggs, with a scanty amount of down.

Aso Island. July65. 75 or more males, probably representing that many pairs, were seen, mostly on the southwest side. There were a number of grass-topped rocks and pinnacles which undoubtedly furnish nesting places.

Igitkin Island. July 6. 70 males, representing that many pairs, were counted around the east end, where the island is high and precipitous, with grass-topped, off-shore rocks and pinnacles. There were about 20 or more pairs around the west end. Several females were seen flying off the nests.

Salt Island. July 7. I counted 25 males. Offshore rocks and pinnacles, topped with grass, afford nesting places.

Chuginadak Island. July 9. Corwin Rock, off-shore, is grass-covered and used by nesting gulls. At least three female eiders flew in that direction and no doubt this island, protected from foxes, affords them a nesting place.

Baby Islands. July 15. A number of eiders were nesting on Adokt and Excelsior Islands of this group. These have no foxes.

Atka Island. July 20. On the north side are 4 or 5 outlying rocks, grass-topped, which would afford nesting places for eiders. Mr. McMillan teacher at Atka, found "quite a few" eiders nesting on such rocks on the south side of Atka Island.

Ogliuga Island. July 23. Common about the island. A number of nests with 3 to 5 eggs and 9 females with young. Two broods contained 3 each. The others were not counted.

Ekalgul Island. Aug. 4. Common. A group of 9 females and 18 young was seen.

These are the more exact nesting records. Eiders were seen about many other idlands and no doubt nest on many of them, but this was not

determined. Eiders were seen about some islands where it appeared very improbably that they could nest successfully. This is especially true of such islands as Kagamil and Uliaga, which are inhabited by foxes and do not have suitable off-shore islets. The foxes would almost certainly destroy any eggs that might be laid along the beaches. It is true, there are some steep cliffs, but these were pretty much occupied by cormorants and murres. A few eiders could find a suitable nesting site on such a cliff, but probably not a large population, and it would have to be on the steepest portions, for foxes, are extremely agile. This state of affairs tends to restrict the nesting of eiders.

The nesting places we found were on isolated rocks or small islands and were characterized by grass, Elymus sp. or Heracleum and similar vegetation. This is probably for concealment of the nests. They often nest on the tops of high "chimneys" or pinnacles, where they are safe from foxes. The chief at Atka assured us they also nest on ledges of cliffs. Where foxes are not present, they nest on grassy slopes, as on two of the Baby Islands.

We found eiders outside of the Aleutians. Eskimo at Nelson Island assured us that they nest there and on Krigegak Island nearby.

In Nelson Lagoon May 22, we found flocks of eiders and on one beach I counted 111 males. They are said to nest abundantly on some grass covered sand islands there.

A number were seen in Ugashik River, but we did not determine their nesting status there.

At Chisik Island we found 12 pairs or more and Mr. Jack O'Connor, Game Warden at Anchorage, informed us that these eiders nest on Duck Island, closely adjacent to Chisik Island.

Somateria spectabilis, King Eider.

Our information on this species is very unsatisfactory. The chief of Attu appeared to identify the bird from a colored illustration, gave us the name "Sakh-uch", said a few nest on Attu and a few winter there. However, we feel some doubt as to identification of the bird and this report requires verification.

Arctonetta fischeri, Spectacled Eider.

Eskimo at Nelson Island informed me that Spectacled Eiders nest on Krigegak Island, and on the mainland nearby, on the portions known by them as Tumeraramk and Muskunat (see map.)

We obtained no precise information on this species in the Aleutians.

M Melanitta deglandi, White-winged Scoter.
Attu dialect: Tru-pan'-ach
Atka dialect: Ta-mu-gha'-luh

White-winged Scoters were seen casually enroute to the Aleutians, an occasional group east of Vancouver Island April 24; a few in Millbank Sound April 25; several hundred, both sexes, in Wrangell Narrows April 27; a few at Seward May 5; 15 or 20 or more at Port Chatham, Kenai Peninsula, May 6; a few individuals among the Barren Islands May 10 and 11; several at Kodiak and common in Kupreanof Strait May 13.

On May 23 we found large numbers of White-winged Scoters in Kushagak Bay, at least some of them flying in pairs. On the evening of May 26 as we were going back out through Kushagak Bay we observed flocks after flock of White-winged Scoters flying high in the air in goose-like formation, all heading up the bay in a general "inland" direction. Some flocks contained 75 or 100 birds. It appeared that we were witnessing a movement, en masse, from a temporary salt water nesting place to the inland nesting grounds.

On May 27 and 29 we saw numbers of White-winged Scoters in lower Ugashik River.

White-winged Scoters winter in the Aleutians in considerable numbers, according to native information.

Melanitta perspicillata, Surf Scoter.

Surf Scoters were observed south of Seymour Narrows April 24. They were very numerous on the south side of Millbank Sound on April 25. They were apparently all males, although this was not ascertained accurately. A large flock arose from the water and strung out for over a mile, surely containing over a thousand birds, to be conservative, and there were other smaller flocks. None were seen on the north side of the sound.

Surf Scoters were plentiful in Wrangell Narrows on April 27 and on May 6 4 or 5 were seen at Port Chatham, on Kenai Peninsula.

The natives in the Aleutians did not recognize pictures of this duck and declared it did not occur there, and we did not observe any.

Oidemia americana, American Scoter.
Attu dialect: Koo-vai'-ach
Atka dialect: Koo-ghang'-ach

The first American Scoter was seen south of Ketchikan on April 26. Four or five males were seen at Port Chatham May 6. In Kushagak Bay, on May 23, 45 or 20 of these scoters were noted among large numbers of M.deglandi, those identified all being males.

On May 29 several flocks were flying about at the mouth of Ugashik River and on the adjacent marshes I found 2 pairs among the ponds, the males whistling. They were evidently preparing to nest.

The Atka Aleuts stated that these ducks occur sparingly in winter, the chief of Attu saying they winter abundantly there.

The Eskimo of Nelson Island said the American Scoter nests there.

Mergus m. americanus, American Merganser.
Attu dialect: Chu-vi-ach Siss-uch
Tan-num ak-tum Cak-oi-a
Chung-ung-i-koo-loo-ghearch
Ha-ka Chai-u-too

About 8 American Mergansers were seen in Uyak Lake at Cordova on May 4. At Chignik I was informed that "two kinds" of mergansers were plentiful.

The chief at Attu said a few American Mergansers nest there, but they are more in evidence in winter. None were seen by our party.

Mergus serrator, Red-breasted Merganser.
Attu dialect: Cruch-ah-lich
Atka dialect: A-ga-lai-ahh

This species was more common than americanus. Two were seen in Wrangell Narrows April 27, a flock of 6 or 7, believed to be this species, at Unimak Island May 20, two females in Mushagak River at Snag Point May 26 and a pair was seen back on the marshes, among the lakes, near Ugashik River, where they probably nest. Said to be common near Chignik.

They were noted among the Aleutians. Six were seen at Unalaska on June 3. A flock of 7 on Corwin Lake, Atka Island, on June 22. Two were seen in a pond on Nanaga Island and several more were seen by Mr. Williams' party in the dory on June 29. Two were noted in Bay of Islands and 3 or 4 in Kuluk Bay, at Adak Island, July 3. At Kiska Island on July 26 I saw 8 in a lake. The Attu chief said they nest on that island and the Atka natives reported them nesting on Atka Island.

Buteo lagopus sancti-johannis, American Rough-legged Hawk.

A few of these hawks were observed casually, one at Kodiak May 12, one at Unga Island May 26, and two at Afognak Island September 2.

Two were noted on Amak Island, where they were found nesting in 1925. On July 12 one was seen back on the hills near Unalaska. On June 6 and 7 one was seen along some cliffs on Unmak Island and one on Ananiuliak Island nearby. These seemed to be nesting birds.

We saw none westward of Unmak Island and it is significant that this marks, exactly, the western limit of the range of rodents in the Aleutian Islands, with the exception of a few islands where ground squirrels and rats have been introduced artificially.

Aquilla chrysaetos canadensis, Golden Eagle

Mr. Williams and Mr. Gray reported seeing an eagle at Unalaska with much white on the tail., and a dark terminal band, suggesting the golden eagle. One was reported to have been shot near Chignik. Aside from these two rather indefinite records we obtained no information on the species. Dall reported them common west to Unalaska in his day. Undoubtedly this eagle is suffering under the Alaska bounty law.

Haliaeetus leucocephalus alascanus, Northern Bald Eagle.
Attu dialect: Tirrgh-luch
Atka dialect: Tig-a-lach
Immature, A-waich-rich

Bald eagles were plentiful throughout the Aleutians. Practically every island visited had at least one, often 2 or more pairs, generally nesting. About the larger islands many more were seen. For instance, Mr. Williams noted 15 eagles in Bay of Islands, off Adak Island, on July 2, and there were others on other parts of the island. We saw several at Kanaga Island on June 29 and the caretaker had killed 14 for the bounty and planned on raiding 20 more nests later. The other large islands were not investigated thoroughly enough to ascertain the eagle population.

Eagles were seen eastward of the Aleutians, one in Seymour Narrows April 24; one at Port Chatham, Kenai Peninsula May 6; 5 at Chisik Island, Cook Inlet, on May 7; two, probably a pair, at Ushagat Island, in the Barren Islands, May 11; one at Kodiak May 13, and on September 1 a rock pinnacle was pointed out to me in Halibut Bay, Kodiak Island, as a nest site where young eagles were raised during the summer. On September 2 an immature bird was seen at Afognak Island. Two immature eagles and a dead adult were found on Nagai Island, Shumagin group on May 16, on August 29 an immature bird was seen on Simeonof Island, and I was informed at Sand Point that "quite a few" bald eagles nest around Popof Island.

At least one pair of eagles was nesting on Amak Island and one on Sankin Island, near False Pass.

Eagles may still be said to be fairly common in parts of southern Alaska but evidently they have been greatly reduced in numbers. Mr. Jewell informed me that on one occasion, just north of Craig, Alaska, he saw between 500 and 700 bald eagles perched in the trees on each side of the channel. The herring were "thick" literally, one might say, for Mr. Jewell said when herring are swarming as they were on that occasion one can put down a long pole and "feel them all the way." Evidenly the swarms of herring were the attraction for the eagles in this instance.

Physical Characters

Among the eagles observed a goodly proportion were birds in various immature plumages. The first plumage, that shown in all the nestlings observed, is dark throughout, with patches of light, ivory vermiculations on parts of the rectrices. The bill and cere were dark slate, the eyes were dark brown.

Another plumage was very common and often observed. In this case there was a large dull whitish area down the back and the same color over much of the wing coverts, forming pronounced wing patches. The underparts, also, contained a considerable admixture of white, including underside of the wings. In the specimen collected the eyes were still brown and the cere and bill slaty and the head was dark. This would appear to be the bird in his second year.

Still another bird was observed, one killed by coast guard sailors at Unalaska. In this case the plumage was whitish about the head and neck, back and underparts, but the scapulars were dark. The eyes in this bird were a dull yellow, approaching the adult coloration, the ~~xxx~~ cere mottled with dull yellowish and the bill showed light areas of yellowish and greenish. This bird was far advanced, toward adult coloration and might be either in the second year in advance of the development of others in its class or it might be in its third year. The feet in all cases were yellow.

Food Habits

We could not, of course, take the time for an extensive study of food habits, but we took every opportunity to obtain data on this subject. A number of eagle nests were visited and in each case the food remains were noted and the material saved for future examination. Although a complete report on such finds can only be made after analysis of the material, it seems worth while to present here what direct observations we could make.

Sankin Island (near False Pass) May 19.

A bald eagle was apparently nesting here. We found two pellets, which were saved, and the remains of a shearwater.

Ananiuliak Island (near Unmak Id.) June 7.

In a nest containing two young were five Atka mackeral, Pleurogrammus monopterygius, a little sheep wool, remains of shearwaters, cormorant (sp.) and others not identified. All but the fish were saved for study.

Amukta Island, June 16.

A nest, containing 1 young eagle, and food debris, contained parts of 1 pigeon guillemot and feathers of other birds, which were saved.

Kanaga Island, June 29.

A nest ~~xxxxxx~~ on a chimney rock contained two young and among other things the food debris (which was saved) contained parts of 2 shearwaters, 1 female eider, 1 fulmar, and a fish head.

Mr. Williams examined another nest at this island in which were three young and remains of at least 2 shearwaters and an unidentified duck.

At this island eagles had been seen about a whale carcass.

Adak Island, July 3.

A nest in Bay of Islands contained two young and remains of 3 or more fulmars, 2 tufted puffins and a number of fish, among other things.

Buldir Island. July 31.

A nest contained two grown young (which left the nest) and the debris included puffins and auklets and at least one adult and one immature Glaucous-winged Gull. It is not at all certain that the gulls had been killed by the eagles since on the beach a few hundred yards away were the bodies of two or more gulls which appeared to have died from some other cause. On the other hand, I have no reason to think that an eagle can not capture a gull.

Amatignak Island. Aug. 2.

A nest contained 2 well grown young. Pellet material, which consisted of sea birds, was saved.

Ulak Island. Aug. 3

A nest contained 2 young and the pellets were saved for future examination.

These casual inspections while collecting food debris for future study indicated that eagles were preying chiefly on what might be disignated "sea birds", including auklets, puffins, fulmars, shearwaters and gulls. An occasional eider or other duck is taken and an appreciable number of fish. The final analysis will give more accurate data.

The eagle is commonly spoken of as being very destructive to young, foxes and is being killed at every opportunity for that reason. With few exceptions such information was very general, with no specific instances, and certainly nothing quantitative. In the nests we examined, which are admittedly very few in number, there was not the slightest trace of fox. It would be surprising, indeed, if the eagles did not pick up an occasional young fox, but our meager findings, are of enough value to point to the need of definitely finding out, by scientific methods. There are several complications to consider. For example, if an island is more or less depleted of its abundance ofsea birds by numerous foxes, does that automatically increase the hazard for the foxes, from the eagles, which then find the foxes more prominent in the available fauna?

In one case domestic sheep wool was found, not far from Umnak Island, where sheep are raised. This may have been nest lining, but could easily have been food remains. This presents another complication.

Eagle Bounty

The vexing question of eagle bounty confronted us as soon as we reached Alaska. Apparently everyone's hand is raised against the eagle, generally speaking. Condemnation of the bird is in general terms. And we found the psychological element that it is easy to join the hue and cry when there is money to be made by condemning the eagle. Eagle claws are collected throughout the Aleutians for the bounty. In a number of cases the trader pays $.75 for the feet and collects $1.00, thus making the eagle an article of trade. At Kodiak a store displayed the sign "Eagle feet bought here." In this case the eagle had become legal tender. Under such circumstances can we expect a tolerant attitude toward the bald, or even a moderate estimate of damage done, where the facts seem to be hidden in a maze of guessing, surmising, half truths and perhaps very local observations?

In the light of our own findings I would protest against the indiscriminate killing of eagles, and especially in the Aleutian Islands. As example, on Amak Island is one pair, possibly 2 pairs, of eagles. There are no foxes. They must of necessity live largely, if not entirely, on the sea birds which swarm about the island, and which do not feel the loss from only two pairs of eagles. No one is harmed. Yet there is nothing to hinder anyone from stopping at Amak Island to collect a few more dollars worth of eagle feet. At Buldir Island again no one's fortune is being impaired by the eagles, but those birds are not exempt from the bounty law. Furthermore, even on the fox islands, there is generally a very good fox crop taken, in spite of eagles, provided the food supply for foxes is ample, indicating that losses from eagles may not be so serious after all.

It is true that, according to reports, eagles must have been very abundant in southern Alaska at one time. They have been greatly reduced in numbers now. In the Aleutians they are still common, probably due to the fact that there are so few white men and the natives are not so energetic, even with the lure of the dollar bounty. Some of the boys are in the habit of taking young eagles from the nest and raising them for the bounty. We bought one such bird by paying the amount of the bounty, kept it on the ship with a young gull, both of which grew up and earned the affection of the entire ship's company. At the end of the voyage they were shipped to the National Zoological Park in Washington.

I am not familiar with governmental difficulties involved, but would recommend that the eagle bounty be made not to apply to the Aleutian Islands Reservation. Then if local control is necessary to protect a real economic interest, such control should be applied only locally. In the meantime, all efforts should be made to learn about the food habits of the eagle by approved and accepted methods. Suggestions on this are given below.

We were constantly on the lookout for other species of eagles, such as the Kamchatka sea eagle and the gray sea eagle. Eyerdamm (1936) reports seeing "several" at Unalaska in 1932 and one killed by seamen. We saw none which we could assign to albicilla, although we saw numerous immature birds in peculiar plumages which were sometimes suggestive of other species. We concluded that we saw none which we could record as albicilla, however.

Pandion haliaetus carolinensis, Osprey.

One was seen, possibly another in the distance, south of Seymour Narrows, B. C. on April 24. None were seen in Alaska.

Falco rusticolus uralensis, Asiatic Gyrfalcon. ✓
Attu dialect: Kus-sum Ah-ghu-lich

Our notes on this species are meager, unfortunately. Falcons were seen at times in the distance and some of those which we thought were duck hawks may have been gyrfalcons, for it is easy to confuse them under certain circumstances. However, at least one specimen was collected, at Gareloi Island on August 6. It was a female, weighing 2¼ pounds, with a wing spread of 46 inches. Its eyes were dark, cere and bill blue, blackish at tip. Feet pale blue.

Mike Hodikoff, chief at Attu, said a hawk larger than the duck hawk, which appears to be the gyrfalcon, nests at Attu and winters there.

Falco p. anatum, Duck Hawk ✓
Attu dialect: Ah-ghu-lich
Atka " "

Duck hawks were noted in many places and appeared to be the commonest species of falcon we encountered. As stated above, some of the birds seen in the distance could have been gyrfalcons, and some others may have been the Peale's Falcon. But since no specimens of pealei were actually taken and since the specimens we did obtain proved to be anatum, the discussion will be placed under that head.

A pair of duck hawks was nesting on high cliffs near Cape Pankof, Unimak Island, May 20, and a specimen was taken.

A duck hawk was seen at Amak Island May 31. I believe specimens were taken on this island in 1925.

A duck hawk was seen on Unmak Island June 6 and the following day Mr. Williams collected one on Ananiuliuk Island, nearby.

On June 8 at least one pair was noted on Nagamil Island and Mr. Williams records one on Uliaga.

On June 12 a pair was nesting on Chuginadak Island June 13 two nests were observed on Carlisle Island, and on June 15 one was seen at Chagulak Island. It is not impossible that some of these could be pealei.

On June 16 two were seen on opposite sides of Amakta Island while a third one, which was so dark that I suspected it to be pealei, flew over some inland lava beds.

June 13 two nesting pairs were noted on Segnam Island. In one case, at least, I felt pretty certain that the birds were anatum.

On July 3 one was heard calling at North Island in Bay of Islands, at Adak Island.

July 6 one was seen at Igitkin Island and another at Ulak Island nearby.

On July 5 a duck hawk was seen at each of the following islands: Umak, Hazuk, Tanaklak, and Unak.

July 7 two were seen on Kasatochi Island, one of these up at the crater rim. On July 20 a pair was evidently nesting at the rim and these were dark colored.

July 8 a nest was found on Salt Island.

On July 15 one was observed on Excelsior Island, of the Baby Island group.

On July 21 Mr. Williams recorded one on the northeast side of Carelol Island.

On July 26 at least one pair seemed to be nesting on Kiska Island.

On July 27 a pair was nesting on Buldir Island and these appeared to be normal anatum. Some others seen flying along the beach were darker in color.

The chief at Attu Island stated that duck hawks remain there the year round.

On August 29 a duck hawk was seen at Simeonof Island, of the Shumagins. It appeared dark in color.

These notes indicate that falcons undoubtedly, including both anatum and pealei, are generally distributed throughout the Aleutian chain. In a sense this is fortunate for here we have an abundance of water birds on which they can prey without any detriment to economic interests and the Aleutians can well be a haven for the preservation of the three falcons occurring there.

However, there is at least one adverse factor, and that is the human antagonism toward the bird. At Atka the natives told us the duck hawk was locally referred to as "chicken hawk" no doubt this being the only raptore available to which they can with any logic apply this familiar term. The chief of Attu assured us the falcons were "bad birds", they were "no good" and he explained that he had read in some official publication that it was "all right to kill those birds." In view of the nationwide effort to preserve the remnants of some of these more or less scarce raptorial species which often appear to be working against the sportsman's interest, it is unfortunate that adverse criticism of the bird should have come into the hands of these remote natives without a presentation of the conservation question

involved. If we can not keep the falcons in the Aleutians, where they are relatively harmless to man's interests, we have a small chance to keep them anywhere else. However, the birds are well scattered throughout the chain, are not easy to kill and they still have a good chance of survival there.

Dendragopus f. fuliginosus, Sooty Grouse.

On April 30 quite a number of grouse were heard hooting, back of Juneau and Mr. Dufresne discussed their distribution, but no new information was obtained by our party.

Lagopus l. albus, Willow Ptarmigan.

Willow ptarmigan occur on Unimak Island, but we did not obtain precise information on their distribution to the westward. Traces of ptarmigan were observed at Snag Point, Nushagak Bay, and Mr. Williams saw a willow ptarmigan there. A flock was seen on Kunivak Island on August 14.

Lagopus l. alexandrae, Alexander's Ptarmigan

We were informed that both willow and rock ptarmigan occur on Kodiak Island. On September 1 we visited Halibut Bay and learned that a grass fire had burned off a considerable area back of the cannery and last spring and that several people had found the charred remains of ptarmigan on the remains of their nests.

Several specimens were taken on Nagai Island, of the Shumagins, on May 15 and 16. On August 26 a covey of grown young as well as a female with a brood of downy young just able to fly were found in the edge of some lowland marsh near Sand Point, on Popof Island, and a female was collected. At Simeonof Island in the same group the fox rancher said ptarmigan are common there at times. His brother stated that ptarmigan had been scarce since Blue foxes were introduced. This would require verification, in view of the cyclic nature of ptarmigan populations.

Lagopus rupestris subsp., Rock Ptarmigan.
Attu dialect: A-ti-ka-took-ach
Atka dialect: A-gha-de-ghach or A-gha-de-ghahh

The rock ptarmigan will be discussed under the heading of the basic species, for convenience. We had hoped to obtain enough specimens to complete our knowledge on the existence of ptarmigan subspecies on the islands, but unfortunately our collecting had to be curtailed. In many cases time was spent covering the shore line only and the interior portions of the islands were not investigated. In other cases only a brief time could be spared for the interior of the island and sometimes no sign of ptarmigan was found. A few specimens were taken here and there. From our brief investigations I got the impression that ptarmigan were very scarce on some islands or even absent.

Outside the Aleutian chain Rock Ptarmigan were found only once. Two were found on Ushaget Island, of the Barren Islands group, May 11 and one was collected. This one, a male, was still mostly white. It weighed one pound.

Ptarmigan signs were found at Unalaska and of course they are known to occur there, but none were seen.

On June 7 I flushed a pair on Ananiuliak Island and collected the male. This is a very small island, not far from the shore of Unmak Island and without question this ptarmigan would belong to the race inhabiting the larger island.

On June 8 a male was collected on Kagamil Island on a high slope, the only one seen there. On June 12 I found them plentiful on the southwest part of Chuginadak and two specimens were taken. A nest of 9 eggs was found back under a rock. Eight were seen and a specimen was taken by Williams on Carlisle Island June 13. One was seen on Yunaska Island on June 14 and plenty of sign on Amukta Island on June 16 but no birds were seen. The small series taken on these islands, comprising the Islands of the Four Mountains, should prove interesting for comparison with other species. Undoubtedly the same form will be common to the five eastern islands of this group, for they are not far apart. Whether this form would extend westward to Amukta and Yunaska is a question and its extension to Seguam is more doubtful. It is not impossible that the form on the Islands of the Four Mountains is nelsoni. There is a considerable gap between Unmak Island and Kagamil, however, probably fully as great as the width of Unimak Pass to the eastward, which this subspecies has been able to bridge. A comparison of the specimens will prove very interesting and may throw light on the western limit of range of nelsoni.

Ptarmigan were plentiful on Atka Island and we were struck by the grayish color of the plumage, so different from any we had seen to the eastward and very noticeable even when the birds were seen in flight, in the distance. Undoubtedly atkhensis occurs also on Amlia Island, which is separated only by a very narrow pass, but since we did not visit that island no specimens were obtained from it. According to the natives, in winter when the snow becomes deep on Atka Island the ptarmigan may fly out to the smaller off-shore islands where conditions are evidently better. Dr. Fetmore learned of a similar off-shore migration at Morzhovoi Bay in 1911.

On June 28 several were seen on Little Tanaga Island on high slopes and specimens were taken.

On June 29 a single bird was seen on Tanaga Island but no specimens were secured. According to the men in charge of the ranch headquarters here, ptarmigan are plentiful on this island.

On July 2 about half a dozen were seen on Adak Island and a pair was collected and next day a male was seen at Kulik Bay. The female collected had a thin shelled egg in the oviduct. The males are prone to perch on peaked hummocks and I found them from the lower slopes well up to the higher rocky slopes, where vegetation is scarce. I found several "dusting" places

in rather damp earth. The dung was soft at that time, due to the succulence of the food at that season.

On July 4 one was heard crowing on Nagalaska but specimens were not obtained.

On July 5 one was seen and signs of others on Unak Island; Mr. Gray heard one and found tracks on Nazuk Island; on Unak Island we found an egg shell at a fox den.

On July 6 Mr. Williams heard one on Igitkin Island.

On July 8 one was seen on Salt Island. This small island is so close to Atka that the few ptarmigan occurring there are undoubtedly referable to atkhensis.

At Attu we were informed that ptarmigan were scarce and had been for a long time. At one time the chief thought the scarcity was due to the presence of blue foxes. Later he said they had been scarce before the foxes were introduced. Turner, it may be mentioned, writing on his experiences which terminated as early as 1881, says that the ptarmigan of Attu were largely confined to the higher elevations, "probably on account of the great number of foxes which occur on that island." He adds that the natives reported them "quite numerous" on Agattu Island, where no foxes occurred at that time. Agattu is now a fox island, but unfortunately we had no time to visit it.

A pair of ptarmigan, apparently with no young, was obtained on Amchitka Island on August 1.

A short hunt was made on Gareloi Island August 6 but I found no evidence of ptarmigan, nor did I find any sign on Amatignak Island on August 2.

The Aleutian ptarmigan are of particular interest and significance to ornithologists and are one of the important elements of that valuable avifauna. Their preservation is a definite responsibility and naturally one must give special consideration to the question of fox farming.

Our investigations can not be considered entirely adequate on this point. Yet certain facts stand out. We were surprised to find the ptarmigan surviving at all in many cases. On Atka several hundred foxes have been taken in a season yet ptarmigan were plentiful. Even on some of the smaller islands, as Chuganadak, ptarmigan were present in fair numbers. But on some of the small islands heavily stocked with foxes we saw none. We came to the conclusion that on the large islands a fair ptarmigan population may persist if there is a moderate fox population, but even these islands may become less favorable if fox farming should become intensified by artificial feeding in winter. Fox farming on the smallest islands would no doubt do away with the ptarmigan.

Grus canadensis canadensis, Little Brown Crane

Eskimo at Nunivak Island assured me that cranes nest commonly in the interior of that island and I obtained the same information from a native at Nelson Island.

A crane was heard calling back on the tundra at Shag Point, Nushagak River, May 26.

Cranes were heard several times on the flats about Ugashik River. One was seen there May 27 flying high in the air. On May 29 I found a pair on the tide flats and another group of three. Curiously enough, one of these three appeared much larger than the other two, like an adult and two well-grown young, but it would be much too early for that. Evidently cranes nest here.

A local trapper informed me that cranes nest commonly up river from Nelson Lagoon.

Referring to my notes of 1925 I find that cranes were observed at Izembek Bay on several occasions, as late as July 18, on which date two adults tried to decay me away. They were evidently nesting. On May 1 two cranes were seen at Urilia Bay on Unimak Island. It should be noted that the Bering Sea side of the Alaska Peninsula consists of lowlands, with intermittent marsh areas which furnish nesting habitats for such birds as cranes. Unimak Island also partakes of this physiographic character and it is possible that cranes nest there, although my one observation there does not necessarily indicate nesting.

Haematopus bachmani, Black Oyster-catcher.
Attu dialect: Hē-gich
Atka dialect: Hēchh (Probably the same name, the difference here shown possibly due to variation in pronunciation and the difficulty of recording this name.)

One was noted on Ushagat Island May 11, where snails and limpets were numerous. Mr. Williams saw 4 over the water off Cape Karluk, Kodiak Island, remains of one were found at Chignik, and a specimen was taken on Nagai Island May 16. Mr. Williams found a nest on the pebbly beach of Nagai close to high tide mark. There were two eggs.

Oyster catchers were noted on Amak Island. This is undoubtedly the easternmost point in Bering Sea where these birds nest.

Among the Aleutian Islands proper the oyster catchers occur on nearly every island. While there are a few islands for which we did not record them, we may have simply failed to see them on some of these. However, the chief of Attu, although familiar with the birds, said they do not occur there.

Frequently there were only some half a dozen pairs on an island, or possibly less, but sometimes we saw many more. At Ogliuga Island there were 25 or 30 at least August 6. There was a flock of 13 on Salt Island, which

is very small, on July 8.

Mr. Williams, Cray and Jewell found a nest on a small islet at Little Tanaga Island on June 28. The nest was back in the grass, a shallow depression lined with a few bits of barnacle shells and it contained two eggs.

It would appear that these birds would find it difficult to nest successfully on fox islands since they nest on the beach, which is the particular hunting ground of the foxes. In some cases, at least, they find suitable places on outlying rocks which foxes can not reach.

Charadrius semipalmatus, Semipalmated Plover.

Two of these birds were feeding on the beach at Ushagat Island, Barren group, on May 11.

Three were seen on the beach at False Pass August 23. All of these may have been migrants.

However, several were seen about Izembek Bay and Unimak Island in 1925, some of these in the latter part of May, when it was believed they may have been about to nest there.

Pluvialis dominica fulva, Pacific Golden Plover.
Attu dialect: Svegch

The chief of Attu appeared to recognize a colored picture of a golden plover, referred to it as "gold snipe" and gave me the Aleut name. He said they nest on Attu commonly and remain until October. The reported nesting should be verified.

Squatarola squatarola, Black-bellied Plover.

An Eskimo at Tanunak, Nelson Island, said this plover nests on Nelson Island.

Arenaria interpres morinella, Ruddy Turnstone.

On May 22 a small flock of turnstones was noted at Nelson Lagoon. Our view of the birds was not good, but it was thought they were the Ruddy Turnstone. On August 20 two or three were seen at Port Moller, feeding along the beach with Aleutian Sandpipers.

Among the Aleutians these birds were seen only at Ogliuga and Skagul Islands, in small flocks, on July 23 and August 5.

Arenaria melanocephala, Black Turnstone.

Black turnstones were seen frequently on the tide flats at Ugashik River May 27 to May 29. One day I observed 8 pairs. I found a deserted nest containing 3 cold eggs. The birds were evidently on their nesting grounds and were largely confined to the low tide flat rather than the somewhat higher,

mossy areas farther back.

Several black ~~turnstones~~ were seen on Kunivak Island August 14. They had been observed in flight the previous day south of the island.

Capella delicata, Wilson Snipe.
Attu dialect: Coo-lech-arch

A Wilson snipe was performing high in the air at Kodiak on May 12 and on May 25 and 26 several were observed in their flight performance at Snag Point, Nushagak River.

The chief at Attu insisted that Wilson snipes nest on Attu, as well as other islands, but leave for the winter. He identified the bird from a picture and gave us the native name. This is one of the instances where verification is necessary, not only the identity of the bird but its nesting.

Heteroscelus incanus, Wandering Tattler.

A wandering tattler was seen at Kodiak May 12 and one was collected on Nagai Island, in the Shumagins, May 16. Another was seen at False Pass August 23 and a flock of 6 or 7 along the beach at Karluk, Kodiak Island on September 1.

Totanus Melanoleucus, Greater Yellow-legs.

Two were seen at Anchorage on May 9 and I was informed that they nest there. Three were seen on the beach at Port Moller August 20.

Arquatella ptilocnemis couesi, Aleutian Sandpiper.
Attu dialect: Too-loo-goo-yuch
Atka dialect: Chu-lich-tah

These sandpipers were found throughout the Aleutian chain, fairly common, but by no means abundant. As examples, about 10 were seen on Chuginadak Island, 2 on Seguam, about 15 on Adak Island, 2 on Salt Island, and 4 on Umak Island. The last two were small islands. However, if we could have done more work on the interior of the islands we would probably have noted more of these birds.

Mr. Williams found a nest on Chuginadak Island June 12 and collected the eggs.

I found a dead downy young on Atka Island June 22.

On July 23 and August 5 they were common on Ogliuga and Skagul Islands in small flocks, feeding along the rocky beaches.

On August 20 small groups were feeding along the beach at Port Moller, many of these being immature.

Pisobia minutilla, Least Sandpiper.

Least Sandpipers were noted in small flocks feeding along the beach

at Yakutat May 2, a flock of 9 was seen at Port Chatham, Kenai Peninsula, May 6, and a flock was seen at Ushagat Island of the Barren group May 10. Several were seen at Chignik May 14.

On May 25 at least half a dozen were found in the marshy vegetation at Snag Point, Nushagak River, where they were evidently nesting and the following day a male, with incubation patches, was collected. The flight song was noted.

Referring to my notes of 1925 I find that on May 7 a Least Sandpiper was seen at Urilia Bay, Unimak Island, and on May 10 several were seen. On May 18 they were common at St. Catherine Cove and they may nest on Unimak Island. At any rate, a little later they proved to be common and nesting about Izembek Bay. A Nest with four well-incubated eggs was found on June 22.

We saw none of these birds to the westward in the Aleutians. The chief of Attu, when shown pictures of sandpipers pointed out a picture of the Least Sandpiper and gave the Attu name Krē-a-ma-ghrē-choo. However, under such circumstances, the identity must remain doubtful until verified. This would indicate, at least, that he was familiar with some small sandpiper other than the Aleutian Sandpiper.

Pelidna alpina Sakhalina, Red-backed Sandpiper.

On May 27 and 29 Red-backed Sandpipers were common on the tide flats flats bordering Ugashik River, where they were paired and evidently breeding. A few were also seen on slightly higher ground back from the tide flats and one was evidently flushed from a nest, although the nest was not found.

It is interesting to note that in 1925 a single Red-backed Sandpiper was seen feeding in company with some Aleutian Sandpipers at Urilia Bay, Unimak Island, on April 29.

Limnodromus griseus scolopaceus, Long-billed Dowitcher.

Several, evidently nesting, were noted on a low marshy area near Snag Point, Nushagak River, and a female collected contained two eggs, almost ready for development of the shell, May 25. Several pairs were also seen on the tide marshes at Nushagak River May 27 and 29.

Mr. Williams reported seeing one on Bogoslof Island June 5, at the "sulphur" lake.

Kreunetes maurii, Western Sandpiper.

A specimen was taken on Ushagat Island, of the Barren group, May 10, the only one noted.

Limosa lapponica baueri, Pacific Godwit.
Attu dialect: Mi-u-keegh or Miu-keegch
Atka dialect: Chu-se-gech

According to an Eskimo on Nelson Island Pacific Godwits nest sparingly on that island.

The chief of Attu pointed out a picture of the Pacific Godwit and said they occur there, giving us the native name. Natives of Atka Island had also readily recognized it, the same picture, gave us their name for it and said it was found there. The names are somewhat similar, considering the characteristics of the two dialects.

At Atka the natives described to us still another shorebird, similar to the Godwit, for which they gave us the name Kre-ge-mul-liga, in the Atka dialect. This I could not identify. They denied that it was the Greater Yellow-legs, when shown a picture.

The Godwit as an Aleutian bird requires verification and the data is given here only for future investigation.

Phalaropus fulicarius, Red Phalarope.
Attu dialect: A-chi-li-rha-uch

While passing off-shore from Unimak Island in Bering Sea, in the evening of May 21, we saw bands of Red Phalaropes flying over the water, totalling nearly 100. On July 15 over 100 were flying about near the Baby Islands in Akutan Pass and again near Rootok Island. Next day some more were seen near Rootok Island. On two occasions many of them were feeding along a long line of floating deek kelp.

The chief of Attu stated that these phalaropes do not nest in the Aleutians but are plentiful there in winter.

Lobipes lobatus, Northern Phalarope
Attu dialect: Chirr-teg-ech
Atka dialect: Chir-riz-ing-ah

Northern Phalaropes were seen in several localities enroute to the Aleutians. Two or three flocks of shorebirds thought to be Northern Phalaropes were seen south of Ketchikan April 27, a flock north of Cordova May 4, a small group between Barren Islands and Afognak Island May 11, and on May 13 a flock of about 25 in Kupreanof Straits and smaller groups near Kodiak Island. All of these phalaropes were seen over the open water, where they sometimes alighted and swam about. Evidently they were in migration.

On May 26 two were seen near a pond on the tide flat at Snag Point, Nushagak River, where they appeared to be preparing to nest.

May 27 and 29, they were common on the tide flats at Ugashik River, where many were undoubtedly preparing to nest. Some were in small flocks, others in twos and threes.

Northern Phalaropes were seen here and there among the Aleutian Islands, where they nest. Two or three were seen on Atka June 22, a pair at Little Tanaga June 28, 7 on Adak Island July 2 and 3, three on Ogliuga Island July 23, two on Amchitka July 24 and several others August 1, and several on Kiska Island July 26. On Buldir Island two were found high up, in the area where geese are also found.

Stercorarius pomarinus, Pomarine Jaeger.

In the evening of May 21, several miles off Urilia Bay, Unimak Island, 3 Pomarine Jaegers passed the ship, two together, then a single bird which Mr. Williams observed at close range.

On May 22 the was seen off-shore from Nelson Lagoon, Alaska Peninsula, and several later in the day. On two occasions one was trying to rob an Arctic Tern.

On May 23 at least three or four were seen in outer Nushagak Bay.

Apparently the Pomarine Jaeger is scarce in the Aleutians. Three jaegers flew by the ship between Little Tanaga and Kagalaska Islands July 4. They were light underneath and appeared large in size, but in this case there was a little doubt in identification, due to a poor view of the birds.

One was seen at Unalga Island August 3.

Stercorarius parasiticus, Parasitic Jaeger.
Attu Dialect: Klu-pe-soch
Atka dialect: Ke-uch

On May 23 at least two were seen in outer Nushagak Bay. May 25 at least 3 were seen over the marshy tide flats at Snag Point, Nushagak River, and next day two were seen there.

On May 27 and 29 a number were seen flying about over the tide flats at Ugashik River, both the dark and light phase of plumage noted. Mr. Williams collected a specimen.

In the summer of 1925 I found Parasitic Jaegers common about Izembek Bay and noted them at Urilia Bay, Unimak Island. In that season I noted an unusual number of dark birds.

During the present expedition we saw these jaegers at intervals throughout the Aleutians, all the way to Attu Island. Invariably these were in dark plumage.

On June 12 Mr. Williams and Mr. Gray observed 8 Parasitic Jaegers, in pairs, on Chuginadak Island.

On June 14 one was observed at Herbert Island.

On June 18 a pair was seen on Seguam Island.

June 29 two were seen and one taken at Kanaga Island.

July 23 two were noted on Ogliuga.

July 26 several were seen on Kiska Island.

July 30 three were noted at Attu.

July 31 I counted at least 21 high on Buldir Island and took specimens.

August 4 about 5 were seen on Kavalga Island and 3 on Skagul Island.

On August 14 one was seen on Nunivak Island, Bering Sea, in light color phase. On August 26 five were seen over a marsh at Sand Point, Popof Island, all in the light color phase.

Larus hyperboreus, Glaucous Gull.

We kept a sharp lookout for the Glaucous Gull and although we thought at first that the gulls of Chisik Island, Cook Inlet, were hyperboreus, it was not until one was taken at Nelson Island on August 15 that we obtained an undoubted specimen of this species. None were identified as such among the Aleutians.

The specimen collected, a male, weighed 3½ pounds and had a wing spread of 59 inches. The iris was yellow, like that of the herring gull, strikingly different from that of the Glaucous-winged Gull.

The Eskimo at Nelson Island stated that gulls, probably hyperboreus, nest on Kri-ge-gak and Nunivakchak Islands.

Larus glaucescens, Glaucous-winged Gull.

Attu dialect:	Hlú-ka
	Chá-larch, immature
Atka dialect:	Shlú-ka
	Chiá-li-erch, immature

These are no doubt the same name, the difference shown being possibly due to slight differences in pronunciation or the difficulty of rendering Aleut syllables with the English alphabet.

Glaucous-winged Gulls were present at nearly all times throughout the trip whenever we approached land and sometimes followed the ship in moderate numbers enroute, particularly through Southeastern Alaska and along the Alaska Peninsula, in the latter part of April, and early in May.

On May 11 we found a small colony beginning to nest on a grass-covered rock on the west shore of Ushagat Island, of the Barren group.

On May 19 a colony of 30 or more was found on Senkin Island, lying between the Alaska Peninsula and Unimak Island.

Numerous gulls were nesting on Amak Island and a large colony was preparing to nest on a low grassy island in Nelson Lagoon. Another colony

of about 75 was preparing to nest on an Island in a lake near Ugashik River on May 29.

Among the Aleutians we recorded Glaucous-winged Gulls at practically every island visited, usually not in great numbers, but occasional colonies were found. Gulls were nesting in considerable numbers on Bogoslof. Several colonies, the largest about 250 birds, on Carlisle Island, a small colony on Chagulak, a small colony at Little Tanaga, a colony of 100 to 150 birds on Corwin Rock, at Chuginadak, small groups in the Baby Islands, a colony on Egg Island near Unalaska Island, several hundred on Puffin Island, Trident Bay, Akun Island, a large colony on Buldir, 250 on Tanadak, near Amatignak. Among the other islands they were seen only as stray individuals or small groups.

There was not time for more than casual observations on the food habits of the gulls. At Port Moller they are nesting in considerable numbers in in close proximity to Pacific Eiders and according to local information, the gulls consume eggs and young birds. At the small eider colony at Little Tanaga the gulls were nesting on the same islets and had consumed a number of nestfuls of eggs. Just what the ultimate effect on the eider population is is not known. This would depend on eider losses from other causes. Eiders are not hunted in the Aleutians in any great numbers by the natives, apparently. The native population is not large. Nor do these birds suffer from hunting by sportsmen. At least, it must be on a very small scale, if at all. This question must remain for future study and computation.

A gull was seen eating a fulmar's egg on Amukta Island. And, judging by observations, elsewhere, the gulls no doubt habitually "snipe" at the nesting colonies of sea birds, such as at Amak Island where murres and cormorants are so numerous. On this island I had a chance for comparison, as I visited it in 1925. On both visits I found murres, cormorants, and gulls very numerous, yet I could not see any reduction of numbers in any group on this second visit.

Gulls fed also on any carrion available and scanned the beaches for refuse and marine invertebrates. They particularly sought exposed, kelp covered reefs. Sea urchins are an important item in their diet. On certain sand beaches gull droppings consisted entirely of sea-urchin remains and their empty shells lay all about.

Mr. C. J. Rhode kindly furnished us with notes and material collected at small islands in Skilak Lake, Kenai Peninsula, on July 17,1936. The gull stomachs he collected have been forwarded to Washington for analysis, together with gull wing tips for identification.

Mr. Rhode estimated 200 gulls in the colony. Most of the eggs had hatched by July 17, the time of his visit, only a few eggs remaining. About 50 cormorants were nesting with the gulls. These were later with their nesting, some still incubating and the others with small young.

Bones of small rodents were found immediately adjoining one nest, apparently those of ground squirrels. There were from one to three young gulls per nest.

page 60 missing but probably mishumbered

A limited area of marsh land adjoins the lake, but no water fowl were observed.

Larus occidentalis occidentalis, Western Gull.

On April 24 an occasional Western Gull was seen east of Vancouver Island and nearly as far as Seymour Narrows.

Larus argentatus, Herring Gull.

An occasional gull of the argentatus group was seen along the coast of British Columbia April 23 and 24, as far as Millbank Sound. At Anchorage on May 9 an occasional gull of this type was seen about the boat and a specimen was taken. It weighed 2 pounds 2 ounces, the feet were ruddy, the eyelid dull flesh, iris pale yellow.

No gulls of this type were seen among the Aleutians.

Larus canus brachyrhynchus, Short-billed Gull.

Short-billed Gulls were common along the southern Alaska coast. On April 24 they were noted near Seymour Narrows, B.C.; April 25 about a dozen near Millbank Sound; April 27 common in Wrangell Narrows, outnumbering other species; April 29-30, quite a few at Juneau; May 2, the dominant species at Yakutat; May 5, common at Seward; May 7, about 10 noted at Chisik Island, Cook Inlet; May 9, a flock attended our ship at Anchorage and in a marshy area near the town several appeared to be preparing to nest. On May 12 one was seen at Kodiak; on May 16 three or four at Nagai Island.

On May 17, at Belkofski, we found a colony nesting on a wide marshy flat, through which ran a small stream. They sat around in pairs, widely scattered. We estimated there might have been from 50 to several hundred pairs.

At Snag Point, Kushagak River, they were common on May 23 to 26 and may nest on the tidal marsh near that village. They were also common on the tide flats near Ugashik River, where no doubt they were preparing to nest.

At Sand Point and Unga, in the Shumagins, several were noted on August 29.

None were seen among the Aleutians.

Larus philadelphia, Bonaparte's Gull.

On April 24 flock after flock was seen near Seymour Narrows, on May 1 they were abundant at Juneau, and May 2 several were noted at Yakutat. On May 5 several were noted at Seward. On May 9 at Anchorage one or two appeared occasionally at the ship and a pair was seen sitting together on a small marsh near the town, where they probably nest.

On the return trip we found Bonaparte's Gulls abundant at Juneau, September 13 and 14, about the docks, and numerous at Petersburg the next day.

Rissa tridactyla pollicaris, Pacific Kittiwake.
Attu dialect: Teegle-ah'girch
Atka dialect: Teegle-ga'gha

Several kittiwakes were seen at Seymour Narrows on April 24.

On May 7 we visited Chisik Island, in Cook Inlet, and found the Pacific Kittiwakes to be the principal bird of that island refuge. The kittiwakes were swarming about the high steep cliffs and we estimated 25,000 or more.

On May 11 about a dozen were seen south of Ushagat Island and on May 14 there were quite a few between Sutwik Island and Cape Kumlik on the Alaska Peninsula. On May 15 several were seen near Nagai Island, in the Shumagins, and on May 16 there was a large flock about a steep headland near Unga. They were fluttering about the cliffs there and were evidently preparing to nest. They were flying about those cliffs on our return there on August 27 also.

May 18 to 23 kittiwakes were noted at Ikatan Peninsula, and other points around Unimak Island and eastward along Alaska Peninsula to Bristol Bay.

We visited Amak Island on May 31 and observed the large rookery there and later in the day found a small nesting colony on a cliff at Cave Point, on Unimak Island.

Kittiwakes were noted at intervals among the Aleutians. June 9 two or three were seen between Kagamil and Chuginadak Islands, on June 13 between 200 and 300 were feeding north of Herbert Island, and on June 14 small groups were observed off Yunaska Island. We did not, however, discover nesting colonies among those islands.

On June 15 kittiwakes were nesting in moderate numbers in company with murres on Chagulak Island. Next day several small colonies were found by Williams, Gray and Jewell on Amukta Island.

A single kittiwake was seen at Andrew Bay., Adak Island, July 3.

On July 7 a good sized colony was observed on Koniuji Island in the distance.

On July 15 a few small groups were noted near Rootok Island.

One was seen at Careloi Island on July 21 and a few at Kiska July 26. Next day a small colony was found nesting on a small island near Buldir Island

On August 3 a small colony was found on an offshore rock near Unalga Island.

In the Aleutians proper about half a dozen colonies were observed, only moderate in size, although other groups were noted here and there in the tide rips. None of these colonies approached the size of the huge one at Chisik Island, or the other large one on Amak Island.

A sharp look-out was kept at all times for the Red-legged Kittiwake. Many of the birds, in fact most of them, necessarily, were observed at some distance, but whenever we observed them at close range they proved to be Pacific Kittiwakes and all specimens taken were this species.

Fortunately, these birds nest on steep cliffs where they can not very well be disturbed by foxes.

Xema sabini, Sabine's Gull. ✓

The first Sabine's Gull was seen near False Pass on May 18, apparently a wandering individual. On May 22 at least one, which appeared to be in immature plumage, was seen offshore opposite Nelson Lagoon. At Ugashik River, May 27 to May 29, we found them common on the tide flats. They were paired and evidently preparing to nest.

Sterna paradisaea, Arctic Tern. ✓
Attâ dialect: Ki-ti-ki-tee-ach
Atka dialect: Kri-thich-tha

A large flock of birds, thought to be terns, was noted in the distance in Wrangell Narrows April 27. Strangely enough there was difference of opinion on the identification, since Bonaparte's Gulls were also present, but these may have been Arctic Terns after all.

One was seen at Anchorage May 9.

An Arctic Tern colony was observed near the cannery, south of Waller Island, Nelson Lagoon. Mr. Jewell reported the existence of this colony and on investigation we found the birds to be the Arctic Tern, and not the Aleutian Tern, for which we were on the look-out. At the time of our visit to the island the birds were just scooping out the nest depressions, although egg laying had begun. At least a dozen or more single eggs were found.

A few Arctic Terns were observed at Ugashik River May 27 to 29, probably on their nesting grounds.

At Kanaga Island we were told that a tern colony was nesting on a sandy beach, but we had no chance to visit the place.

A few Arctic Terns were seen along the south end of Tanaga Island on August 7.

On August 4 Arctic Terns were observed nesting, in several small colonies, on Ogliuga and Skagul Islands. Both on this date and on July 23 immature birds were flying about, while others were still downy.

Several Arctic Terns were seen at Nunivak Island August 14.

Gene Motovitski informed me that terns nest at Bear Bay, near Delkofsky, and on an island in Pavlof Bay. We had no opportunity to visit these colonies for positive identification.

At all times we were on the look-out for Aleutian Terns but not one was seen during the expedition. Apparently this species does not occur in the Aleutians. As a matter of fact, tern habitats are comparatively scarce in the Aleutians, where most of the islands are so precipitous. Possibly we have here recorded the majority of the terns nesting there, although study of some of the flatter Near Islands may reveal other groups. However, since those islands have been used for fox farming the terns may have disappeared, for the eggs and young are quite available to the beach haunting foxes.

While we were entering Nushagak River a number of Arctic Terns followed our ship, apparently attracted by the bits of food churned up near the surface of the water by the propellers. Mr. Jewell, who has had years of experience on boats in Alaskan waters, said the terns habitually do this. And I learned that the wardens of the Bureau of Fisheries, who are furnished with ammunition to kill gulls and terns, often station themselves at the stern of their boat and shoot down the terns as they follow the wake for bits of food.

In 1925 I reported certain evidences that some Aleutian Terns may still have nested about the Alaska Peninsula at that time and I believe that Mr. E. P. Walker has published something to that effect. Apparently the Aleutian Tern has been maintaining a very tenuous hold on this part of Alaskan territory, indeed, may have already disappeared. At any rate, the average warden would not distinguish the Aleutian from the Arctic Tern, especially if the Arctic is in immature plumage, and both species are probably condemned in any case. Therefore the practice of shooting terns, as an official duty, certainly gives the Aleutian Tern a "bad break" and it is already extremely scarce. This practice was in effect in 1925, when I reported on it, and presumably it has been going on since. I am not aware that a really comprehensive study by qualified workers has been made of the food habits of terns in Alaskan waters. It is possible that the war on terns is not being waged assiduously. But it has serious potentialities and it is recommended that appropriate action be taken to ameliorate a situation which is so dangerous to a rare North American species and that, after obtaining the necessary facts, any control should be deemed necessary, that a more selective method be used and that the matter be placed in the hands of well-informed personnel.

Uria aalge californica, California Murre. ✓

Uria lomvia arra, Pallas's Murre. ✓
Attu dialect: Co-la-rhook-ta
Atka dialect: O-loong-thrah

These two species of murres will be discussed together for the reasons that in many cases when we viewed a whole colony we could, naturally, identify only a portion of it and furthermore the two species generally nested together. To treat these separately would be almost total repetition.

Murres were noted here and there along the coast from some distance south of Queen Charlotte Sound to the Gulf of Alaska, April 24 to May 2. Most of these were in winter plumage, but a few had acquired the dark summer plumage.

On May 10 a few were seen near the entrance to Cook Inlet and next day quite a few were noted between Ushagat Island and Afognek, while on May 13 a few were seen in Shelikof Strait. On May 14 they were common between Sutwik Island and Cape Kumlik and some of these were californicus. May 15 and 16 a few were seen among the Shumagins near Nagai and Unga and during the next four days murres were noted in flocks about Ikatan Bay and East Anchor Cove at Unimak Island. On May 21 murres were noted around Unimak Island, from the Pacific to the Bering Sea side. Californicus was identified on both sides and Pallas Murre was definitely identified on Bering Sea.

Many, or most of the murres seen enroute up to this time were probably migrants.

On May 31 we observed large numbers of murres nesting on Amak Island, where both species are represented. Studies in 1925 showed that in this colony the Pallas Murre is by far in the majority.

On June 5 we observed large numbers of murres on Bogoslof Island, where they were preparing to nest all over the high rocks and also along the ledges of the high bank just back of the sea lion beach. Both species were here, although Pallas Murre was in the majority.

A California Murre was collected and several others seen at Nikoleki Village on Umnak Island June 7.

On June 8 we found a large colony of murres on the steepest cliffs of Kagamil Island, where both species were present, but the percentages could not be determined.

On June 13 a few, thought to be arra, were seen near Carlisle Island and next day half a dozen were seen near Yunaska, two of which were californica.

June 15 there was a colony, consisting of both species, but arra probably in the majority, nesting with Pacific Kittiwakes, on Chagulak Island. Next day Mr. Williams, Gray, and Jewell noted 4 small colonies of murres on Amukta Island, two of these associated with Kittiwakes. On June 18 a small colony, including both species was found at Seguam Island.

Scattered individuals and small groups were seen at times, a few at Adak July 3, a few at Kagalaska and Umak July 4, 1 near Aso next day, 4 or 5 californica at Igitkin July 6, and 20 or 30, those observed closely being californica, at Ulak Island on the same date.

Murres were numerous on Kasatochi Island, both species being present, and there were colonies on Koniuji, farther east.

On July 10, early in the morning, Mr. Martin, the mate, observed "thousands" of murres coming out from land opposite Makushin, on Unalaska Island.

On July 23 three or four murres were seen at Ogliuga Island, where there is no nesting place, and on July 26 a Pallas Murre was seen at Kiska. On July 27 a few murres were noted at Buldir, August 2 about 12 near Amatignak, and a californica near Unalga August 3.

Murres were noted casually on the return trip, as between Perryville and Chignik August 30 and a few near Karluk September 1.

Murres nest in such inaccessible places that they are generally safe from foxes.

Cepphus columba, Pigeon Guillemot.✓
Attu dialect: Seev-luch
Atka dialect: Seev-luch

Pigeon Guillemots are so nearly universally present that it seems useless to enumerate the many places of its occurrence. However, they were nowhere really abundant. An occasional one was seen at intervals along the British Columbia and Alaskan coasts, from April 24 to May 31, including such localities as Port Chatham Kenai Peninsula, Chisik Island, Nagai and Unga in the Shumagins, Unimak and Amak Islands.

Among the Aleutians they were generally present at each island visited, sometimes as only a few individuals, sometimes much more prominently in groups. They nest, apparently, in crevices in cliffs and among the boulders on the beaches.

Judging by the fox food caches we found, these animals prey on the guillemots at least to some extent.

Some natives at Atka stated that the Pigeon Guillemots are not seen there in winter. Turner, speaking of the westernmost Aleutians, states that he did not observe them there in winter, and other writers appear to have the same information.

Brachyramphus marmoratus, Marbled Murrelet.✓

The Marbled Murrelet was not often observed. Several small groups were seen south of Seymour Narrows, B. C., April 24, two or three in Queen Charlotte Sound next day and a few south of Frangell Narrows April 27. At Port Chatham,

Kenai Peninsula, one in black and white plumage was seen May 6. On May 11 half a dozen or more were seen between the Barren Islands and Afognak. One was in the black and white plumage. And on May 14 one or two which may have been this species were seen southwest of Sutwik Island.

Murrelets were seen several times under unfavorable conditions so that they could not be identified.

Brachyramphus brevirostris, Kittlitz's Murrelet.

On May 21, in Bering Sea off Unimak Island and again the next day, off the Alaska Peninsula several murrelets were seen which were almost certainly of this species.

This murrelet is supposed to occur among the Aleutians in summer, but we saw none. Either they are extremely scarce or very secretive.

Synthliboramphus antiquus, Ancient Murrelet.
Attu dialect: Katrch
Atka dialect: Kriz-yung'-a

This was the commonest murrelet met with but even this species was by no means plentiful. Enroute to Alaska we saw two near Dixon's Entrance, April 26.

On June 7 a few small flocks were observed near Nikolski Village, at Unmak Island, and two were collected. A female contained an egg pretty well developed.

On June 9, while going from Kagamil to Chuginadak Island in a storm, we saw a number of small birds, some of which appeared to be of this species, although visibility was very poor.

A pair was seen near Carlisle Island June 13, three were seen near Herbert Island June 14, and a specimen was taken at Amukta Island June 16.

July 3 I saw 5 near South Island, Bay of Islands, at Adak, where Mr. Williams recorded some the previous day, taking a specimen.

Six were seen near Igithin Island July 6, one was seen near Kasatochi Island next day, and on July 8 one near Salt Island. Three were seen at Careloi July 21 and next day about 10 near Ogliuga Island. One or two were seen at Kiska July 26 and two at Buldir July 27.

At Atka the natives informed us that these murrelets nest on Amlia Island and on Chugula, near Amlia, and that they nest in burrows.

This sums up our observations on the Ancient Murrelet, which is not indicative of a plentiful population. I have read accounts of multitudes of these birds nesting on islands in the Sanak group. No such numbers can be found in the more western Aleutians today. The Atka natives said they used to kill these murrelets for food, but do not do so any more. For one the customs

of the natives have changed and it is also true that the birds are not present in great enough numbers to make it worth while to go after them. We were also told that foxes feed on the birds in summer. Much of this is purely circumstantial evidence and it may be that some of the islands we did not visit are the ones which support a greater murrelet population. But the evidence, such as it is, strongly supports other facts which indicate a diminution of bird life due to fox farming.

Ptychoramphus aleuticus, Cassin's Auklet. ✓
Atka dialect: Mak-chooth'-ah

It was a little difficult to identify this bird when speaking to the natives, but it is believed the native name here given is correct.

On June 14 a dozen or more were seen feeding in the tide rips off the shore of Yunaska Island, in company with the more numerous whiskered auklets.

On July 7 and 20 a number of Cassin's Auklets were identified among the vastly more abundant Least and Crested Auklets.

Among the flocks of small auklets nesting elsewhere there must have been a few of Cassin's but we kept a sharp look-out for them and those mentioned above are all we saw.

Mr. Wheaton, trader at Atka, stated that last winter on one occasion several hundred auklets which according to his identification appeared to include both Crested and Cassin's were found dead along the beaches of Atka Island.

George Ermeloff, former chief of Unmak Village, stated that an auklet which according to his identification by pictures, appeared to be this form, nests on Keegaloo Island and used to nest on Adugak Island, but he remarked, "I guess foxes finish now."

I have not had experience with this species on its actual nesting grounds but it is said to be nocturnal at such times, which may account for our not seeing more of them, but it may be remarked that among the bird remains cached by foxes we did not find this species. It is believed it is relatively rare in the Aleutians as a whole.

Cyclorrhynchus psittacula, Paroquet Auklet. ✓
Attu dialect: A'-bo-chee-arch
Atka dialect: Kroch-ud'-ga-tha

On May 14 near Sutwik Island a few of these auklets were seen, the first we met with. On May 18 and 19 some Paroquet Auklets were noted among the numerous Crested Auklets feeding near Ikatan Peninsula of Unimak Island and on May 21 a flock of 100 or more was seen near Cape Lazarof.

Among the Aleutians proper these birds were rather generally distributed and there were some good sized colonies. An occasional one was seen at Unmak Island and they were found in small numbers at Kagamil and Uliaga, quite plen-

tiful at Carlisle Island, where they were nesting and where Mr. Williams collected an egg, June 13, and nearly 150 were seen at Herbert Island. Several were nesting on Chagulak Island. At Seguam Island they were numerous, probably several thousands. Nine were seen at Kagalaska, one at Aso Island, 3 or 4 at Tanaklak, 4 at Unak, several small flocks at Igitkin, and 50 to 100 at Ulak nearby. A few were noted at Kasatochi and Koniuji. At Careloi they were plentiful, possibly the most abundant of the auklets there. Mr. Jewell reported a number of Paroquet Auklets at Ogliuga Island. They were nesting in large numbers on Kiska Island, one of the best nesting colonies found, and they were common at Buldir Island. A few were noted at Unalga.

The principal nesting colonies are at Careloi, Kiska, and Buldir Islands, while Seguam also has a striking colony. Among the other islands visited there were only an occasional one or a few scattered groups, sometimes possibly reaching several hundred in numbers.

The Paroquet Auklets nest commonly among the large boulders of certain beaches, where many deep cavities among the jumbled rocks are available. They nest also in cavities of certain slopes where loose rock has been covered with soil and vegetation, yet containing cavities and galleries underneath the soil layer. On Kiska Island the Auklets were nesting in the lava rock of a mountain slope. Sometimes, as at Seguam, they find suitable crevices in the cliffs.

On several occasions when a startled bird ejected food recently taken it was seen to consist of a salmon colored mass which seemed to consist of very small crustaceans or similar invertebrates. This was noted among other auklets also.

Aethia cristatella, Crested Auklet. ✓
Attu dialect: Ku-noo'-yuch
Atka dialect: Ku-noo'-yuh

This is evidently the same name in both dialects.

The Crested Auklets were generally distributed through the Aleutians and in some cases were the most abundant auklet present. At Ikatan Peninsula of Unimak Island, May 18 and 19, these auklets were seen flying about and alighting to feed in huge flocks, literally "swarms", as viewed in the distance. We saw one in Bering Sea opposite Urilia Bay.

To the westward of Unimak Island in the Aleutian chain these auklets were as common and widely distributed. They were numerous near Chagulak Island, where they nest and where an egg was collected June 15. Several thousands nested on Seguam, they nested in large numbers on Koniuji and Kasatochi Islands, as well as Careloi and Kiska Islands and were common at Buldir.

On several occasions these birds were observed spewing out the salmon colored food material as in the case of the Paroquet Auklet. They nested in the cavities and crevices among the boulders on beaches as well as higher slopes.

Foxes were preying on this species commonly. This was particularly noted on Careloi Island and on Kasatochi Island a fox cache was found which

contained 65 of these birds.

Aethia pusilla, Least Auklet.
Attu dialect: A-la-ma-gha hu'-li-gi
Atka dialect: Choo'-cheah

Many of the islands visited had no Least Auklets, but they were extremely numerous on some others. None were observed for certain east of Amlia Island. The first ones observed were in Amlia Pass on June 27.

On Kuniuji and Kasatochi Islands these little auklets were nesting in great numbers. We observed them coming in from the sea in great swarms, appearing like huge swarms of bees in the distance, changing shape, undulating, swerving, dissolving and bunching, much like a wisp of smoke. They nested among the boulders on the beach as well as on the higher slopes among the rock crevices. A small downy young was found on Kasatochi on July 20.

Least Auklets were very numerous on Careloi Island and on the north end of Kiska Island. They were also numerous on Buldir Island.

These were the principal rookeries found. Elsewhere, a few were seen at Amatignak, a wing was found on Tanadak Island and on August 12 a number were seen south of Nunivak Island. On Bobrof Island remains of 4 were found in fox caches.

The least Auklets, together with other species, were seen spewing the salmon colored masses of small invertebrates, which appeared to be their principal food.

Foxes prey on this species as well as the other auklets. Besides the few remains found on Bobrof Island, 37 Least Auklets were found in one fox cache on Kasatochi Island and remains of this bird were found in fox caches on Careloi. The Chief of Atka Village stated that many of these auklets remain in winter, using the rock crevices for shelter, where the foxes get them.

Aethia pygmaea, Whiskered Auklet.
Attu dialect: Choo-chirr'-ech
Atka dialect: Tooch'-much

There is a possibility of confusion in the native names. The Attu name for the Whiskered Auklet is evidently the same as the Atka name for the Least Auklet, "Choo-cheah." Yet actual specimens of the Whiskered Auklet were used for identification.

The first observation on this species was at Kagamil Island, where Mr. Williams collected a single specimen on June 8. On June 14 three hundred or more were seen at Herbert Island, where they evidently nest and at least 250 were feeding in the tide rips near Yunaska Island. Obviously we did not see all the birds and there may be well have been many more.

On June 15 they were found nesting in crevices of a rocky slope of Chagulak Island, in company with Crested and Paroquet Auklets and puffins and

an egg was collected.

On June 18 at least 132 were counted and others noted casually at Segum Island, where they no doubt nest.

As we left Nazan Bay on Little Tanaga Island June 23 several were noted there. The natives of Atka informed us that these birds nest on Konhuji, Kasatochi, and Chugul Islands (the last most Kiska); and on Amlia Island.

Eleven were seen and a specimen was taken at Umak Island July 4, several flocks totalling about 100 were noted at Aso Island July 5, half a dozen were seen near Igitkin Island and 2 or 3 were seen near Ulak Island July 6.

At Careloi July 23 half a dozen or more were identified. Although other auklets were abundant here, this species was apparently scarce.

This summarizes our observations on this bird, those actually seen totalling upwards of 1,000, although since we could not have seen all of them, the actual number present on the islands visited might be upwards of 2,000, as an estimate. This is a small number for an auklet and its status as an American nesting species might well be considered precarious.

These birds, as with other auklets, nest among the boulders of certain shorelines or in the crevices of rocky slopes which have become largely covered with soil and vegetation.

The foxes feed on this as well as other auklets. We found the head of a Whiskered Auklet on Kasatochi Island at a fox cache near a den. They were apparently scarce at that island. The natives assured us that this species spends the winter among the Aleutians and that during that season the birds return to their retreats among the rocks to roost, where the foxes get them. Thus, due to this roosting habit, these birds fall prey to the foxes the year round and suffer much more than the other species. This could well be one of the factors in their present scarcity.

Fratercula corniculata, Horned Puffin.

Attu dialect: Ka-gee'-ach
Atka dialect: Ka-geeth'-ah

The Horned Puffins were common and almost universally distributed throughout the Aleutians, at least a few being present on nearly every island visited. As a rule they were much less abundant than the Tufted Puffins with which they nesting everywhere. In a few instances, however, they were unusually abundant, as on Careloi Island, due largely to better nesting facilities. The Horned Puffins prefer crevices in steep cliffs or among jumbled boulders or blocks, rather than burrows in the sod and their numbers and distribution seemed to be somewhat limited by the extent of such nesting sites.

Direct evidence was lacking that the foxes prey extensively on this species. In some cases their nest places are more or less inaccessible and probably the auklets and Tufted Puffins, on the same areas, are more readily

available.

According to the natives there puffins winter in the Aleutians.

Lunda cirrhata, Tufted Puffin.

Attu dialect: Och-choch
young birds: Kong-o-luch
Atka dialect: Ok-chuh or Ok-chuch

Tufted Puffins were plentiful and generally distributed throughout the Aleutians and they were noted in the Shumagins, Barren Islands, Kupreanof and Shelikof Straits and at Amak Island. On some islands they were very numerous. A small islet in Trident Bay, Akun Island, was thickly populated by Tufted Puffins and the earth honeycombed by their burrows. An outstanding puffin island is Uliaga, one of the Islands of the Four Mountains. A number of other islands were also thickly populated with these birds. According to the natives these puffins also spend the winter among the Aleutians.

Apparently the puffins have been able to withstand the depredations of the foxes quite well, although the foxes do use them for food. We found Tufted Puffin remains in food caches and droppings a number of times. It is probably however, that auklets and petrels are more easily obtained and may possibly be more palatable so that while those other species are present the puffins enjoy a certain immunity, relatively speaking. However, this would not hold true after the smaller species have been eliminated.

Nyctea nyctea, Snowy Owl.

Attu dialect: Ah-vai-ach

The chief of Attu stated that this owl nests on Attu Island. Turner records it as a resident bird on Agattu, which we did not visit.

It has been seen on Unimak Island, according to local information.

Eskimo informed me that Snowy Owls nest in the interior of Nunivak Island and on Nelson Island.

Asio flammeus flammeus, Short-eared Owl.
Attu dialect: Too-too-tooch
Atka dialect: Too-too-tuch

A Short-eared Owl was flushed on Ushagat, one of the Barren Islands, May 10, and one was seen on Popof Island, near Sand Point, May 16. Mr. Martin, the Mate, saw one off-shore at Bristol Bay May 23. I flushed one on Amak Island May 31. A number of pellets indicated a diet of Microtus, which was abundant there.

We did not see any among the Aleutians and according to the natives they are scarce there, except on Unalaska, where, they said, they are common. It is interesting to note that on Unalaska, where these owls are said to be common,

field mice are abundant. Westward of Umnak, where these owls are rare in summer, there are no rodents except on three islands where rats and ground squirrels have been introduced.

At Atka we were told that an owl had been shot on a small adjacent islet the previous winter. Upon searching that vicinity the wings and part of the body were found, even a piece of the stomach, which still contained remnants of a common rat, which abounds on Atka.

We were assured that although these owls do not nest in the western Aleutians, they occur there in winter. As to their food habits on these islands in winter, where there are no rodents, it is difficult to guess. Perhaps they do not remain long.

Selasphorus rufus, Rufous Hummingbird.

On June 20, 1936, Howard Jensen, a member of the crew, declared he saw a hummingbird, on the beach at Uliaga Island. When questioned, he described it as a "brown bird", smaller than a winter wren, with a long bill. He did not see a red gorget, but noted a whirring of the wings and heard their sound and described the bird as darting here and there in the air. He assured us confidently that he "knew a hummingbird."

Subsequently some of us became suspicious of the winter wren, which we would occasionally see moving with a blurring flutter of wings.

This is one of those puzzling occurrences which the field man hardly knows how to dispose of. It is mentioned here not as an absolute record, but as a suggestion in case of future observation of this kind.

Megaceryle alcyon pauirna, Western Belted Kingfisher.

A kingfisher was seen at Port Chatham, Kenai Peninsula, May 6 and one was seen at False Pass on August 23. In 1925 I learned that a local guide, John Gardiner, had seen one in the fall of 1924 and one in the previous summer at False Pass. They do not spend the summer there, I was told.

Piccides tridactylus fasciatus, Alaska Three-toed Woodpecker.

At Kodiak, on May 12, I observed a female of this species at close range and noted the most minute markings of the plumage. Another woodpecker drumming a little distance away was probably the same species.

Tachycineta thalassina lepida, Violet-green Swallow.

A Violet-green Swallow was seen flying over the water north of Petersburg on April 27, probably in migration.

Iridoprocne bicolor, Tree Swallow.

Half a dozen or more Tree Swallows were noted at Snag Point, Nushagak River, on May 25 and again on May 26. Some forest growth occurs there and they may well nest there.

Hirundo erythrogaster, Barn Swallow.

Arthur Neuman of Ikatan Peninsula reported that he had seen the Barn Swallow at Unalaska and Turner reports it on that island. In 1925 I saw several among the cannery buildings at Ikatan Peninsula, Unimak Island, on August 10.

Pica pica hudsonia, American Magpie.

Magpie feathers were found near a steel trap at Port Chatham, Kenai Peninsula, May 6; one was noted at Ushagat Island, Barren Islands, May 10; noted at Afognak Island May 13; and several on Nagai Island, Shumagin Group, May 16, when Mr. Williams found a nest containing 8 eggs. A number were seen at Sand Point, Popof Island, August 26.

I was told at Unimak Island that no magpies occur on that island. However, in 1925 I found some preparing to nest in Izembek Bay, which is not far from Unimak.

Corvus corax principalis, Northern Raven.

Attu dialect: Ka'-ga-lach
Atka dialect: Kang-lach'

Ravens are universally distributed. We saw them in Southeastern Alaska, along the Alaska Peninsula, the Kodiak-Afognak group, Barren Islands, Shumagins, north side of Alaska Peninsula and throughout the entire Aleutian chain.

A number of nests were noted on cliffs of some of the islands. In some places they were observed feeding on sea urchins at low tide. They were plentiful on Kanaga Island, where the caretaker informed me that he had trapped about 150 ravens the previous winter. He said they will kill Blue foxes in the traps and that he has found remains of fox pups in nests.

Corvus brachyrhynchos caurinus, Northwestern Crow.

Crows, were noted south of Ketchikan April 26 and again at Seward, where they were hunting along the beach on May 6.

A number of crows were seen near Afognak Village on May 13 and again on September 2 a flock of 50 to 75 at least, was noted at this village. None were seen to the westward.

Penthestes atricapillus septentrionalis, Long-tailed Chickadee.

At least half a dozen pairs were noted on Nagai Island, Shumagins, on May 16 and two specimens were taken. One was heard in the alders at Sand Point Popof Island, August 26. One was also heard in the woods near Afognak Village on September 2.

Cinclus mexicanus unicolor, Dipper.

A Dipper was seen at Port Chatham, Kenai Peninsula on May 6.

Mr. Arthur Neuman, of Ikatan Peninsula, stated that this species occurs

on Unimak Island in winter. Turner records it at Unalaska and Attu Islands, but we saw none among the Aleutians.

Nannus hiemalis subsp. Winter Wren.

Attu dialect: Kach-tai-ech Kit-rich
Atka dialect: Kat-chrai-uh

Winter wrens were observed on many of the islands and a few specimens were taken. It is regretted that the complexities of the field work did not permit taking a more representative series.

Since we could not undertake subspecific identifications in the field all the wrens will be included under the above heading, the basic species.

Winter wrens were noted casually at Juneau on April 30, one of them singing. One was seen, singing, at Port Chatham May 6 and Kodiak May 12. On Amak Island a number were noted.

Throughout the Aleutians these wrens were met with frequently, practically every island having its quota of wrens. They generally inhabit the beaches, among the boulders and the occasional driftwood, wherever crevices may give them shelter.

The Atka natives spoke of "another kind" of winter wren, with black spots. I could not determine what bird they were referring to.

Turdus migratorius, subsp., Robin.

Robins were noted at Yakutat May 2, and they were common at Snag Point, Nushagak River, on May 25 and 26.

Ixoreus naevius subsp., Varied Thrush.

Varied Thrushes were plentiful at Juneau, singing, on April 30 and at Port Chatham, Kenai Peninsula, May 6. One was seen in the driftwood on the beach of Ushagat, Barren Islands, on May 11. There is only a trace of forest growth on this island. On Kodiak Island May 12 Varied Thrushes appeared to be the most common bird. Several were noted on Afognak May 13 and again September 2.

Hylocichla guttata guttata, Alaska Hermit Thrush.

Hermit Thrushes were common at Yakutat May 2. On May 11 two or three were noted on Ushagat, Barren Islands, high up where the principal vegetation is Crowberry. Several were noted at Kodiak and Afognak May 12 and 13. Many were singing on Nagai, Shumagin group, among the alders on May 15 and next evening several were noted at Sand Point, Popof Island, also among the alders.

Corthylio calendula grinnelli, Sitka Kinglet.

A number of these kinglets were seen at Juneau April 30 and one was heard singing in the spruce woods at Port Chatham, Kenai Peninsula, on May 6.

Anthus spinoletta rubescens, American Pipit.

Attu dialect: Assu Ka-vij

Pipits, presumbbly this form, were noted at various points. A number of them were picking about the beach at Chignik on May 14. On May 16 two were singing at Sand Point, Popof Island. A number of pipits were indulging in their flight songs at Ikatan Peninsula on May 19 and 20. Pipits were also noted at Ugashik River on May 29.

Among the Aleutians generally pipits were scarce. They were common on Unimak, as noted above, and were common on Unalaska, but to the westward they were seldom seen. One was noted on Amchitka July 24, and the chief of Attu was familiar with the bird.

Lanius borealis invictus, Northwestern Shrike.

Arthur Neuman, of Ikatan, said the shrike occurs on Unimak Island. It often hangs mice in the willows, he said, he has seen it carrying mice and one one occasion observed one fiercely harrying a ptarmigan.

On May 5,1925, I saw a shrike at Urilia Bay, Unimak Island, the only one seen that year.

Mr. Petri, warden of the Bureau of Fisheries, said shrikes are seen commonly at Chignik.

Vermivora celata celata, Orange-crowned Warbler.

A male was collected at Snag Point, Nushagak River, May 25.

Seiurus noveboracensis notabilis, Grinnell's Water-thrush.

At Snag Point, Nushagak River, May 26, I repeatedly heard a song in the alders and willows bordering the tide flats which appeared to be that of the water thrush, but I could not get even a glimpse of the bird.

Wilsonia pusilla pileolata, Northern Pileolated Warbler.

These warblers were common in the willows and alders at Snag Point, Nushagak River, May 25 and 26. The males were singing. On August 20, as we were approaching Port Moller, several miles off-shore, three of these warblers hovered about the boat for some time and occasionally settled on the deck.

Pinicola enucleator alascensis, Alaska Pine Grosbeak.

The skeleton of a female pine grosbeak was found at Cmag Point, Nushagak River, on May 25.

Leucosticte griseonucha, Aleutian Rosy Finch.

Attu dialect: Kohl-grha-ghuch
Atka dialect: Cha-nuh

Rosy finches were seen at Chignik, among the alders, on May 15 and at Kelkofski on May 17. They were common, and nesting, on Amak Island May 31. A number were seen on Unimak Island and they were much in evidence all through the Aleutian chain.

The Rosy Finches often frequented the boulder beaches, sometimes the sheer bluffs bordering the sea. But they were often plentiful in the highlands, back in the mountains, especially where extensive lava beds were present. This species was one of the few common small land birds of the Aleutians, present on nearly every island. According to the Attu chief, they are permanent residents.

Acanthis linaria linaria, Common Redpoll.

Arthur Neuman, of Ikatan Peninsula, described a "small brown bird, with pink on the head" which comes to feed on crumbs put out for the birds. This would appear to the be the redpoll. I observed them on Unimak Island a number of times in 1925.

Redpolls, were observed at Cmag Point, Nushagak River, May 25 and 26.

Redpolls were found at Unalakka July 12. Turner states that they do not occut west of Unalaska, nor did we observe them to the westward.

Several were noted at Sand Point, Popof Island, August 26.

Loxia curvirostra subsp., Red Crossbill.

On September 2 a group of about a dozen was feeding on spruce cones at Afognak.

Passerculus sandwichensis sandwichensis, Aleutian Savannah Sparrow

Savannah sparrows were noted rather commonly on Unimak Island, Amak, Unalaska and in the Baby Islands nearby and Tangik Island near Akun. To the westward we found them on Ananiuliak, near Umnak Island, Nagamil, Uliaga, Chuginadak, Carlisle. None were recorded west of Carlisle and the Attu chief did not know the bird.

On June 20 a nest of the Savannah Sparrow was found on Uliaga Island. It was hidden deeply in the rank grass, made of fine, dry, pale colored grass stems and contained 5 eggs.

To the eastward of the Aleutians Savannah Sparrows were common at various points, some of these no doubt being other subspecies. We found them common at Yakutat May 2, where they appeared to me large and robust for this bird. On the same day a Savahnah Sparrow settled on the front deck of our ship and the mate reported seeing two other "sparrows" on the deck. These were evidently migrants.

A number of Savannah Sparrows were feeding along the gravel beach of Ushagat, Barren Islands, May 10 and 11 and specimens were taken.

They were singing at Kodiak and Afognak on May 12 and 13. Next day one passed our ship between Sutwik Island and Cape Kumlin. In the Shumagins we noted them on Nagai and Popof Islands, May 16 and on the latter island again on August 26.

In the Bering Sea region they were noted at Snag Point, Nushagak River, May 25 and at Ugashik River, May 27 and 29, they were common, the principal passerine bird there.

On August 14 Savannah Sparrows were noted on Kunivak Island, where undoubtedly they nest.

Spizella arborea ochracea, Western Tree Sparrow.

A male was collected at Snag Point, Nushagak River, May 25.

Zonotrichia leucophrys gambeli, Gambel's Sparrow.

Mr. Williams saw a Gambel's Sparrow at Sand Point, Popof Island, May 16 and a male was collected at Snag Point, Nushagak River, on May 25.

It may be observed that on July 19, 1925 I recorded two of these birds at Izembek Bay, near the western end of the Alaska Peninsula.

Zonotrichia coronata, Golden-crowned Sparrow.

This sparrow was noted at Yakutat May 2, Ushagat, Barren Islands May 10, Kodiak May 12, Uliaga May 14, Nagai and Popof Islands, Shumagins, May 16 and on Popof Island again on August 26. Several were noted at Snag Point, Nushagak River, May 25 and 26. On May 31 one was heard singing on Amak Island and Mr. Williams collected one there.

In 1925 I recorded this species from False Pass and Ikatan Peninsula thus establishing it as far west at least as Chimak Island.

Passerella iliaca insularis, Kodiak Fox Sparrow.

Specimens, possibly insularis, were obtained on Ushagat, Barren Islands, May 10, in a clump of dwarf Sitka spruce. They were abundant, and singing, at Kodiak May 12 and next day were noted on Deranof Island, near Afognak and on Afognak September 2.

Passerella iliaca unalaschensis, Shumagin Fox Sparrow.

Fox Sparrows were heard singing at Chignik May 14 and the birds were observed on Nagai Island, where they were abundant, and Unga, and they were common on Popof Island, on May 16. Specimens were taken on each island and specimens were again taken on Popof August 26. Some of those taken in May had well developed eggs.

A number were noted at Snag Point, Nushagak River, May 25 and 26 and a specimen was taken.

On August 23 they were very common among the alders at False Pass.

Melospiza melodia sanaka, Aleutian Song Sparrow.

Attu dialect: Chú-gu Chigch
Atka dialect: Chig-wiach

A number of Song Sparrows were seen at Yakutat May 2 which, however were undoubtedly caurina.

On Ushagat Barren Islands, a number were observed May 11. Presumably these could be wither kenaiensis or insignis. A specimen was obtained. Mr. Williams observed a pair building a nest. Two were noted at Halibut Bay, Kodiak Island, September 1.

On May 16 a Song Sparrow which would be sanaka, was noted on Unga Island and on August 26 several were seen amon the buildings at Sand Point, Popof Island.

They are common on Amak Island, where one was noted with a white tail feather.

From Unimak Island westward Song Sparrows were a prominent feature of the avi-fauna. They occur on practically every island throughout the chain. They are a beach loving species, often living among the tumbled boulders, but, as elsewhere, they delight in masses of driftwood, the nearest approach to the favorite brush heaps of more southern latitudes. They apparently nest back on the adjacent grassy slopes.

A nest was found at East Anchor Cove, Unimak Island, May 19. It was in the rye grass some distance up a slope, above the beach. It was tucked away under a mass of dead grass and was made of fine, smooth, nicely bleached grass. There were three downy young.

On June 7 an abandoned nest was found on Umnak Island. This, also was on the ground, some distance up a slope above the beach and was made of uniform dry grass.

On Kasatochi Island a Song Sparrow was seen within the crater rim, high above the beach, one instance at least, when this bird had left the vicinity of the shore. However, in this case the inner walls of the crater descended abruptly to an interior lake, so that one had the feeling of being on cliffs overlooking the water, as usual.

It is probably that under present conditions the Song Sparrows escape the depredations of foxes to a great extent. The nests are hard to find and the animals probably spend little time looking for them. The foxes greatest concern is with the beach itself, or the concentrations of nesting sea birds.

Calcarius lapponicus alascensis, Alaska Longspur.

Attu dialect: Chir-loch
Atka dialect: Chi-loch

Alaska Longspurs were first noted on Popof Island, May 16. They were noted again on Popof Island August 26 and on Simeonof Island August 29. On May 27 and 29 a few pairs were noted on the flats at Ugashik River and several on Amak Island May 31.

From Unimak Island westward this bird was found on nearly every island. It is one of the commonest of the passerine birds of the Aleutians.

A nest was found on Beguam Island June 18. It was sunk in the vegetation, built of fine dried grass stems, with a few longspur feathers in the structure. There were four downy young, with yellow down. Youngg on the wing were seen at least as early as July 2 and frequently after that.

Longspurs were distr buted everywhere, from the beach line to the upper mountain sides and the lava beds, but appeared to prefer grassy flats and slopes.

As in the case of the Song Sparrows, the Longspurs probably thrive pretty well in spite of fox farming.

The Attu chief stated that longspurs leave the Attu in August and return early in April.

Alaska Longspurs were common on Nunivak Island August 14.

Plectrophenax nivalis townsendi, Pribilof Snow Bunting.

Attu dialect: Ko-ka-noch
Atka dialect: Kath-a-wach

Snow Buntings were observed frequently throughout the Aleutians, from Unimak Island to Attu. They preferred the higher elevations and the extensive lava beds, where they find their chosen rocky habitat. It is likely that if we had had the opportunity to climb more of the mountains

we should have found Snow Buntings on nearly every island.

According to the Attu chief Snow Buntings are permanent residents on the western islands, at least.

On August 14 two Snow Buntings were seen on Nunimak Island.

Asiatic Species.

We were constantly on the lookout for rare stragglers from the Siberian side of the water. However, we were not fortunate enough to discover any. The entire party was keenly alert for Old World eagles and each one we saw was scrutinized critically. Several times we were deceived by extensive white areas on scapulars, suggesting Steller's Sea Eagle, but eventually became reconciled to the immature plumages of the Bald Eagle.

Among small land birds, no specimens of exotic species were obtained. It is possible that if we could have spent more time roaming over the interior of the islands and the uplands, we may have encountered some.

The nearest we came to such an experience was on Unga Island, May 16 when Mr. Williams encountered some strange land birds. I quote from his field notes: "An unusual group of unidentified birds were seen on the very high slopes of Unga Island, south of Delarof Harbor. They were about the size of a robin and had an iridescent purple pinkish cast similar to some of the common pigeons. The sides of the head flashed white when the light was just right. They were timid birds and kept out of gun range. Their flight resembled that of a starling. Perhaps we may see them on our return trip."

These birds were not seen again.

MAMMALS

The mammal fauna of the Aleutians is not extensive and is confined largely to aquatic species. There are very few native land mammals. With a few exceptions, rodents are absent from the Aleutian chain, although introductions have been made on some of the western islands. Yet in spite of the paucity of mammal life, some of the species are of extreme importance and are directly responsible for our most difficult problems in the administration of these islands.

In this account consideration will be given also to mammals encountered elsewhere in Alaska, in order to report fully on the results of the expedition. While the mammals will be discussed in the account of the individual islands a general account here will serve to present a more connected view of the distribution and the facts obtained, just as in the case of the birds, and will include many observations which would not appear in the discussions of the islands.

~~Order INSECTIVORA~~

Sorex sp. Shrew

A shrew was taken on Nagai Island, Shumagins, and one was trapped at Chignik and another seen there. Although trapping was done on Unalaska no shrews were obtained there and from our observations and the information we obtained, shrews do not occur westward of that island, with the possible exception of Unmak.

Ursus gyas, Peninsula Giant Bear.

George Peterson, of Ikatan Peninsula, said he has found a number of brown bear dens on Unimak Island in the lava beds at the base of Mt. Shishaldin. The dens, which are natural cavities, extend as far as 100 feet. It is reported that a bear was seen swimming to Unimak Island from Alaska Peninsula, at "The Whirl", in the fall about 2 years ago.

On May 31, as we were approaching a Kittiwake colony at Cave Point Unimak Island, we sighted a huge bear on the top of a ridge. A smaller one was down near the beach.

I was greatly encouraged by the present attitude toward the Brown Bear of Alaska. To be sure, there is still plenty of feeling against bears in Alaska, and the future of these animals is by no means secure, but after an absence of ten years I could see great improvement. The personnel of the Alaska Game Commission is earnestly working for this animal's preservation and is winning cooperation of other people. I believe this attitude

is now shared by the Forest Service personnel. This is the important thing. When the official attitude is favorable toward an animal the chances for its effective preservation are greatly enhanced.

Procyon lotor, Raccoon.

On Long Island, near Kodiak, a blue fox farm is being operated by A. F. Bennett and C. B. Bryan. A number of years ago they stocked the little island with raccoons, from Wisconsin, Minnesota, North Dakota and Michigan. In the years 1932, 1933, and 1934 dead raccoons were found at intervals. Twelve or fifteen dead ones were found in one year and one or two sick ones were discovered, apparently partly paralyzed, dragging the hind quarters.

Some raccoons still occur on the island.

Mustela sp., Weasel.

We were informed that weasels occur on Kodiak and Afognak Islands and a fine photograph of a live one was shown us. On Unimak Island I was told that weasels are scarce this year. I obtained a specimen there in 1925.

Mustela vison subsp., Mink.

Mink occur on Afognak Island. George Peterson, of Unimak Island, said mink are increasing on that island. Mink farming is becoming a prominent industry in southern Alaska. Fur of exceptional quality is being produced at Petersburg. We visited a mink ranch at Anchorage.

Mink were introduced on Long Island, near Kodiak, by the fur farmer who has the island.

Gulo luscus, Wolverine.

On May 19 wolverine tracks were found on the sandy beach of Ikatan Peninsula, Unimak Island. We were told this species occurs on the island.

It is, of course, well known that the wolverine has disappeared from much of its original range on the continent. It is still present in almost safe numbers in certain parts of Alaska. This animal was discussed with various people and I became convinced that it is really in danger of great reduction in numbers, if not actual extinction, if the trapping industry is to be intensified. We feel that to help this species which is on the down grade the first step is official recognition of its desirability as a member of our mammal fauna. Some steps in that direction have already been made. Then a more tolerant attitude toward the animal should be encouraged among trappers. This is admittedly difficult in view of the occasional valuable fur bearer destroyed in the trap by the wolverine. But a careful study of the question should help and official enthusiasm, as in the case of the Brown Bear, will go a long way. We should not be deceived

by the fact that wolverines still occur commonly in certain districts of Alaska.

Lutra canadensis, Otter.

A number of otter skins were examined at Afognak and on Unimak Island we were told that they were increasing there. A pair was said to be living in a lake near George Peterson's house.

Enhydra lutris, Sea Otter.

Attu dialect: Chach-toch
Atka dialect: Ching-á-tho

Since the Sea Otter is the outstanding mammal in point of interest and potential value in the Aleutian area, naturally we were alert for any information on this rare species and we spent several days specifically on its study. Mr. Dufresne had given us a small map giving roughly the distribution of these animals so far as known from his own investigations and the information given him. This map, together with reports from natives at Atka, gave us a good indication of the localities where we might find them. It is regretted that more time could not be given to this species, for our brief study was so productive of data and so suggestive of what should be done, that we were struck by the need of a thorough biological study of the animal as a basis for its preservation and more extended distribution.

Habitat

It seems pretty well known that the Sea Otters prefer the vicinity of kelp beds, reefs, and island shores where offshore rocks and islets are found. Some writers on conditions in early days state that the Sea Otter will remain far out at sea. Possibly, at the time when this animal was persecuted for its fur nearly to the point of extinction, it may have been discouraged from inhabiting its chosen habitat. During our entire trip among the Aleutians, covering many hundreds of miles, we saw no Sea Otters far from an island while on the other hand those we did see were close to or within easy reach of a shore and the kelp beds. It has been suggested that kelp beds serve to quiet rough water during storms, thus affording animals shelter. However, we observed them commonly, time after time, distributed in the kelp beds during perfectly calm weather. And they came up on rocks and the beach, at least a few of them, during such weather, when shelter could not have been the objective.

Habits

Sea Otters come ashore on certain rocky areas, judging by the accumulation of excrement in such places, and appear to have certain favored locations to which they return time after time. In a single instance sea otter tracks were seen on a sandy beach. Apparently they often climb out on a kelp covered rock that is not entirely flooded by the surging sea,

to rest or play. On one occasion, at Ogliuga Island, five Sea Otters climbed up on one rock, three adults and two young, and there they rolled and squirmed in friendly play, with much dressing of fur. On at least two occasions a single animal hauled out on a rock or a rocky beach to rest for a time.

However, it is by no means necessary for these animals to come ashore to rest, in calm weather at least. Usually when we saw the Sea Otters they were floating quietly on their backs, or soon assumed that position if swimming. One, presumably an old male, observed at Amchitka, was lying on the surface of the water, in the characteristic position with front paws held up near the head in an easy pose and the hind feet trailing out behind, sometimes held up vertically. Across the body lay several strands of seaweed, which served to anchor the animal and prevented it from drifting away. This arrangement may or may not have been intentional.

Frequently a mother would be floating on her back, with a little one resting on her body. If the mother decided to go somewhere she would seize the young with one "arm" and go off with powerful strokes of the hind feet, which produced a steady and rapid movement through the water.

On one occasion a young one climbed part way on the mother's body, as she lay on her back, and began nursing.

Another time a mother wished to climb out on a kelp-covered rock with her little one. The little one objected. She tentatively pulled at him with her teeth, took him in her arms, and at length got him up on the rock, where they played together.

When a mother and young one are suddenly frightened on the water, she seizes her offspring in one arm and takes it under as she quickly dives. Apparently the little one is accustomed to catching its breath on the instant in such emergencies.

Mother and offspring are inseparable. The little ones swim well and are at home in the water, but they do not stray far from the parent and at the slightest alarm the mother seizes the little one in one arm and swims away or dives, depending on the urgency of escape. As indicated by the observations cited, there is much affection between mother and young and playfulness is an outstanding characteristic. In this respect these animals are much like the Land Otter.

Reproduction

All accounts of the Sea Otter agree that but one young is born at one time and that young may be born any time of the year. This was the information the natives gave to us and it was fully substantiated by all our observations. Only one young was seen with any one adult and in no case did we observe an authentic case where both parents were collaborating in the case of the offspring. In fact, at Ogliuga at least, most of those I saw were females with one young, generally with no male in sight.

The young were of several sizes, some evidently very much younger than others, and some that had attained a fairly good size were still associating with the mother. Obviously, our brief study could not determine the duration of this filial status.

On July 23, at Ogliuga, Mr. Williams and I observed a pair in the act of breeding. A pair of adults and a little one were sighted rolling about at the far edge of a kelp bed. Presently the two adults disappeared under water. The little swam back and forth, crying for its mother. It had a worried quality, a sort of squeal that was whistle-like at times, but sometimes harsher, with more "body" to it. After some time the adults, clinging together, appeared on the leeward side of the wide kelp bed, rolling over and over, and worked into the open water near shore where we were taking pictures at 50, 30 and 20 feet. It was apparent that this was a pair in the act of breeding. We had ample opportunity to observe the animals at close range for some time.

They rolled over and over, clinging to each other, apparently the essential position being with the ventral surfaces apposed, although of this I could not be positive, for the relative positions were constantly shifting. They would submerge for a time, coming up with noisy expulsion of the breath, coming only to roll over and under again. The female apparently got breath only as opportunity offered, sometimes after a long interval, since she was submerged much of the time by the activity of the more aggressive male. The male held her by the head with his teeth, sometimes by the upper jaw, once by the lower jaw, sometimes by the loose skin about the head. Sometimes the female held the male with her teeth. Occasionally the abdomen of the female appeared at the surface, and I could plainly see the two mammae and well-filled udders.

In the meantime the little one, which had lost sight of the adults, was still crying on the far side of the kelp patch until at length the pair worked their way out, having become suspicious of our presence, and the mother rejoined her offspring.

Food Habits

On several occasions Sea Otters were seen feeding. Once a single adult came close in to shore and I watched it at 40 feet, feeding. It would roll over, partly submerge, then come up with a mass of sea weed held in its two hands. Floating there on its back, it held the "double handfull" on its chest and nibbled at it. I could hear its mouth "smacking" as it chewed at what at the time I assumed to be snails, or similar invertebrates clinging to the sea weed. Presently it seemed to have exhausted the resources of that particular handful, casually let it go and smoothly rolled over to pull out a fresh handful beneath the surface. This was continued until the animal was satisfied and swam away.

On another occasion a mother and baby were both feeding, at a greater distance from the shore. This time they appeared to be feeding on sea urchins. They would hold something on their chests and there came to us a "smacking" sound which suggested that of two clams pounded together. However, it is likely that they had a sea urchin and "patted" it violently with the free paw, to break it open. This process was observed by other members of the party.

Sea Otter droppings were collected on Ogliuga Island on July 22 and 23 and again on August 6, a total of 70 droppings. These were analyzed in Washington, D. C. by C. S. Williams with the following results, expressed in percentages by volume:

Sea Urchin	78%
Mollusks	13%
(Pelecypoda 6%)	
(Gastropoda 4%)	
(Amphineura 3%)	
Crabs	4%
Fish	3%
Coral rock	2%
Insects	trace
Cecophilidae	"
Hydroids	"
Algae	"
Grass	"
Bird's Egg	"
Sea Otter Fur	"

SEA URCHIN. Since the feeding of the Sea Otter seems to be restricted to shallower waters the species of sea urchin taken was probably entirely the littoral form, Strongylocentrotus drobachiaensis. This was by far the most important food found in the Sea Otter excreta. Remains of at least 980 (determined by counting the Aristotle's lanterns) formed 78% of the total amount of food. This would indicate an average of 14 sea urchins per dropping. The largest number found in one was 50 sea urchins. In all but 11, sea urchins constituted over 50% of the food and in 24 no other food was found.

While these figures probably do not give an accurate idea of the number of sea urchins consumed at any one time, as Mr. Williams has pointed out, they do serve to show the Sea Otter's decided preference for this article of food over all others. This preference is met with an abundant supply. We found them quite plentiful about each island visited in the Aleutians when we had an opportunity to observe them. The scarcity of Sea Otters today cannot be laid to an inadequate food supply.

MOLLUSKS. Mollusks of some kind occurred in 81% of the feces, but their total bulk made up only 13% of the total amount. Twenty of the 58 occurrences existed only as traces and in five alone did the percentage exceed 50%. Pelecypoda (bivalves) constituted 6% of the food and of these the edible mussel, Mytilus edulis, was the principal one, occurring in 45% of the feces and representing 5% of the total food volume. Musculus

vernicosus and Pecten islandica were the only others that approached 1% of the food.

Castropoda (snails) formed 4% of the food and of these Acmaea sp. appeared to be the most important, occurring in 24% of the droppings, but forming only 1% of the food. Others of less importance include Littorina satchana and some not yet identified.

Amphineura (chitons) formed 3% of the food and several kinds were present. They occurred 17 times.

CRABS. In only a single instance did crabs exceed 50% of a dropping's contents but they occurred often enough in small amounts to form 4% of the total bulk of food. Several forms were present.

FISH. Fish do not appear to be a major article in the Sea Otter diet. Of the 3% representing fish over half is made up of fish roe. Positive identification of this roe was not possible but the material was thought to be herring. The several forms of fish found include Ammodytes alascanus, Gymnocanthus pistilleger, and an unidentified Cottid.

CORAL ROCK. Coral, forming 2% of the food and occurring in 5% of the droppings, has been included as a food item because in this instance the taking of it seems to be a case of taking a particular material to satisfy some dietary deficiency or need. Other rock forms of course were found but these seemed to have been taken incidentally. For instance, in some cases pebbles were still attached to the byssuses of Mytilus edulis.

Other items eaten so sparingly as to show only as traces were: bits of Hydroids (Abietinaria sp. and Thuaria robustus), Algae, fragments of a Geophilid, a few insects (Eurystellus californicus, an a ground inhabiting beetle, and Scatophaga sp., larvae), remains of a bird's egg, some grass, and Sea Otter fur.

For ready reference and comparison I shall refer here briefly to the work of Barabash-Nikiforov (1935). He examined about 500 droppings from the Commander Islands and presents the results in the following table:

Sea Urchins	59%
Mollusks	23.3%
Crabs	10%
Fish	6.7%
Sea weeds and accidental admixtures	1%
	100%

These results agree remarkably well with the findings of Mr. Williams. The droppings from the Aleutians show a larger percentage of sea urchins and less of the other items. But the general proportions are similar and the diet "pattern", if we may call it that, is identical.

Mr. Barabash-Nikiforov calls attention to some additional items, such as the octopus, and mentions a number of fish, including the large cod, (Cadus).

These two studies of the Sea Otter diet, based on extensive feces, examination, are the only ones of an exact and quantitative nature that have ever been made so far as I know. The results seem so satisfactory and significant that they can be relied upon as an accurate picture of this animal's diet, though naturally in due time more details will come to light.

Mortality

No first hand information was obtained on natural enemies of Sea Otters. The killer whale is generally considered an enemy of these animals and this is very likely. However, under normal circumstances it is unlikely that many Sea Otters are lost in this way, for when they are in their chosen habitats, in or near the kelp beds, the whales cannot get to them.

Barabash-Nikiforov points out that Steller believed that the Sea Otter feared the seal but he found no such antipathy among these animals in the Commander Islands. Our observations were meager on this point. Several members of the party observed some sort of a tussle in the water and at first thought they were a seal and Sea Otter, but some of the party were in doubt about it later. Two animals were seen tussling at a distance, on a later occasion. I, for one, feel certain that these were two Sea Otters either playing or fighting. We found no evidence that seals injure the Sea Otter population. A few seals and a sea lion or two were present on Ogliuga and the same may be said of Amchitka.

According to the natives an occasional Sea Otter is found dead on the beach and they believe these animals that have been dashed against rocks during a storm. The skins of a few such animals have filtered through to the authorities and have been turned over to the Bureau of Fisheries.

Obviously an occasional Sea Otter will succumb to disease, accident, or some other natural cause, but from our observations we are convinced that mortality from such causes is negligible. This is reported to be true also at the Commander Islands.

Distribution

At Tanaga Island I was told that a Sea Otter had been seen in the harbor there once.

Bill Dirks, chief of Atka Village, said that Sea Otters have appeared occasionally at Little Tanaga Island and at the entrance to Kazan Bay of that island he pointed out two caves where natives used to lie in wait for the Sea Otters.

As we were approaching Atka Island, northof Amlia, on June 21, the Captain saw an animal which was thought to be a Sea Otter. When it dived it arched its back over the surface in characteristic fashion and this would eliminate the hair seal.

On July 4, as we were dropping anchor at Ulak Island, a Sea Otter was sighted nor far away. This was the first clear view of one and there was much excitement, since for many on board it was their first meeting with this rare mammal and I, with one or two others, who were below at the time, were quite envious, because we had missed it. Mr. Williams and Mr. Cray took the dory and cruised along the shore and saw it again.

On July 21 we arrived at Ogliuga Island, in the fog, and anchored. Here I saw my first Sea Otter and here we found them common and carried on most of our studies of this species, remaining until July 24.

Ogliuga Island, and the adjacent Skagul, are low flat islands of small size, with a very irregular shore line jutting out in finger-like rocky points, with a sandy beach at intervals, and fringed with off-shore rocks and reefs. At a greater distance there are sizable rocks or islets one of which is called Tag Island, but these were rarely sighted due to the constant fog. And surrounding these islands lies a heavy belt of sea weed, varying in width, but with heavy concentration and extent in some parts. This is ideal Sea Otter habitat, one of the very best we saw, and here we found them common enoughtto study conveniently. We found at least two places where they haul out habitually. We saw as many as 8 in view at one time on occasion and encountered some at least, each time we went to look for them. Most of them were at Ogliuga Island, relatively few about Skagul.

We visited Amchitka Island July 24 and again on August 1. Here, too, we observed Sea Otters, made some experimental counts, and gathered various information. Amchitka is a long island , probably 40 miles in length, and is probably the principal home of the Sea Otter in the Aleutians today.

On August 3 we saw at least 4 Sea Otters at Ulak Island, which lies north of Amatignak.

On August 4 we saw 4 or 5 Sea Otters at Kafalga.

On August 7 we explored a portion of the shore line of Tanaga Island and in a short time counted 43 Sea Otters. This is one of the most important Sea Otter islands in the Aleutians.

At Attu we were informed that an occasional Sea Otter is seen at that island.

According to the chief of Attu, a few are seen occasionally at Semichi Islands, especially the east island, where six were seen in 1930, or a little later, the exact year being uncertain.

It is said there used to be none at Agattu, but a few occur there now.

According to the Atka chief, a few Sea Otters could be found on the northwest side of Seguam Island. We found none there this trip.

Kiska Island has been reported a good Sea Otter locality. Upon questioning the natives they indicated that Sea Otters occur at portions of this island but are not plentiful there.

On the return trip, upon the suggestion of Dr. Bell, by wire, we visited Simeonof Island, in the Shumagins, and learned that Sea Otters occur there. I counted 11 in the kelp beds along the shore. Apparently this is the only place in the Shumagins where these animals occur.

Sanak Island with its numerous outlying rocks and smaller islands is known to have been a good Sea Otter habitat in the recent past. Indeed, at one time it was the center of the Sea Otter hunting activities and according to Elliott (1897) the reefs and kelp beds there are the most favorable to be found for Sea Otters. We were greatly disappointed at not having time to visit that area.

Information that Mr. Jewell unearthed indicates that Sea Otters are present in Kujulick Bay, on the Alaska Peninsula. Rocks, reefs and kelp are abundant there, forming a good habitat. The most favorable part is on the east side of the bay near its entrance and according to reports Sea Otters sometimes occur on the west side, where we also find reefs and kelp.

Sea Otters are also said to occur at the southeast portion of Cape Kumlik, a little farther eastward of Kujulick Bay.

Farther east, Aiugnak Columns and Chiginagak Bay are other Sea Otter localities, according to reports.

Sutwik Island and its general vicinity are well known to be good Sea Otter ground and in August 1936 eight skins were seized by the Deputy U.S. Marshal of Unga, Alaska, that were admittedly taken from this locality.

At Shuyak Island and Latax Rocks and the adjacent rocks the Sea Otters were at one time abundant. Information was received from several trappers and local people to the effect that Sea Otters are still occupying that locality.

At Montague Island in Prince William Sound Sea Otters have been present on the south side in recent years. This is no doubt the eastern limit of the Sea Otter range today.

I am indebted to Mr. Jewell for obtaining the information on the Sea Otter at some of these obscure places along the Alaska Peninsula.

Numbers

We could not, of course, undertake a complete and precise census of the present Sea Otter population. But it is believed that we obtained pertinent and suggestive data on that question.

The bulk of the Sea Otter population in the Aleutian chain proper centers about three islands, Amchitka, Ogliuga and Tanadak. Of these Amchitka stands foremost, so far as we can tell.

We attempted to obtain some unit of measure based on direct observation and we found that in cruising along the shore lines, among these islands, where the animals were most abundant, we would see approximately 10 to the mile. In some cases we saw much less, sometimes there were greater concentrations in distances less than a mile. But the actual trials made fell roughly into this figure.

On this basis, allowing a distribution the length of Amchitka Island, about 40 miles, the Sea Otter population of that island would be 400. The Sea Otter population is virtually confined to the south side.

According to the Atka chief the Sea Otters at Tanaga Island are confined chiefly to the southwest portion. It was there that we observed 43 in a distance of 4½ miles. At this island we did not cover much of the shore line. Howeve , as an estimate, on the basis of what we did see, we might allow 200 Sea Otters.

At Ogliuga Island estimates varied, a conservative one being 75. We might allow 100 for this island, to be more liberal.

Sea Otters are much less common at the other islands mentioned in this report and although we did not examine the areas in detail, it would seem that in comparison with the Amchitka center, known to be the best, these outlying districts might contribute two or three hundred, enough to raise the total to 1000 Sea Otters, as an estimate. These figures may be considered by some conservative. But even if we doubled them, to be liberal, that would still leave only 2000 Sea Otters for North America, and there may be much less. With a little more time at our disposal we could have made a much more precise appraisal of the Sea Otter population.

We have, then, remaining to us in the neighborhood of one or two thousand Sea Otters, most of these occurring in three concentration points in the Aleutian Islands.

Future of the Sea Otter

Since we had this opportunity to observe the animal, we could not help coming to certain conclusions, which are here presented.

Judging by the reports we received, there must have been an increase in the Sea Otter population in recent years. However, considering the numbers we found, and however liberal we may be in raising these figures in deference to some of the much greater estimates that have been made, we still have a pitifully restricted distribution. Compare this with early days when Sea Otters were plentiful enough to be taken in commercial quantities. At that time they were found all along the southern Alaskan coasts, and on southward to California coast lines. And some occurred even as far north as the vicinity of Bering Strait.

From what we are learning about animal populations we know that for survival a species must be maintained at a safe numerical level. What that is for the Sea Otter, for mere survival, we do not know,. But we do feel that too much optimism has been expressed over the reported increase of these animals. It has even been suggested that the season be opened on the Sea Otter.

As a comparison with even the most optimistic estimates of Sea Otter numbers today, it may not be out of place to quote briefly from E. W. Nelson's account:

"When the Fur Seal Islands were discovered these animals (Sea Otters) were very numerous, and two sailors killed five thousand there the first year. The next year less than one thousand were killed, and from the end of the next six years to the present the Sea Otter has been unknown there. .....in 1804 Baranov sailed from Alaska with a single cargo of fifteen thousand skins. At that time the district about Unalaska Island furnished about one thousand skins annually. In 1826 only fifteen skins were taken there; in 1835 about one hundred were taken and at the time of the transfer of the Territory in 1867 the entire Aleutian chain, with the adjacent coast south, only yielded to the Russians from six to eight hundred skins annually."

Many records of large corgoes of Sea Otters may be found in Bancroft's History of Alaska. These all tend to show what the normal Sea Otter population was at one time.

Poachers have pricked up their ears. I might mention that some time in the last year, or perhaps two years, (I do not have the records before me) 17 or 18 Sea Otters were killed along the coast of the Alaska Peninsula by a group of 5 men at least, I believe. Mr. Jewell, who has been particularly interested in the Sea Otter, had much to do with working up

the case for the prosecution. I believe two of the men were eventually convicted, one of them, at least, being sentenced to three months in jail at his own request.

Eight more Sea Otters were seized by a marshal at Chignik last summer. And we obtained plenty of unsubstantiated reports of much poaching. An occasional skin is picked up out in theAleutians, particularly at Amchitka. In a number of cases the natives report finding one on the beach, killed by natural causes. There are persistent rumors of Japanese fishermen landing in the Aleutians and these are suspected of poaching.

Bits of information were picked up here and there, not enough for evidence in court, but enough for successful investigation by an enthusiastic warden.

While on this subject, I might mention briefly an incident which puzzled us greatly. On a second visit to an island where previously we had found many Sea Otters, we found only a few. A boat had landed and we saw the tracks of the men who had encircled the island. Subsequently we learned who they were.

The natural impulse was to connect the visit of this boat with the sudden decrease of the sea otters. Yet one could not present any evidence. But the incident shows how easily these animals could be taken. During our own visit we could readily have killed most of the animals there. They could be shot easily with a .22 rifle, are easily stalked, and contrary to the hair seal, they float when killed. A single raid by a determined poacher could materially reduce the total Sea Otter population.

Perhaps enough has been presented here to show the complexities and problems in preserving the Sea Otter from extinction. Poaching is a big problem, probably the most important one. It is probably the most important factor which is preventing the eastward extension of range of this animal and its reestablishment as an additional wildlife resource in southern Alaskan waters.

There are other problems. The animal presents a biological problem. Its life history should be studied by competent biologists with a view to discovering the factors important in reestablishing it in satisfactory numbers in areas where it has been exterminated.

We talked with a number of men who recalled the old hunting days and who told us of the methods used, which agree with published accounts. I shall not take the space here to enumerate such data. Nor shall I discuss its values from the several viewpoints. However, on the basis of information obtained on this trip, the Sea Otter figures in certain recommendations made for the administration of a number of the islands in the Aleutian Reservation.

Vulpes sp., Red Fox.

Red foxes are wide spread in Alaska, an important item in Alaska's fur infustry, and highly valued for its economic value. Our observations were brief and casual and we did not obtain extensive data on these animals.

It might be recalled that Kodiak Island has been stocked with snowshoe rabbits with the purpose of furnishing more feed for wild foxes. The Kodiak fox is said to be coarse furred.

Unimak Island is well stocked with foxes. We saw several and made a good collection of droppings for study. On this island they appear to feed very extensively on crustaceans picked up on the beaches. The supply of foxes appears to be holding up well and the system of definite bag limits for trappers appears to be working well and should probably be in much wider use everywhere.

At Unalaska I saw one red fox not far from the village and saw plenty of signs. A moderate collection of droppings was made here, from inland areas, and rodents obviously are important in their diet here.

The opinion was expressed that foxes are scarce on Unalaska and that more foxes should be planted on the island. I can not refrain from expressing a thought on this matter. I have mentioned the fact that at least one fox was seen on a short walk from the village and there were plenty of fox signs. If the foxes are considered scarce, it would be caused by one of two causes, probably. The food reccurces are insufficient or the foxes have been over-trapped. Food should be sufficient, for there are rodents on the island in addition to whatever is available on the beaches. As to over-trapping, on that I do not have information. In either case, the remedy is not to dump more foxes into the area. If the food supply is low, there is not enough for additional animals and as for over-trapping, the remedy is simple. Give the animals a rest. From what little I saw, I suspect there are plenty of foxes on the island for a new start, if an increase in numbers is desired.

Red foxes were observed on the Kushagak flats and a good collection of droppings obtained. In this area rodents, particularly Microtus, are abundant and were being utilized.

Red foxes occur on Kunivak Island, but we did not obtain specific information.

Red foxes, or the color phase, the silver, occur here and there among the ~~Aleutians~~ Aleutians, as on Umnak, Chuginadak, Amlia and Kanaga. On Umnak Island they have lemmings as a food resource and many foxes are trapped on the island.

It is interesting to note that domestic sheep are also raised on Umnak and when questioned the sheep owner declared the foxes prey on the sheep, while the local fur trader declared the foxes do not bother the sheep. Another trader,

from farther west, when discussing it with the sheep owner, tried to shift the blame to the eagle. While out after lemmings with some native boys I asked them about it. They said "foxes kill a few sheep, when he hungry", and added "little sheep." Probably, if the facts were known, that would sum it up--the red fox on Unmak probably kills lambs under certain circumstances.

Among the western Aleutians we heard much about the antipathy between the red and blue fox. Some thought the red foxes actually killed the blues. Some had a theory that the male red fox would try to mate with female blues, with resulting conflict with male blues, resulting in little reproduction. As for actual information on the subject, we obtained none. It occurs to me that in areas where food is as scarce as in the Aleutians in winter, there may be actual competition of this sort and that the more aggressive ~~wanid~~ red fox would do better.

It is interesting to note that on Amlia Island both species are doing well, according to the Atka natives. In this case Vulpes is represented by the silver fox. The natives we talked with said they had never seen blue fox remains in the stomachs of Reds.

It occurred to us that if we do not now have sufficient specimens, it would be worth while to obtain a good series of first class specimens from various localities, such as Kodiak Island, Alaska Peninsula, Unimak Island, Unalaska, and Unmak Island. There seems to be a great desire in Alaska to shift animal life around from place to place. I believe, it is planned, for example, to transfer another species of fox to Kodiak and possibly others to Unalaska. The result before long will, of course, be a conglomeration that will still have value to the fur buyer but will lose much of its significance to science. There is still time to rescue a few specimens of the natural fauna in most cases.

Alopex sp., Blue Fox.
Attu dialect: Mis-si-sirch' Chir-ri-ech
Mis-si-si- Kam-uch (White Fox)

With the recent high prices of blue fox furs fox farming, so-called, has received added impetus and people are more and more interested in the industry. Apparently all available islands from southeastern Alaska to Attu Island are utilized for raising foxes. And this widespread activity has created the problems which chiefly occupied our thoughts on this trip to the Aleutians.

Some historical accounts indicate that blue foxes were always present in the Aleutians at least on some of the larger islands. Certain it is that the very first Russian voyagers to Alaskan waters brought back cargoes of furs, including thousands of blue foxes. In some cases, at least, the records show that the fox skins were obtained outside of the Aleutian chain, for the vessels were a long time on a trip and traveled far. However, many of the cargoes appear to be traced directly to the Aleutians.

The Aleuts themselves stoutly maintain that the blue fox was introduced in the Aleutians by the Russians. Animal remains obtained at old village sites by anthropologists of the Smithsonian Institution should be instructive on this

point. I have not had an opportunity to pursue this historical matter very far.

Habits

The blue fox is very active and expert in gleaning a living where food is scarce. It does not hesitate to enter the water and often swims from one island to another. Often when a large island has been stocked the foxes will swim out to the smaller islands off the shore. This was pointed out to us particularly at Adak Island, Little Tanaga, and Atta Islands. Bill Dirks, the Atka chief, in commenting on the activities of the blue fox, stated that it will sometimes watch a diving bird feeding close to the shore and if the bird works in close enough, the fox will see it coming to the surface and will leap into the water to seize it as it is about to emerge. The fox is also very active in the cliffs and gets about surprisingly well. Eider ducks will often seek the grassy tops of steep pinnacles, just off shore, on which to nest. Bill Dirks declared that if the pinnacle is close enough to other rocks or a cliff which the fox can scale, it will reach a point a little higher and leap across to the pinnacle, where it may seize the eider or eat its eggs. Then it scrambles down to the water and swims ashore. This same informant declared that foxes occasionally are able to seize an Emperor goose, at night, probably while the goose is asleep, with its head tucked under the wing and that even sea gulls are sometimes obtained in this way.

The ground nesting auklets, puffins and petrels apparently are easy to obtain but just how the fox goes about it we do not know. In the case of the petrels the fox probably is able to reach in with paw and rake out the bird with its sharp claws, or it may wait at the entrance until the bird emerges. In several instances I was able to reach in and touch the bird, but often the bird would retreat out of reach.

Sea urchins are reputed to be the favorite food of the blue fox. We did note that sea urchins were utilized for food, and undoubtedly they eat these whenever they are obtainable. But probably sea urchins are not always readily obtained and furthermore, in order to utilize those which wash up on the beach, the fox must compete with those expert beachcombers, the gull and raven, to mention only two.

There is another food item which has been generally overlooked, but which we discovered by dropping analysis, to be be very important, ranking second only to birds, if our casual field examinations are an accurate indication. This is the beach flea, which is so abundant in some places, to be found by turning over stranded seaweed, bits of wood or rock , or sometimes merely by scraping up the sand or gravel. Such relatively minute fare, probably consisting of Crustacea and other organisms, may be important if the proper beaches are available where such food may be found.

Naturally, any fish that is washed ashore, or larger creatures, such as dead seals or whales, furnish substantial food supplies, although rather uncertain.

Analysis of Fox Droppings

Obviously, we could not hope to learn about the food of foxes entirely by direct observation. In fact, we could learn very little in that way. Therefore we adopted the plan of collecting fox droppings at every opportunity. It was fortunate that we did so, for this material furnished us with the best data on the food habits of the foxes.

Naturally, there has be not been time examine all of the material in time to include the results in the present report. But Mr. C. S. Williams has been working on it and has kindly forwarded to me the data so far obtained in this study. The following tabulations are Mr. Williams' contribution and serve to indicate fairly well the food of foxes.

TABLE I

Fox Food Items from Attu Island

Item	% volume	times occurring	% occurrences
SEA BIRDS			
Forked-tailed Petrel		9	14
Scaup duck		1	1
Tufted Puffin		1	1
Least Auklet		1	1
Unidentified Alcid		1	1
	32%	13	18%
LAND BIRDS			
Aleutian Rosy Finch	11	4	5
Rock Ptarmigan	4	3	4
Aleutian Sandpiper			
Aleutian Song Sparrow			
Aleutian Winter Wren			
Pribilof Snow Bunting			
	19%	12	15%
INVERTEBRATES			
Beach fleas, chiefly Orchestia traskiana	27%		19
Isopods, Ligyda pallasii	12		15
Edible mussel, Mytilus edulis and unidentified Pelecypod			8
Sea urchin			8
Gastropods (Limpets, Acmaea sp. & snail, Littorina sp.)			4
Clam worm, Nereis sp.			4
Beetle, Cryptohypnus littoralis			1
	42%	33	47%
FISH, carrion			
Cod			
Sculpin			
Dolly Varden trout			
Sea bream, Sphaerodon?			
	6%	13	15%
VEGETATION			
Vaccinium vitis-idaea	trace	1	1%

From this tabulation it will be observed that petrels are the most important item in the bird remains. Two other petrels, reported by the natives to inhabit Attu Island, were not represented.

Crustacea appear to be the most important single item of fox food on Attu, judging by these samples. Beach fleas constitute 27% by volume and 19% of the occurrences and the Isopod, Ligyda pallasii, had 12% by volume and 15% of the occurrences, these two totalling 39% by volume and 31% of occurrences.

It will also be noted that fish, undoubtedly chiefly if not entirely carrion, formed only 6% by bulk but occurred 13 times and formed 20% of the occurrences. Therefore such carrion picked up on the beach is also important.

Finally, all birds constituted 52% by volume and 33% of occurrences. Invertebrates and fish formed 48% by volume and 66% of occurrences. On the basis of a majority the fish-invertebrate group is the more important if we consider the number of occurrences, which furnish a more significant unit of measure in the case of droppings. On the other hand, 33% of occurrences were birds.

TABLE II

Fox Food Items from Kasatochi Island. (46 Droppings)

Item	% volume	times occurring	% occurrences
SEA BIRDS			
Least Auklet.....		23	
Crested Auklet ...		15	
Paroquet Auklet...		 4	
Ancient Murrelet..		 2	
Tufted Puffin		 2	
Whiskered Auklet ..		 1	
	94 %	50	45%
EGG SHELL	3%	22	19%
LAND BIRDS	0	0	0
INVERTEBRATES			
Isopod, Ligyda pallasii..... 2		 13	
Beach fleas trace		1..... 2	
Sea urchin		 1	
Snails, Acmaea & Littorina ....trace		 3	
Beetles .....trace		 3	
Diptera, Amphimyia, Cynomyia, Tipula, Scatophaga, mostly as adults .....trace		 13	
	2%	38	34%
FISH .....trace		2	3%
VEGETATION			
Empetrum nigrum trace		1	1%
Kelp ..... trace		1	1%

In addition to this tabulation it should be added that Mr. Williams found a food cache at a fox den which contained the following: 65 Crested Auklets, 37 Least Auklets, 1 Paroquet Auklet, 1 Whiskered Auklet and 1 Pigeon Guillemot. Others could be dimly seen far back under the rocks, out of reach. There were also numerous fragments of egg shells lying about. Three foxes were noted carrying eggs and photographs of them were taken. A study of this table and of our observations on the island indicate clearly the great preponderance and importance of birds for fox food, at least during the summer season. It is likely also, as Mr. Williams has pointed out, that birds are important also in winter, for the beaches for supplying necessary invertebrate food are limited.

TABLE III

Fox Food Items from Amchitka Island. (18 droppings)

Items	% volume	times occurring	% occurrences
SEA BIRDS			
Crested Auklet	1	1	2
Least Auklet	1	1	2
	2%	2	4%
LAND BIRDS	0	0	0
INVERTEBRATES			
Beach fleas	89	18	
Isopod		1	
Sea Urchin, *Strongylocentrotus drobachiensis*	7	9	
Snail, *Littorina*,		4	
Edible mussel, *Mytilus edulis*		1	
Beetles, Nebra		3	
Flies (mostly adults		2	
	96%	38%	76%
FISHES			
Unidentified vertebrae		4	
Sculpin		1	
Salmon ? roe		3	
	2%	8	16%
UNIDENTIFIED FLESH	trace	1	2%
VEGETATION, Algae	trace	1	2%

This table indicates clearly that birds are unimportant in the fox diet on this island while beach fleas are all-important. Mr. Williams found that beach fleas occurred in every dropping, forming 89% of the total volume. As many as 270 were found in a single sample and in the 18 droppings examined there were at least 1011 individuals beach fleas.

It should be added here that on a trip across one end of the island, when I had no facilities for collecting fecal samples, I examined 29 droppings and every one contained beach fleas.

All this data clearly demonstrates the food habits of foxes on this island, which is very harmless by the usual standards.

The explanation of this diet is probably this, that Amchitka is a large

island, with sufficient extent of beach to furnish the invertebrate food in abundance and furthermore, the topography of the island is such that sea birds do not nest on the main island and hence are not available.

TABLE IV

Fox Food Items from Navalga Island. (21droppings)

Item	% volume	Times occurring
BIRDS		
Emperor Goose	60%	16
European Teal.....	18	5
Undetermined Anatidae	10	6
Rock Ptarmigan.....	trace	1
	88%	28%
FISH	trace	2
SNAIL	trace	1
VEGETATION, grass	12%	17

These findings do not indicate the normal food habits of foxes on this island for the droppings were taken from a feeding pen. But they do indicate some of the birds present in winter and the birds which are killed by the resident trapper at that time and possibly indicate that such birds are fed to foxes, although we were unable to determine whether or not these birds were killed for fox feed or were simply the refuse from the table. The frequency of grass in the droppings would seem to indicate an abnormal diet.

TABLE V

Fox Food Items from Amukta Island. 38 droppings.

Item	% volume	times occurring	% occurrences
SEA BIRDS			
Forked-tailed Petrel	74	34	
Paroquet Auklet	1	1	
	75%	35	49%
LAND BIRDS			
Winter Wren		1	
Aleutian Rosy Finch		1	
Aleutian Song Sparrow		1	
	2%	3	4%
INVERTEBRATES			
Sea urchin	19	14	
Beach fleas		1	
Snails		3	
	19%	18	24%
FISH	trace	1	trace
VEGETATION			
Empetrum nigrum	3	16	
Green algae	trace	1	
	3%	17	23%
MISC. (piece of cloth	1%	1	trace

These results conclusively indicate harmful food habits. Extensive lava beds occur here and numerous petrels nest in this rocky area. It would appear that as long as the petrels hold out the foxes will feed on them as extensively as shown in this table.

TABLE VI

Fox Food Items from Kiska Island. (10 droppings)

Item	% volume	times occurring	% occurrence
SEA BIRDS			
Forked-tailed Petrel		 2	8
Least Auklet		 1	 4
Tufted Puffin		 1	 4
	15%	4	16%
LAND BIRDS			
Aleutian Rosy Finch		 1	 4
Winter Wren		11111....1	 4
Aleutian Sandpiper		1	 4
	3%	3	12%
BIRD, undetermined	trace	1	..... 4%
MAMMALS (carrion)			
Sea Otter		 1	4
Harbor Seal		 2	8
	20%	3	12%
INVERTEBRATES			
Sea urchin	 34	 6	24
Beach fleas	 17	 3	 12
	51%	9	36%
FISH, Codfish, carrion.....	1%	 1	..... 4%
VEGETATION			
Empetrum nigrum	10	3	12
Sibbaldia procumbens ?	trace	1	 4
	10%	4	16%

The mammals and fish were, of course, carrion. Bird remains form about one third. The number of droppings is far too small to be conclusive and furthermore, they were taken far from a large auklet colony occupying one end of the island. This island presents a problem, as indicated in the discussion of Kiska Island below. There appear to be enough beaches to furnish food for a fair number of foxes, yet it is possible, even likely, that foxes in the vicinity of the large colony of birds occupying the slopes of the volcanic mountain will feed extensively on those birds. More work is required on this island.

Fox Raising versus Birds.

One of our chief objectives was to learn whether or not foxes are feeding on birds and to what extent and whether or not the bird colonies are being decimated from this cause.

We obtained abundant evidence on the first point, both verbal and by observation. Everywhere we went we were told that foxes feed on birds. Several traders and permittees who were using fox islands admitted it. The trader at Attu remarked that the foxes "drive away" the geese and other birds which was his way of putting it. Others acknowledged by their remarks indirectly that they were aware of the fact. And the natives invariably stated that foxes feed on the birds. We had with us for a considerable length of time Bill Dirks, chief of Atka Village, who acted as our pilot. He gave us much information on this subject, and repeatedly referred to the killing by foxes and gave us details.

But we did not have to rely on the data supplied by the natives. We were able to gather abundant proof through our own investigations. This is set forth in the tabular lists of food items above, furnished by Mr. Williams, and in the account of the individual islands in this report.

An important question to be answered is this: What effect does the fox raising have on the bird populations? And not only on the general bird population, but how are certain species affected?

This is a matter difficult to determine by direct observation or by study in any single season. It is necessary to have a little of the history for comparison.

Some of the information was not absolute, but a little uncertain, not the kind one can rely upon alone, but very suggestive when corroborated. Of such a type were the numerous remarks of Bill Dirks. On one occasion I told him we found many birds on Ulak Island. "Yes," he said, "no foxes there." This was repeated on other occasions. At other times, when asked about an island, he would say, "Not many birds there. Too many foxes."

Another native at Atka told us there "used to be many ducks in the islands but they are scarce now since the foxes." By ducks he meant all kinds of birds.

This is indefinite information but clearly indicates the sincere understanding these natives have of the situation and they often substantiated this opinion with more specific data from their experiences.

There were other conversations which were suggestive. We talked with a white man at Unalaska. He said Amukta Island was one of the best fur producers. "Funny thing about that," he remarked. "It's just a rock pile, nobody wanted it, nobody thought it would be any good." He got a permit for it and it turned out to be a good island. Our findings on fox food, given in the table above, are suggestive in this connection.

The same man said Kagamil Island was a fine producer and he got many foxes from it the first few years. Then Uliaga was stocked by another man and returns from that island were excellent while returns from Kagamil diminished greatly. He believes that foxes had been stolen from Kagamil and placed on Uliaga. The present owner plans to raise fox pups on Uliaga then, late in the season, "After the feed leaves," as he put it, he will transfer them to Kagamil and feed them artificially through the winter or until some are pelted and then return some to Uliaga, in spring, to raise more pups.

It is clear that this man, the present permittee, recognizes the value of the Uliaga birds as fox feed and also recognizes the present inadequacy of Kagamil.

It appears to me that the "cream" of the feed has been taken off Kagamil, during which fur production was high, and that the Uliaga foxes are now enjoying the initial productivity of virgin ground.

Of a decidedly definite character is the information we obtained on certain islands. Natives at Atka had told us that at one time there were numerous auklets on Bobrof Island. When we visited the island we found remains of a house wrecked by winter winds, some good stretches of jumbled boulders, which were ideal nesting places for auklets, but no auklets, quite a few puffins still nesting on what appeared to be fairly inaccessible top portions of cliffs, and the foxes were living extensively on petrels. This appeared to be an island in the last stages of bird depletion.

George Ermeloff was enumerating birds found on various islands. In speaking of Adugak Island, he mentioned among others what he seemed to recognize as the Cassin's Auklet, and remarked, "Foxes finish now, I guess," meaning that this species was probably extinct on that island because of the foxes. Incidentally, while this island produced as many as 41 pelts in one year, none remain now.

Salt Island is another instance. We had been informed that there used to be "plenty of birds" on Salt Island. On our visit they were by no means plentiful, although certain species nesting on inaccessible cliffs still persist. Bill Dirks stated definitely this was due to the foxes.

It appeabs quite certain from the information gathered, that bird depletion has already taken place on some islands and that other islands are in the process. Naturally, the islands that are first depleted are small ones, those not capable of holding enormous bird populations.

We do not have precise enough figures with which to make reasonably safe estimates, but it is of interest to consider an island like Kasatochi. It is not a large island but the bird life is very abundant. As many as 29 foxes have been trapped in a year, with an estimated 24 remaining. If we consider a year with 30 foxes on the island, to be very conservative, and allow these animals to live through a bird nesting season, probably well over 100 days, and allowing only 1 bird a day we would have a loss of over 3000 birds. As a matter of fact we found an a single cache of one pair of foxes over 100 birds, and none of these were badly decomposed. This is itself would indicate several times the number derived above. The loss of birds by various methods of calculations, such as allowing a cache like the one we found once a week, per pair, and other qualifying estimates, the figures run all the way from three or four thousands to as many as 40,000 or even more for the season. The sea birds are prolific and tenaceous, but this would be a heavy drain on the population, far in excess of the normal losses.

The toll taken by a few eagles and duck hawks is very small by comparison, but there are other causes of mortality, particularly what we may refer to as winter kill. In winter the beaches are sometimes strewn with dead birds. This complex normal loss, together with losses from an introduced concentration of foxes, would appear to be too much for an ordinary bird colony to overcome. And it would become more and more difficult after the initial reduction had appeared and as the population level became lower.

There are some islands which carry good bird populations whose status is a little hard to estim te. One such island is Carelci. Birds are numerous and the extent of the breeding/ areas is great, extending miles. Our findings reveal that foxes are living on the birds to a great extent, as shown below in the account of this island.

The question comes to mind, can the foxes destroy this bird colony? The numbers of birds and the size of the island are impressive. At least it is safe to assume that it may take quite a few years to accomplish destruction. But in the meantime, what may be taking place? It is clear that the foxes seem to be concentrating on certain species, the petrel in particular. Even while birds in general still appear abundant, a species like the petrel may be seriously on the down-grade. In this case, a native told us that at one time fulmars nested on this island. We saw none. Have they already been discouraged, as a species, by the foxes? Indications are that the rare Whiskered Auklet is easy to obtain for the foxes and that that species would be one of the first to go. It is my belief that there would be a selective trimming down of the general bird population, species by species.

Such islands as Careloi present a problem because we do not have precedents. They are large enough to give some cause for a belief that the foxes could not actually exterminate the birds, even though they subsist on them all summer.

At this point I would like to mention some possibilities which have occurred to me. In reading some of the older literature during the preparation of this report I find that earlier observers, A. C. Bent and others, actually observed considerable numbers of Leach's Petrel and from reading the accounts one gets the impression that these petrels are common in the Aleutians. As a matter of fact we saw very few. I did not see a single live one. About half a dozen wings were picked up on some of the islands, but on the other hand all the petrels seen fluttering about the ship's lights on various occasions were the Forked-tailed Petrel and all those whose remains were found at fox dens and in fox droppings at this stage of the study proved to be this same species. The natives declared both species should be common on the islands. Could it be that a selective elimination has already become effective? This is by no means conclusive evidence, and coincidence may be involved. But at least it should make us suspicious and we should seek more information.

Land birds are apparently faring better than water birds. There are no water margins to direct a fox to the nest. The foxes are accustomed to seek their food on the sea shore and it would appear that they make no special effort to seek out land birds. It may be that ptarmigan suffer to some extent, especially on the smaller islands. While relatively few adults may be taken, it is possible that young are caught before they can fly. However, ptarmigan appear to be holding out fairly well considering that foxes are being raised in their habitat.

In the case of the large islands land birds survive fairly well and some waterfowl and fox damage on such islands is relatively slight. Other things being equal, fox farming should be confined to the larger islands which have good feeding beaches.

Improving the Food Supply

An important question arose in connection with planting various animal species on the islands for fox food. The brown rat has already been introduced on Pat Island and Atka Island accidentally and these islands are overrun with them. Ground squirrels have been planted on Unalaska Island and Kavalga Island and have become very abundant. Domestic rabbits have been placed on several. Such rabbits were hopping about the buildings on Kanaga Island and were spreading a little into the surrounding area. The Atka natives had some for pets. Some people asked about the suitability of snowshoe rabbits for introduction on these barren islands for fox food. Some are considering more ground squirrels, others mice. It is evident that some drastic innovations are likely to be attempted in an effort to keep up the fur production.

Undoubtedly, a rodent food supply for the foxes should be a potent factor in boosting the productivity of an island. But probably the venture would be fruitless in some cases. We had hoped to be able to get some evidence on Kavalga as to whether the foxes were utilizing the ground squirrels which are so plentiful there, but we could not take the time to hunt up sufficient fox droppings. This island has been an excellent fur producer and it is possible that the ground squirrels are responsible. However, the ground squirrel is a hibernating species and presumably in the winter, when food is most needed, it would be unavailable.

It appears to me that if any such project is undertaken the ideal animal for the purpose would be the lemming or field mouse. Mice form the staple food of the Arctic Fox in the far north and their failure in some years causes widespread starvation and migration of the fox. Lemmings or field mice are available the year round and reproduce rapidly. As between those two, the lemming, which is available on Unmak Island, has the advantage of being more widespread in distribution over the terrain thus tending to keep the foxes more scattered over the island. On the other hand, Microtus tends to concentrate in grassy areas, in colonies, and I believe it is more prolific. The pursuit of the lemming would take the fox into the nesting places of ptarmigan and smaller land birds. While, in seeking the field mice, the fox is more likely to find nesting ducks.

The introduction of mice on an island should be considered with great caution. Once accomplished, it can not be undone. Before any such step is taken it should be decided definitely that the island in question is to be a fox island, permanently. We have many monuments in our country to abandoned projects in wildlife manipulation. And fox farming may possibly change in a few years. If such a move were contemplated perhaps it should be first done on an experimental basis on one or two islands.

In the meantime, it would be very desirable to have control of private introduction of exotic species in the Aleutians. We prohibit the placing of foxes on islands except under permit. Why should we not control the planting of other species? All such matters should be in the hands of an agency which has a broad view of the wildlife situation and is concerned with the interests of many people.

Future of Fox Farming

Several trends are to be noted in fox farming methods. Throughout southeastern Alaska operators are changing their methods. Instead of letting the foxes roam free on the island, many are now putting them in pens, where they can be fed properly and bred to advantage and the whole operation can be controlled. This methods also protects the animals from piracy. Mr. Homer Jewell assured me that more and more people are favoring pen raising. I would point out that this is in a part of the country in which rodents are available. As far west as Kodiak we noted this practice. Mr. Bennett who has been using Long Island, near Kodiak, as a fox farm has recently converted his project to pen raising. We inspected his animals and found it conducted apparently along modern lines, with many fine litters. Mr. Bennett is very enthusiastic and hopeful.

Should any such operations become prevalent in the Aleutians our bird problems would largely disappear. Mr. Dale, of the Office of Indian Affairs, discussed with me the natives and their problems and one of his tentative suggestions was the possibility of training Alaskan natives in fur farming. He referred particularly to pen raising. This is, of course, a definite possibility.

At the present time some islands, small ones, are being abandoned as unprofitable. Others are being retained, unprofitable, but apparently in the persistent hope that some miracle will make them profitable. Others are finding it desirable to have someone live on the island to feed the foxes. Of course, the feed is obtained from the natural resources, including seals, some fish and, we suspect, birds. It seems to me that it would be difficult to obtain enough fish, for it is extremely stormy in winter and the present day native would find it difficult to venture out on the sea consistently to fish. Furthermore, the shooting of seals is very wasteful. I had an opportunity to see the day by day record of one trapper. During about two weeks he killed 7 seals and only retreived three, more than 50% waste. This is characteristic of the industry in the Aleutians. Mostly it has been haphazard gambling. Someone gets an island, stocks it with a few foxes, hires a native to trap it and whatever he gets above the costs is that much gain. He does not question where the feed comes from, some vague natural supply from the Hand of Providence will furnish it. His venture does not interfere with his other activities, whether he be a clerk or a public office holder. His island or islands are simply an investment. And I might add here that any outsider coming into the Aleutian Reservation and killing a bird without a scientific permit can be arrested and fined, while the foxes of a permittee are living on the birds. Altogether an uncertain and unstable form of industry.

The situation is occasionally somewhat different. The permittee may have an honest intention to go to his island, live there and feed his foxes, in an effort tomake a livelihood from it. At least one man I have in mind has even tried it, spent a miserable winter on an unproductive island, and plans to do it again on one of his other islands. At least, in this case, the man would like to make fox raising his occupation. There is also the case of a trader who owns a store, has been more or less associated with the Aleutians for many years and in addition has two or three fox islands. Finally, there is the case of the native community which has been allotted two or more large islands for raising foxes and the islands are operated by representatives of the community.

There is nothing in all this that is particularly unworthy or dishonest. The permittees have presumably all undertaken their ventures in good faith and no one is to blame. But, in consideration for the public interest and the welfare of the remnants of the Aleuts still remaining in the Aleutians, we feel that the use of islands by native communities as a whole, rather than by individuals, should be encouraged in the future. We were pleased to note to what extent such apractice has already been put into effect by the Biological Survey. And, as stated above, an effort should be made to confine fox raising to the larger islands which do not harbor bird colonies.

Several administrative matters were considered. One was the matter of license fees. Dissatisfaction with the present system was expressed by others outside our group. A man who has an island which may produce 20 foxes or less, pays the same fee as the one who reaps a harvest of 200 skins or more from his island. Our party was unanimous that a more equitable system should be devised, and this feeling is shared by the Juneau office.

We suggest that a charge be made for each fox pelted, probably .50 or $1.00 per skin. It may be desirable to maintain a minimum fee of $25.00 for each island to prevent irresponsible ventures. If the returns in any one season exceed $25.00, that amount would be absorbed in the charge per skin. For instance, if 20 foxes were pelted, the minimum fee of $25.00 is charged. If 50 foxes are pelted, $50.00 are collected as the fee (if the charge adopted is $1.00 per skin). It would seem that if an island ~~[illegible]~~ cannot produce on the average 25 pelts annually, or nearly that, the island should not be devoted to that purpose. This is a suggestion. Perhaps some other plan is better. In any case, Mr. Dufresne of Juneau office, who is closest in touch with administrative matters, should have valuable suggestions on this matter. Patrolling the Aleutians is costly and it is only right that the fur industry there should contribute a little to the expense of it.

It is also suggested that furs taken in the Aleutians should be branded or marked, as I believe they are now, and cleared through an office at Unalaska. I am not suggesting details. Merely that it seems desirable, from the standpoint of administration and law enforcement, that a check be made of skins coming out of the Aleutians. It should be no hardship for anyone to come as far east as Unalaska, at least, before going south with their furs and for those who send their furs by someone, Unalaska is a convenient shipping point. This suggestion, also, I leave for others to improve upon or consider for what it is worth.

Resumé

I should like to recall a few points particularly with reference to the fox situation.

1. There is no question about the foxes feeding upon birds, in some cases almost exclusively, in others rarely, and only on a few islands, chiefly the larger islands, is the damage negligible.

2. There is considerable evidence that fox raising actually depopulates the bird colonies on the smaller islands, except for a few, such as those of murres and cormorants, which may persist on cliffs. And it is also very probable that larger islands will be depopulated in the course of time. In fact, it is possible that the reason foxes are not now very destructive on certain islands is that these islands were depopulated many years ago, by natural fox stocking.

3. With reference to this bird destruction, it is necessary to point out three potent factors that are unique in the Aleutians. One of these

is the complete absence of rodents on all but a few. The foxes simply do not have anything but birds to eat except for what they can glean from the beach, a very precarious existence, and such fare as crowberry.

Another factor is that birds and foxes are confined on the same island, with limited boundaries. Under such circumstances it is remarkable that the land birds are so free from fox depredations. I might point out that on Unimak Island, which is large, and has plenty of good feeding beaches and an abundance of rodents, indications are that the foxes (red fox in this case) are not at all harmful, or that the harm done is negligible.

The third factor is the degree of concentration of foxes. Even the sea bird colonies can stand a slight stocking. On the little island of Ogliuga, of limited extent, there were only one or two foxes. And the terns and various ducks were nesting successfully. At this time we are unable to offer specific data on the carrying capacity of any given island. The food supply is so imperfectly known.

4. Apparently birds head the list of single food items in the diet of Aleutian foxes on the average. Aside from birds, the two most important items of natural food appear to be beach fleas and sea urchins and when the study is completed we may find the former the more important. Naturally, all kinds of carrion is valuable.

5. The blue fox is extremely clever, being able to seize diving sea birds in the water, as much as a foot below the surface, and salmon in streams, (an ability shared by some Alaskan dogs), and to leap as far as ten feet across to a pinnacle after eiders. Steller reports also that in desperation foxes eat human corpses and will even start eating a sleeping person. We found mummies torn by foxes.

6. There is a tendency toward pen raising of foxes, which would be a boon to the birds should it become established in the Aleutians.

7. Control of animal plantings in the Aleutians is desirable. Ground squirrels are no doubt of value as fox food, but mice are probably better, being available the year round. Such stocking should be done only on islands which are certain to be used permanently for fox raising.

8. A more equitable fee should be charged, based on number of foxes pelted, and skins should be checked through some office, such as Unalaska.

Eumetopias jubata, Steller's Sea Lion
Attu dialect: Kav-rch
Atka dialect: Kow-uhh

Sea lions are pretty generally distributed throughout the Aleutians, with a concentration at certain islands. Bogoslof is the outstanding breeding ground.

A colony of about 50 was found at Carlisle Island, various small groups on the rocks around Yunaska Island, at Chagulak Island there were about 250 and at Amukta about 200. At Buldir Island there was a large colony, second only to the Bogoslof group in size.

A few were seen here and there elsewhere, and some more small colonies were reported to us, but those listed above are the principal colonies. These, with the exception of the Bogoslof rookery, had very few young. A dead pup was seen at Buldir but no live ones.

Callorhinus alascanus, Alaska Fur Seal. ✓
Attu dialect: Hla-koo-yach

An occasional migrating fur seal was seen enroute. Three were seen May 2 south of Yakutat and May 3, east of Mt. St. Elias, a band of about a dozen was sighted. On May 13 one was seen near the southwest end of Shelikof Strait and on May 21 Mr. Williams reported one in Unimak Pass. These were on the northward migration.

On August 11, in Bering Sea, enroute between Unalaska and Nunivak Island, we saw many fur seals, generally singly, sometimes in groups of three or four. To me, unaccustomed to these animals, they appeared small, and I believe none of these could have been older animals.

They were exceedingly graceful, floating about in graceful poses, sometimes lazily raising a flipper and diving with the smoothness and ease so characteristic of these animals.

Bill Dirks and some of the natives at Attu say that fur seals were supposed to have bred at Buldir Island. There seems to be a tradition to that effect. We found only sea lions there now.

Phoca richardii, subsp., Harbor Seal. ✓
Attu dialect: Ish-u-gich
Atka dialect: Ish-uh

Seals are fairly common, from one or two to half a dozen generally being observed at most of the islands. They appeared to be most plentiful about Uliaga and Kagamil Islands, where as many as 15 were seen on one rock on one occasion. A specimen was taken here.

Seals invariably inhabit the kelp beds, which are their chosen habitat in the Aleutians.

Erignathus barbatus nauticus, Pacific Bearded Seal.

The bearded seal, called by the Eskimo Cog-rook, occurs at Nunivak Island and is used by the natives for food and articles of clothing, harness, etc.

On May 25 the Captain saw a seal in Bristol Bay which he said dived like a fur seal, that is, with humped back, but had a "white streak" on its face. This type of diving suggests the bearded seal and it occurred to me that the "white streak" may have been the long whiskers of that seal. This would be about as far south as they come.

Bill Mirks, Atka chief, said that last winter two large seals arrived at Atka Island on ice floes after a period of northerly winds. These appear to have been bearded seals. They do not normally occur in the Aleutians.

Odobenus divergens, Pacific Walrus.

The Eskimo at Nunivak Island say that Walrus are occasionally obtained there, but they have become scarce.

Walrus used to be found as far south as Amak Island and portions of the Alaska Peninsula, as proben by their abundant remains on beaches.

Alexis Yatchmenoff, chief at Unalaska, said that in 1880 to '83, during his visit to his home at Morzhovoi Village, walrus were numerous on the north side of Unimak Island and occurred in St. Catherine Cove. On one occasion while hunting on Unimak he observed 40 or 50 walrus leaving the island. For two years they were plentiful there. Then some white men did a lot of shooting there and the chief believes the walrus left the island for that reason. That was is 1898 or '99.

Citellus sp., Ground Squirrel.

Mr. Petellin, of Afognak, informed us that ground squirrels occur on Chirikof and Semidi Islands and on Marmot Island, but none on Kodiak or Afognak. According to this man "marmot" refers to ground squirrel in this locality, hence, no doubt, the name Marmot Island.

On May 11 we obtained some ground squirrels at Ushagat Island, Barren Islands group. These were in good pelage. Snow was still plentiful there.

On May 16 we obtained some on Nagai Island, in the Shumagins, where they were very numerous but unusually shy. The pelage here was very poor, the hair shedding extensively. The snow was almost gone on this island.

Could it be that the climatic difference in these two islands materially affects the time of pelage change to the extent here noted?

Ground squirrels were, of course, noted on Unimak Island, which appears to be the westernmost limit of the natural range of the ground squirrel.

At Unalaska ground squirrels are plentiful. According to the Chief, Alexis Yetchmenoff, they were brought to Unalaska by Mr. Applegate, an employe in the U.S.Signal Corps, in 1896 or 1897. He recalls the introduction well and stated that in about two years time the ground squirrels had become plentiful. They had been brought from the vicinity of Morzhovoi Bay or Unimak Island.

Bill Dirks, chief of Atka Village, informed us that in 1920 Nick Bolshanin brought 10 or 12 ground squirrels from Unalaska and liberated them on Kavalga Island. They are not very plentiful on that island.

The two ground squirrel colonies now found west of Unimak, therefore, originated from the stock at the western end of Alaska Peninsula or Unimak Island, I am unable to determine which from my notes.

We observed ground squirrels on Simeonof Island, of the Shumagin group.

Microstonyx rubricatus subsp., Collared Lemming.

Lemmings are abundant on Umnak Island, where I saw their numerous runways and burrows. I could only set traps one night, during bad weather, and obtained but a single specimen. Lemmings are apparently an important source of food for red foxes on Umnak Island.

No lemmings occur to the westward of Umnak.

At Unalaska I made special efforts to find lemming but found no sign of them, although Microtus are plentiful. I tramped over extensive areas of likely lemming-habitat but did not find a single den. But, on examining fox droppings, I noted one or two which on casual inspection seemed to contain lemming remains. This point will be cleared up when analysis of the material is completed.

Lemmings were reported on Nelson Island, which is to be expected, but I could not get positive data that they occur on Nunivak Island.

Lemmings were also reported to occur near Chignik.

Clethrionomys dawsoni, Red-backed Mouse.

Five were trapped in what looked like Microtus runways along a little stream, among the alders, at Chignik.

Microtus sp., Field Mouse.

Signs of field mice were observed at many places enroute. Some signs were found on Ushagat Island, Barren Islands. On Nagai Island, in the Shumagins, there were no signs of these mice while on Unga Island they were very numerous, and were also quite plentiful on Popof Island. They were extremely plentiful locally at Cape Pankoff, Unimak Island, but were very scarce in other parts of the same island. They were moderately plentiful at Ugashik River and Nelson Lagoon, at Unalaska, Nunivak and Nelson Islands, and were extremely abundant on Amak Island. This was the situation on Amak Island in 1925.

I could get no evidence that Microtus occurs on Umnak Island. Apparently

Microtonyx is the only rodent there. And no mice of any kind occur on the islands lying to the west of Unmak. We looked carefully for any evidence of mice at every opportunity but found not the slightest trace, fresh or old. Our findings were abundantly confirmed by the natives, who invariably testified that mice do not occur west of Unmak.

It is very significant that short-eared owls are scarce west of Unmak and that Unmak Island and its adjacent islets are the western limit of the range of the Rough-legged Hawk, which is a habitual mouser. The western Aleutians probably could not support weasels or minks, and none occur there.

Castor canadensis, Beaver.

Beaver have been introduced on Kodiak Island and have increased. They are now causing some damage to a road and are blocking some spawning streams for salmon.

Lepus americanus, Snow-shoe Rabbit

Snowshoe rabbits, which had been brought to Kodiak Island from areas along the Alaska Railroad on the mainland, have increased and are very plentiful in the vicinity of Kodiak.

Snowshoe rabbits occur at Snag Point, Nushagak River, but are said to have been scarce last winter.

Lepus poadromus, Arctic Hare.

I found signs of Arctic Hares at Snag Point, Nushagak River, among the alders and willows and was told that they had been a little more common than usual last winter, while the snowshoe rabbit had been less abundant.

Rattus norvegicus, Norway Rat.

Rats have been introduced to two islands, Rat Island and Atka Island. Rat Island was called "Rats" and the Russian "Krisi" (Rat) as early as 1790 it appears and the rats were no doubt introduced before that. According to the natives the rats were brought to these islands by Russian ships.

Half a dozen flat skins were obtained from Rat Island and two alcoholic specimens from Atka.

At Atka the rats have managed to invade the little islands lying in Nazan Bay. The natives are disgusted with the rats and say they are troublesome. It is difficult to raise vegetables because of these animals. Whether or not foxes prey extensively on rats we could not learn. Certainly they have not controlled these rodents.

A short-eared owl ventured to appear at Atka and was promptly shot. It had a rat in its stomach.

Rangifer grantl, Grant's Caribou. ✓

I obtained conflicting reports on caribou. However the general consensus seems to be that caribou are doing pretty well on the Alaska Peninsula now, as well as on Unimak Island. Caribou have been seen crossing between Unimak Island and the Peninsula, in both directions, at a place locally known as the "Whirl."

H. Barber, who has been Game Warden in Bristol Bay, informed me that there are quite a few caribou up the Mulchatna River. These would probably be stonei, at the outer margin of the present range of the interior Alaskan caribou.

Rangifer sp., Reindeer. ✓

We had no opportunity to make first hand observations on reindeer. However, we did obtain information of a sort.

At Saag Point I was informed by Mr. H. Barber, who has been Game Warden there, that in the Bristol Bay region the reindeer herds are generally neglected, many of them run wild and the animals are straying. There seems to be much confusion about ownership. Judging from the short conversation I had with Mr. Barber on this question the reindeer industry can hardly be called such in this area. I consider Mr. Barber entirely reliable.

Reindeer have been introduced in the Aleutians and I believe various plans for stocking with reindeer have been entertained from time to time.

From the records it appears that 36 reindeer were placed on Umnak in 1913 and subsequently various herds had been seen and estimates were made, one being 186 reindeer. Apparently this reindeer project dallied along for a number of years. We did not make a study of Umnak and can not say what the status of the reindeer is now. Apparently this reindeer stocking resulted in no human benefit that I could learn about.

Reindeer have also been planted on Atka Island. For the first few years the herd remained in the vicinity of the native village and it seems the animals were then being utilized to some extent. The reindeer eventually wandered off to more remote parts of the island and the natives lost interest in them. Generally someone, in the course of boat travel around the island, observes them enough so that the natives have some idea of the location of the herd but they rarely go after them, apparently considering it too much exertion to make the necessary overland journeys to get the animals. I believe through the encouragement of the teacher appointed by the Office of Indian Affairs an expedition was organized once last summer and some reindeer meat was obtained.

The natives have learned to depend on trapping foxes for a livelihood, an occupation which they take to naturally and they like to fish, but apparently they do not care to herd reindeer and keep them under domestication. The reindeer on Atka are virtually wild game now. No one seems to know how many there are.

The vegetation on the larger islands is not altogether unsuitable for reindeer but in most cases it is by no means ideal. There is a certain amount of lichens and some other plants available, which help a little, but the growth of lichens is generally scattered and by no means luxuriant.

There is one exception. Judging by the portions we examined, Amchitka Island supports a heavy growth of lichens and carries a vegetation over extensive areas that is very tundra-like in character. Reindeer should do well on this island, until over-stocking occurred. However, I can conceive of no reason for placing reindeer there. Unless an animal can serve a useful purpose it should not be introduced. In the case of Amchitka Island, there is also the question of the Sea Otters and the eventual policy regarding them, whether or not additional human activity should be encouraged there. As a matter of fact, the natives are doing well with their fox farming and if some sort of cooperative marketing could be developed for them, they would do still better.

It occurs to me that there is much we can learn about reindeer and caribou. Reindeer were present for years on Unmak and Atka Islands, where they had no natural enemies that could do them much harm, yet it seems to me that during along period of years there was not nearly the increase one could expect. On the Alaska Peninsula, also, we have a herd of caribou which seems to linger on at about a certain number and never reaches a really large figure. I am aware of the fact that over-shooting has been blamed for it, and that may be a factor, after all. But there, again, are relatively few natural enemies. And I am beginning to suspect that the condition of the range may have something to do with it. Paucity of lichen forage is characteristic of the Alaska Peninsula and Unimak Island, and has a hard time coming back once it is down. Lichens occur only moderately on most of the Aleutians. This is largely conjecture but I venture to suggest that the carrying capacity of these particular areas is decidedly limited.

Odocoilaus c. sitkensis, Sitka Black-tailed Deer. ✓

On September 3 Capt. Sellevold, Mr. Williams and I went over to Long Island, near Kodiak, to investigate reports of dying deer. Mr. A. W. Bennett and C. F. Bryan, who are engaged in fur farming on the island gave us their observations.

Coast Black-tail have been introduced on this little island and according to Mr. Bennett they became extremely abundant prior to 1935. Then they began dying. He found at least 22 carcasses. They became emaciated, and the survivors are still poor, he said. We found a couple of skulls but they revealed nothing and I could learn little about symptoms from my informants. A dog had been feeding on a deer carcass and eventually the dog died. In 1932, 1933, and 1934 dead raccoons ~~xxxxx~~ had been found. He found 12 or 15 dead raccoons in one year and a couple of sick ones which were dragging the hind quarters.

From this account it would seem that some disease common to both the raccoon and deer swept the island, otherwise it would be a remarkable coincidence. We walked over part of the island and examined the vegetation. I am convinced that starvation was not involved, unless certain forage elements necessary to deer, found in southeastern Alaska, were lacking, but this is

unlikely. Willows, salmon berry, and similar forage were in good condition and indicated but slight use. If forage had been scarce such species would certainly have shown heavy use. Moreover, the horses and cows did very well on the same range.

This is meager information but it suggests that an epidemic of some kind has struck a too concentrated animal population. Muskrats, minks, raccoons, and blue foxes have been concentrated on this little island and in addition a heavy deer population developed. The result was something akin to a heavily stocked barn yard. It has been my theory that animal life in the north to thrive must have much space and that when too great concentrations develop an epidemic occurs. This may not be so true of the larger animals, yet we can not be so sure of some of them. And it may apply particularly to islands, where movements are restricted. This, however, is mere theory.

It may well be suggested, however, that stocking of an island, particularly a small island, should be done with great caution. Overstocking is a national trait.

Cervus c. occidentalis, Roosevelt Elk.

We stopped briefly at Afognak Island to inquire about the elk which have been introduced there. We saw four on the beach of Deremof Island, near Afognak, big bulls with velvet antlers, fine specimens of the Roosevelt Elk. This was on May 13. On September 2 Mr. Williams and I went ashore at Afognak and looked over some of the range. Nineteen or twenty were seen from the ship on a distant mountainside.

In spring we found that the elk had been feeding on the young lupine and Ligusticum scoticum, which were just coming up at that time. The lupine was abundant.

In September we found that elk had recently been feeding on willow leaves and a tall huckleberry, Vaccinium sp., had been browsed in winter. Viburnum pauciflorum, [illegible], Epilobium angustifolium, Heracleum lanatum, Calamagrostis, sedges, and a little Equisetum had been eaten. Mushrooms had been eaten and much elder, Sambucus sp.

On the open hillsides fireweed and bracken fern are the dominant forms of vegetation. Elk are fond of fireweed and since snowfall is probably not heavy here, this is no doubt available also in winter and may possibly be an important winter food resource. However, the elk are said to inhabit the spruce forest also and there they would find a limited supply of willows and a considerable salmonberry brush. The slight snowfall probably does not prevent the elk from reaching the low vegetation, such as grass, sedges, Equisetum, etc. Under such circumstances the elk should thrive.

It was noted that the elk have developed regular trails and appear to have chosen their habitats on the island. In fact, they have made themselves so much at home that they often appear in the village. We saw elk droppings among the houses. They have been known to pull the wash off the clothes lines. And when dogs went after them they would whirl and strike at the dogs. Several dogs are said to have been killed.

Future observations from time to time, as the herd increases, will indicate how well adapted this flora will be to the elk and what the carrying capcity of the island will be. It is well to remark, however, that if the elk herd increases sufficiently and some of them cross to Kodiak Island, they will undoubtedly cause more or less annoyance in places where agriculture is carried on.

Orcinus rectipinna, Killer Whale.
Attu dialect: A'-ga-ghi-ach or A'-ga-ghirch
Atka dialect: Ah'-ga-lohch or Ah'-ga-luch

In the Atka dialect the name is very similar to that of the fulmar. The difference appears to be one of syllable length or stress, which I was unable to record satisfactorily.

Killer whales were common throughout the Aleutians, sometimes three or four in a group, but on occasion as many as 25 in a school. We learned practically nothing about their habits and could merely note their occurrence here and there.

I am under the impression that a white elongated spot near the eye is a distinguishing character of the Atlantic Killer. If this is the case the animals we saw were largely, if not all, Atlantic Killers. For whenever a close view was possible the white spot was noted.

Phocoenoides dalli, Dall Porpoise.

These porpoises were common in southeastern and southern Alaskan waters. They were not often seen in the Aleutians but on July 20 a school of these porpoises was playing about the ship, between Atka and Kasatochi Islands.

Balaenoptera physalus, Finback Whale.

Finback Whales were seen from time to time, but I can give no estimate of abundance. It was not always possible to identify the whales seen occasionally. Even members of the ship's crew, who had served as whalers, were often in doubt. Therefore, no attempt will be made here to enumerate whales encountered.

We should have liked to gather information on the abundance of whales since these mammals have been so reduced in numbers. Five whales were handled in one day at the whaling station at Akutan Island. I did not attempt to get their records for I was assured that complete reports were being forwarded to Washington. We did not often see the larger species and apparently they are not plentiful. It would be helpful to some extent at least, if the western Aleutian waters could be kept free of whaling. The one station located on Akutan Island should be sufficient for this area, in the interest of the conservation of these animals.

NATIVES OF THE ALEUTIANS

During the summer occasional bits of information were obtained from the natives relating to their early life. These are noted here briefly, as being of some interest, and although there is probably no new information, it may nevertheless interest Dr. Hrdlicka of the Smithsonian Institution.

The original population in the Aleutians was divided into three "tribes", if we may call them that. At least there were three linguistic subdivisions, or dialects, and these may be for convenience designated as the Attu, Atka and Unalaska dialects or groups. The names of the birds and mammals in the Attu and Atka dialects are given in this report. I had no opportunity of obtaining the third dialect from Umnak or Unalaska.

There was constant warfare among these three groups. I have not ascertained where the main village of the Attu people was located, possibly on Attu itself, nor do I know about the Umnak or Unalaska group. But the Atka people had two principal villages, one on Atka Island and one on Adak Island. The village on Atka Island is located on the west tip of the island, at a point where the island is one-half mile wide.

The other large village is on Adak Island, in a bay just south of the entrance to Bay of Islands, opposite a little island there. My notes are not quite clear on this point but I judge this would be near the so-called Entrance Islands. on the chart.

These were the two largest villages in the middle Aleutians, the real homes for these people. There were numerous other villages on various islands where people went in summer, but these were more of a temporary or seasonal kind and the people would assemble again at the main villages. It would appear then, that archeological work should be of special interest in these two sites.

There are numerous other village sites. At Atka, among others, there is an old site on Oglodak Island off the west end, probably not far from the main village.

Some random notes are as follows:

Amchitka Island. A permanent(?) village site at the northwest end, pretty well over on the Pacific side. I saw this one. Two permanent villages were at the southeast side, Bering Sea shore, one in the harbor, one west of it; an old camp site farther east toward the tip. An old permanent village on the Pacific side, opposite the harbor. There are others, on the island, not noted specifically.

Unalga Island. A big village site on the east side.

Kavalga Island. Big village on the northeast side.

Ogliuga Island. Village site near the present house.

Skagul Island. Village on southeast side. A casual inspection

suggested this might have been partly escavated. There were many pits.

Ilak Island. Big village on west side and a mumny cave from which a "Russian professor" has taken the material.

Tanaga Island. A mummy cave on a small island on the southwest side a village on shore of Tanaga opposite this little island. Two small village on the west side of Tanaga.

Kanaga Island. Many villages on this island. One, at least, had bee excavated at one time for trophies by a Navy party.

Igitkin Island. A village in the narrow neck, near the present house

Amlia Island. A village in Sviechnikof Harbor. A big village on Cap Idalug. Several others both on north and south sides.

There are other village sites, many of them, and if one had the time t talk with some of the natives much information could be obtained.

When the Russians came to the Aleutians they transported the Adak people to the Commander Islands. Some were taken to Sanak or Unalaska to hu sea otters. These were all of the Atka tribe. At that time also the people on Atka Island moved from their ancient village at the west end and settled in Korovin Bay. It seems the reason for this was that the Russians required an anchorage. Then, when the United States purchased Alaska the village was again moved, this time to the present site in Nazan Bay. At this time also some of those who had originally gone to the Commander Islands under Russian rule returned to the Aleutiens, but others remained, and the Atka dialect is spoken in the Commander Islands today. Those who had gone to Sanak and Una-laska never returned.

In primitive times an Aleut home was a hole in the ground, about 15 f deep, covered with a "hatch" and provided with a ladder. Sometimes there w a window of sea lion gut. Often there was no window and a seal oil lamp provided light. As debris accumulated inside, it was buried in the floor, never thrown out. As a result the floor gradually rose higher and high and when eventually the floor level became too high, a new home was built.

Fresh water was piped in. Two sticks were hollowed on a flat side, ed together, and this crude water pipe was buried in the ground, leading fr a stream nearby to the interior of the house. Presumably there was a stopp for the pipe.

Children sometimes remained in the house, without seeing broad daylig until they were five or six years old.

A type of refrigeration was used. A pit was dug and in this, durin cold weather, meat and ice were placed. Over this was a layer of driftwoo Then another layer of meat and ice, and so on, until the cache was complet

When the men went off to war they would leave the women and children in the underground houses, presumably with a supply of food, pull out the ladder, and cover the hatch with grass to conceal its location.

If the enemy was expected to raid the village short spears, in the form of hard wooden points, were set in the ground in areas of likely approach, about six inches protruding from the ground. Cords were stretched in strategic places so that an approaching foe would stumble and fall on the points. Sometimes 20-foot pits were dug, covered thinly, and left as traps for the approaching enemy.

If a village was successfully raided the men were killed and the women and goods were carried off.

In those days sea otter skins were used as clothing, blankets and as a lining for the underground house.

Enormous boats were sometimes built, as many as 50 sea lion skins going into the construction of one. These boats were sometimes 100 feet long or more, according to Bill Dirks. The forward end was decked over and under that deck they stowed their bidarkas and there the people lived on the voyage. As many as ten pairs of oars were used, stuck through holes in the side of the boat much as in a viking ship.

This is the story as I got it from the natives who knewof it through talk with the "old men."

The native today is a changed individual. In earlier times, in the days of sea otter hunting, which is not so long ago, the Aleut possessed great skill in the use of various implements and weapons and in the manipulation of the native boats, a skill that won the admiration of those who saw it. I talked with some white men who remember this. Today this is gone. The very tools and bidarkas are gone and the natives dress in white men's clothes, use rifles and the modern power boats. Their skill with these is not remarkable and according to an old Russian sea otter hunter their seamanship today is vastly inferior. I can testify that the modern generation is even losing the native knowledge of and familiarity with the Aleutian bird life.

The modern Aleut is of course, a mixture of races to a large extent. His color is sometimes pale and blotched and he is equipped with an inferiority complex. In the more eastern communities the natives have gone far in the assimilation of the white man's thought, custom and bearing, but they have not come in contact with the best influences. Sophistication does not fit them well, rather it detracts. Drunkenness is common and an occasional murder occurs. On the whole they are now unattractive, looked down upon by the whites, and are generally not shown much sympathy.

This is a dark picture, but I give it with sincere sympathy on my part. And there are exceptions in most respects. Furthermore, the natives appear more attractive, on the whole, the farther they are removed from sophistication that is, the farther west one goes. It is my impression that both drunkenness

and tendencies to poach diminish to the westward. One can actually trace improvement in distinct steps, from village to village, westward, until on arrival at Attu Village one finds an upstanding people, fairly healthy, happy, quite prosperous now, and I believe, law abiding. Incidentally, a few of the Attu people still make the famous Attu basket, an a skill which makes for racial pride, an important point in the preservation of primitive peoples.

On arrival at Nunivak Island we were greeted by a fleet of Eskimo kayaks, each one paddled by a jolly smiling Eskimo. These people still use their native spears and boats, dance their own dances and are proud of it all. We were so struck by the contrast with the somber atmosphere of the Aleuts which we had observed all summer.

I give this account of the natives for the reason that they are so intimately connected with the Aleutian Island Reservation and we have a responsibility toward them. There is little that we can do now to rectify what has taken place in this race. However, some thoughts can be had in mind in dealing with them.

Their racial pride, in the best sense, has probably disappeared, but a sort of resentment sometimes appears in the form of truculence and opposition to a white man's efforts. But I would suggest, for one thing, that basket making be encouraged. They should have something interesting to keep them busy. Basket making is still a fine art among the three or four Attu women who still have the ability. More eastern women do it poorly. If possible, this art should be extended to other communities.

Furthermore, we can help by encouraging community effort. The Biological Survey has already taken an important step in that direction by leasing community islands to them. This could be further extended. As the opportunities occur, an island passing out of the hands of a white man could be given to some native community. By such a policy the natives would become self-supporting and with plenty of territory in their control, they would not need to stock some islands so heavily, which would in turn benefit the birds.

Cooperation with the Indian Service on some of these points should be mutually helpful.

THE ISLANDS OF THE ALEUTIAN CHAIN

In the following reports on the individual islands I have attempted to summarize the information we obtained for each one, as a basis for its administration. In some cases our information is incomplete, but I have gone as far as I can in each case to point out the probable course that should be followed.

Fox farming proved to be the vital problem and special attention is given to this matter in each case.

The sequence used is from the west to the east and the general outline of this discussion of each is that used in the preliminary reports made in the field.

Mr. Homer Jewell energetically took charge of posting the islands with the Biological Survey refuge signs and such posting is indicated in each case.

In a number of cases Capt. Sellevold made a sketch map of the island while some of the others of the party were studying the bird life. The Captain pointed out that these could not be entirely accurate ~~xxxxxxxxx~~ in detail, but I can testify that they are a great improvement over those shown on the charts available to us. I have made tracings of these maps for this report. Furthermore, the Captain, Mr. Williams and myself made pencil sketches of some of the islands in profile, to show their general character, and copies of these, also, are included with this report.

ATTU ISLAND

July 22-30, 1936

Location: Lat. 52-56½., Long. 173 E. The largest of the Near Islands and the most western of the Aleutian Chain.

Physiography: Attu is very irregular in shape, made up of many deep bays and peninsulas, being 36 miles in greatest length and 19 miles in greatest width. The only portion that we had time to visit was the northeast, in the vicinity of Chichagof Harbor and Holtz Bay. This area is mountainous and characterized by several large streams. A few miles inland there is a long flat valley bottom, somewhat marshy and containing a lake, while on the adjacent mountain slopes were a number of pot holes and small ponds in the depressions.

Improvements. Attu Village is located in Chichagof Harbor and has a population of 42 people, with frame houses, native barabaras, a church, a government school and a store.

Vegetation. The following plants were noted or collected on Attu Island: Lichens (Cladonia and probably other genera), mosses, Lycopodium sp. Equisetum arvense, various ferns, Among the grasses were Poa, the usual Elymus mollis of the shore lines, Deschampsia flexuosa, Calamagrostis sp. (the grass which is so abundant in the Aleutians and is so often associated with Elymus), a little Phleum alpinum, Sparganium (hyperboreum?) was noted, Eriophorum chamissonis, Carex physocarpa, Carex stygia, Juncus haenkei, Juncus mertensianus, Juncoides sp.

Among herbaceous plants were recorded Veratrum eschscholtzii, Unifolium eschscholtzianium, Streptopus (amplexifolius?), Iris setosa, Orchis aristata, Habenaria (dilatata?). There were a few bushes of a large willow, probably Salix barclayi, and dwarf willows of two or more species, apparently including S. arctica, were common. Other plants were Claytonia sibirica, Arenaria peploides on the beaches, Anemone narcissiflora, Ranunculus sp., Parnassia palustris, Cerastium calthifolium, Sorbus sambucifolia, Aruncus vulgaris, Potentilla (villosa?), Lupinus nootkatensis, Empetrum nigrum, Viola langsdorfii, Epilobium sp., the usual Ligusticum scoticum, Conioselinum gmelini, Heracleum lanatum, Cornus canadensis, Rhododendron Kamtschaticum, Phyllodoce aleutica, Vaccinium vitis-idaea, Vaccinium (uliginosum?), Primula cuneifolia, Veronica sp., Castilleja pallida, Pinguicula vulgaris, Plantago macrocarpa, Linnea borealis, Campanula lasiocarpa, Hieracium triste, Erigeron (peregrinus?), Antennaria dioica (and apparently two other species), Achillea borealis, Artemisia tilesia, Artemisia arctica, Arnica unalaschensis, Cacalia auriculata, Senecio palmatus, and Cirsium sp. and Pedicularis sp.

The beach vegetation is similar to that of other islands, including Arenaria peploides and the usual rank growth of Elymus mollis as well as the nieghboring Calamagrostis.

In gullies and sheltered nooks vegetation grows rank, including Anemones, Lupines, Geum, Ligusticum, Conioselinum, Iris, Streptopus, ferns and grasses.

On higher ground, particularly on ridges, flat areas and exposed slopes the vegetation is low and includes a moderate quantity of lichens and mosses, Empetrum nigrum and the usual associated species and the sedges and rushes are common on these exposed areas and in the wet habitats where cotton grass also occurs.

We were struck by the appearance of the Attu flora, several elements of which were new to us and different from what we had found on other western islands. Here we found some high shrubs, such as a tall species of willow and Sorbus sambucifolia in particular.

I find that some of the Attu plants are Siberian invaders, according to Hultén, among them Veronica grandiflora, Cacalia auriculata, Sorbus sambucifolia, Cirsium kamtschaticum, Allium victoriale (which we did not record) and Senecio palmatus (which has not been found farther east than Attu). It was this Siberian complection which caught our attention. These westernmost islands are therefore of great interest from the floristic point of view, Attu being the first "stepping stone."

—

Bird Life

Gavia immer, Common Loon.

Chief Mike Hodikoff says that they nest on Attu, arriving in April and departing in October.

Gavia adamsi, Yellow-billed Loon.

The chief of Attu appeared to know this loon and said they occur there sparingly, but this requires verification due to doubt about correct identification.

Gavia arctica pacifica, Pacific Loon.

We obtained no data on its occurrence at Attu but Turner recorded it for Attu in the winter of 1880-81 and said it nested commonly on Semichi Islands.

Gavia stellata, Red-throated Loon.

According to the chief, these loons nest on Attu but do not winter there. Two were seen by our party in Holtz Bay and one in Chichagof Harbor.

~~Puffinus tenuirostris pacificus Pacific Slender-billed Shearwater~~

Puffinus tenuirostris, Slender-billed Shearwater.

We observed none at Attu but the chief said that they nest on Semichi Islands, at least as late as 1932. He said they formerly nested on Agattu but are scarce there now. He also said foxes are doing away with these birds.

Pterodroma inexpectata, Scaled Petrel.

The chief recognizes three petrels and according to his description one of these is probably Pterodroma, which he says nests commonly on Attu, "near the beaches", flying only at night. It arrives in March and nests early.

Oceanodroma furcata, Fork-tailed Petrel.

The chief said this petrel nests sparingly on Attu, arriving in late April, much later than the other two species.

Oceanodroma l. leucorhoa, Leach's Petrel.

The third petrel described by the Attu chief appears to be this form. The chief said this one arrives in March, but information on its actual nesting is vague and unsatisfactory.

Phalacrocorax a. cincinatus, White-crested Cormorant.

According to the chief, this cormorant was at one time plentiful at Attu, but only a few have been seen in recent years.

Phalacrocorax p. pelagicus, Pelagic Cormorant.

Phalacrocorax urile, Red-faced Cormorant.

The Attu chief said both of these species are plentiful about Attu Island. Members of the party noted about 100 of one or the other of these birds between Chichagof and Holtz Bay.

Cygnus columbianus, Whistling Swan.

The chief of Attu said Swans winter abundantly on that island, among the lakes on the south side, occurring in flocks of "8, 10 to 26" as he put it. In 1932 "hundreds and hundreds" of swans were seen on the south side lakes. In 1924 they are said to have walked among the houses of the village. Now they are seen only in small groups.

We were informed that they arrive late in October and leave the last of April.

Branta canadensis minima, Cackling Goose.

The chief stated that "land geese", as the geese of the canadensis group are known in the Aleutians, used to nest in some numbers on Attu,

Agattu, and other western islands but have become very scarce since fox farming was developed. The trader himself was of the opinion that the decrease of geese is due to the foxes. The statement was made by the chief that the fox production has gone up since the trader arrived and the geese have decreased in numbers.

We had no observations of our own on this island and although information such as that given us is worthy of full consideration I would point out that the geese are migratory and are subject to hunting over a wide area after leaving Attu and the western islands, thus complicating the whole situation.

Branta nigricans, Black Brant.

The chief was familiar with this species and said that sometimes brant appear at Attu in small numbers in the fall occasionally associated with Emperor Geese.

Philacte Canagica, Emperor Goose.

According to the natives there are "millions" of Emperor Geese at Attu in winter. They arrive late in October and leave early in April.

Anser albifrons, White-fronted Goose.

The natives of Attu said a goose of this description occurs there but is scarce. They have been seen in September but do not spend the winter there.

Anas p. platyrynchos, Mallard.

The Attu chief said the mallard nests and winters at that island. They are said to nest back in the wet grassy areas near creeks.

Nettion crecca, European Teal.

The chief stated that teals nest and winter at Attu.

Nyroca americana, Redhead.

When shown a colored illustration the chief appeared to recognize this duck and stated that they are at Attu winter and summer but are scarce.

Nyroca marila, Greater Scaup.

This species, also, was said to nest and winter at Attu.

Glaucionetta c. americanna, American Goldeneye.

When shown colored illustrations the chief picked out this species and said it is plentiful at Attu in winter, arriving in November and, he thought, leaving early in March.

Charitonetta albeola, Bufflehead.

The chief reported that these ducks are present at Attu the year round and nest "up high."

Clangula hyemalis, Old-squaw.

The chief said that they are abundant at Attu in winter and while they do not nest on that island, other natives have told him that they nest beside the lakes on Agattu.

Histrionicus h. pacificus, Western Harlequin Duck.

A few of these ducks were seen about the rocks near the entrance to Chichagof Harbor. They are said to occur at Attu the year round and we heard again vague reports that they nest under stream banks and that some had been seen "by some of the boys."

Somateria v-nigra, Pacific Eider.

A few were seen off-shore at Chichagof Harbor and the chief reported that they nest on Kliting Island in Massacre Bay.

Somateria spectabilis, King Eider.

The chief gave us the native name for this bird, identifying it from a picture, and said something about its nesting on Attu and Agattu and that there are not many here in winter. There is some doubt about identification of this species and the data requires verification.

Melanitta deglandi, White-winged Scoter.

We were informed that this duck is numerous at Attu in winter.

Oidemia americana, American Scoter.

These are reported abundant in winter, "millions of them", the chief said.

Mergus m. americanus, American Merganser.

The chief identified this species from pictures and descriptions and said a few nest on Attu and they are more plentiful in winter.

Mergus serrator, Red-breasted Merganser.

Reported nesting on Attu.

Haliaetus l. alascanus; Northern Bald Eagle.

The natives see an occasional one but, we were told, eagles are not plentiful on Attu.

Falco r. uralensis, Asiatic Cyrfalcon.

The chief described a "larger hawk" which appears to be gyrfalcon and said it nests and winters at Attu. The natives kill "both hawks" at every opportunity.

Falco p. anatum, Duck Hawk.

According to the chief, some form of Duck Hawk is present the year round.

Lagopus r. evermanni, Evermann's Ptarmigan

We were told that ptarmigan are scarce at the present time. We were told "foxes kill all the ptarmigan. Don't have many any more." On the other hand, we were also told there never were many, even, "before the foxes."

Pluvialis d. fulva, Pacific Golden Plover.

The chief appeared to recognize this bird from pictures, calling it the "gold snipe" and said it occurs on Attu (probably as a migrant.)

Capella delicata, Wilson's Snipe.

When shown colored pictures of various shore birds the chief readily picked out that of the Wilson's Snipe and said it nests on Attu and "all over these islands." None were seen by us in the Aleutians and there is of course a chance of misidentification.

Arquatella p. couesi, Aleutian Sandpiper.

These were quite plentiful along the rocky shores at the time of our visit, last part of July, the young being nearly full grown. Two specimens were taken.

Limosa l. baueri, Pacific Godwit.

The chief appeared to recognize our colored picture of this bird and said that it occurs on Attu. We had the same experience with the people of Atka, so they are evidently familiar with this species or one very similar. The chief further stated that this species nests on Attu and leaves when the snow comes.

Phalaropus fulicarius, Red Phalarope.

We were informed that this species winters at Attu but does not nest there.

Lobipes lobatus, Northern Phalarope.

The species was said to occur on Attu.

Stercorinus parasiticus, Parasitic Jaeger.

Two were seen back of the village.

Larus glaucescens, Glaucous-winged Gull.

We found them plentiful from the mouth of Chichagof Harbor to Holtz Bay.

Rissa t. pollicaris, Pacific Kittiwake.

Eight were seen at the mouth of Chichagof Harbor.

Cepphus columba, Pigeon Guillemot.

Numerous, in small flocks.

Fratercula corniculata, Horned Puffin.

Abundant, especially at the islands out from the harbor.

Lunda cirrhata, Tufted Puffin.

Very plentiful.

Nyctea nyctea, Snowy Owl.

The chief described this owl well, referring to its slow flight compared with that of the falcons, and declared that it nests on Attu.

Asio f. flammeus, Short-eared Owl.

Not a nesting bird, we were told, but it occurs on Attu in winter.

Corvus corax principalis, Northern Raven.

Reported common at Attu. Said to begin nesting early in February! We saw four ravens along the cliffs on the northeast side.

Nannus h. meligerus, Aleutian Wren.

A specimen was collected, the only one seen.

Anthus spinoletta rubescens, American Pipit.

A specimen was recognized by the natives and they have a name for the bird, indicating that it occurs there.

Leucosticte griseonucha, Aleutian Rosy Finch.

Quite common along the beach. A permanent resident, according to the natives.

Melospiza m. sanaka, Aleutian Song Sparrow.

Quite common. A specimen was taken.

Calcarius l. alascensis, Alaska Longspur.

According to the chief, these birds leave in August and return early in April.

Plectrophenax n. townsendi, Pribilof Snow Bunting.

Said to be permanent residents. We saw ten along the shores and others were noted at higher elevations.

Mammals

Enhydra lutris, Sea Otter.

Sea Otters are apparently scarce at Attu, although the natives say one is occasionally seen there, as well as at East Island of the Semichi group and at Agattu.

Alopex sp., Blue Fox.

Previous to 1922, according to the records, Attu produced very few foxes. In the following years the fox population was increased and more pelts were taken until in the last few years the take has exceeded 300 several times. From the records, it appears that an estimated breeding stock of about 200 foxes is maintained.

The Attu chief repeatedly spoke of the reduction of birds by foxes. Geese used to nest on Attu, Semichi and Agattu but have become scarce since fox farming has begun. Mr. Schroeder, the trader, agreed with the chief that there has been a reduction in the waterfowl population in these westernmost islands due to the foxes, although undoubtedly he got his information originally from the natives. As they both put it, the "foxes drive them away" and the birds are "afraid of the foxes." The chief said there are many fine lakes on Semichi and Agattu but geese are not plentiful there now.

The natives reported that there is a small island about 200 yards in length, called "Kliting" lying off-shore several hundred yards in Massacre Bay. Among other birds, many eiders and puffins have been nesting there. This year it was learned that foxes have reached Kliting and had their pups there. This means, of course, the elimination of whatever birds were nesting on the little islet.

The chief referred to the early scarcity of foxes, indicated in the official records and said birds were plentiful then—but that the natives were "hard up." Then came the trader, the fox population was built up, the bird population decreased, and the natives became prosperous.

Most of our information from this island is derived from the natives. I believe they were perfectly honest in their statements of facts, yet there are a number of factors acting on the animal populations and before we make final judgment on the matter some original studies must be made. At any rate, we may be sure of a certain amount of pressure on the bird life by fox farming and the effect may be serious in proportion to the degree of intensity with which fox farming may be developed.

Callorhinus alascanus, Fur Seal.

Mike Hodikoff said fur seals were sometimes seen around Attu.

Fishes

Red Salmon. There are three good red salmon streams, one each in Saranna, Chichagof, and Massacre Bays.

Trout. Three kinds of trout, Rainbow, Cutthroat, and Dolly Varden, are found in all the streams, according to the chief.

Remarks

We were at Attu July 23,29, and 30. This is a large island and since we knew that we lacked the time necessary to cover the whole ground even hastily, we put in our time talking with the natives and examining the terrain in the vicinity of Chichagof and Holtz Bays to gain a little familiarity with the island.

A Wild Life Refuge sign was placed in both Chichagof Harbor and Holtz Bay.

Recommendations

Our information on the fox situation on this island is too uncertain for us to make definite recommendations to curtail that industry. This is a large island and the natives are dependent on this business. Possibly with more precise information, it would be possible to designate a given fox population for the island as an optimum that would not utterly destroy the bird life. For the neighboring islands, Semichi and Agattu, we feel apprehensive about what has been occurring on them. Apparently these islands have harbored some very interesting bird life and are suited for various kinds of waterfowl. A marked decrease in birds there is indicated in all the reports received. Our work was limited by a schedule for the boat within given dates

so that we could not visit these two islands, as we had planned to do. Therefore we would recommend that at the earliest opportunity these westernmost islands be given a careful study to note what birds are there and what measures can be taken for seasonable protection of interesting and rare species.

BULDIR ISLAND

July 27 and 31,1936

Location. Lat. 52-24' N., Long. 176 E. A small island about 60 miles northwest of Kiska Island, in the western Aleutians.

Physiography. It is an island of irregular shape but if the fog had permitted a good view we would probably have found it roughtly "dome-shaped" at a distance. It is about 5 miles in greatest length and 3 miles in greatest width, said to be 1145 feet in height, a mountainous island with the highest portion on the east side. A low grassy ridge extends to the northwest with rocky beaches on both sides and a sandy beach beyond, in both directions, while off-shore beyond this ridge extend three islets and some outlying rocks. Along the east portion of the island are stretches of both rocky and sandy beach. Here also, as well as on the southwest side, are landslides, some of them high and steep. On the north side is a grassy flat extending as an indentation into the mountain area, through which flows a stream. Along the northeast side are cliffs and loose rocks which afford nesting places for birds.

Vegetation. The lowlands are covered with a very heavy growth of grass and this rank growth extends up many of the slopes and even some of the ridge-tops. Elymus mollis lines the beaches as usual, but also extends up some of the slopes and is especially rank in growth on a long ridge top where gulls are nesting, and where we found associated with it an abundance of Ligusticum and Heracleum. Ligusticum and Conioselinum were common elsewhere throughout the grassy areas and in sheltered places. Back from the beach Calamagrostis is abundant, and dominant, forming a thick mat thatimpedes walking. Festuca and Poa were noted. In some places sedges are dominant and there the growth is not so heavy. Furthermore, in some of the depressions on the top of the mountain mass there is a short growth of very fine sedge which may be the food of geese. On high ridges and exposed slopes of the island summit vegetation is scarce and there is much bare and rocky ground. On this high rocky ground is a prostrate, dwarf willow, some moss, Empetrum nigrum, Campanula lasiocarpa and some others.

In more sheltered places were found Fritillaria kamschatcensis, Streptopus, Habenaria, Claytonia sibirica, Geum macrophyllum, Geranium erianthum, Veronica grandiflora, Chrysanthemum arcticum, Artemisia sp., and ferns.

On the beaches we found Arenaria peploides, Senecio pseudo-arnica, and Lathyrus maritimus. Hultén records the Asiatic Sorbus sambucifolia on Buldir, as the easternmost point in its Aleutian range.

Patches of sea weed were distributed along the shores.

Birds

Fulmarus g. rodgersi, Pacific Fulmar.

Two white fulmars were found dead on the beach.

Oceanodroma furcata, Fork-tailed Petrel.

The remains of four of this species were found on the beach.

Oceanodroma l. leucorhoa, Leach's Petrel.

The remains of a Leach's Petrel were found on the beach.

Phalacrocorax p. pelagicus, Pelagic Cormorant.

A colony of about twelve nests was found at the northwest end.

Branta c. minima, Cackling Goose.

As long ago as 1925 I heard rumors of geese nesting on top of Buldir Island and several natives mentioned the same thing during this trip. Bill Dirks, our pilot, and chief of Atka Village, said his father once caught 50 young geese on Buldir, took them home and fattened them until fall, then killed them for food.

On July 31 I climbed to the top of the mountain and after some search I found a moist depression grown with fine sedges and other low vegetation and much bare ground. Here I found droppings and a few feathers where a brood of geese had been feeding. I found several other similar depressions but no more sign of geese.

Histrionicus h. pacificus, Western Harlequin Duck.

A total of 45, in groups of 8 to 11 were enumerated along a portion of the island shore.

Somateria v-nigra, Pacific Eider.

Nineteen Pacific eiders were counted, a few of which were nesting in the grass. A female with three newly hatched young were also seen.

Haliaeetus l. alascanus, Northern Bald Eagle.

A pair of eagles had a nest on a rocky outcrop with two young which were just able to fly. Food remnants at the nest were collected for analysis. This debris included parts of auklets and puffins and at least two Glaucous-winged Gulls.

Falco p. anatum, Duck Hawk.

A pair had a nest on a ridge and food remains were collected for analysis. These birds appeared to have the normal color of the duck hawks. Several others, possibly young birds, were noted and it was suspected that some of these may have been gyrfalcons.

Lobipes lobatus, Northern Phalarope.

Two were seen high up on the mountain.

Stercorarius parasiticus, Parasitic Jaeger.

At least 21 were seen far up in the mountains and several specimens were taken. Several times I noted a tendency to attack passing gulls and possibly a certain amount of their food is obtained by parasitism on the gulls.

Larus glaucescens, Glaucous-winged Gulls.

Gulls were numerous on the island and were nesting along the beaches as well as on a grassy ridge top and on high grassy slopes. A hundred or more congregated near the mouth of the stream on the north side. A number of immature gulls were banded. Several adults were found dead on the beach, the cause of death unknown.

Rissa tc pollicaris, Pacific Kittiwake.

A small colony was found on the cliffs of the second small island off the northwest point of Baldir. Specimens were taken for identification.

Cepphus columba, Pigeon Guillemot.

A few were seen along the shore.

Synthliboramphus antiquus, Ancient Murrelet.

Two were seen July 27 near the island.

Cyclorrhynchus psittacula, Paroquet Auklet.

Nesting commonly on the island, most abundantly near the center of the north side.

Aethia cristatella, Crested Auklet.

These auklets also were nesting commonly.

Aethia pusilla, Least Auklet.

Least auklets were plentiful.

Fratercula cirrhata, Horned Puffin.

Nesting in large numbers, one of the outstanding colonies. An immature bird was noted.

Lunda cirrhata, Tufted Puffin.

An abundant bird, nesting all around the island.

Nannus h. subsp., Winter Wren.

Winter wrens were plentiful along the beach where an abundance of driftwood apparently furnished an appropriate habitat.

Leucosticte griseonucha, Aleutian Rosy Finch.

Plentiful along the beaches, twenty being seen in one place.

Melospiza m. sanaka, Aleutian Song Sparrow.

Common along the beaches.

Calcarius l. alascensis, Alaska Longspur.

A number of these were seen on the meadow and on a grassy ridge.

Mammals

Eumetopias jubata, Steller's Sea Lion.

At least 300 individuals, as a conservative estimate, were found at the northwest point of the island and two adjacent islets. A single dead pup was found, but no live ones were noted. Apparently this is not essentially a breeding colony.

Callorhinus alascanus, Alaska Fur Seal.

There are persistent reports among the natives that fur seals have inhabited the beaches of Buldir Island or that they could be expected to be there. Possibly this dates back to a time when they occurred there. We saw none, but it should be stated that we did not examine all the beaches.

Phoca richardii subsp., Harbor Seal.

Several harbor seals were noted.

Remarks

Parts of two days, July 27 and 31, were spent on this island, in which time we cruised around part of the island with the dory, explored some of the lowlands and I made one excursion to the top of the island. Persistent fog hindered visibility except for short distances.

A Wildlife Refuge sign was placed on the north side of the island.

Recommendations.

There can hardly be any question about this island. It is unprotected by other islands, isolated and rather inconvenient for fox farming but on the other hand this is somewhat a protection for its birds. It has distinct values as a bird refuge. There are numerous auklets and puffins we well as a number of other birds, mentioned above. Here the Harlequin Ducks can nest unmolested, if these birds really do nest among these islands, and eiders have an opportunity. And Buldir is one of the outstanding island nesting places for geese, a unique high mountain nesting place. While these geese do not appear to be plentiful now, due to unknown causes, some of which may involve hunting in the Pacific states, this is one of the important hereditary ranges and is a potential breeding ground of great interest.

I should mention also the great scientific value; a strictly isolated island with an isolated fauna in which the elements may interact unhinderedx This will be of great value and interest to the biologist of the future.

It is recommended that Buldir Island be kept in its present status as a bird refuge, exampt from fox farming.

KISKA ISLAND

July 25-26, 1936

Location.

Lat. 52 N., Long. 177 -30' E. The westernmost of the Bat Islands group.

Physiography.

Kiska is approximately 22 miles long and 7 miles wide. The northern tip of the island is occupied by a volcanic mountain rising 4050 feet and immediately south of this lies a low, flat lake area extending all the way across from the east to the west shore of the island. South of this the country becomes hilly again but we did not visit the areas much south of the lakes belt.

Improvements.

Four houses are situated in Kiska Harbor and several barabaras around the island, the property of fox farmers.

Vegetation.

Our observations were confined to the west side near the lake and Kiska Harbor and its vicinity. In general, the vegetation resembled that of the other islands, with the usual Elymus mollis bordering the beaches, and associated with it Lathyrus maritimus and Arenaria peploides.

On higher, exposed ground the vegetation was low and consisted largely of mosses, lichens, Empetrum nigrum, considerable Carex, Juncus, Festuca, Phleum alpinum, Rubus (stellatus?), Pedicularis, Campanula lasiocarpa, and Arnica unalascensis.

In more sheltered places although not confined to them, we found an abundance of Calamagrostis, ferns, Equisetum arvense, Lycopodium, Streptopus amplexifolia, Iris setosa, Habenaria, dwarf willows, Anemone narcissiflora, Ranunculus, Geum calthifolium, Lupinus nootkatensis, Geranium erianthum, Ligusticum scoticum, Conioselinum gmelini, Heracleum lanatum, Cornus canadensis, Linnea borealis, Erigeron peregrinus (?), Chrysanthemum arcticum, and Achillea borealis.

Birds

Gavia immer, Common Loon

One was seen.

Gavia stellata, Red-throated Loon.

Three were seen among the lakes south of the volcano.

Phalacrocorax p. pelagicus, Pelagic Cormorant.

Phalacrocorax urile, Red-faced Cormorant.

We found a small colony consisting of both of these species of cormorants on the northwest side. A Red-faced Cormorant was collected.

Philacte canagica, Emperor Goose.

At a barabara on the northwest side I found many bones of this goose, showing that it is present in winter and is used for food.

Nyroca marila, Greater Scaup.

A flock of about 30 males was seen in one of the lakes south of the volcano. This would indicate nesting females in the area, although we saw none.

Histrionicus h. pacificus, Western Harlequin Duck.

Small flocks of these ducks were seen along the northwest shore as well as on the east side. No doubt they occur all around the island.

Somateria v-nigra, Pacific Eider.

Twenty five eiders were counted. They probably find it hard to nest on the island successfully because of the foxes, but there may be some suitable steep off-shore rocks around the shore we did not investigate.

Mergus serrator, Red-breasted Merganser.

Eight of these were seen in a small lake on the northwest side, south of the volcano.

Haliaeetus l. alascanus, Northern Bald Eagle.

One bald eagle was seen.

Falco peregrinus anatum, Duck Hawk.

A pair of duck hawks were seen. They were suspiciously dark, suggesting pealei.

Haemotopus bachmani, Black Oyster Catcher.

Two were seen.

Arquatella p. couesi, Aleutian Sandpiper.

Several of these were seen.

Lobipes lobatus, Northern Phalarope.

Several were seen in the lake area.

Stercorarius parasiticus, Parasitic Jaeger.

Several were noted.

Larus glaucescens, Glaucous-winged Gull.

Gulls were apparently not numerous. A few were nesting above the cliffs on the northwest side. One immature bird was noted.

Rissa t. pollicaris, Pacific Kittiwake.

Eight of these were seen but no colony was found in the area we covered.

Uria lomvia arra, Pallas Murre.

A single one was seen.

Cepphus columba, Pigeon Guillemot.

Eleven of these birds were noted.

Synthliboramphus antiquus, Ancient Murrelet.

One or two were seen.

Cyclorrhynchus psittacula, Paroquet Auklet.

These auklets were nesting in large numbers about the northwest tip of Kiska Island. It is one of the best nesting colonies we have seen. The sides of the volcanic mountain consist of loose lava which is partly covered with vegetation, thus forming ideal nesting places, although the birds were not confined to the high mountain sides.

Aethia cristatella, Crested Auklet.

These were nesting in large numbers together with other auklets at the northwest end of Kiska.

Aethia pusilla, Least Auklet.

Least auklets nested in thousands on the northwest end of Kiska in the lava rock extending far up the mountain sides. Apparently the most abundant of the auklets here. They came in from the sea in swarms, circling about high in the wisps of fog, headed for their nesting crevices on the lava mountain.

Fratercula corniculata, Horned Puffin

Horned puffins were abundant at the northwest part of the island, nesting in the cliffs.

Lunda cirrhata, Tufted Puffin.

These were plentiful, nesting on the grassy slopes.

Corvus c. principalis, Northern Raven.

Five ravens were seen.

Nannus h. kiskensis, Kiska Wren.

Several winter wrens were noted.

Melospiza m. semaka, Aleutian Song Sparrow.

These song sparrows were noted. They undoubtedly occur on all the islands.

Calcarius l. alascensis, Alaska Longspur.

Several of these ubiquitous birds were seen.

Mammals.

Alopex sp., Blue Fox.

A few droppings were collected. We obtained hardly any first hand information on the fox, since our stay was so short.

Phoca richardii subsp., Harbor Seal.

At least two seals were seen.

Cetacea, Whales

Several whales were seen playing off the northwest side of the island.

Remarks.

We arrived at Kiska Harbor in the evening of July 25, where we met Dr. Ales Hrdlicka and his party and we explored a section of the shoreline. Next day, to assist Dr. Hrdlicka, who had no means of extended transportation, we took him and his party around the north end of Kiska to a village site. We investigated the nesting colonies at the base of the volcanic mountain and the lake area and assisted the Anthropologists, who had been digging

energetically to make the most of the few hours that could be given to their work. We left about 4 P.M.

This was, of course, but a glimpse of the island and since to cover such a large island satisfactorily would take a long time, we found it necessary to proceed. Thus we did not look into the sea otter situation and there were probably other bird colonies. Nor were the food habits of the foxes studied extensively.

A Wildlife Refuge sign was placed in Kiska Harbor and another on the northwest side.

Recommendations

Kiska has now been well stocked with foxes and in the last few years from 255 to 572 foxes have been pelted annually. In view of the fact that our information is not sufficient as a basis for any particular action, it is recommended that fox farming might continue until more extensive observations can be obtained. However, Little Kiska, nearby, has been stocked but was not a success in this first attempt, according to the records, the foxes swimming over to Kiska. It would be good policy to delay issueing further permits for Little Kiska until such time that it can be studied. We could not visit this island. Dr. Hrdlicka visited it and said there were many more birds on it than on Kiska and deplored the presence of foxes on the latter.

In the final evaluation of this situation no doubt the sea otter should also be taken into consideration.

According to official records the introduction of sheep and reindeer has been considered and permits were actually issued at one time. In view of the isolation of Kiska and difficulty of securing transportation, it would seem that no economic or social ends could be served by any such attempt under present conditions.

ANCHITKA ISLAND

July 24 and August 1,1936

Location.

Lat. 51-30 N., Long. 179 E. The largest and southernmost of the Rat Islands group.

Physiography.

Approximately 40 miles long and 5 miles wide. It is an island of moderate relief and rolling hills, among which lie many ponds and lakes. Its shoreline is characterized by outlying rocks and reefs, which were noted especially at the northwestern and southeastern points. Parts of the shore rise in rocky bluffs, but there appears to be considerable beach.

Improvements.

A small trapping village consisting of about a dozen houses, including a small church, is located in Constantine Harbor and several trapping cabins are scattered over the island.

Vegetation.

The vegetation cover of this island differed strikingly from that of most of the other islands observed, not so much in the species present as in proportion and dominance. The fact that the island is low and rolling rather than mountainous is probably responsible in part.

The following notes apply mostly to the southeast portion, where the vegetation was given special attention. This portion is low with numerous lakes. The dominant plant is the lichen, chiefly Cladonia, but also including Alectoria ochroleuca cincinnata and Siphula ceratitis, a fine thick growth, with sedges running a close second. Mosses, including Sphagnum acutifolium, occur here and there but curiously enough are not as prominent as on other islands, at least in the areas we examined. Lycopodium selago, Equisetum arvense, and ferns were noted. Among the grasses there was the inevitable Elymus mollis along the shores, with which Calamagrostis is more or less associated, Festuca rubra, Deschampsia caespitosa, Agrostis borealis, Phleum alpinum. Also Eriophorum chamissonis, Carex hinsii, Carex lyngbyei, Carex Stygia, Juncus haenkei, and Juncoides campestre.

We noted Fritillaria kamschatcensis, Streptopus amplexifolius, Orchis aristata and Habenaria.

Shrubs were represented by dwarf willows.

Among the more strictly herbaceous plants were Rumex occidentalis,

Polygonum viviparum, Claytonia sibirica, Arenaria peploides (on the beaches) Caltha palustris, Coptis trifolia, Anemone narcissiflora (in fruit), Ranunculus repens, Parnassia palustris, Geum calthifolium, Rubus stellatus, Rubus sp., Empetrum nigrum, Viola langsdorfii, Epilobium (latifolium?) Hippuris vulgaris, Ligusticum scoticum, Heracleum lanatum, Cornus canadensis, Vaccinium vitis-idaea, Pedicularis chamissonis, Pinguicula vulgaris, Plantago macrocarpa, Linnea borealis, Campanula lasiocarpa, Hieracium triste, Erigeron peregrinus, Antennaria dioica, Achillea borealis, Chrysanthemum arcticum, Arnica unalaschensis, and Senecio pseudo-arnica and Ranunculus (nelsonii?).

Birds

Gavia stellata, Red-throated Loon.

A pair was seen in a pond at the southeast end, July 24, and a pair was seen in a pond at the northwest end August 2. One specimen was taken.

Phalacrocorax p. pelagicus, Pelagic Cormorant.

Phalacrocorax urile, Red-faced Cormorant.

A nesting colony of urile was found on the northwest side, where the young were nearly full grown, with only a tinge of red on the face, as someone in the party observed. A few pelagicus appeared to be associated with them and fifteen pelagicus were seen on an outlying rock.

Cygnus columbianus, Whistling Swan.

I was informed by Atka natives that swans winter on the lakes at Amchitka and it was said that 20 had been killed there in the winter of 1935-36. We found swan remains among the buildings.

Nettion crecca, European Teal.

On July 24 we saw 3 females with broods numbering 5, 5 and 3. A dozen or fifteen others were seen, chiefly about a sedge-bordered pond, and a male was collected. It seems probable that there are many suitable lakes for these ducks throughout the island.

Clangula hyemalis, Old-squaw.

The native chief, Bill Dirks, said that Old-squaws nest on Amchitka. He has not found the nests but has seen the young birds. We saw none of these ducks.

Histrionicus h. pacificus, Western Harlequin Duck.

A few were seen off-shore July 24 and twelve were seen on August 1.

Haliaeetus l. alascanus, Northern Bald Eagle.

One immature bald eagle was seen.

Lagopus r. subsp., Rock Ptarmigan.

On August 1 a pair was collected at the northwest end of the island. This pair had no young.

Haematopus bachmani, Black Oyster-catcher.

Several were seen on the south and east sides.

Arquatella p. couesi, Aleutian Sandpiper.

Several were seen on the south side and a specimen was taken.

Lobipes lobatus, Northern Phalarope.

Noted at both the northwest and southeast ends of the island.

Larus glaucescens, Glaucous-winged Gull.

Gulls were numerous. A flock of about seventy flew over the beach at the northwest end.

Cepphus columba, Pigeon Guillemot.

About 25 were seen in scattered groups.

Fratercula corniculata, Horned Puffin.

About 100 or more were seen at the northwest end.

Lunda cirrhata, Tufted Puffin.

Numerous at the northwest end.

Corvus c. principalis, Northern Raven.

A flock of over 20 at least rose from the beach at the southeast end of the idland, where they had been turning over the kelp hunting for beach fleas or other invertebrates. Ravens were noted also at the north end.

Nannus h. subsp., Winter Wren.

Quite a number of winter wrens were seen along the beaches.

Anthus spinoletta rubescens, American Pipit.

A pipit was seen at the southeast end July 24.

Leucosticte griseonucha, Aleutian Rosy Finch.

One was seen at the northwest end.

Melospiza melodia sanaka, Aleutian Song Sparrow.

Noted at both ends of the island.

Calcarius l. alascensis, Alaska Longspur.

Several were noted.

Plectrophenax n. townsendi, Pribilof Snow Bunting.

A snow bunting was seen at the southeast end of the island.

Mammals.

Enhydra lutris, Sea Otter.

About two miles of coast line was observed on the south side across from Constantine Harbor, along which we saw about 18 Sea Otter, including young on July 24. At the northwest end over a distance of about five miles covered by the party nineteen Sea Otters were noted August 1. The Sea Otter population is confined to the south side of the island and this has been their ancestral "range" according to available records. The Atka natives reported that last winter the Sea Otter were not so plentiful there and appeared to have moved around to the other side of the island. At the time of our visit, however, these animals were on the south side.

Elsewhere I have discussed numbers of Sea Otters. We made certain observations and learned that where we found them most abundant they averaged ten to the mile. We found areas at Amchitka where they were much scarcer then that. Applying this yard stick to the south shore of Amchitka we get a total of 400. Even if we double it, we have 800. It should be remembered that Amchitka is the greatest concentration we have, the optimum Sea Otter group we have. While it is evident that these animals have been doing well here, we should not become over-confident about the animals until we learn more about them and their limiting factors, including the effect of occupancy of the island for the purpose of trapping foxes.

Alopex sp., Blue Fox

A few droppings were collected at the southeast end July 24 and a larger collection was examined at the northwest end August 1, when three young and four adults were seen. Twenty nine droppings were examined here and every one contained beach fleas or similar invertebrates.

Phoca richardii subsp., Harbor Seal.

Four seals were seen.

Remarks

We visited Amchitka July 24, anchoring in Constantine Harbor. We crossed overland to the south side and followed the shore a few miles. This gave us an idea of the interior and we sampled the shore lines. On August 1 we anchored at the northwest end, where a party explored by dory while I walked overland and followed the beaches. It is regretted that we could not have covered this island more extensively but this was a large island and time for more was not available. However, these two days gave us a good idea of the general features of the island, enough to form some conclusions.

A Wildlife Refuge sign was placed near the buildings in Constantine Harbor and another at the northwest end of the island.

Recommendations.

Amchitka is one of the best fox producing islands in the Aleutians, having produced annual takes of 500 to 600 and once as many as 965, accordi to official records. It is at present leased to the Atka Community, which i a fortunate circumstance.

—It is entirely possible that some of the birds nesting in the lakes suffer to some extent. This is a matter that has not yet been satisfactoril determined. Yet we did see at least three broods of teals. On the other h the loons observed had no young, nor did the single pair of ptarmigan. However, if any islands are to be used for fox farming, this would be a fav able one. It is significant that the fox droppings examined contained larg ly crustaceans.

It may be suggested that if the island is trapped fairly close ever other year, there would be an alternate year of successful nesting by bird frequenting the lakes, since one year the foxes would not be so numerous during the early nesting season and the island is large enough to approxi mainland conditions. It is the nesting season that is critical for the bi

All things considered, it is recommended that Amchitka remain a fox island and that it be utilized by the native community as at present. However, policy should eventually be adjusted to the needs of preserving Sea Otter, in the event that future study indicates that human occupancy Amchitka should for any reason be detrimental.

It is further suggested that at some opportune time the natives be instructed effectively but in a friendly way in the matter of the preser tion of swans and other protected birds. On this trip I thought it best first gain their confidence and refrain from any truculent attitude in o to obtain information from them. They responded with a great deal of in uable information. But in due time, and especially when it becomes evid that we can patrol the Aleutians more effectively, the conservation of t birds should be stressed. I might add that we were convinced that the A natives do not disturb the swans wintering there.

AMATIGNAK ISLAND

August 2, 1936

Location

Lat. 51-17 N., Long. 179-08 W. One of the western islands of the Andreanof group and the southernmost island of the Aleutians as well as the southernmost land in Alaskan territory.

Physiography

The size of Amatignak is about 5 by 5 miles. It is very mountainous with quite a few boulder and gravel beaches. A beautiful waterfall marks the east side where it falls perpendicularly to the beach. Vapor could be seen rising from a lake on the first bench above the falls, whose water was warmer than the atmosphere. This lay in an incomplete basin partly shut off by a low ridge from a much larger basin lying farther back in the interior of the mountain mass. This larger basin has a flat bottom through which a stream meanders and is surrounded on three sides by high slopes in "bowl-like" manner. This was evidently an ancient crater broken on one side.

The coast line is irregular with outlying rocks, reefs, and pinnacles.

Improvements.

One house.

Vegetation

The vegetation was not studied extensively. Along the beaches were the usual Arenaria peploides and Senecio pseudo-arnica, and the two grasses, Elymus mollis and Calamagrostis were extremely dense along the beaches and up the seaward banks and bluffs. As an example, I climbed one of these steep banks and the grass almost hid me from sight and I struggled with it as I would elsewhere going through alder brush. A clasp pencil was torn out of my shirt pocket and lost.

On top of the benches the vegetation is much shorter, and there is much moss and sedge, some Empetrum nigrum, Rubus sp., Claytonia sibirica, Potentilla villosa, Coniogelinum gmelina, and Heracleum lanatum.

Considerable beds of seaweed off-shore.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant.

Phalacrocorax urile, Red-faced Cormorant.

About ten/each species were seen.

Histrionicus h. petfficas, Western Harlequin Duck.

A group of six was observed.

Somateria v-nigra, Pacific Eider.

About 20, mostly males in partly eclipse plumage, were seen.

Haliaeetus l. alascanus, Northern Bald Eagle.

On a steep chimney-like rock mass at the shore we found an eagle's nest and banded the two well-grown young, Nos. 36-806703 and -8. The nest debris was collected and this consisted of the remains of sea birds. No fox remains were noted.

Haematopus bachmani, Black Oyster-catcher.

Four were seen on the east side.

Arquatella p. couesi, Aleutian Sandpiper.

Eight were seen on the east side.

Larus glaucescens, Glaucous-winged Gull.

Several were noted but no colonies.

Uria aalge californica, California Murre.
At least 12 were seen.

Cepphus columba, Pigeon Guillemot.
Common, in small bunches, totalling at least thirty in the distance we covered.

Aethia pusilla, Least Auklet.
A few ere seen.

Fratercula corniculata, Horned Puffin.
Quite numerous, nesting in a shallow rock cave at the east end.

Lunda cirrhata, Tufted Puffin.
A few were found, nesting.

Nannus h. subsp., Winter Wren.
Winter wrens were common along the beach.

Leucosticte griseonucha, Aleutian Rosy Finch.
Several were seen along the beach.

Melospiza m. sanaka, Aleutian Song Sparrow.
Common along the beaches.

Plectrophenax n. townsendi, Pribilof Snow Bunting.

Several snow buntings were seen on a rocky slope. There were young on the wing.

Mammals

Alopex sp., Blue Fox.
There were fox trails leading back into the higher interior of the island, where a number of droppings were collected. Some of these obviously contained feathers.

Two or three blue foxes were seen along the beach and I found a dead one. It had been dead two or three weeks and the cause of death could not be determined.

Phoca richardii subsp., Harbor Seal.
Five seals were seen in the kelp beds.

Remarks

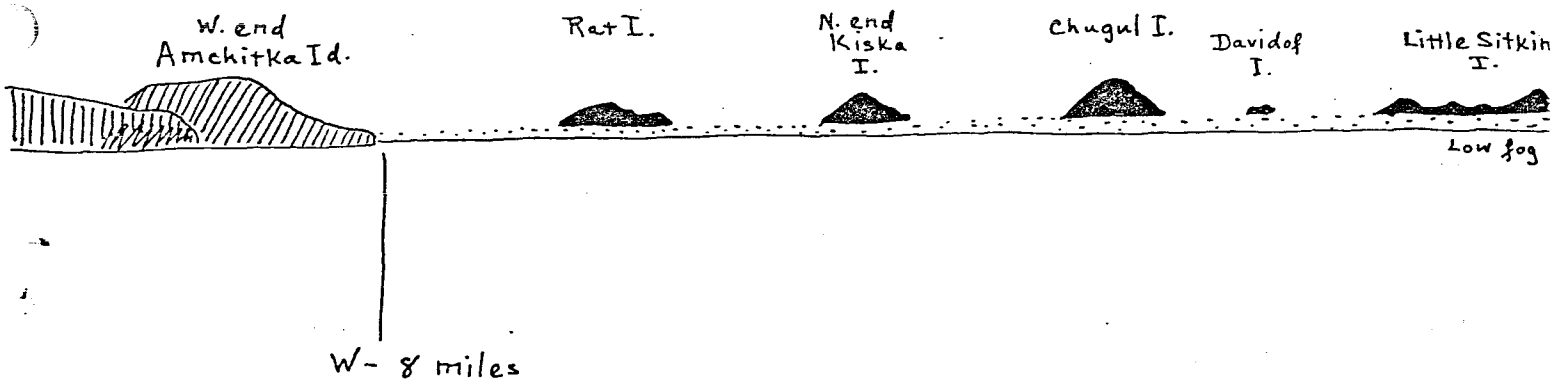
We reached Amatignak on August 2 and anchored for the night at a little bight. We had several hours for investigation. A party cruised along a portion of the shoreline in the dory while I went overland and sampled the interior of the island.

A Wildlife Refuge sign was placed in the bight at the north end of the island.

Recommendations

Our study of this island is incomplete and it should be covered more extensively as opportunity offers. However, so far as our investigation went, we found no extensive bird populations. The island has been stocked with blue foxes for a number of years and as many as 63 blue foxes have been pelted in a season. These are known to feed on birds, from a study of droppings collected. This, however, occurs undoubtedly on every leased island. It seems best to let this island continue in its present status, even though it is probably not an outstanding fox island.

See, however, the recommendations for Igliuga Island.



W- 8 miles

NE×N

Semisopochnoi Island
From W. end Amchitka Id.

Ulak Island

Amatignak Id.

SE×S
from Unalga I.

S From W. end
Unalga Id.

From sketches by Capt. John O. Sellerold.

TANADAK ISLAND

August 3,1936

Location

Lat. 51-22 Nol, Long. 179-03 W. Among the westernmost island of the Andreanof group, just off the west side of Ulak Island.

Physiography

This is a low rocky island covered with vegetation, fringed with reefs and miscellaneous rocks and is less than a quarter of a square mile in area.

Improvements

None.

Vegetation

The characteristic plant of this little island is Elymus mollis, which covers much of it with a dense mass which makes walking difficult. Draba grandis, Conioselinum gmelini were collected. Other plant life was not listed.

The island is surrounded with a heavy growth of kelp.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant.
Four were noted.

Branta canadensis minima, Cackling Goose.
Bill Dirks, the Atka chief, declared that "land geese" used to nest on this little island but we found no sign of them.

Nettion crecca, European Teal.
One female was seen.

Histrionicus h. pacificus, Western Harlequin Duck.
Several were noted.

Somateria v-nigra, Pacific Eider.
Thirty six adults and three young were counted. This is a good island for eiders.

Haematopus bachmani, Black Oystercatcher
Six of these were seen.

Larus glaucescens, Glaucous-winged Gull.
We counted at least 250 gulls, which nest on the island apparently.

Cepphus columba, Pigeon Guillemot.
Fifteen were seen.

Aethia pusilla, Least Auklet.
A wing of a Least Auklet was found, indicating that it may nest there in limited numbers. Sounds issuing from underground at one showed the presence of some subterranean nester.

Fratercula corniculata, Horned Puffin.
Four were seen.

Lunda cirrhata, Tufted Puffin.
Fairly common here.

Corvus corax principalis, Northern Raven.
Three were noted.

Nannus h. subsp., Winter Wren.
Twelve winter wrens were counted.

Melospiza m. sumaka, Aleutian Song Sparrow.
Five were seen.

Calcarius l. alascensis, Alaska Longspur.
Longspurs were common.

Mammals

Phoca richardii subsp., Harbor Seal.
At least six seals were seen in the kelp beds.

Remarks

We arrived at this island on August 3 and an hour or two were sufficient for us to obtain the essential information.

A Wildlife Refuge Sign was placed on the east side.

Recommendations

This small island, is, of course, unsuitable for fox farming and should be reserved for the birds.

ULAK ISLAND

August 3,1936

Location

Lat. 51-24 N., Long. 179 W. Among the westernmost islands of the Andreanof group, about four miles northeast of Anagtignak.

Physiography

This island is about 6 miles long by 2 miles wide. The western shoreline is abrupt with fairly high bluffs, apparently extending into a rolling interior, but that portion of the island was not visited. A small creek was noted on the west side.

Improvements

It is reported that a house is located on the east side of the island.

Vegetation.

There is a heavy growth of Elymus mollis on the beach and seaward banks and bluffs of the island. Other species were Calamagrostis, Bromus (aleuticus?), Festuca rubra lanuginosum, Arenaria peploides, Draba sp., Potentilla villosa, Epilobium (glandulosum?), Ligusticum scoticum, Conioselinum gmelini, Heracleum lanatum, and Senecio pseudo-arnica.

Birds

Histrionicus h. pacificus, Western Harlequin Duck.
Five were noted.

Somateria v-nigra, Pacific Eider.
Three were seen.

Haliaeetus l. alascanus, Northern Bald Eagle.
We found a nest on a rock chimney with two large young which were banded with Nos. 36-806707 and -8. Pellet material, in which we could find no fox remains, was collected for analysis. An adult eagle was present.

Larus glaucescens, Glaucous-winged Gull.
Gulls were plentiful.

Cepphus columba, Pigeon Guillemot
Sixteen pigeon guillemots were counted.

Fratercula corniculata, Horned Puffin.
A few were seen.

Lunda cirrhata, Tufted Puffin.
The tufted puffin was somewhat more plentiful than corniculata.

Nannus h. subsp., Winter Wren.
Ten were seen along the beach.

Melospiza m. sanaka, Aleutian Song Sparrow.
Seven were noted on the beach.

Mammals.

Enhydra lutris, Sea Otter.
Four were seen on the west side when we made our landing. Since Sea Otters seem to inhabit this group of islands generally and this island appears suitable, there may be more of these animals about the shores which we did not visit.

Alopex sp., Blue Fox
A few droppings were picked up for analysis.

Phoca richardii subsp., Harbor Seal.
Six seals were seen.

Remarks

On August 3 a brief stop was made at Ulak Island, for the purpose of placing a Wildlife Refuge sign on the west shore. The above observations were made incidental to this short visit and time was taken to climb to an eagle's nest nearby.

Recommendations

In this brief visit we could not obtain complete information. We obtained no data on birds that would warrant excluding the island from fox farming. The Sea Otter question enters in and this is discussed for this whole group of islands in the recommendations for Ogliuga.

WEST UNALGA ISLAND

August 3 & 4, 1936

Location.

Lat. 51-33 N., Long. 179-09 W. The westernmost island of the Andreanof Group.

Physiography

The island is about three miles long and two miles wide. This is more or less a flat-topped, low grassy island with steep rocky bluffs along the shore, fringed with humerous rocks and reefs and several small islets.

Improvements

A small cabin on the north side.

Vegetation.

West Unalga is surrounded by kelp and on the north side it is as heavy a kelp growth as we have seen in the Aleutians.

Grass appears to be the dominant vegetation on the island as far as we could discern. Elymus mollis is dominant along the beaches and neighboring slopes. The interior was not visited. Other species noted were Calamagrostis, Bromus (aleutensis?), Claytonia sibirica, Ligusticum scoticum, Coniocelinum gmelini, Heracleum lanatum.

Birds.

Fulmarus g. rodgersi, Pacific Fulmar.

Bill Dirks assured us that fulmars nested on two prominent outlying rocks but we found none there. A few were seen off one end of the island but we did not find them nesting.

Phalacrocorax p. pelagicus, Pelagic Cormorant.
Common in small groups on the outlying rocks.

Phalacrocorax urile, Red-faced Cormorant.
A few were nesting on the west side.

Histrionicus h. pacificus, Western Harlequin Duck.
Twelve were counted.

Somateria v-nigra, Pacific Eider.
Seventy-five male eiders were counted. Probably these ducks find safe nesting places on outlying rocks.

Haliaeetus l. alascanus, Northern Bald Eagle.
Official records in Juneau show that after the 1924-25 trapping season on this island 104 pairs of eagle claws had been left in the cabin there. We did not record the species there on our visit.

Haematopus bachmani, Black Oystercatcher.
Four were seen.

Arquatella p. couesi, Aleutian Sandpiper.
Eight of these were seen.

Stercorarius pomarinus, Pomarine Jaeger.
One was seen near the shore of the west side, one of the few occurrences of this species we noted in the Aleutians.

Larus glaucescens, Glaucous-winged Gull.
Common, but not particularly numerous.

Rissa t. pollicaris, Pacific Kittiwake.
A colony of about 75 kittiwakes was found in waterworn cave of an outlying rock on the west side. So far as we could tell these were pollicaris.

Uria aalge californica, California Murre
A single bird, thought to be this species, was noted.

Cepphus columba, Pigeon Guillemot.
Small groups and singles totalling about 50 were noted.

Cyclorrhynchus psittacula, Paroquet Auklet.
A number of these were seen but no nesting colonies.

Aethia cristatella, Crested Auklet.
A number were seen near the island.

Fratercula corniculata, Horned Puffin.
Many hundreds were present but they were not as plentiful as the Tufted Puffin.

Lunda cirrhata, Tufted Puffin.
These were numerous.

Nannus h. subsp., Winter Wren.
A few were noted.

Leucosticte griseonucha, Aleutian Rosy Finch.
A few were seen and a dried carcass was found on the beach.

Melospiza m. sanaka, Aleutian Song Sparrow.
A few were noted. One was found in a cabin, unable to get out, evidently having made its entrance through the chimney hole.

Mammals

Eumetopias jubata, Steller's Sea Lion

Near Unalga on the south side are some off-shore rocks where the sea lions live. Eight were seen on the west side and several were heard in the fog on the north side.

Remarks

We arrived at Unalga rather late in the day, after hunting for it in the fog for hours. We explored part of the coast line in the dory and next morning visited some of the most promising outlying rocks. When we left the place we partly encircled some new territory with the "Brown Bear", so that we got a fair idea of the island, as much as one can get in the troublesome fog with which we were beset.

A Wildlife Refuge sign was placed at the cabin on the north side.

Recommendations

This is not an outstanding bird island at present at least. We do not know what it might have been in the past. We had heard from natives that fulmars nest on Unalga, and Bill Dirks said they nest on outlying rocks, and we found that they were not nesting there. A more extensive survey of the island should be made. For the present, we find no sufficient bird-fox conflict to warrant discontinueing fox farming. However, with reference to the Sea Otter situation and general administrative problems, this island is included in the discussion of Ogliuga Island.

O. J. Murie
Aug. 1, 1936.

KAVALGA ISLAND

August 4,1936

Location

Lat. 51-30 N., Long. 179 W. Among the westernmost of the Andreanof group of islands, just west of Ogliuga Island.

Physiography

Four miles long and three miles wide. A flat-topped island with an abrupt shoreline, rocky shores, and many outlying pinnacles.

Improvements

There are a house and feeding pen on the northwest side.

Vegetation

The shores are lined with a heavy growth of Elymus mollis, as usual and Arenaria peploides was noted. On the level interior the vegetation consists of moss, some lichens (chiefly Cladonia), sedges, and a little Empetrum nigrum. This was the dominant plant association on the interior portions visited.

We did not encircle the island but according to general information there is an abundance of kelp around it.

Birds —

Phalacrocorax p. pelagicus, Pelagic Cormorant
A few were seen.

Philacte canagica, Emperor Goose.
The remains of Emperor Geese were found near the cabin, along the beach, and in considerable numbers in a fox feeding pen at the cabin, showing that these geese winter there and that they are shot for food, possibly for fox food, by the fox trappers.

Somateria v-nigra, Pacific Eider.
Eight female eiders were seen and a broken egg was found on the shore.

Haliaeetus l. alascanus, Northern Bald Eagle.
One was seen.

Haematopus bachmani, Black Oystercatcher.
Two were seen.

Stercorarius parasiticus, Parasitic Jaeger.
Five of these jaegers were seen in the interior of the island.

Larus glaucescens, Glaucous-winged Gull.
A few gulls were seen.

Cepphus columba, Pigeon Guillemot.
Three were seen.

Fratercula corniculata, Horned Puffin
Five or six were noted.

Nannus h. subsp., Winter Wren.
Winter wrens were plentiful.

Leucosticte griseonucha, Aleutian Rosy Finch.
One was seen.

Melospiza m. sanaka, Aleutian Song Sparrow.
Plentiful.

Mammals

Enhydra lutris, Sea Otter
Four Sea Otters were seen on the northwest side. Kavalga Island is reputed to have been a good Sea Otter concentration place. We saw very few, but we not not encircle the entire island and there may have been more of them in other places. Furthermore, Ogliuga is but a short distance away and there we found a concentration of these animals.

Alopex sp., Blue Fox
Tracks and trails of foxes were noted and droppings were collected for analysis.

Citellus plesius, Ground Squirrel.
Ground squirrels are plentiful on Kavalga. They are most numerous along the shores in the Elymus belt, where they have their burrows. They are also distributed over the interior of the island which is covered with moss, lichens and sedges, chiefly. Here they are particularly fond of knolls, which they riddle with their burrows.

Ten or twelve ground squirrels were brought from Unalaska Island in 1920 by Nick Bolshanin and liberated on Kavalga for fox feed, according to Bill Dirks, the Atka chief. This I believe was a mistake. Although they might furnish feed in the critical spring time when the foxes have their young, and to that extent would be beneficial, they are in hibernation in winter, which is also a critical period.

We were unable to determine to what extent, if any, the foxes are preying on the ground squirrels.

Remarks

We arrived at Kavalga on August 4 and while a Wildlife Refuge sign was being erected, I made a trip into the interior of the island, while Mr. Williams and the others explored part of the shoreline. We could not encircle the island.

Recommendations

Unfortunately we do not know enough about the bird life on the island. In our short visit we did not find a big bird population and it would seem best to leave the island in its present status unless action is taken on the suggestions for this group of islands contained in the Ogliuga report, with consideration of the Sea Otter situation.

This island appears to have been a good fur producer according to the official records. Whether or not the ground squirrels are a factor in this remains to be learned.

OGLIUGA ISLAND

July 22-23 and August 5-6,1936

Location

Lat. 51-34 N., Long. 178-48 W., in the westernmost part of the Andreanof group, lying directly south of Carelai.

Physiography

About 2½ miles long and ½ mile wide. A low flat island rising not over 150 feet at its highest point with an extremely irregular shoreline consisting of deep bays and numerous off-shore rocks and sunken reefs. The surface of the island consists of volcanic sand, rimmed with the basic volcanic rock around the shores. There are frequent sandy and gravelly beaches. There are a few small ponds, but no streams.

Improvements

A frame cabin, 16x18, with partitions in it, is located in a bight on the east side.

Vegetation

The heaviest vegetation is confined to the shorelines, where the usual Elymus mollis and Calamagrostis are prominent, and where we find Arenaria peploides, Lathyrus maritimus, Ligusticum scoticum, Heracleum lanatum, Mertensia maritima, Erigeron peregrinus, Achillea borealis, Chrysanthemum arcticum, Petasites frigidus, and Senecio pseudo-arnica.

The flat interior of the island is almost desert like, with much bare ground. According to Bill Dirks, this island was once covered thickly with vegetation and he was surprised to learn of the present condition. This is no doubt explained by the eruption of Carelai in 1930. This island lies directly north of Ogliuga and an ash fall apparently covered the surface of Ogliuga to a depth of several inches, the depth varying in different parts apparently due to drifting by wind. New vegetation is now springing up in scattered clumps. This consists chiefly of sedges, Carex macrochaeta, in particular. There were also Juncus haenkei and Juncoides campestre.

Kelp is extremely abundant about the island and there are some extensive beds of it, in some places extending over a mile off-shore.

Birds

Puffinus tenuirostris, Slender-billed Shearwater.
Part of a carcass was found on the beach.

Oceanodroma furcata, Fork-tailed Petrel.
Quite a few Fork-tailed Petrels came aboard and about the ship on the night of July 21 and several went into the forecastle where one was caught. The following night they appeared again.

There are no suitable petrel nesting grounds on Ogliuga and I believe these must have come from Carcloi, which lies a few miles to the north.

Phalacrocorax p. pelagicus, Pelagic Cormorant.
Over 25 were noted.

Philecte canagica, Emperor Goose.
According to Bill Dyoks, Atka chief, Emperor Geese are plentiful on Ogliuga in winter.

Nettion crecca, European Teal.
During our visit in July approximately fifteen adult females were seen and several broods were noted. A young teal was banded with No. 36-507403. Teals were again observed on August 5 and 6. The success of the teals here this year at least is probably due to the scarcity of foxes on this little island.

Histrionicus h. pacificus, Western Harlequin Duck.
At least fifty were seen around the island.

Somateria v-nigra, Pacific Eider
Numerous around the island. Fifty nine were counted in one day and one band of 34 was seen on another. They are nesting plentifully around the island. When this island again becomes covered with grass it may become an outstanding eider island.

On July 22 we found two broods of three small young each. Next day we saw 7 females in a group along the shore accompanied by a band of small downy young. We found a number of nests with from three to five eggs.

Haliaeetus l. alascanus, Northern Bald Eagle.
Three were seen here, and the skeleton of one on the beach.

Haematopus bachmani, Black Oystercatcher.
Between 25 and 50 were estim ted, and 25 were seen in one day.

Arenaria i. morinella, Ruddy Turnstone
Forty-three were counted and others were seen, probably well over 50 on the islands, the only place we saw them in the Aleutians.

Arquatella p. couesi, Aleutian Sandpiper.
Common, at least forty having been counted, in flocks. Probably resident birds.

Lobipes lobatus, Northern Phalarope.
Two were seen.

Stercorarius parasiticus, Parasitic Jaeger.
Two were noted in the barren interior of the island, both in dark plumage.

Larus glaucescens, Glaucous-winged Gull.
Common here. Twenty two were counted in one day.

Sterna paradisaea, Arctic Tern.
Two colonies were found, one at the northeast part of the island, on a little islet, and another of 8 to 10 pairs on a little islet at the southeast part. The former was a larger colony. There were eggs as well as full grown young and five these were banded with Nos. 36-405101-5.

We had glimpsed several which at first were thought to be Aleutian Terns but on the second visit, August 5-6, I became convinced that these were immature Arctic Terns, which were already on the wing.

Uria aalge californica, California Murre
Four were seen about the island but there is no nesting place here.

Cepphus columba, Pigeon Guillemot.
Forty one were counted and one egg shell was found. Evidently they nest along the rocky shores.

Synthliboramphus antiquus, Ancient Murrelet.
A group of about ten was seen a short distance off-shore.

Cyclorrhynchus psittacula, Paroquet Auklet.
A number of these were seen off the northeast shore.

Aethia cristatella, Crested Auklet.
One which appeared "dumpish" possibly sick, was sitting on the water off shore a little distance. No auklet colonies here.

Fratercula corniculata, Horned Puffin.
A few appeared to be nesting here, apparently finding some suitable crevices in the rather low rocky shores.

Corvus c. principalis, Northern Raven.
Two or three were seen.

Nannus h. subsp., Winter Wren.
Fairly common, twelve being counted the first day.

Leucosticte griseonucha, Aleutian Rosy Finch.
Several were seen along the beach.

Melospiza m. sanaka, Aleutian Song Sparrow
Several were seen along the shores.

Calcarius l. alascensis, Alaska Longspur.
Several were found, including immature birds.

Mammals

Enhydra lutris, Sea Otter.
Seventy five would be a conservative estimate for this island, some members of the party estimating 100 or more. This is a perfect Sea Otter habitat, with the rocky shores containing numerous recesses affording shelter, and surrounded by reefs, rocks and extensive kelp beds.

We observed the Sea Otters feeding, breeding taking care of the young, found their hauling-out places, and collected many droppings. The results of these studies are reported elsewhere in this report. Both still and motion pictures were taken.

There were many females accompanied by young at this island and we noted considerable variation in the size of the young, confirming the many reports that breeding may take place at any time of the year.

Alopex sp., Blue Fox
Apparently very few foxes remain on this island now. A track was seen in two or three places but no droppings were found.

Phoca richardii subsp., Harbor Seal.
A few seals were seen about this island.

Cetacea, Whales.
The skeleton of a rather small unidentified toothed whale was found near the shore, where it had been washed up.

Remarks
We visited Ogliuga on July 22 and 23 and again on August 5 and 6 and feel that we have covered this island sufficiently for making specific recommendations. We encircled the island, both by water and land and crossed it.

A Wildlife Refuge sign was placed on the island.

Recommendations.
While the records show that some fairly large catches of foxes have been made the island has had to be restocked from time to time and at present the fox population again is very low. Although there are many beaches, which is favorable for fox farming, the food supply for any large number must be uncertain and irregular, possibly depending on drift.

On the other hand here we have an ideal Sea Otter sanctuary and indications are that these animals use the very shores of the island for hauling out, and this practice must be very convenient for shelter in times of severe winter storms. We are not certain what effect human occupancy might have on the Sea Otters, but we feel that they should encounter no discouragement to remain in such an ideal habitat.

Furthermore, Ogliuga is an excellent nesting place for such ducks as the European Teal and Eider, and contains one of the very few tern colonies now existing in the Aleutians. We could wish that it might also eventually attract the rare Aleutian Tern, some of whose few nesting places have been interfered with in recent years by human activity, although this can hardly be expected with any assurance. The birds actually nesting with success this year could do so for the reason that the foxes are so scarce. There

may have been only one or two foxes left. On the whole, Ogliuga is an excellent nesting island.

This is one island which the entire party agreed enthusiastically should be exempt from fox farming and such a course is recommended.

I should like to make further suggestions. The whole group of islands, with Ogliuga and Skagul as the most valuable nucleus, including the neighboring Kavalga, as well as West Unalga, Ulak and Tanadak, forms a unit with respect to Sea Otter habitat and Conservation, and some members of the party would include Amatignak. It is felt that if this whole group could be dedicated to Sea Otter protection and increase and bird nesting, there would be much better chance to achieve those ends. These waters, especially about Ogliuga and Kavalga, are dangerous and difficult to navigate and the area would probably be left unmolested if no one had occasion to visit the islands for fox trapping. It is probably that more birds would also inhabit Kavalga and some of the others if foxes were removed. Some small lakes were seen on Kavalga and there may be many. It is, of course, problematical just what would happen. At any rate, this would be the ideal plan. Mr. Homer Jewell and Douglas Gray, Alaska Wardens who have been in contact with difficult law enforcement and are familiar with administrative difficulties, were the ones who advanced this plan and were enthusiastic about it, and we all agreed on its desirability.

I am fully aware of the fact that we might encounter considerable opposition to a plan for removing from fox farming Ogliuga, Skagul, Kavalga, West Unalga, Ulak, Tanadak, and Amatignak, especially since bird numbers on some of these were not great and we have not even completely covered some. Perhaps the difficulties would be greater than we anticipate, but three of those mentioned, Ogliuga, Skagul and Tanadak should be exempt from fox farming in any case and Amatignak may contain bird life, such as ptarmigan and bird colonies which we could not find in our short examination.

If circumstances permit or if it is possible, such exemption of this island group as a unit is recommended and is considered desirable. It is further suggested that Kavalga and Amatignak be looked over more extensively at the first opportunity.

SKAGUL ISLAND

July 22-23 and August 5-6,1936

Location

Lat. 51-54 No., Long. 175-48 W., in the westernmost part of the Andreanof group. The same location is here given as for Ogliuga, as it is seperated from that island by not much more than 150 yards.

Physiography

Somewhat smaller than Ogliuga, and very similar, flat topped, with sandy beaches and rocky points. At least one good sized pond was noted.

Vegetation

Very similar to that of Ogliuga, and the plants will not be listed here.

Birds.

Bird life is practically the same as for Ogliuga and will be listed only briefly.

Philacte canagica, Emperor Goose.
Said to winter on Skagul and Ogliuga.

Nettion crecca, European Teal.
Several, apparently with young, were noted on August 5.

Somateria v-nigra, Pacific Eider.
Common. On August 5 a group of 9 females with 18 young were seen.

Haliaeetus l. alascanus, Northern Bald Eagle.
Two immature eagles were seen August 5.

Haematopus bachmani, Black Oystercatcher.
Common on the rocky places.

Arenaria i. morinella, Ruddy Turnstone.
Common.

Arquatella m. couesi, Aleutian Sandpiper.
Common.

Stercorarius parasiticus, Parasitic Jaeger.
At least three, dark ones, were seen August 5.

Larus glaucescens, Glaucous-winged Gull.
Gulls were common on the beaches.

Sterna paradisaea, Arctic Tern.
A number were seen, although most are nesting at Ogliuga.

Cepphus columba, Pigeon Guillemot.
A few noted.

Fratercula corniculata, Horned Puffin
A few.

Corvus c. principalis, Northern Raven.
Some noted.

Nannus h. subsp., Winter Wren

Melospiza m. sanaka, Aleutian Song Sparrow.

Calcarius l. alascensis, Alaska Longspur.
These three were all noted on Skagul.

Mammals

Enhydra lutris, Sea Otter.
A number of Sea Otters were seen about Skagul on August 5 but they are not nearly as plentiful here as at Ogliuga. The latter offers a much better habitat as far as shore line is concerned.

Alopex sp., Blue Fox.
Very few remain here. Probably only one or two. Foxes can readily swim from Ogliuga to Skagul.

Eumetopias jubata, Steller's Sea Lion
A big bull was resting on the beach, the only one seen.

Remarks

We visited Skagul briefly on the July trip and Mr. Gray and I covered it pretty well on August 5.

A Wildlife Refuge sign was placed on the island.

Recommendations

Skagul should be administered together with Ogliuga. The two are not far enough apart for separate treatment.

CARELOI ISLAND

July 21 and August 6,1936

Location

Lat. 51-47 No., Long. 178-52 W. Careloi lies at the extreme west end of the Andreanof group, about 20 miles west of Tanaga.

Physiography

7½ miles long and 5 miles wide. Roughly circular in outline, sloping up regularly to a blunt mountain peak which is an active volcano. There was an eruption in 1930, chiefly along the south side, and steam is still rising from a seam on that side. Also on that side we could see recent lava beds devoid of vegetation. On August 6 I found pits in the earth where lava "bombs" had landed and shattered into several pieces, much like a shell hole. As recorded elsewhere, Ogliuga Island lying to the south has been covered with lava sand in that eruption.

The shoreline consists of low bluffs under which lie jumbled rocks and water-worn boulders. Occasional off-shore rocks and a number of beaches were seen.

There are some streams and springs. The water supply however, is probably not permanent for according to Bill Dirks, Atka chief, there are times in winter when the water courses are dry and trappers have to use rain water and snow water.

Improvements

A frame cabin, 10x12, with a small shed attached and a barabara were seen on the north side. A barabara is reported on the opposite side of the island.

Vegetation

Mountain slopes are chiefly grassy. Elymus mollis grows very rank along the beaches, especially large and tall on the boulder beaches where the auklets nest. This may be due to the guano there. On the higher slopes Calamagrostis appears to be dominant, and grows in dense masses.

Claytonia sibirica and Arenaria peploides were noted.

Vegetation was not given much study on this island.

Birds

Diomedea nigripes, Black-footed Albatross
An albatross was seen off-shore on the northeast side.

Fulmarus g. rodgersi, Pacific Fulmar.
Quite common as we were leaving the island on the southeast side, where they were feeding, on July 21. Bill Dirks, our pilot, said fulmars do not nest on Careloi. However, a native at Atka assured us that fulmars nest on this island, or at least did nest there, on cliffs of the east and the west sides, and that some nested in on low ground, not on the cliffs, and that

the foxes got these. He saw one fox carrying a fulmar once. He thought that foxes killed more of them previous to the eruption than afterward, for some reason. Possibly he meant that favorable cliffs had been created by the eruption.

Although we noted fulmars in the vicinity of the island, we did not actually note evidence of nesting. But we examined so little of the island, and did not climb to the higher elevations, that our observations are inconclusive.

Oceanodroma furcata, Fork-tailed Petrel.
On August 6 we anchored off the southeast shore of Gareloi. I had found many remains of these petrels on the shore, where foxes had fed on them, and after dark they were numerous about the ship, attracted by the lights. Two were captured. We could see them readily in the light beams. All appeared to be furcata, no dark colored ones being detected, and all the remains left by foxes on the shore were of furcata.

Phalacrocorax p. pelagicus, Pelagic Cormorant
Not over a dozen were seen on the northeast side. A few were nesting on a cliff.

Phalacrocorax urile, Red-faced Cormorant.
A few were nesting on a cliff on the northeast side, in company with a few Pelagic Cormorants.

Histrionicus h. pacificus, Western Harlequin Duck.
About three were seen along the northeast shore.

Somateria v-nigra, Pacific Eider.
About a dozen were seen along the northeast rocky shore.

Haliaeetus l. alascanus, Northern Bald Eagle.
One immature bird was seen.

Falco rusticulus urelensis, Asiatic Gyrfalcon
A gyrfalcon was taken at the southeast side on August 6. It has not yet been identified subspecifically.

Falco p. anatum, Duck Hawk
A falcon thought to be a duck hawk was seen on the north side on July 21, but identification was not certain.

Larus glaucescens, Glaucous-winged Gull.
Only a few were seen. Evidently they cannot nest safely where there are so many foxes.

Rissa t. pollicaris, Pacific Kittiwake
One was seen on the southeast side.

Cepphus columba, Pigeon Guillemot
Rather common along the shores, where they are evidently nesting.

Synthliboramphus antiquus, Ancient Murrelet
Three were seen on the east side.

Cyclorrhynchus psittacula, Paroquet Auklet
Abundant. One of the best nesting colonies we found. All along the shores we saw them sitting out in the water and they were nesting in the rock jumbles on the beaches. One was banded with No. 363307402. Possibly most numerous of the auklet species nesting here.

Aethia cristatella, Crested Auklet
Crested auklets nest abundantly along the boulder shores. Mr. Jewell found them "swarming" on the southeast side August 6. We thought these may rank third in point of numbers of the nesting auklets.

In the fox caches found and the numerous droppings this species was well represented.

Aethia pusilla, Least Auklet
Second only to the Paroquet Auklet in numbers, but all three of these auklets are numerous and it is difficult to estimate their relative numbers.

On August 6 huge flocks of Least Auklets, together with numerous other auklets, were seen about the south end of Careloi by Mr. Jewell. Remains of these auklets were found in fox caches.

After dark these auklets were flying about the ship's lights together with petrels. At least 10 Least Auklets hit the rigging and four were taken alive. All of these proved to be immature birds, white breasted, with white eyes and black bills.

Aethia pygmaea, Whiskered Auklet
Half a dozen or more of this species were identified but they did not appear abundant.

Fratercula corniculata, Horned Puffin
These were numerous along the rocky shore, nesting, one of the best nesting colonies we found. One of the most abundant birds on the island.

Lunda cirrhata, Tufted Puffin
They are nesting in large numbers along the shores, chiefly in the turf above the rocky bank. There must be a large total around the island.

Nannus h. subsp., Winter Wren
A number were seen along the rocky shore.

Leucosticte griseonucha, Aleutian Rosy Finch
A few were seen along the rocky shores.

Melospiza m. sanaka, Aleutian Song Sparrow.
A few were seen along the shore.

Mammals

Alopex sp., Blue Fox

Several foxes were seen at the south end of the island. Mr. Jewell found a den where numerous bird remains were cached, mostly wings and skeletons. The birds represented petrels and various auklets, a large number of Crested Auklets and some Least, with at least two or three Tufted Puffins. Aside from these caches of actual remains, about 170 droppings were collected and all of these contained feathers. On the slopes, in addition to this, I found remains of petrels here and there.

It is certain that birds play an important part in the food resources of foxes on Gareloi.

Phoca richardii subsp., Harbor Seal.
Four or five were seen in the kelp.

Remarks

We visited Gareloi briefly on July 21, when we put up a Wildlife Refuge sign and cruised along a portion of the shore and examined the boulder beach in two or three places.

On August 6 we anchored for the night at the southeast end of the island Mr. Jewell and Mr. Jensen, a deck hand, cruised along a portion of the shore in the evening and I climbed as high as the remaining daylight would permit me, looking for ptarmigan. I found no sign of ptarmigan but collected for droppings.

It is regretted that we could not climb to the higher elevations of the island in the time at our disposal.

Recommendations

There can be no question about the foxes depending on the bird colonies for food during spring and summer, the food apparently consisting of birds nearly 100%.

We are not in a position to say whether or not the foxes on this island will eventually do away with the birds, how long this will take, or what concentration of foxes it takes to destroy the birds. I would point out that a few Whiskered Auklets nest at the island. This is a species which, according to natives, uses the nesting grounds for shelter in winter also and consequently is preyed upon the year round by foxes. This selective pressure on a rare species may cause that to disappear while others are still common.

There is also the matter of the fulmars. There are conflicting reports from natives. Does that mean that these birds once nested there and have already been discouraged from using the island?

These are some important questions that need clearing up.

Two facts may be suggested. First, that foxes are actually depending upon the birds for food during the critical period of raising the pups. Second, that dependent on this, and as a result, if and when the bird supply is gone, the island has lost its usefulness for fox farming as at present carried on.

The bird colonies on Careloi are extensive and they would probably hold up for some time. But from the facts learned there is almost certainly a day of reckoning in store. We have been unable to establish a yard stick to determine when.

Fox farming has become established on Careloi apparently in good faith and it seems unreasonable to withdraw it now. Yet our feeling is that the safest course is to do so when an opportunity comes. In the meantime it is desirable to round out more fully the data we obtained, especially to learn by more extensive and judicious questioning of natives just what earlier conditions were, with respect to Whiskered Auklets, Fulmars, Ptarmigan etc.

TANAGA ISLAND

August 7,1936

Location

Lat. 51-46 N., Long. 178 W. Among the western Andreanof Island, west of Kanaga Island.

Physiography

Approximately 25 miles in greatest length and 22 miles in greatest width. We visited only the southwest portion from the south end of Tanaga Bay for about five miles down to Cape Amagalik. This particular area was characterized by indentations in the coast line and many reefs and rocks extending off shore for considerable distances.

Vegetation

Land flora was not examined. Along this portion of the coast kelp is very abundant and extends off-shore a long way.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant.
Fairly common.

Histrionicus hl pacificus, Western Harlequin Duck.
A number were seen in the kelp beds.

Somateria v-nigra, Pacific Eider
A few were seen among the outlying rocks.

Haliaeetus l. alascanus, Northern Bald Eagle.
Two were seen.

Larus glaucescens, Glaucous-winged Gull.
Noted all along the shore.

Sterna paradisaea, Arctic Tern.
A few were seen.

Cepphus columba, Pigeon Guillemot
A few were seen.

Fratercula corniculata, Horned Puffin
Lunda cirrhata, Tufted Puffin
Both species of puffins were noted.

Mammals

Enhydra lutris, Sea Otter
From the south side of Tanaga Bay to Cape Amagalik, a distance of about 4½ miles by dory, we counted 43 Sea Otters. Many of these were females with a little one.

Phoca richardii subsp., Harbor Seal.
Several were seen in the kelp.

Remarks

We visited this island on August 7 and spent only a few hours there in the dory to check up on a reported Sea Otter concentration. Having obtained this information, we went on.

A Wildlife Refuge sign was placed in Tanaga Bay.

Recommendations

Since we have so little data on the island itself we have no recommendations to make, beyond pointing out an important concentration of Sea Otters at the southwest part of the island.

BOBROF ISLAND

August 7,1937

Location

Lat. 51-54 No., Long. 177-23 W. A small island in the middle Andreanof group, lying between Tanaga and Tanaga Islands.

Physiography

This island is about 3½ miles long and 2½ miles wide. The main part of the island rises domelike from the water. And on the northwest side a narrow low neck connects this with a large steep rock forming short boulder beaches on each side of the strip. These, apparently, were the only beaches on the island. No water was noted.

Improvements

The remnants of a house that had been destroyed by a violent storm were found strewn over the narrow strip of the island.

Vegetation

Elymus mollis was the principal species noted and it grew in such masses that walking was very difficult.

Birds

Oceanodroma furcata, Fork-tailed Petrel.
Numerous remains of this species were found at two blue fox dens, representing at least 73 petrels at one and over 50 at the other.

Phalacrocorax p. pelagicus, Pelagic Cormorant
A small colony was found nesting on the rock adjoining Bobrof Island.

Somateria v-nigra, Pacific Eider
Two or three females were seen along the shores.

Larus glaucescens, Glaucous-winged Gull.
A few were seen.

Cepphus columba, Pigeon Guillemot
Several were seen and at a blue fox den were the remains of a pigeon guillemot and an egg shell.

Aethia pusilla, Least Auklet
Auklets in general are said to have been abundant on Bobrof Island, according to information obtained from natives. The Least Auklet was mentioned specifically and no doubt both the Crested and Paroquet Auklets were there also. We found rock "jumbles", ideal nesting places for auklets, but no auklets were seen there. However, at one fox den were the remains of at least three Least Auklets and at another the remains of one. The auklet colonies on this island evidently were depleted and we found the evidence of the last few being exterminated.

Fratercula corniculata, Horned Puffin
Rather plentiful around Kobrof Island where they find protected crevices in the cliffs.

Lunda cirrhata, Tufted Puffin.
These are nesting about the cliffs on the northwest side, especially in the turf at the top. The remains of three were found at each of two blue fox dens.

Corvus c. principalis, Northern Raven.
A number were seen.

Nannus h. subsp., Winter Wren
Several noted.

Leucosticte griseonucha, Aleutian Rosy Finch
Noted.

Melospiza m. sanaka, Aleutian Song Sparrow
Noted.

Mammals

Alopex sp., Blue Fox
Two dens were found. One contained the remains of 73 Fork-tailed Petrels 3 Tufted Puffins, 3 Least Auklets, one Pigeon Guillemot and a Pigeon Guillemot egg. The other contained the remains of 30 Fork-tailed Petrels, 3 Tufted Puffins and a Least Auklet. We collected over 300 droppings and every one contained bird remains.

Phoca richardii subsp., Harbor Seal.
One seal was seen.

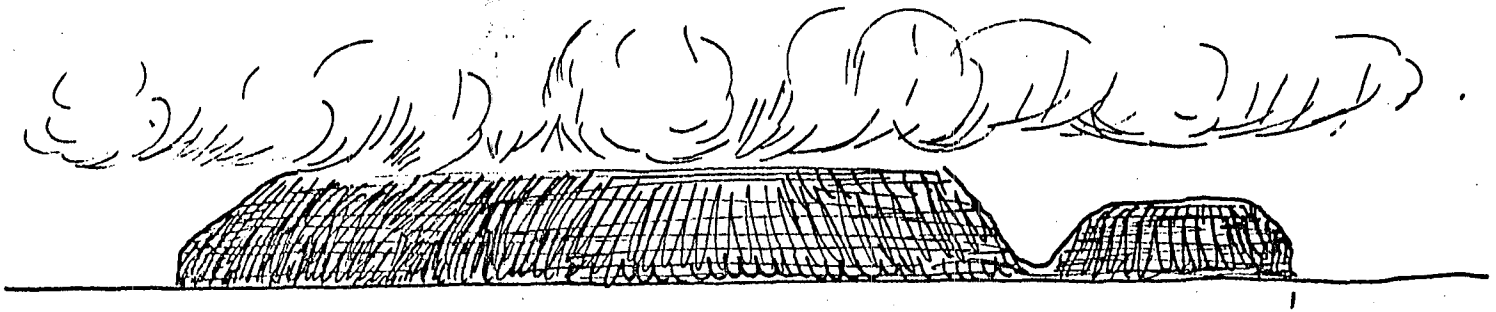
Remarks

We stopped only a short time, on August 7, on this island, to permit us to put up a Wildlife Refuge sign and long enough to examine the fox den. Short as it was, this visit permitted us to obtain the pertinent information needed.

Recommendations

In the period this island has been used for fox ~~farming~~ farming it does not seem to have been an outstanding success. During six years it was trapped once, with a yield of 26 foxes, and on the last visit, 1934-35, according to the records, foxes were estimated at 30 and 9 were actually seen, according to official records. And it was not heavily populated by foxes at the time of our visit. These figures give little promise for this industry on the island and it will be much less when all the birds, such as the petrels, are finally eliminated.

The facts listed above indicate that the foxes are still depending on birds for food to the extent of nearly 100 %. All things considered, this island should be withdrawn from fox farming, to restore the bird colonies and actually to protect the present lessee from further losses and futility.



SW x W
5 miles

Bobrof Island
top obscured by fog
From sketch by Capt. John O. Sellevold

KANAGA ISLAND

June 29,1936

Location

Lat. 51-45 N., Long. 177-20 W. Toward the westend of the Andreanof group, lying between Tanaga and Adak Islands.

Physiography

Kanaga is a long narrow island with a northward bend at its northeast portion. It is approximately 30 miles in length along the curve, about 6 miles at the greatest width. In general the shoreline is fairly even but with numerous minor indentations and one bay which affords a harbor on the southeast side. The portions that we saw on the southeast and northeast sides were rocky with numerous off-shore rocks and pinnacles, and many breakers and reefs were in evidence. However, the people in charge of the Kanaga Ranching Company stated that they have 90 miles of beach available to the foxes. We saw at least two short sandy beaches on the southwest side and a long sandy beach was reported on the north side, opposite Kanaga Harbor.

The northeast end of the island is occupied by a conical volcano but the remainder of the island is low and fairly level but with rolling hills and knolls. There are numerous ponds of various sizes and boggy areas. These areas are drained by small streams. At the headquarters of the Kanaga Ranching Company very good water is available.

Improvements

A large fish house, living quarters, and store room were included in one unit. In addition, there was a good sized barn, a fox feeding pen, a chicken house, two cabins, and a water tank. A dock ran out for about 300 feet, having a depth at the face of it of 12 feet at low water. Fresh water is piped to the face of the dock. At least six trapping cabins and a barabara are known to be distributed around the island.

Vegetation

Much of the area, probably most of it, is moss covered with an abundance of lichens and Empetrum nigrum. But there is an abundance of grass, no doubt both Calamagrostis and Elymus mollis chiefly, though their proportions were not determined. The grasses emerge through the moss-Empetrum base, even in the interior portions, and while not as dense as on some other islands grasses can be said to be abundant.

Elymus mollis of course, is dominant along the beaches. At Skull Bay there is a bench or knoll above the beach, an ancient village site. This is thickly overgrown with Elymus, standing out in the landscape as a dark green patch.

Ranunculus nelsonii, Anemone narcissiflora, Lupinus nootkatensis, and Viola langsdorfii were noted and the usual Ligusticum scoticum, Conioselinum gmelini, and Heracleum lanatum.

The usual kelp beds occur off-shore.

Birds

Puffinus tenuirostris, Slender-billed Shearwater.
Remains of several shearwaters were found in two eagle's nests.

Fulmarus g. rodgersi, Pacific Fulmar
Some were seen in the vicinity of the island and feathers of one were seen in an eagle's nest.

Phalacrocorax p. pelagicus, Pelagic Cormorant
A few were noted among the outlying rocks.
Phalacrocorax urile, Red-faced Cormorant.
Two of this species were identified among the outlying rocks.

Philacte canagica, Emperor Goose.
Mr. Lewis, one of the party in charge of the establishment on Kanaga, informed us that these geese ~~wer~~ are very numerous in winter and that they feed on kelp and the green shoots of Elymus.

Anas platyrhynchos, Mallard.
Abundant in winter.

Nettion crecca, European Teal.
We were informed that teals nest on Kanaga and remain the year round.

Histrionicus h. pacificus, Western Harlequin Duck.
Several small flocks were noted.

Somateria v-nigra, Pacific Eider.
A number of eiders were seen along the shores and a wing of a female eider was found in an eagle's nest. On a small rock island just off-shore at Sand Bay, topped with grass, a small group appeared to be nesting.

Haliaeetus l. alascanus, Northern Bald Eagle.
Eagles appeared to be common and the ranch hands were killing them for the bounty. We examined two nests and banded two young in one nest with Nos. 36-806704 and 36-806705. Shearwater's remains and an unidentified wing, one eider, one fulmar, and numerous fish remains were found in the nests. The material was saved for more detailed examination. There were two young eagles in one nest and three in the other.

Lagopus r. subsp., Rock Ptarmigan
Ptarmigan were reported to be plentiful on the island and one was seen.

Haematopus bachmani, Black Oystercatcher
A few were seen along the rocky shore.

Arquatella p. couesi, Aleutian Sandpiper.
Several were seen and they were reported to be common on the island.

Stercorarius parasiticus, Parasitic Jaeger.
Two dark jaegers were seen in Kanaga Harbor and one was collected.

Larus glaucescens, Glaucous-winged Gull.
A few were seen here and there along the shore.

Sterna paradisaea, Arctic Tern
Mr. Ramsack, caretaker, said there are terns on a sandy beach on the north side across from Nanaga Harbor.

Cepphus columba, Pigeon Guillemot.
A few were noted.

Fratercula corniculata, Horned Puffin.
A few were seen along the southeast shore.

Lunda cirrhata, Tufted Puffin.
A colony was nesting on a grass-topped off-shore rock at the southeast side of the island.

Corvus c. principalis, Northern Raven.
A number were seen and they are said to be very plentiful.

Leucosticte griseonucha, Aleutian Rosy Finch.
Three were seen on the rocky shore.

Melospiza m. sanaka, Aleutian Song Sparrow.
A few were noted.

Calcarius l. alascensis, Alaska Longspur.
Very common.

Mammals

Alopex sp., Blue Fox.
Fox droppings were collected and a considerable number of these contained feathers but no percentage can be given at this time, nor have we as yet had the opportunity to work out the fox food resources of the island.

In an effort to make the island produce more blue fox fur, the Nanaga Ranching Company has been conducting a campaign to exterminate red foxes, eagles and ravens, and the caretaker thought he had only one or two red foxes left on the island. He had in addition some captive silver foxes. In our opinion the difficulty may be not the interference of these birds or the red foxes but an uncertain food supply. This may be in part the opinion of the management also since we were told that they would have to do some fishing for the foxes and it is planned to construct some sort of rake with which to gather sea urchins from the water for fox feed. It is also planned to feed the carcasses of the Caracul lambs to the foxes. Experiments are being conducted to determine the feasibility of raising these sheep on the island. Domestic rabbits have also been released on the island.

Phoca richardii subsp., Harbor Seal.
One or two were seen. Several had been killed here.

Orcinus sp., Killer Whale.
A group of a dozen was seen near the island.

Ziphius cavirostris, Cuvier's Whale.
A whale carcass was found washed up on the beach. None of us were whale experts but it was thought to be this species.

Remarks
We arrived at Kanaga Harbor late on June 28 and conferred with the men who had been left in charge of the affairs of the Kanaga Ranching Company. Next day, June 29, was spent exploring parts of the island.

A Wildlife Refuge sign was placed at the harbor.

Recommendations
This is a large island and as in the case of other large islands, we obtained no information indicating that fox farming was unduly harmful to other interests. As for what the resources favorable to fox farming might be, that we had no chance to determine.

I do not know whether or not the red foxes which are so relentlessly being exterminated are indigenous to the island. Perhaps this data is available in our files. If so, it is regrettable if specimens have not been saved for scientific study.

Caracul sheep are being raised. Because of the fairly level surface and the type of vegetation on this island it would appear to be a promising island for experiments with sheep. As for the financial success of such ventures, there are so many factors, such as costs, transportation, markets, etc. that no judgment can be given offhand.

ADAK ISLAND

June 30-July 3,1936

Location

Lat. 51-50 N., Long. 176-40 W. About the middle of the Andreanof group.

Physiography

This is one of the larger islands, being about 28 miles in greatest length and about 15 miles in greatest width. It is irregular in shape with several deep indentations, among which may be mentioned Kuluk Bay in the northeast, Andrew Bay on the north, Bay of Islands and Three Arm Bay on the west, Bay of Waterfalls on the southwest and several other smaller ones. There are a number of islands of various sizes in the Bay of Islands and on the west side outside of this bay and several on the south side. Not all of these were visible to us.

There are a number of lagoons, notably West Lagoon, lying north of Bay of Islands; North Lagoon, at the northern part of the island; and another lagoon at the head of Kuluk Bay.

There is a large lake at the head of Andrew Bay and many small lakes and ponds were noted at the south part of the island. A lake between one and two miles in length was found at the base of the mountain a short distance inland from the head of Bay of Waterfalls.

Adak Island in general is mountainous, with the highest mountain occupying the northern peninfula, and with various other mountain groups throughout the central portion well down toward the head of the Bay of Waterfalls. The Peninsula lying to the west of the Bay of Waterfalls is rugged and broken near its base but levels off toward a low smooth surface to the westward where it breaks off in low bluffs bordering the sea.

The area lying to the east of the Bay of Islands is fairly low at the southern part but becomes more rugged northward.

The peninsula lying between Three Arm Bay and the Bay of Islands consists of broken land of moderate relief, rising rather abruptly from the water.

Water is exceptionally abundant on Adak Island. A number of attractive streams empty into Bay of Islands, Bay of Waterfalls and Three Arm Bay. From all indications the remainder of the island, though not examined closely, is equally well supplied with water.

A sketch map of the island is attached.

Improvements

We are informed that there are 11 cabins and 5 barabaras on the island. We noted 3 of the cabins.

Vegetation

The vegetation of Adak is typical of the majority of the Aleutians, with the coastal strip of Elymus mollis, which also covers the small islands offshore and which extends well up the seaward slopes, to a considerable height. Calamagrostis is undoubtedly an important element a little farther back from the beach. On higher ground the vegetation is shorter and the moss-lichen-Empetrum nigrum association comes into prominence. In favorable locations sedges are plentiful. Sedges were particularly plentiful in swampy areas at Kuluk Bay, where I also noted Viola langsdorfii and Pinguicula vulgaris.

On July 2, near Bay of Islands, I examined a small area on high ground in detail and the results may be listed here, as suggestive of the types of vegetation found.

The area consisted of two parts, A and B. "A" was a small depression on a slope, where presumably moisture and plant foods collect and which is slightly sheltered. "B" was the ground immediately surrounding the depression, a little more exposed.

The Depression, A. Density 1.0		The Rim, B. Density 1.0	
		Lichens	trace
Moss	trace	Moss	75%
Calamagrostis	42%	Calamagrostis	23%
Carex	32%		
Juncoides	trace		
Fritillaria kamschatcensis	trace		
Habenaria	trace		
		Salix (arctica?)	trace
Claytonia sibirica	trace		
Anemone narcissiflora	23%	Anemone narcissiflora	1 %
Ranunculus nelsonii	1%		
Geum calthifolium	trace	Geum calthifolium	trace
Lupinus nootkatensis	1%	Lupinus nootkatensis	¼ %
Geranium erianthum	trace		
Ligusticum scoticum	½ %	Ligusticum scoticum	½ %
Conioselinum gmelini	trace	Conioselinum gmelini	½ %
Heracleum lanatum	½ %		
Cornus canadensis	trace		
		Achillea borealis	trace
Arnica unalaschensis	trace		
Leontodon sp.	trace		

These lists do not give a complete representation of plants on the island but may serve to illustrate certain associations. Other plants noted elsewhere were Poa hispidula (common near the beach), Carex (lechenalii?) Carex stygia, Juncoides campestre, and Unifolium eschscholtzianum.

Birds

Gavia immer, Common Loon

A loon was seen on Three Arm Bay, one on Bay of Waterfalls, a pair on a large lake near Bay of Waterfalls, one on a small lake east of Bay of Islands, and an unidentified loon was seen near Kuluk Bay. I saw no young anywhere.

Gavia stellata, Red-throated Loon.

A pair was swimmin off-shore in the Bay of Waterfalls.

Diomedea nigripes, Black-footed Albatross.

One was seen off-shore near the Bay of Islands.

Fulmarus g. rodgersii, Pacific Fulmar.

Off the mouth of Bay of Islands we encountered a large flock of fulmars feeding in company with a school of killer whales. In the evening, when at anchor, a fulmar came on the deck and seemed unable to take off. It was captured by Mr. Jewell, banded with No. 56-507401 and released.

At Three Arm Bay a pile of fulmar feathers indicated a kill, probably by an eagle. Also in a bald eagle's nest in Bay of Islands we found remains of three or four fulmars, among other things.

Phalacrocorax p. pelagicus, Pelagic Cormorant.

We found a colony nesting on the inaccessible cliffs of South Island, Bay of Islands, and about 400 of the birds were swimming in the surrounding water. There were also a few urile in this group.

Pelagic Cormorants were nesting on the cliffs on the west side of North Island along with the more numerous Red-faced species.

On the southernmost of the Entrance Islands, Bay of Islands, we found one nesting in a niche of a cliff.

Phalacrocorax urile, Red-faced Cormorant.

A large nesting colony was observed in the cliffs on the west side of North Island in the Bay of Islands. A few pelagicus were also nesting there. This colony was estimated at about 150-200.

The Red-faced Cormorants were also observed in the colony of pelagicus on South Island, as mentioned above.

Philacte canagica, Emperor Goose.

Remains of an Emperor Goose were found at the cabin in the Bay of Islands. A tub of feathers was found in the cabin at Kuluk Bay.

Nettion crecca, European Teal.

A pair was seen, the female having at least two young, in a boggy grassy pot hole at the head of Kuluk Bay.

Histrionicus h. pacificus, Western Harlequin Duck.

Harlequin ducks were quite numerous, in flocks of about 25, the most abundant bird here and they were possibly more plentiful than at other islands we visited. May this abundance be correlated with the prevalence of large

swift streams on this island as possible nesting places? Yet we found none actually nesting, nor any young.

Somateria v-nigra, Pacific Eider.
In three Arm Bay there are two small islands where four or five males were seen from a distance, indicating a probably nesting place.

Two or three males were seen in Kuluk Bay and Bill Dirks, the native pilot, believed they nest there on a small rock island.

A few eiders were found about all the islands in the Bay of Islands. Approximately 75, nearly all males and some in eclipse plumage, were seen on a small island in the Green Island group in this Bay. And we found a few nesting on an outlying rock near South Island.

Mergus serrator, Red-breasted Merganser.
Two were seen in the Bay of Islands and at least three in Kuluk Bay.

Haliaeetus l. alascanus, Northern Bald Eagle.
Sixteen were seen in the vicinity of Bay of Islands and five at Three Arm Bay and Bay of Waterfalls one day. We climbed to a nest where two well-grown young were banded with Nos. 36-306701 and 36-306702. Among other things in the nest were remains of three or more fulmars, a number of fish, and a couple of Tufted Puffins. There were no fox remains. This material was saved for complete analysis.

Falco p. anatum, Duck Hawk.
One was seen on the cliffs of the west side of North Island, in Bay of Islands, and undoubtedly nested there.

Lagopus rupestris chamberlaini, Chamberlain's Ptarmigan.
Droppings were found on North Island in Bay of Islands and half a dozen were seen near Three Arm Bay and Bay of Waterfalls. A pair was collected on July 2, the female containing a soft-shelled egg.

A male was seen at Kuluk Bay.

Haematopus bachmani, Black Oystercatcher.
Three were seen at Three Arm Bay and one at North Island in Bay of Islands. A pair was seen in the Green Island group and another pair on a small island between North and South Islands.

Arquatella p. couesi, Aleutian Sandpiper.
About a dozen or fifteen were seen at the south part of the island, some down at the beach at Three Arm Bay, others up high among the rocks, moss and shallow ponds. One was collected on one of the Green Islands.

Lobipes lobatus, Northern Phalarope.
Two males were seen among the little ponds near Three Arm Bay and a group of at least five was seen in a shallow pond in Kuluk Bay.

Larus glaucescens, Glaucous-winged Gull.
A few were seen in all parts of the Bay of Islands and a small colony was found on an island adjacent to North Island. A few were nesting on South Island. Four or five were seen among the small islands in Three Arm Bay, a pair was nesting at the head of Bay of Waterfalls and one in a big pond on a high slope above Three Arm Bay.

Rissa t. pollicaris, Pacific Kittiwake.
One was seen at Andrew Bay.

Uria aalge californica, California Murre.
One was seen at North Island in Bay of Islands and two at Kuluk Bay.

Cepphus columba, Pigeon Guillemot.
A few were noted on Three Arm Bay and about 30 at the head of the Bay of Waterfalls. Common all around the islands of Bay of Islands. They were noted coming out of the rocks at the base of the cliffs of North Island and we found where they were preparing to nest on the south side of North Island.

Synthliboramphus antiquus, Ancient Murrelet
Nine were seen the first day and from the second day in the Bay of Islands. One was collected.

Fratercula corniculata, Horned Puffin
A few were seen at Three Arm Bay. They were found nesting about South Island and were observed elsewhere in the Bay of Islands, especially in the Green Island group.

Lunda cirrhata, Tufted Puffin.
They were nesting in fair numbers in South and North Islands and were common throughout the Bay of Islands.

Corvus c. principalis, Northern Raven.
Four were seen at the Bay of Islands and two at Three Arm Bay.

Nannus h. tanagensis, Tanaga Wren.
One was seen on North Island. Two were seen on the slope back from Three Arm Bay.

Leucosticte griseonucha, Aleutian Rosy Finch.
Six or eight were seen at Three Arm Bay, some of them on the beach. Two were seen on the islands of Bay of Islands and several on the grass and moss slopes at Kuluk Bay.

Melospiza m. sanaka, Aleutian Song Sparrow.
Several were seen on the beach at Three Arm Bay, three about the Green Island group, a pair at Entrance Islands, and one on South Island.

Calcarius l. alascensis, Alaska Longspur.
Very common from sea level to the higher rocky slopes. They were noted particularly on the southwest part of the islands and also at Kuluk Bay. Also on North Island.

Plectrophonax n. townsendi, Pribilof Snow Bunting.
Abundant on the higher slopes.

Mammals

Alopex sp., Blue Fox.

A fox was seen back from the Bay of Waterfalls high up in the mountains. Forty five droppings were collected, mostly near the Bay of Waterfalls, and these indicated a greater proportion of marine food than usual. Casual examination of these droppings showed the following items:

Number of droppings	Food Items
17	Crusteceans
10	Birds
6	Crustaceans and Birds
3	Crustaceans, birds, insects
2	Birds and sea urchins
1	Birds, Crowberries
1	Sea urchins
5	Other items

This indicates that birds are an important item, even though Crustaceans and other foods are more in evidence than usual. We found no bird rookeries on which foxes were definitely subsisting.

Phoca richardii subsp., Harbor Seal.

Small groups were seen in several places about the Green Islands, North and South Islands, and small rocks adjacent to the Entrance Islands.

Orcinus sp., Killer Whale.

A school of a dozen or more were seen at the mouth of the Bay of Islands where a large flock of fulmars were feeding.

Remarks

We arrived at Bay of Islands in the morning of June 30 but rain prevented much field work that day and the next. July 2 was spent in the field. Mr. Williams with Jewell and Gray cruised around the Bay of Islands in the dory while I worked overland covering portions of the southwest part of Adak Island. July 3 we did some more work in Bay of Islands, a few hours, stopped briefly in Kuluk Bay, before going on to the next island.

Wildlife Refuge signs were placed in Bay of Islands and Kuluk Bay.

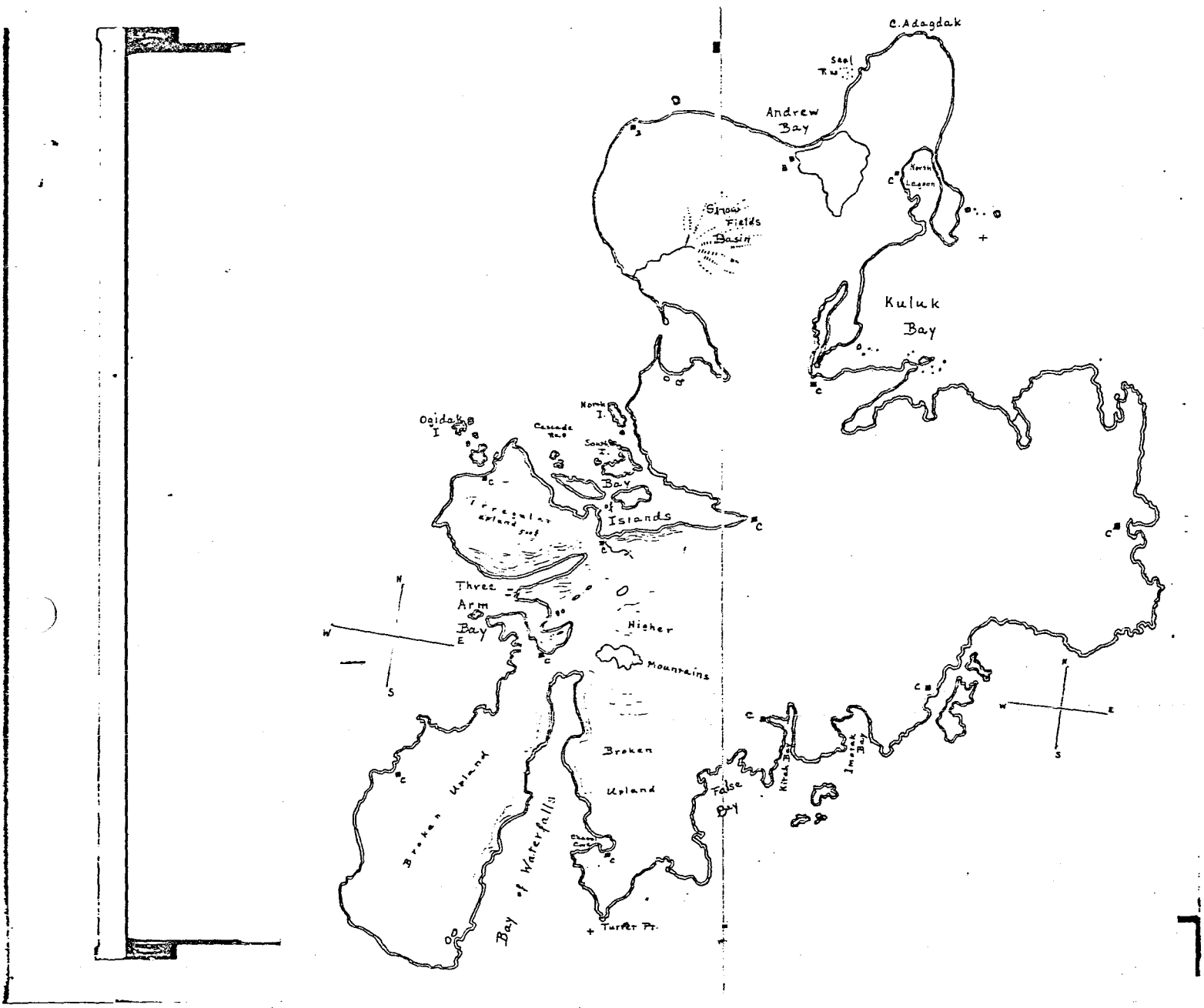
Recommendations

Adak appears to be a favorable one for fox farming, although official records indicate a fluctuating fox population, with only small numbers pelted in any one season, until in the last two years, 414 and 106 were pelted. The fact that foxes have been swimming out to adjacent small islands would indicate perhaps insufficient food for large numbers. We did find that

crustaceans apparently were plentiful at least near Bay of Waterfalls, judging by contents of droppings there.

Aside from these indications we have no definite data on the food resources of the island and can recommend no changes in its present status as a fox island.

195 reduced


C. Adagdak
Steel Tw
Andrew Bay
North Lagoon
Snow Fields Basin
Kuluk Bay
Ogidak I
North I.
Cascade Rks
South I.
Bay of Islands
Three Arm Bay
Higher Mountains
Broken Upland
Broken Upland
Bay of Waterfalls
Turret Pt.
False Bay
Kitak Bay
Imuya Bay
N
S
E
W

KAGALASKA ISLAND

July 4,1936

Location

Lat. 51-50 N., Long. 176-25 W. About the middle of the Andreanof group, just east of Adak Island.

Physiography

The island is about 8½ miles long by 5 miles wide, and is roughly rectangular with deep bays, especially on the eastern and southern sides. On the northwest side where we anchored on the night of July 3, the shores of the bay are low and gravelly or are covered with boulders, the boulders predominating south toward the pass between Kagalaska and Adak.

The shore slopes are not exceedingly steep on the west side, but inland the slopes become steeper and rise to mountains hidden in fog. Deep canyons cut into the mountains on this side.

The south side consists of three rugged points, the westernmost being made up mainly of three mountains with short valleys in between. The shoreline is one of jagged cliffs and outlying rocks.

It is reported that there are two lakes a mile or more in length a short distance in from the middle of the west side.

The inland portions of the island were obscured by fog and we could not visit the northern parts.

Vegetation

Vegetation was noted only casually on the west side. The shore was heavily covered with Elymus mollis, while moss and its associated flora occurred a little distance up the slopes.

Ferns were noted, various sedges, Fritillaria kamschatcensis, Orchis aristata, an abundance of Anemone narcissiflora, in bloom, Ranunculus nelsonii, and Geranium erianthum.

Birds

Fulmarus g. rodgersi, Pacific Fulmar

There was a large flock of fulmars at the north end of the strait between Kagalaska and Adak.

Phalacrocorax p. pelagicus, Pelagic Cormorant.

A few were noted in the pass between Kagalaska and Adak and a dozen or more were standing on Delak Island, between Kagalaska and Little Tanaga.

Nettion crecca, European Teal.

At the head of a little lagoon at the northwest side of the island were three males and a female. A male taken for a specimen is in partial moult and appears to be the European Teal.

Histrionicus h. pacificus, Western Harlequin Duck
One group of ten was seen on the west side.

Somateria v-nigra, Pacific Eider
About 60 were seen on the west side, 2 males on the northwest side, and they are reported nesting on Selak Island, east of Kagalaska, but we saw none as we passed.

Haliaeetus l. alascanus, Northern Bald Eagle.
An immature and an adult were seen on the southwest side of the west bay, another eagle was seen on Adak, across the pass, and an adult at the lagoon on the northwest side.

Larus glaucescens, Glaucous-winged Gull.
An occasional one was seen.

Uria aalge californica, California Murre.
Two or three were seen between Kagalaska and Little Tanaga.

Cepphus columba, Pigeon Guillemot
A pair was nesting on a rocky shore in the bay on the northwest side and several were seen on the east side. Common in the pass between Kagalaska and Little Tanaga.

Cyclorrhynchus psittacula, Paroquet Auklet
Nine individuals appeared to be nesting on the rocky shore of the little bay on the northwest side.

Aethia cristatella, Crested Auklet.
North of Selak Island, on the east side of Kagalaska, we found numerous auklets in flocks, feeding in the tide rips. Bill Dirks, the pilot, stated that most of them were Crested Auklets and that they nest on Selak Island. There may have been other species among them but the Crested Auklet at least was identified.

Twelve of these were seen between Kagalaska and Adak.

Fratercula corniculata, Horned Puffin.
Several were seen on both sides of the island.

Lunda cirrhata, Tufted Puffin
A few were seen on the west side. Common on the east side and appeared to be nesting on Selak Island.

Corvus c. principalis, Northern Raven
Two were seen flying along the beach on the northwest side.

Calcarius l. alascensis, Alaska Longspur.
These were common about the bay on the northwest side.

Mammals

Alopex sp., Blue Fox

A young fox was seen at the head of the little bay on the northwest side. A few droppings were collected.

Phoca richardii subsp., Harbor Seal.

According to Bill Dirks, seals occur in one of the small lakes near the west side of the island.

Orcinus sp., Killer Whale

One was seen at the entrance to our anchorage at the northwest bay.

Miscellaneous

Red Salmon

It is reported that red salmon occur in the lake, in which seals were reported. We saw these salmon in the pass on the west side of Kagalaska.

Remarks

We anchored in a little bay on the northwest side the night of July 3 and next morning a short time was spent ashore, then we cruised down the west side with the Brown Bear, around the south end and on between Kagalaska and Little Tanaga, observing what we could enroute.

Recommendations

We allowed ourselves only a brief glimpse of this island and the above data is the result of our visit. We found no large important rookeries but auklets occur there to some extent, as shown above.

In view of such a meager data we can not make any specific recommendations. I might point out that the present lessee, Andrew Snigaroff, has stated in one of his reports that geese and eidrs nest on the island. From the records it does not appear to have been very productive of furs to date.

LITTLE TANAGA ISLAND

June 28,1936

Location

Lat. 51-52 N., Long. 176-12 W. In the middle part of the Andreanof group, one and one-half miles east of Kagalaska.

Physiography

Ten miles long and 5⅓ miles wide. It is an island of irregular shape with at least three deep bays that produce long and finger-like peninsulas between. Consequently there is a very large amount of shoreline. Someone computed about 46 miles of shore.

We noticed various high shores on the south and west sides but our observations of the island were limited and we are unable to say anything about the extent of good beaches. In Nazan Bay the shore is a narrow rocky beach, over much of which walking was easy.

The northwest portion of the island is mountainous. The central portion is lowland which forms convenient passage between Little Tanaga Bay, Nazan Bay, and Odik Bay. This area is characterized by wet ground with several ponds and is drained by a number of small streams in several directions.

There are six little islands in Nazan Bay, most of which were available to foxes. These little islands have rocky shores with heavy growth of grasses. (See incomplete map on map sheet accompanying report on Umak Island).

Improvements

There is a cabin, 16x 20, at Nazan Bay.

Vegetation

There is the usual grass adjacent to the beaches mostly Elymus mollis, which farther back is mixed with and finally gives way to Calamagrostis and other grasses. There is an abundance of Carex in wet areas and on higher slopes.

The higher slopes, knolls, and rocky areas are characterized by the usual moss-Empetrum type.

I made a close examination of a small area back from the beach, level but with many mossy hummocks. Over the whole was a lichen-moss-Empetrum base, from which sprang an abundance of Calamagrostis, especially in lower parts, some Cornus canadensis, a few Rubus stellatus and an abundance of a white-flowered Rubus, a little Achillea borealis, Linnea borealis, Geum calthifolium and Anemone narcissiflora in greater abundance in low places between the knolls and some Lupinus nootkatensis distributed the same as the Anemone. Abrupt hummocks are likely to be covered chiefly with moss and Empetrum, and often with the white flowered Rubus and Rubus stellatus.

On high rocky slopes, among rock outcrops, there are moss areas covered with Anemone, grasses, lupine, dwarf willow (arctica), a little yarrow, and Primula, among other.

In seepage places were Saxifrage and various mosses.

Near the beach in sheltered places were Carex, Fritillaria kamschatcensis, Orchis aristata, Habenaria, Polygonum viviparum, Geranium erianthum, Viola langsdorfii, Ligusticum, Heracleum lanatum, Pedicularis, Pinguicula vulgaris. On rocks we found Potentilla villosa.

Other plants noted were two species of ferns, Iris, Salix (arctica?) Claytonia sibirica, Ranunculus, Epilobium angustifolium, Conioselinum gmelini, Equisetum arvense, Coptis trifolia and Leptarrhenia pyrolifolia.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant.
A few were noted in Nazan Bay.

Anas p. platyrhynchos, Mallard.
A mallard wing was found in a cabin in Nazan Bay.

Nettion crecca, European Teal.
A male teal was seen at the head of Nazan Bay.

Histrionicus h. pacificus, Western Harlequin Duck.
We noted about 30 in the bay.

Somateria v-nigra, Pacific Eider.
Eiders were found nesting on the small islands in Nazan Bay. We estimated 100 nests for three small islands. We found 11 nests destroyed by the gulls which were occupying the same area with their young. The nests contained from 2 to 11 eggs, giving a fair average of 6 eggs to a nest.

Haliaeetus l. alascanus, Northern Bald Eagle.
One adult noted near the entrance to the bay.

Lagopus r. chamberlaini, Chamberlain's Ptarmigan.
Ptarmigan appeared to be fairly common and specimens were taken.

Haematopus bachmani, Black Oyster-catcher
Three pairs were observed on the little islands in Nazan Bay and there was a nest with two eggs.

Arquatella p. couesi, Aleutian Sandpiper.
Several were seen about Nazan Bay.

Lobipes lobatus, Northern Phalarope.
One pair was seen around the small islands in Nazan Bay.

Larus glaucescens, Glaucous-winged Gull.
A small colony was nesting on the same island as the eiders. At least 25 gulls were counted and several nests were found. The young were just hatching, several being out and running about.

Cepphus columba, Pigeon Guillemot.
A few were noted near the shore and one flew from the rocks, evidently nesting.

Nannus h. tanagensis, Tanaga Wren.
One was seen on a high rocky slope.
Leucosticte griseonucha, Aleutian Rosy Finch.
Several noted on high rocky slopes.

Melospiza m. sanaka, Aleutian Song Sparrow.
Several were seen and one was collected.

Calcarius l. alascensis, Alaska Longspur.
Common about Nazan Bay.

Plectrophenax n. townsendi, Pribilof Snow Bunting.
Several were seen on a high rocky slope.

Mammals

Enhydra lutris, Sea Otter.
According to Bill Dirks Sea Otters used to live around Little Tanaga and he showed us some caves near the entrance to Nazan Bay which were at one time used by Sea Otter hunters as a hiding place.

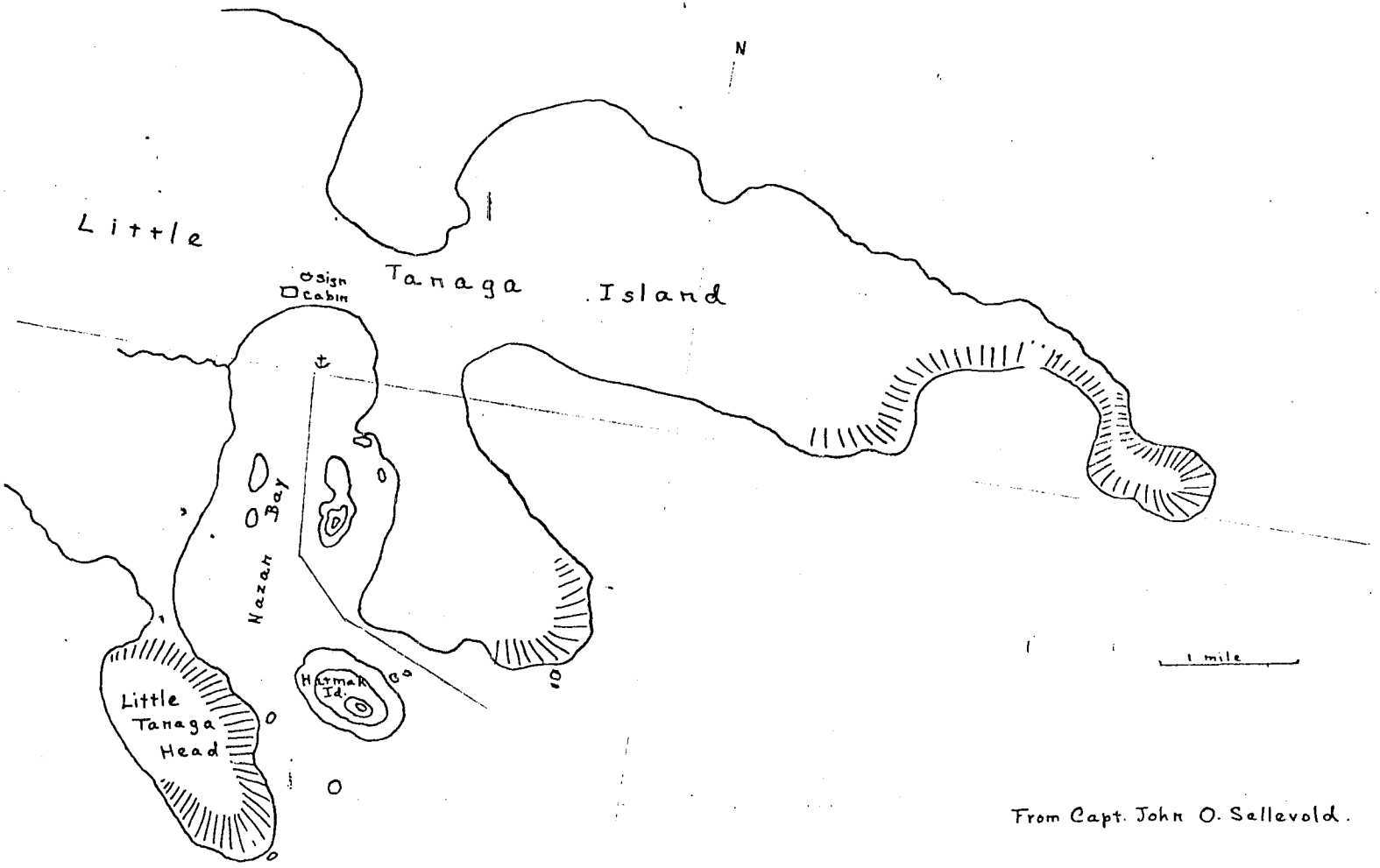
Alopex sp., Blue Fox.
According to our pilot, Bill Dirks, the foxes swim to some of the islands in Nazan Bay and 18 were taken from one of the larger ones, Natmak Island, at the mouth of the bay. Limited time prohibited us from making a more extensive survey of the island and the available fox feed. So far as we could see foxes were not disturbing the present eider nesting places, but of course may be preventing eiders from nesting on some of the other available islands. We found no other bird colonies in the area we covered.

Remarks

We spent a part of June 28 investigating the areas about Nazan Bay, visiting the island only incidentally enroute.

Recommendations

With the information so far obtained, we have no specific recommendations.



From Capt. John O. Sellevold.

BIAK ISLAND

July 5,1936

Location

Lat. 51-55 No., Long. 176-03 W. In the middle Andreanof group, lying between Great Sitkin and Little Tanaga Islands.

Physiography

Six miles long and three miles wide. Very mountainous with a low divide between Ogilaga Bay and the bay on the southwest side of the island. There is considerable beach in Ogilaga Bay and also the southwest side. The remainder of the shoreline is rocky and precipitous. On the southwest side, there were a great many outlying, grass-covered pinnacles. On the west side, there were many inaccessible cliffs, high and rough, with no beach and with many water-worn caves and tunnels. These cliffs were as good nesting places as we have seen but we saw very few birds.

Dense fog prevented observation of the north and south sides.

A good sized stream flowed into each of the two bays.

Improvements

There is a small cabin on the bay on the south side and another cabin in the east arm of Ogilaga Bay.

Vegetation

The vegetation is similar to most of the other islands visited. Grasses are plentiful a long way up the slopes but eventually the heavy grass type gives way to moss and lichens.

Anemone narcissiflora was very common and in full bloom, especially on the north side.

Birds.

Phalacrocorax p. pelagicus, Pelagic Cormorant.
A few were seen on the south and east sides but we found no nests.
Philacte canagica, Emperor Goose.
An Emperor Goose wing was found in the cabin at Ogilaga Bay.

Histrionicus h. pacificus, Western Harlequin Duck.
Several flocks were found on the south side, one of seventeen and others nearly as large.

Somateria v-nigra, Pacific Eider.
Several groups were seen along the eastern side and half a dozen on the southwest side. There were a few chimneys and off-shore rocks with limited grass areas on top which are possible nesting places for eiders.

Haliaeetus l. alascanus, Northern Bald Eagle.
Eight were seen about the island and a skeleton was found on the beach on the southwest side.

Falco p. anatum, Duck Hawk.
One was seen on the east side above the cliffs and another on the southwest side.

Lagopus r. subsp., Rock Ptarmigan
One was seen and the roosting places of five others noted.

Haematopus bachmani, Black Oyster-catcher
One was seen in Ogilaga Bay and two or three on the southwest side.

Arquatella p. couesi, Aleutian Sandpiper
One was seen on the southwest side just above the beach and three others on the mossy slopes about 700 feet above the sea.

Larus glaucescens, Glaucous-winged Gull.
A few were seen about the island and a small colony was seen on the grassy tops of the cliffs at the extreme northeast side.

Uria aalge californica, California Murre
One was seen on the water on the east side.

Cepphus columba, Pigeon Guillemot.
Common on the east and southwest sides.

Aethia pygmaea, Whiskered Auklet
About 11 were seen in Ogilaga Bay and one was collected. A rock jumble at the west side of the bay nearby indicated possible nesting places.

Fratercula corniculata, Horned Puffin
Some were nesting on the east side and very few on the southwest side.

Lunda cirrhata, Tufted Puffin
Some were nesting on the east side and a very few on the southwest side.

Corvus c. principalis, Northern Raven
Three noted on the southwest side.

Nannus h. tanagensis, Tanaga Wren.
One noted.

Leucosticte griseonucha, Aleutian Rosy Finch.
A number were seen along the high grassy bluffs on the west side.

Melospiza m. sanaka, Aleutian Song Sparrow.
Several were seen.

Calcarius l. alascensis, Alaska Longspur.
Common. Young birds were seen.

Mammals

Enhydra lutris, Sea Otter.
Several members of the party saw a Sea Otter in Ogilaga Bay, the first we had encountered. Mr. Williams and Mr. Gray saw it later from the dory.

Alopex sp., Blue Fox.
Several trails were found but very few droppings could be collected, not enough to determine food habits.

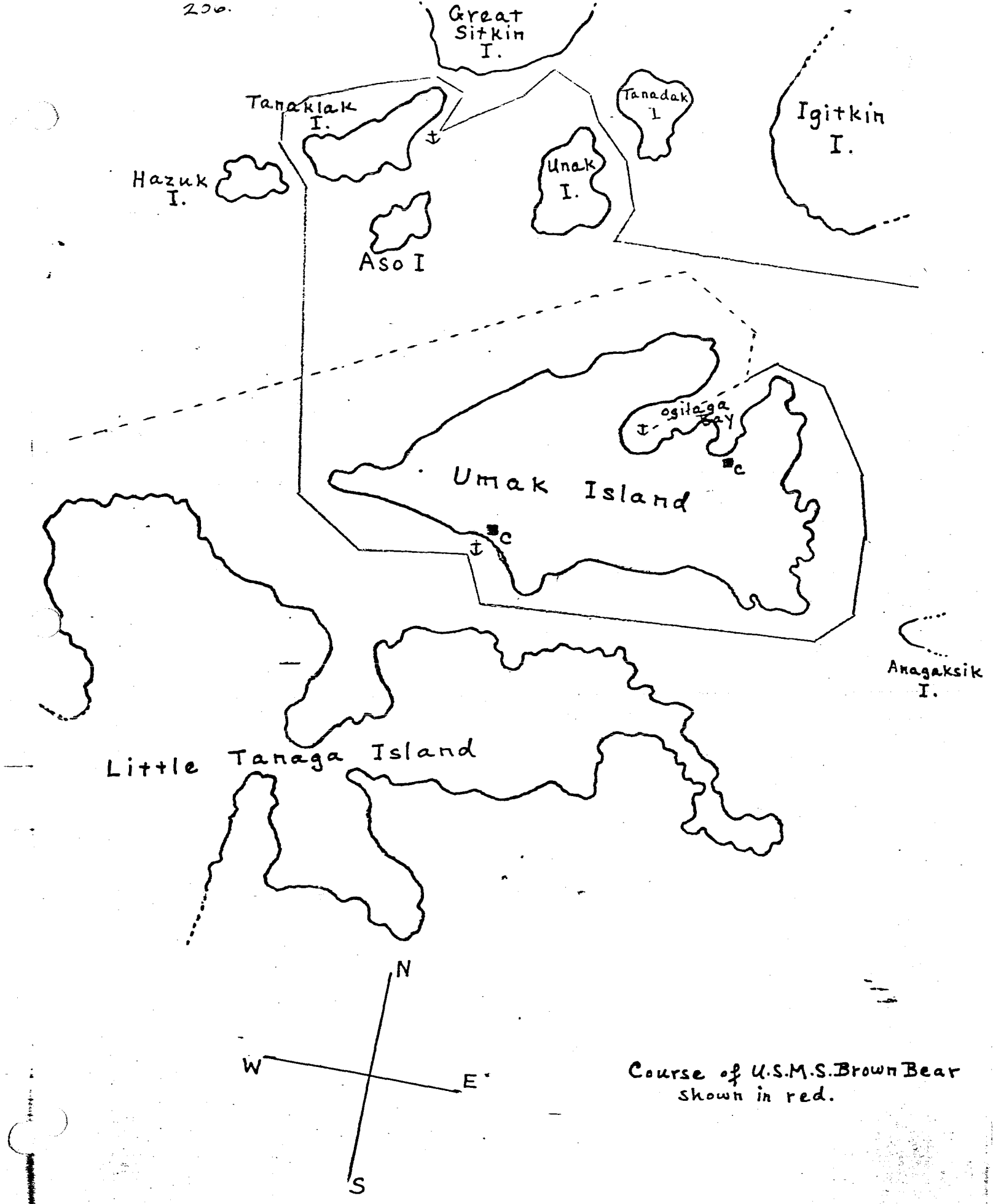
Remarks

We anchored in Ogilaga Bay for the night of July 4 and spent the next forenoon about Unak Island. I crossed over the middle of the island and followed the southwest coast several miles while the others cruised about the east side, partly with dory, and picked me up on the south side. We were greatly hindered by fog.

A sign was placed in the east arm of Ogilaga Bay.

Recommendations

We found no outstanding bird colonies. Whether bird colonies have been depleted we did not learn. It is suggestive that a group of Whiskered Auklets was noted in Ogilaga Bay. Some unused potential nesting places were seen. However, in the present state of our knowledge, we have no specific recommendations to make.



Course of U.S.M.S. Brown Bear shown in red.

UMAZUK ISLAND

July 5, 1936

Location

Lat. 51-59 N., Long. 170-12 W. In the middle of the Andreanof Islands off the west end of Tanaklak Island.

Physiography

Seven-eighths of a mile long and ⅝ mile wide. There are three very short, beaches on the east end where it was possible to climb the banks and from this end they became progressively higher toward the west, where the island culminated in some high points 600 to 700 feet high and where the shores became very rugged and broken into many high pinnacles and rocks just off the shore. There were several water worn caves on the south side of the island. (see map accompanying report on Umak Island.)

Improvements

None.

Vegetation

Grasses and sedges occurred plentifully pretty well up toward the top but there were some areas of the typical lichen-moss-Empetrum association on some of the higher rocky areas. The following plants were noted casually: Ferns, Elymus mollis, Calamagrostis, Sedges common, Fritillaria kamschatcensis, Anemone narcissiflora (now losing its petals), Ranunculus (nelsonii?), Lupinus nootkatensis, Ligusticum, Conioselinum, and Heracleum lanatum.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant
A number were seen around the island, especially on the south and west sides, where a few were nesting.

Histrionicus h. pacificus, Western Harlequin Duck
A few were seen about the island.

Somateria v-nigra, Pacific Eider
Fifteen or twenty pairs were seen about the island.

Haliaeetus l. alascanus, Northern Bald Eagle
One was seen on the west side.

Falco p. anatum, Duck Hawk
One was seen on the south side.

Lagopus r. subsp., Rock Ptarmigan
One was heard and tracks were found.

Haematopus bachmani, Black Oyster-catcher
Two were seen.

A Arquatella p. couesi, Aleutian Sandpiper
Three were seen on the island at an elevation of about 400 feet. They were on mossy ground and were probably nesting.

Larus glaucescens, Glaucous-winged Gull.
A few noted.

Cepphus columba, Pigeon Guillemot
Very common, probably the outstanding species of this island.

Fratercula corniculata, Horned Puffin
A few apparently nesting.

Lunda cirrhata, Tufted Puffin
A few were nesting.

Corvus c. principalis, Northern Raven
One was seen.

Leucosticte griseonucha, Aleutian Rosy Finch
Several were seen.

Melospiza m. sanaka, Aleutian Song Sparrow
Several were seen.

Calcarius l. alascensis, Alaska Longspur
Several were seen.

Plectrophenax n. townsendi, Pribilof Snow Bunting
A male was seen on a high bluff above the beach on the north side.

Mammals

Alopex sp., Blue Fox
Some old trails, a few tracks and three fresh droppings were found. An auklet of some sort had recently been eaten.

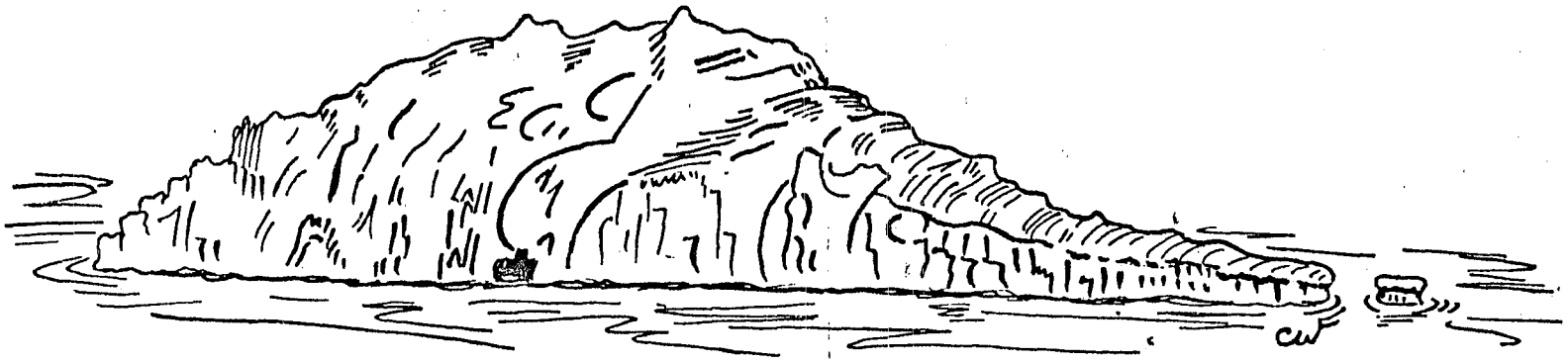
Phoca richardii subsp., Harbor Seal.
At least 8 seals were seen in the kelp or on the rocks.

Remarks

We visited this island very briefly on July 5, the short time being ample to cover this small island. A sign was placed on the east side.

Recommendations

This island is not an outstanding bird rookery at present although presumably if there were no foxes puffins and auklets as well as eiders would have a chance. On the other hand, it is not a satisfactory fox island. Foxes swim over to it from Tanaklak, and presumably also in the reverse direction. For this reason it is suggested that the management of Hazuk be linked with that of Tanaklak and that both be leased together. If the lessee does not desire Hazuk with the other, steps should be taken to remove the foxes periodically from the small island.



Hazuk Island, Aleutians.

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From sketch by C.S.Willams.

TANAKLAK ISLAND

July 5,1936

Location

Lat. 51-59 N., Long. 176-10 W. One of the middle Andreanof group, just south of Great Sitkin Island.

Physiography

Two miles and three-fourths mile wide. Characterized by a regular shoreline with considerable beach, both rocky and gravelly. The island is one of low relief with rolling hills and an estimated elevation of 300-500 feet.

See map accompanying report on Umak Island.

Improvements

A barabara is located on the east side.

Vegetation

Elymus mollis was particularly thick and rank on the beach where a landing was made, on the east side, but the usual mossy ground was encountered farther up the slope.

Birds

Histrionicus h. pacificus, Western Harlequin Duck
A few were seen along the south side.

Somateria v-nigra, Pacific Eider
Very few seen along the south side.

Haliaeetus l. alascanus, Northern Bald Eagle
One was seen.

Falco p. anatum, Duck Hawk
One was seen.

Larus glaucescens, Glaucous-winged Gull.
A few were seen on the beach on the east end.

Cepphus columba, Pigeon Guillemot
A few were seen.

Cyclorrhinchus psittacula, Paroquet Auklet
Three or four were seen at the west end.

Fratercula corniculata, Horned Puffin
Very few.

Lunda cirrhata, Tufted Puffin
Very few were seen.

Hiemalis h. tanaensis, Tanaga Wren
One was seen.

Mammals

Alopex sp., Blue Fox
A few trails were seen at the east end.

Remarks

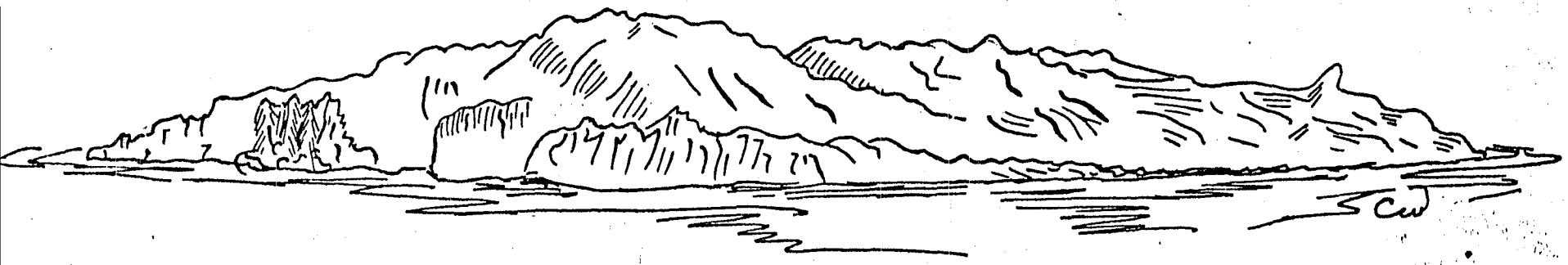
This island was visited on July 5, rather briefly, and although we obtained a good idea of the south and east sides, we did not examine the north side closely, since that would have interfered with our itinerary.

A sign was placed at the barabara on the east side.

Recommendations

Judging by our observations this is not a good bird island and unless future observation indicates a different situation on the north side, there is no reason to exempt this island from fox farming. It might be pointed out that official records show ptarmigan reported for this island.

The records show, incidentally, but indifferent success with foxes. Apparently they have not done well and very few pelts have been taken to date. One wonders whether the scarcity of birds in the spring would have anything to do with this.



Tanaklak Island, Aleutians
(south side)

From drawing by C.S. Williams

ASO ISLAND (Iseso Id.)

July 5,1936

Location

Lat. 51-58 N., Long. 176-09 W. In the middle Andreanof group between Umak and Great Sitkin Islands.

Physiography

About three-eighths mile wide and one mile long northeast to southwest. A dome-like island rising to a height of 700-800 feet. Its shoreline is characterized by cliffs, deep clefts, and numerous rocks more or less separated from the shore. The cliffs and rugged character are more pronounced on the south side. On the northeast corner of the island is a low point with a gravel beach on each side with a possible total of 300 yards of beach. No harbor present but the island is fairly well protected by other islands. See map accompanying report on Umak Island.

Vegetation

The vegetation was not examined closely. The usual Elymus was noted on the beach and considerable grass covered the upper slopes. Tofieldia coccinea and Hieracaum triste were collected.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant.
Common about the island and on the southeast side we found a recess in the cliffs where 60 to 75 were nesting. Some of the nests contained young of varying ages and at least two on the rocks nearby were able to fly.

Histrionicus h. pacificus, Western Harlequin Duck
Quite a number were scattered around the island.

Somateria v-nigra, Pacific Eider
We saw about 70 males representing that many pairs, mostly at the southwest side. At that side were a number of grass-topped rocks and pinnacles that are potential nesting places.

Larus glaucescens, Glaucous-winged Gull.
A few were seen.

Uria aalge californica, California Murre
One was seen, apparently this species.

Cepphus columba, Pigeon Guillemot
Quite common all around the island.

Cyclorrhinchus psittacula, Paroquet Auklet
At least one was seen on the southwest side.

Aethia cristatella, Crested Auklet.
One was identified.

Aethia pygmaea, Whiskered Auklet
Several flocks, totalling upward of a hundred, were seen at the southwest corner of the island and no doubt nest there. There may have been others out from the shore in the fog. At this particular place the shore was marked by jumbled rocks.

Fratercula cornículata, Horned Puffin
These were plentiful on the island, more numerous per unit area than most places visited. They were nesting in the rocks.

Lunda cirrhata, Tufted Puffin
Nesting rather commonly. This was one place where both puffins were nearly equal in numbers.

Corvus c. principalis, Northern Raven.
One was seen.

Melospiza m. sanaka, Aleutian Song Sparrow
Several were seen.

Mammals

Phoca richardii subsp., Harbor Seal.
About a dozen, including young ones, were seen.

Invertebrates

Along the gravel beach were found quite a number of sea urchins shells with contents eaten by gulls. Limpets were also noted.

Remarks

The island was encircled with the dory, July 5, and a sign was placed at the northeast end.

This island has been known in the records as "Isoso" Island. Bill Dirks, the Atka chief, said this name is wrong, that he had argued with Mr. Nye about it, the man who originally proposed the name. Bill Dirks insisted that the native name is Aso, pronounced A-so. Possibly it should be written Azo, for the "s" appeared to have a thick sound. The name is used here for the sake of historical accuracy.

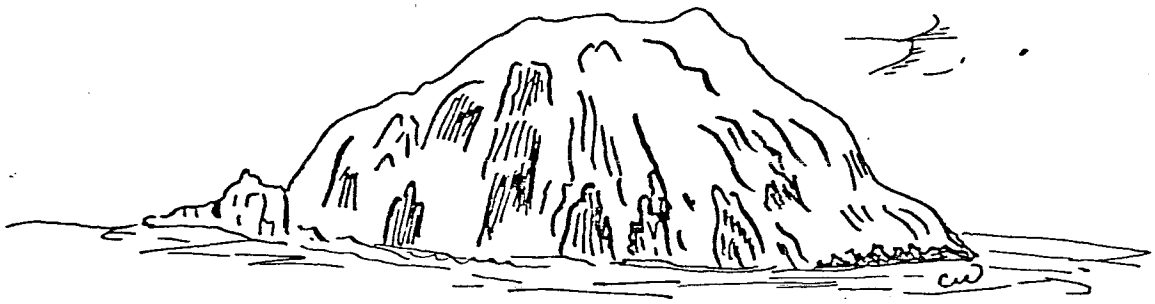
Recommendations

This island does not appear suitable for profitable fox raising since there is only a limited beach for natural feeding, about 300 yards. Since the trapping season of 1930 the island has been stocked with 5 blue foxes and has yielded 11 pelts. The island is small and its resources for raising foxes are decidedly not promising.

On the other hand at least 70 pairs of eiders appear to desire to nest on the island and other birds are nesting there. Of decided interest is the

fact that an appreciable number of whiskered auklets are nesting here. This is a rare species and one that is faring badly in the Aleutians due to fox raising.

In view of these considerations it is recommended that this island be withdrawn from fox farming and left as at least one bird refuge among the small islands of this particular group.



Asho (Cook Pot) Island, Aleutians
West side

From drawing by C.S. Williams

UMAK ISLAND

July 5,1936

Location

Lat. 51-59 N., Long. 178-05 E. Lies between Great Sitkin Island and Umak Island in the middle Andreanof group

Physiography

A mile and a half long and three-quarters of a mile wide, lying north to south. A good gravel landing beach about ½ mile long lies on the west side protected from serious weather on all sides by islands except for southwest winds. The remainder of the shore consists of cliffs, highest on the southern side, with numerous outlying rocks and pinnacles very close in to the shore. On the whole the shoreline is very rugged.

The elevation was estimated at 500 to 600 feet. The interior was not examined closely but the top was grass-covered. A good sized creek emerges on the west side near the cabin, apparently a permanent water supply. There is no harbor.

See map accompanying report on Umak Island.

Improvements

A cabin, 12x20, two rooms, and a couple of barabaras are situated at the gravel beach on the west side.

Vegetation

The rank characteristic growth of Elymus was found along the beach and adjacent areas. Vegetation farther inland was not examined, but had the appearance of the usual flora of these islands.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant.
Two or three were seen around the island.

Histrionicus h. pacificus, Western Harlequin Duck
About 40 were seen about this island.

Somateria v-nigra, Pacific Eider.
One seen.

Falco p. anatum, Duck Hawk
One seen.

Lagopus r. subsp., Rock Ptarmigan
An egg shell was found at a fox den at the west side.

Haematopus bachmani, Black Oyster-catcher
One seenoon the south side.

M on

Larus glaucescens, Glaucous-winged Gull.
A few gulls were noted about the island.

Cepphus columba, Pigeon Guillemot
A few were seen.

Cyclorrhynchus psittacula, Paroquet Auklet
Four were seen at the southern part.

Fratercula corniculata, Horned Puffin
About 50 were nesting.

Lunda cirrhata, Tufted Puffin
A few were nesting.

Nannus h. tanagensis, Tanaga Wren
One was heard singing.

Leucosticte griseonucha, Aleutian Rosy Finch
Several were seen.

Melospiza m. sanaka, Aleutian Song Sparrow
Several seen.

Calcarius l. alascensis, Alaska Longspur
Several were seen.

Mammals

Alopex sp., Blue Fox
A den with several young was found under the house on the beach on the west side. One of the adults was barking at us from the beach. A considerable number of droppings were collected in the vicinity of the den. Some of these contained crustaceans, quite a few held bird remains and several piles of feathers indicated that the foxes had been eating small birds, probably the Longspur. One ptarmigan egg shell was found near the den.

Phoca richardii subsp., Harbor Seal.
Five or six were seen in the kelp on the south side.

Invertebrates

Sea urchin shells were found on the beach and the foxes had fed on crustaceans. This was the only evidence of invertebrates found on our brief visit.

Remarks

We visited this island briefly on the evening of July 5, enough to get a general idea of its physical and faunal characters. A sign was placed on the beach at the west side.

Recommendations

Beaches are very limited for fox feeding and much of the shore is not available to foxes. Available reports show that since 1916 the island has been stocked with 27 foxes and has given a return of about 40 pelts and the last estimate of foxes on the island was 15, in 1935. The limited resources of the island is probably recognized by lessee, for the recordsshow that at least one year a native was employed to live on the island to feed the animals.

Our observations show that foxes at present are undoubtedly living on birds, including small birds.

Beyond pointing out the poor prospects for fox farming on this island we have no specific recommendations. Our information is as yet too meager to judge whether this could become an important bird island without foxes. Possibly not.

IGITKIN ISLAND

July 6,1936

Location

Lat. 52-01 N., Long. 175-57 W. One of the middle Andreanof group off the west end of Atka.

Physiography

Six miles long and 2 miles wide. It is an elongated island constricted in the middle by two deep bays on the north and south sides which are separated by a low narrow strip. The shoreline is rocky all round with exception of the two bays mentioned, which have sand and rock beaches. In the central portions the shores rise in moderate bluffs, gradually becoming higher eastward, culminating in very high cliffs at the east end of the island which apparently reach nearly the height of the island itself.

The west end of the island is also rocky and precipitous. Both ends of the island are mountainous.

One small stream drains into the north bay.

Improvements

There is a frame house, 10x16, on the narrow strip between the two bays.

Vegetation

Although we did not get up to great height the vegetation there appeared similar to that of other islands visited. The lowlands had a rank growth of the following: Elymus, Calamagrostis, a little Phleum alpinum, Fritillaria kamschatcensis, Habenaria, Cleytonia sibirica, Arensria peploides, Anemone narcissiflora, Ranunculus nelsonii, Geum macrophyllum, Lupinus nootkatensis, Lathyrus maritimus, Ligusticum, Conioselinum, Heracleum lanatum, Veronica sp., Galium sp., and Achillea borealis.

Birds

Fulmarus g. rodgersi, Pacific Fulmar

Two or three were seen southwest of the island and about the same number north of it.

Oceanodroma furcata, Fork-tailed Petrel.

Petrels were heard at night in the south bay and Bill Dirks, the permittee, said they nest there.

Phalacrocorax p. pelagicus, Pelagic Cormorant.

Common around the east end, more numerous at the eastern extremity, the total for this half of the island being about 40, a conservative figure. Fifteen were seen around the west end.

Phalacrocorax urile, Red-faced Cormorant

Two or three were seen at the east end and about the same number at the west end.

Histrionicus h. pacificus, Western Harlequin Duck
About 16 were seen around the eastern part and half a dozen at the western part.

Somateria v-nigra, Pacific Eider
Seventy miles, representing about that many pairs, were seen about the east half of the island, mostly at the east end where the shore is high and precipitous. There are many outlying rocks and piccacles capped with grass which afford nesting places. We saw two females come off their nests in the grass on a flat-topped rock. Bill Birks said that they also nest on the cliffs.

There were twenty or more pairs around the west end.

Haliaeetus l. alascanus, Northern Bald Eagle

One was seen in the south bay and one at each end of the island.

Falco p. anatum, Duck Hawk.
One was seen. In this and in other island reports no attempt is made to distinguish anatum from pealei, for we seldom had a good close view of the bird and these notes are given under the above heading for convenience.

Lagopus r. subsp., Rock Ptarmigan.
One was heard.

Haematopus bachmani, Black Oyster-catcher
Five were seen at the northeast part.

Larus glaucescens, Glaucous-winged Gull.
Twenty five or more were found around the east half of the island and several more on the west part. But there were no colonies.

Uria aalge californicus, California Murre
Four or five were seen around the island.

Cepphus columba, Pigeon Guillemot
At least 150 were counted around the eastern part of the island. They were much less abundant around the west part.

Synthliboramphus antiquus, Ancient Murrelet
Six were seen near the south bay.

Cyclorrhynchus psittacula, Paroquet Auklet.
Several flocks were seen off the east end of the island. There are a few short lengths of beach covered with loose blocks of rock which no doubt furnish nesting places.

Aethia pygmaea, Whiskered Auklet
About half a dozen were seen about the shore at the east end.

Fratercula corniculata, Horned Puffin
These were plentiful around the east end of the island and there were a few around the west end.

Lunda cirrhata, Tufted Puffin
Several thousands were nesting about the precipitous slopes which were partly grass-covered at the east end of the island. There were few or none on the easier slopes of other portions of the island and they were not common on the west end.

Corvus c. principalis, Northern Raven
Six were seen.

Hannus h. tanagensis, Tanaga Wren.
Three were noted on the island.

Leucosticte griseonucha, Aleutian Rosy Finch
Two were seen along the beach.

Melospiza m. sanaka, Aleutian Song Sparrow
About 12 were seen on the beach and on the lowlands.

Calcarius l. alascensis, Alaska Longspur
Common. We could hear their notes constantly when on the shore.

Mammals

Alopex sp., Blue Fox
One was seen going into the rocks on a boulder shore under the steep cliffs at the east end of the island. A few droppings were picked up along the sand beach. Of these only one contained bird remains, the others apparently containing beach fleas.

Phoca richardii subsp., Harbor Seal.
About half a dozen were seen around the island.

Invertebrates

Mollusks and sea urchins were common along the sandy beach, and beach fleas, beetles, and flies were abundant. We noted remains of a fish on the shore.

Remarks

We spent a night anchored at the south side of the island and part of the next day was spent encircling the island with the dory, noting the birds on the shores and cliffs as we passed. Mr. Williams and Mr. Gray, meanwhile, examined the middle portion of the island between the two bays. Another night was spent anchored in the shelter of the south side.

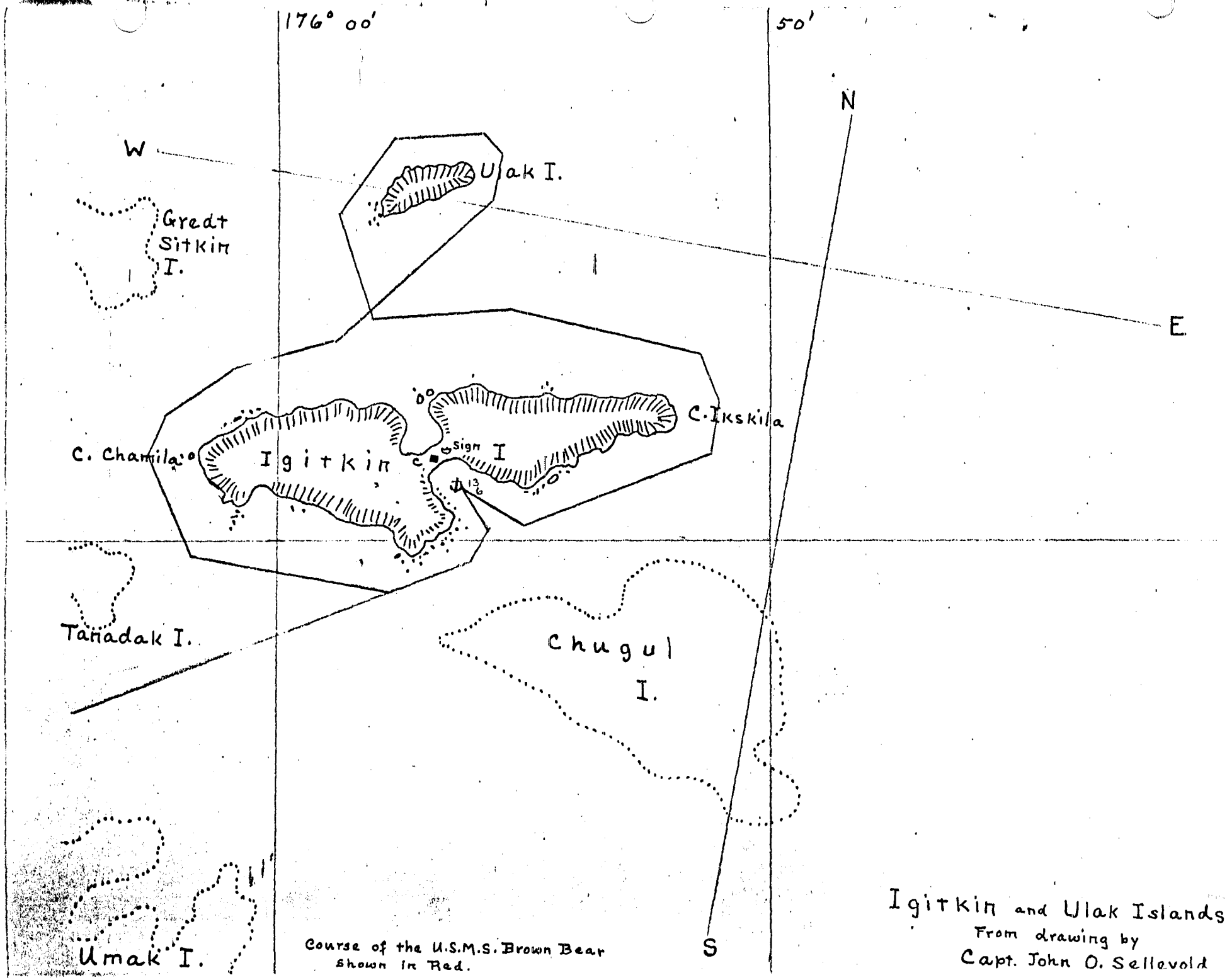
A Refuge sign was placed near the house on the middle portion.

Recommendations

This island has been fairly productive since it was stocked with foxes but it remains to be seen what a success it will prove to be and what the food recources are. It is possible that foxes have been living on birds on the rougher parts of the island and this may possibly be the reason for the absence of puffins on the easier slopes.

It appears ~~is~~ likely that a few eiders, and other birds, will be able to continue nesting on the less accessible cliffs and pinnacles.

Until more detailed information becomes available in due time, no recommendations for changing the status of the island are offered.



Igitkin and Ulak Islands
From drawing by
Capt. John O. Sellevold

ULAK ISLAND

July 6,1936

Location

Lat. 52-04 N., Long. 175-58 W. A small island in the middle Andreanof group a few miles north of Igitkin and east of Great Sitkin.

Physiography

A small rocky island, one mile and one-half mile wide, shaped like a hog-back with precipitous cliffs all around except on the southern side, where the slopes are stony with hundreds of small rock outcrops. Above, the slopes are steep and grassy, with numerous outcrops of jagged rocks. Along portions of the shore are deep clefts and numerous pinnacles almost detached from the island.

See map accompanying report on Igitkin Island.

Vegetation

There is some vegetation on the higher parts, at least enough to form a turf for the nesting of puffins.

Birds

Fulmarus g. rodgersi, Pacific Fulmar
Three or four were seen between Igitkin and Ulak Islands.

Oceanodroma furcata, Fork-tailed Petrel.
Mr. Martin, the mate, saw half a dozen petrels swimming near Ulak Island, which would indicate that they nest there.

Phalacrocorax p. pelagicus, Pelagic Cormorant.
A number of these cormorants were nesting on Ulak, possibly twenty or more

Phalacrocorax urile, Red-faced Cormorant.
We found a colony on some high steep cliffs, probably 50 or more nests all over the high walls.

Somateria v-nigra, Pacific Eider
Twenty or more males and some females were seen.

Falco p. anatum, Duck Hawk
A falcon, possibly this species, was seen at the island.

Larus glaucescens, Glaucous-winged Gull.
Twenty five gulls were counted around the island, but no colonies were found.

Uria aalge californica, California Murre
A number were seen about the island, totalling twenty or thirty. Those seen at close range were californica.

Cyclorrhynchus psittacula, Paroquet Auklet
Between 50 and 100 were seen about the island. It is a rugged island but the boulder beaches so favorable for auklets are rather limited.

Aethia pygmaea, Whiskered Auklet.
Two or three were seen near the island.

Fratercula corniculata, Horned Puffin
These were numerous but no attempt was made at an estimate.

Lunda cirrhata, Tufted Puffin
Very numerous.

Melospiza m. sanaka, Aleutian Song Sparrow
One was seen on the beach.

Remarks

We encircled this island on the evening of July 6. We attempted no landing but could obtain ample date from the dory for the purpose of making recommendations.

Recommendations

This island is not in demand for fox farming, there are no satisfactory landing places, it is reported there is no fresh water, and it is precipitous with no beaches.

On the other hand it is a good bird island and should remain in that category.

KASATOCHI ISLAND

July 7 & 20,1936

Location

Lat. 52-12 N., Long. 175-27 W. In the Middle Andreanof group, north of the western end of Atka and east of Great Sitkin Island.

Physiography

Almost circular in shape with a diameter slightly greater than 1½ miles. It is an extinct volvano rising to an height of about 1000 feet. The crater contains a lake at about sea level with a diameter of about ½ mile. This lake is reported to be saline and natives say that during severe storms agitation of this lake surface is apparent. An attempt to obtain samples of the water were unsuccessful. But we saw no sea weed, no tide water marks on the shore, not any other evidence that there is a direct connection with the sea. At one point at the foot of a rock slide some green submerged vegetation was noted with the aid of binoculars. We could not get down to the lake shore since the crater walls were steep and composed of unstable rock.

The outer slopes of the island are steep, from the crater rim to the sea.

On the north side were huge cliffs interspersed with large rock slides. On the east side the sea has worn away the island forming an almost perpendicular bluff about 30 feet or more high. Above this the land slopes about 25 degrees and is covered with vegetation of the heath type.

On the south side are more cliffs but these appear to be stratified. A little to the west these give way to grassy slopes.

On the west side tremendous chunks of the mountain have fallen, leaving rock slides and precipitous rock banks.

A huge water-washed cave was found on the southeast side, extending in as far as one could see in the dark interior. On the east side the sea shallow and the waves come in with a thunderous roar on the sand beach. The remainder of the shore is largely rocky and steep.

Improvements

One frame house, 8x10 is situated on the southwest side. Reports mention a barabara, 6x8, but it was not noticed.

Vegetation

The island is virtually covered with grass except for the cliffs. The dominant plant in areas examined appeared to be Festuca rubra, and there were two forms of Poa, Phleum alpinum, Trisetum spicatum?), the usual heavy growth of Elymus mollis at the base of the island and a number of sedges. Mosses and lichens were present, as well as ferns. Others noted were Habenaria, Claytonia sibirica, Ranunculus sp., Saxifrage, Potentilla (villosa?), Lupinus nootkatensis (including a clump of white ones), Viola langsdorfii, Ligusticum, Coniocelinum gmelini, Heracleum lanatum, Campanula lasiocarpa, Antennaria, and Achillea borealis. There was kelp around the island.

Birds

Oceanodroma furcata, Fork-tailed Petrel
When leaving the island July 20 three petrels were flying about the boat. Bill Birks said they nest on the island.

Phalacrocorax p. pelagicus, Pelagic Cormorant.
A small colony was seen on the west side.

Phalacrocorax urile, Red-faced Cormorant.
A few were seen, on the water and flying about.

Histrionicus h. pacificus, Western Harlequin Duck
About 25 were seen in several small groups.

Somateria v-nigra, Pacific Eider
Small groups of eiders were seen, about 50.

Haliaeetus l. alascanus, Northern Bald Eagle.
An immature and an adult were seen.

Falco p. anatus, Duck Hawk
A pair of falcons, not certainly identified, was nesting.

Arquatella p. couesi, Aleutian Sandpiper
One was fluttering about the ship as we were leaving the island July 20.

Larus glaucescens, Glaucous-winged Gull.
At least 20 were within the crater, some nesting near the lake and others higher up. Five or six were seen about the outside of the island.

Uria aalge californica, California Murre
Uria lomvia arra, Pallas's Murre.
One of the largest colonies encountered was found on the west side. Others were nesting on the cliffs of the north side. Both species were identified.

Cepphus columba, Pigeon Guillemot
A few were noted. A carcass was found at a fox den on the island.

Synthliboramphus antiquus, Ancient Murrelet
One was seen.

Ptychoramphus aleuticus, Cassin's Auklet.
A number of the auklets seen in great numbers about the island were identified as this species but they were not abundant.

Cyclorrhinchus psittacula, Paroquet Auklet
A few were seen about the island. One was found in a fox den.

Aethia cristatella, Crested Auklet
Thousands of these, together with the Least Auklets, made up the "swarms" in the air. They nested in the rock slide on the north side. Sixty five were found at one fox den.

Aethia pusilla, Least Auklet
Thousands of this species, together with Crested Auklets, were swarming in the air. They were nesting in the loose rock on the north side. Bill Dirks said auklets nest within the crater, but I did not actually see evidence of that.

Thirty seven were found at a fox den. A downy young was observed casually in a rock crevice on July 20.

Aethia pygmaea, Whiskered Auklet
The head of one was found in the above mentioned fox den, the only evidence of their presence noted.

Fratercula corniculata, Horned Puffin
A few were seen.

Lunda cirrhata, Tufted Puffin
Very numerous about the island, nesting on the grassy slopes. No remains of this species were found about the island or in fox dens.

Corvus c. principalis, Northern Raven
At least three were seen at the crater rim.

Nannus h. tanagensis, Tanaga Wren.
Half a dozen or more were seen, one of these within the crater.

Leucosticte griseonucha, Aleutian Rosy Finch
Several were seen, along the beach and within the crater rim.

Melospiza m. sanaka, Aleutian Song Sparrow.
Several noted both on the beach and in the crater.

Plectrophenax nr townsendi, Pribilof Snow Bunting
Three were seen at the crater rim.

Mammals

Alopex sp., Blue Fox
At least 16 were seen, all in very good condition. A fox den was found on the north side near an auklet colony, with two adults and four pups. Cached under a large rock near the den we found almost whole individuals of the following birds: 65 Crested Auklets, 37 Least Auklets (the heads of most of which were missing) one Whiskered Auklet head, one Paroquet Auklet and one Pigeon Guillemot. Other birds which could not be reached readily were seen farther back in the cache. Egg shells were scattered all around near the cache.

Fox droppings were collected for further study. There is no question but that the foxes are living on the birds of Kasatochi Island.

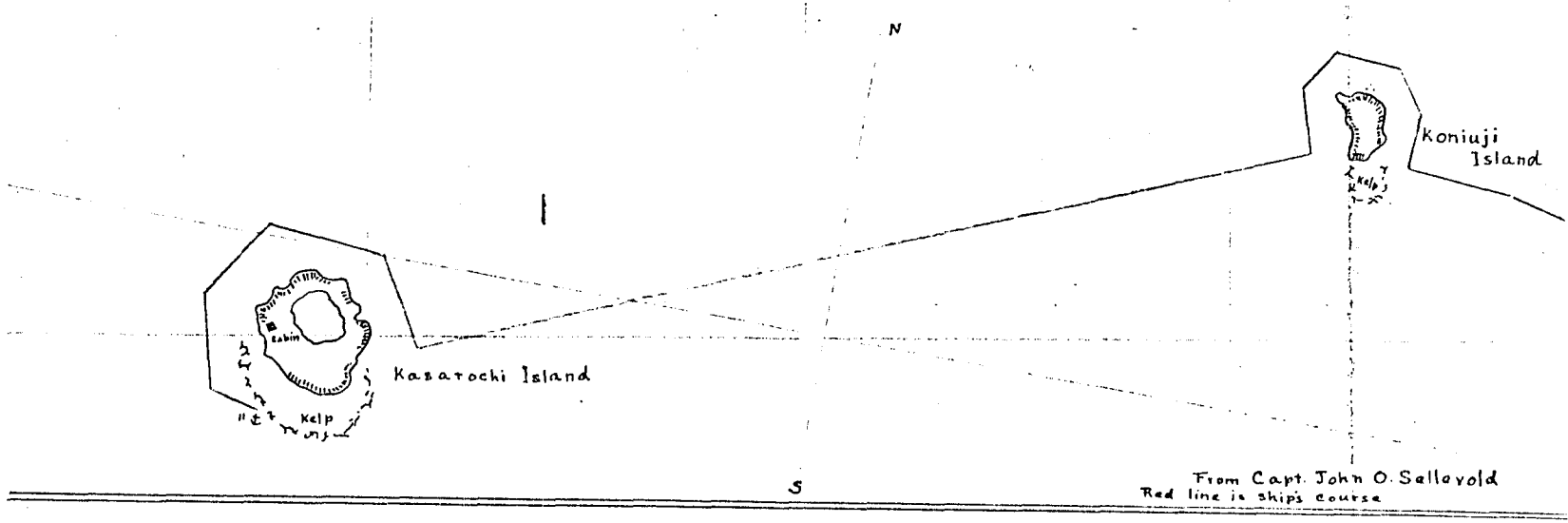
Remarks

We spent a few hours at Kasatochi on July 7 and the afternoon of July 20. Both times I climbed to the crater rim and the second time went a short distance down in an attempt to obtain water samples. Mr. Williams, Jewell and Gray also cruised about the shores noting the bird colonies. We were seriously handicapped by fog, which was particularly troublesome here. In fact, it was not easy for the captain to find the island at all on the first trip.

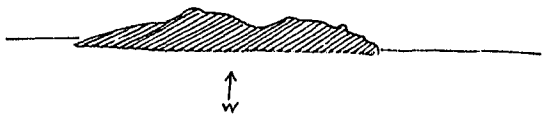
Recommendations

Kasatochi is an outstanding bird island and is of special interest also for its crater and crater lake, all of which features are spectacular enough to warrant careful consideration. It is recommended, without hesitation, that this island be exempt from fox farming and reserved for its bird life.

I might remark that, as shown above, the foxes are living on the birds and with continued development of fur production would eventually decimate the bird colonies, with the exception, of course, of the murres and cormorants. It will be noted that a Whiskered Auklet, a bird finding it difficult to survive in the Aleutians, was among those killed by foxes. Furthermore, when the birds are gone, Kasatochi will have lost its possibilities as a fox island.



From Capt. John O. Sellevold
Red line is ship's course



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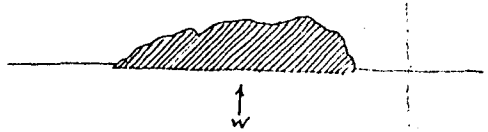


Koniuji Island.

From sketch by
O.J. Murie

KONIUJI ISLAND

July 7,1936

Location

Lat. 52-12 N., Long. 175-05 W. In the middle Andreanof group, north of Western Atka and east of Kasatochi.

Physiography

This island is really a blunt mountain top projecting out of the sea, about a mile long and ½ mile wide, with an elevation of 1000 feet. Cliffs and slide rock, as on Kasatochi, characterize the shore. Hot Springs are reported on the island.

Vegetation

No landing was made and a plant list can not be given. The upper part of the island was clothed in green vegetation, which would probably be similar to that on Kasatochi. The island is sourrounded by kelp beds 200 to 300 yards from shore in places.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant.
One or two were seen near Koniuji.

Somateria v-nigra, Pacific Eider.
It is believed eiders occur about Koniuji since they are common about Kasatochi, but we were not in close enough to see them.

Larus glaucescens, Glaucous-winged Gull.
Two small colonies were seen on the grassy areas probably nesting.

Rissa t. pollicaris, Pacific Kittiwake
A colony of this species was noted on the cliffs. We were not close enough to identify the species but it is believed they were pollicaris.

Uria aalge californica, California Murre
There were colonies on Koniuji associated with Kittiwakes and probably both species of murres were represented, as we have found in most cases.

Cyclorrhynchus psittacula, Paroquet Auklet
A few were seen about the island.

Aethia cristatella, Crested Auklet
Flocks of Crested Auklets were seen about the island, and among the swarms maneuvering in the air a certain percentage were of this species.

Aethia pusilla, Least Auklet
Hordes of Crested and Least Auklets flew before the ship and in the distance tremendous flocks performed in the air. Pusilla is probably the most numerous species on the island.

Lunda cirrhata, Tufted Puffin
This species was identified but we did not determine their numbers in the distance and without a doubt the Horned Puffin also is present.

Remarks

We made no landing on this island but by cruising as near as we dared we saw enough for our purposes. The list of birds here given is necessarily incomplete, but it doubtless is similar to that of Hasatochi to a large extent.

Recommendations

This island is not being used for raising foxes and were it not for the birds we believe it would not be productive. It is a small island, already occupied by hordes of sea birds. We recommend that it be continued as a bird island.

SALT ISLAND

July 8, 1936

Location

Lat. 52-11 N., Long. 174-40 W. In the middle Andreanof group about 2 miles off the northwest coast of Atka Island.

Physiography

Roughly triangular, about one mile long and ½ mile wide. On the south side jagged rocks form cliffs which drop sheer to the water and many outlying pinnacles occur. On the north side this rugged character is far more pronounced and reefs and pinnacles more frequent. There are two gravel beaches on the north side but it would be impossible to land except in the calmest weather. Grass slopes on the south side extend clear to the beach.

Improvements

One house 10x13 feet.

Vegetation

Kelp extends for a considerable distance out from the shore on the north side and in a few scattered patches on the south side.

Elymus mollis is the dominant beach vegetation and it extends up the high slopes. Arenaria peploides is another common littoral plant and clumps of Carex occurred among the Elymus. Several other grasses were common, including Poa hispidula and Phleum alpinum and even the top of the island is essentially grassy, with very little heath type. Juncoides campestre, Claytonia sibirica, Ranunculus nelsonii, Saxifraga tracteata, Epilobium (bongardi?), Ligusticum, Conioselinum gmelini, and Heracleum lanatum were found.

Birds

Oceanodroma furcata, Fork-tailed Petrel

Natives of Atka informed us that petrels at one time nested on Salt Island but have been destroyed by the foxes.

Phalacrocorax p. pelagicus, Pelagic Cormorant.

Common about the island and a small colony of not more than ten birds was observed on the cliffs of the west end. Two young were seen in one nest.

Histrionicus h. pacificus, Western Harlequin Duck.

We saw 175 of these ducks, 68 being in one flock.

Somateria v-nigra, Pacific Eider.

About 30 were seen, mostly males. There are a number of pinnacles and off-shore rocks topped with grass which afford nesting places.

Haliaeetus l. alascanus, Northern Bald Eagle.

Three adult eagles were seen.

Falco p. anatum, Duck Hawk
A nesting falcon, apparently the duck hawk, was seen.

Lagopus r. atkhensis, Turner's Ptermigan
One male was seen, grayish like those on Atka Island.

Haematopus bachmani, Black Oyster-catcher
Sixteen were seen, thirteen being in one band.

Arquatella p. couesi, Aleutian Sandpiper.
Two were seen.

Larus glaucescens, Glaucous-winged Gull.
A small colony was seen in the grassy slopes on the west end, not over 50.

Uria aelge californica, California Murre
One was seen on the water.

Cepphus columba, Pigeon Guillemot
A few seen on the south side.

Synthliboramphus antiquus, Ancient Murrelet.
One was seen in the tide rips.

Fratercula corniculata, Horned Puffin
Very common, more so than the Tufted Puffin. They were seen mostly at the north cliffs, where they are undoubtedly nesting.

Lunda cirrhata, Tufted Puffin
Occasional all about the island. We saw a few leave their holes on the southwest side.

Corvus c. principalis, Northern Raven.
Two were seen.

Leucosticte griseonucha, Aleutian Rosy Finch.
Several noted.

Melospiza m. sanaka, Aleutian Song-Sparrow.
Several were seen.

Calcarius l. alascensis, Alaska Longspur
Several were singing.

Plectrophenax n. townsendi, Pribilof Snow Bunting.
Two were seen.

Mammals

Alopex sp., Blue Fox.
Two were seen on Salt Island. Bill Dirks, chief of Atka, said that there used to be many birds on Salt Island but they disappeared when foxes were put on it.

Orcinus sp., Killer Whale
Four were seen between Salt and Atka Islands.

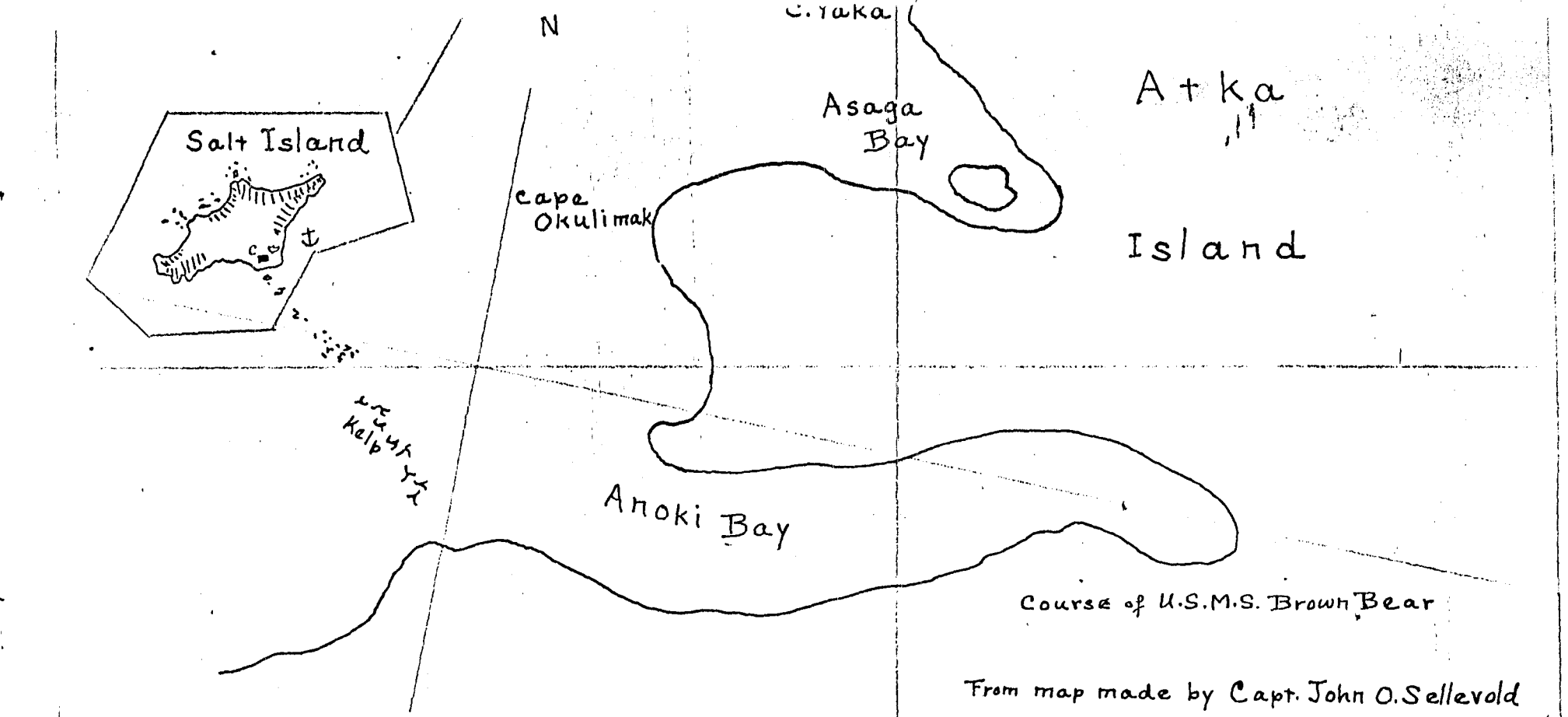
Remarks

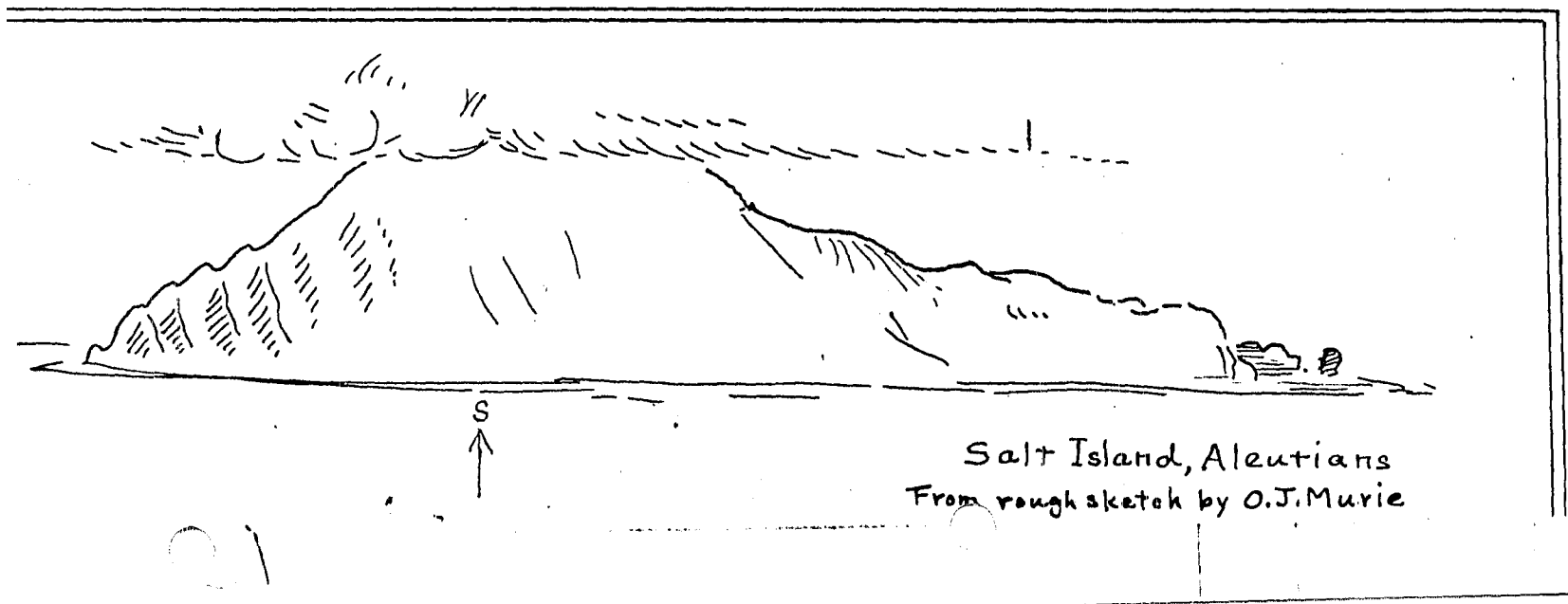
We spent part of the morning of July 8 on the island. I crossed over the top, Mr. Williams and Gray worked along the beaches and also encircled the island with the dory.

A Refuge sign was placed on the beach of the south side near the cabin.

Recommendations

This is a small island, inhabited by a few birds now and said to have been inhabited by many more birds formerly. In the field our party felt that this island should properly be restored to the birds. Possibly that is the proper course. Yet this is an island on which I have much doubt. On examining the official records I find that the fur production appears to have been somewhat greater than I had thought. This may be due to available birds. There appear to be conflicting reports on how great the original avi-fauna was. At any rate it is not an island that compares with Koniuji and Kasatochi. This is not a clear cut case and I would be inclined to leave this island as it is for the present. This is for the reason, that, although good bird islands should be preserved, I do not like to go further than available reliable information permits.


N
C. Yaka
Salt Island
Asaga Bay
Atka Island
Cape Okulimak
Kelp
Anoki Bay
Course of U.S.M.S. Brown Bear
From map made by Capt. John O. Sellevold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Salt Island, Aleutians
From rough sketch by O.J. Murie

ATKA ISLAND

In reporting on this island I do so with the understanding that it cannot be complete. We visited Atka village a number of times, coming and going, and while we made no attempt to effect a survey of the island, we did make observations on each visit and this is compiled here for the record.

Location

Lat. 52-15 N., Long. 174-20 W. One of the principal islands of the Andreanof group, middle Aleutians.

Physiography

From the official records Atka is about 50 miles long and variously ~~xx~~ stated as 13 to 18 miles wide. It is widest at the northeast end and tapers to a point westward. The highest elevations are apperently from 4000 to nearly 5000 feet. There are mountains, such as Korovin Peak, which reach a great height.

The topography is varied, for there are mountains and lowlands and considerable area of intermediate relief. There are streams and lakes, both high lakes and ponds in highland depressions and lowland lakes in marshy areas.

Much of the area was not observed by us.

Improvements

Atka village, situated on Nazan Bay, a good harbor, consists of natives houses, a church, store and a government school.

Vegetation

The vegetation was observed chiefly in the vicinity of Nazan Bay. The usual heavy growth of Elymus mollis lines the shores, mixed with Calamagrostis and grasses grow thickly far up the slopes. About lakes and other wet places sedges are abundant, and they occur back in the mountains. On higher slopes there is a shorter vegetation type, the characteristic lichen-moss-crowberry combination.

The plants of Atka as far as the field notes go are as follows: Lichens (Cladonia and other forms), Mosses, Lycopodium selago, several ferns, Bromus aleutensis, Festuca rubra lanuginosum, Poa arctica, Poa hispidula, Poa trivialis, Elymus mollis, Hordeum boreale, Trisetum spicatum, Agrostis exarata, Calamagrostis, Various forms of Carex and Juncus, Juncoides parviflorum, Fritillaria kamschatcensis, Iris, Orchis aristata, Cohrys cordata, Habenaria, Salix arctica, Polygonum viviparum, Claytonia sibirica, Arenaria peploides, Cerastium sp., Caltha palustris (common), Anemone narcissiflora (abundant, in bloom, June 25; the bloom gone on July 19), Aconitum maximum, Ranunculus nelsonii, Cardamine umbellata, Saxifraga nelsoniana, Geum calthifolium, Lupinus nootkatensis (noted as plentiful on July 19), Geranium erianthum (came into prominence by July 19), Empetrum nigrum, Viola langsdorfii, Ligusticum, Conioselinum, Heracleum lanatum, Rhododendron kamtschaticum, Rubus langsdorfii, Pedicularis chamissonis,

Erigeron peregrinus, and Arnica unalaschensis (this was not in bloom on June 25 but was in full bloom July 19.)

This is a very incomplete list, being those noted casually or collected on several occasions.

Birds

Gavia a. pacifica, Pacific Loon
On June 25 I saw a loon on a pond back in the mountains which appeared to be this form but I had an unsatisfactory view of it. Three other unidentified loons were seen.

Phalacrocorax p. pelagicus, Pelagic Cormorant
A number were noted.

Philacte canagica, Emperor Goose
Emperor geese at Atka, "right at the village", the natives say.

Anas p. platyrhynchos, Mallard
It is said to occur here, winter and summer. We did not see any.

Nettion crecca, European Teal.
Said to be common at Atka.

Spatula clypeata, Shoveller.
The natives seem to know this duck and say it nests on Atka. We have no other evidence of its occurrence.

Nyroca marila, Greater Scaup Duck.
On June 22 I saw a band of 7 scaups, chiefly males, on Corwin Lake.

Charitonetta albeola, Bufflehead
Said to occur here in winter.

Clangula hyemalis, Old-squaw
We were informed that Old-squaws are numerous in winter and used to nest on Atka, but no more, since the foxes were introduced.

Histrionicus h. pacificus, Western Harlequin Duck
These occur here the year round, but more plentifully in winter.

Somateria v-nigra, Pacific Eider.
They are reported nesting on small off-shore rocks. Mr. McMillan, the government teacher reported seeing some nesting off the south shore of Atka in July. We noted some rocks that should furnish nesting sites.

Melanitta deglandi, White-winged Scoter
Reported by the natives to occur here summer and winter.

Oidemia americana, American Scoter.
A few are reported in winter.

Mergus serrator, Red-breasted Merganser
Said to nest here. I saw a flock of seven in Corwin Lake June 22.

Haliaeetus l. alascanus, Northern Bald Eagle
Common at this island. Both adults and immature birds were seen and an immature bird was collected. Bill Dirks informed us that someone had found the remains of a blue fox in a nest. Two young were being raised by native boys for the bounty. He purchased one of these, kept it on the ship, where it became a great favorite with the ship's crew, and was eventually sent to the Washington Zoo.

Falco p. anatum, Duck Hawk
A falcon is said to occur here and is locally called "chicken hawk."

Lagopus r. atkhensis, Turner's Ptarmigan
Common here and the paler coloration is very noticeable, even in flight. The natives say that when the snow becomes deep on the main island the ptarmigan sometimes fly out to the little islands in the bay.

Arquatella p. couesi, Aleutian Sandpiper.
They occur here winter and summer, according to the natives.

Larus glaucescens, Glaucous-winged Gull.
Noted casually here and there about the island.

Cepphus columba, Pigeon Guillemot
Several were noted. The natives of Atka say they disappear in winter.

Synthliboramphus antiquus, Ancient Murrelet
The natives say they nest on Amlia, adjacent to Atka, nest in holes in the ground and are eaten by the foxes. The natives used to kill them for food, but "not now", presumably because they have become scarce.

Aethia cristatella, Crested Auklet
On July 8 large flocks of Crested Auklets were scattered over the sea near Cape Corovin, feeding, possibly several thousands of them. Bill Dirks suggested that they nest on Koniuji, the nearest probable place, and had come here to feed.

Fratercula corniculata, Horned Puffin
A few were seen at Atka and they are said to winter there.

Lunda cirrhata, Tufted Puffin
A number were noted.

Asio flammeus, Short-eared Owl.
Said to be rare, occurring only in winter. The remains of one, shot the previous winter, were examined. The stomach contained parts of a rat.

Corvus c. principalis, Northern Raven
A number of ravens were seen about Nazan Bay.

Nannus h. tanagensis, Tanaga Wren
These occur about the island.

Leucosticte griseonucha, Aleutian Rosy Finch
Noted here.

Melospiza m. sanaka, Aleutian Song Sparrow
Common.

Calcarius l. alascensis, Alaska Longspur
Plentiful.

Plectrophenax n. townsendi, Pribilof Snow Bunting.
These occur on Atka.

Mammals

Alopex sp., Blue Fox
No special observations were made on foxes on Atka. It is a community island and important in this respect. Natives declared that nesting geese and Old-squaws, which were specifically mentioned, have disappeared since foxes were introduced. It is entirely probably that certain waterfowl have suffered since foxes were introduced. On the other hand, it is noteworthy that an upland bird, such as the ptarmigan, is plentiful. In their case water margins do not guide the foxes to the nest.

Eumetopias jubata, Steller's Sea Lion
Sea Lions occur about Atka but we found no rookeries.

Rattus norvegicus, Brown Rat.
Rats have overrun Atka Island and the small islands off its shores. It is likely they were introduced by ships long ago.

Rangifer sp., Domestic Reindeer.
Reindeer have been introduced on Atka Island and apparently are existing, but no one knows much about them. There was some thought of attempting a census of a sort and some observations on them, but so many islands were awaiting attention that we could hardly spare the several days that would be necessary.

We were informed that at first, while the reindeer remained near the village, they were utilized by the natives but after they had wandered to remote parts of the island the natives did not bother to go after them and they are entirely neglected. Usually some of the natives have some idea of where the herd is, but only occasionally do they go after a little meat.

A considerable quantity of lichens was noted back of the village and it is likely that there is sufficient over the island to support reindeer in moderate numbers.

Orcinus rectipinna, Killer Whale
Four killer whales were seen near Salt Island July 8, which is off the north shore of Atka.

Phocoenoides dalli, Dall Porpoise
A school of porpoises played about the ship for a time, between Atka Island and Kasatochi, on July 20.

Remarks

We stopped at Atka Village several times, June 21, 26, July 8 and 19, and August 8, sometimes only a few hours. On these visits we interviewed the natives and explored the neighboring kit areas and collected specimens.

A Refuge sign was placed in the village.

Recommendations

We have no important recommendations for this island. However, we would point out that the introduction of reindeer, no doubt accomplished originally with good intentions and high hopes, now appears useless in view of the fact that they are wandering uncared for, and hardly used by the natives, who are much more interested in their boats and fishing and in their fox pelts, which bring them cash with which to buy the standard goods at the trader's store.

The resident teacher agreed with this and wondered if deer, Odocoileus, would be better, thinking such an animal would not herd up, but would be scattered more uniformly, thus being more available to the natives, who do not like to exert themselves for much of an overland trip. This, however, I believe would be just as futile. If any meat producing animal is introduced, the reindeer is the logical one.

SEGUAM ISLAND

June 17-18,1936

Location

Lat. 52-20 No., Long. 172-26 W. The easternmost of the Andreanof group, lying east of Amlia.

Physiography

Approximately 13 miles long and 7 miles wide. It is quite mountainous, with the higher mountains on the western end with an elevation of 3000 or possibly 4000 feet. Toward the northeast side we noted a crater apparently located within the rim of an older, larger, one. A short excursion up the slope of the outer rim showed the presence of mixed volcanic debris, including areas of fine sand, lava cinders, and stones.

Several sand beaches were noted, one on the southeast side, two on the northeast side, and three on the northwest side. The remainder of the shore consists of rocky beach and cliffs. From the north end of the island around the east to the middle of the south side the shore is mostly low lava cliffs, with many water-worn caverns and frequent stretches of jumbled rocks. There were many off-shore rocks, more than at the islands visited to the eastward.

The water supply is plentiful. There are many deep-cut water courses, with steep banks, some of them cut deeply in solid rock, forming high cliffs. A good stream of water was running in some of these, others were dry at the time of our visit.

Best anchorage in southerly or westerly weather is the bight on the northeast side. For easterly weather an anchorage can be found on the northwest side off a landing beach. Off the east and west ends there are heavy tide rips exceptionally dangerous for small craft.

Improvements

One house on the northeast side of the island 12x18 and one house on the northwest 12x18.

Vegetation

Elymus mollis, with a certain amount of Calamagrostis, the percentage of which was not determined, was very abundant all over the seaward slopes even to a high level, and occurred again on knolls farther back. In many places these grasses grow up through the moss and crowberry. Some sedges were noted.

The usual moss and crowberry association was very common in places. Anemone narcissiflora is plentiful and was in full bloom at the time of our visit. Lathyrus maritimus was found on the beach, Lupinus nootkatensis was noted, Ligusticum was coming into bloom and Heracleum lanatum noted. Dwarf willow, probably S.arctica, was found in places.

The usual kelp beds were common about the island.

Birds

Colymbus g. holboelli, Holboell's Grebe
Two, possibly a pair, were seen on the northeast side of the island, sitting on the water near the shore. There may possibly be nesting places in the interior of the island, but dense fog and lack of time prevented a search.

Diomedea nigripes, Black-footed Albatross
A specimen was taken about a mile off-shore on the southwest point of the island and several others were seen near the island. Twelve were in sight at one time while we were enroute from Seguam to Atka, June 21.

Diomedea albatrus, Short-tailed Albatross
A white albatross was seen by Mr. Martin, the mate, on June 21 between Chagulak and Seguam.

Fulmarus g. rodgersi, Pacific Fulmar
Several were noted in the vicinity of the island in the tide rips.

Phalacrocorax p. pelagicus, Pelagic Cormorant.
Phalacrocorax urile, Red-faced Cormorant
We saw Pelagic Cormorants at intervals along the shore and an occasional Red-faced one. On the cliffs at the east point were 15 nesting Red-faced Cormorants and one or two Pelagic Cormorants.

Philacte canagica, Emperor Goose
An Emperor Goose wing was found on the beach.

Histrionicus h. pacificus, Western Harlequin Duck
A few were noted along the shores.

Somateria v-nigra, Pacific Eider
A few were noted, 8 in one group.

Haliaeetus l. alascanus, Northern Bald Eagle
At least six were seen, one of which had a nest on an outlying grass-covered chimney rock in a bay at the northeast side of the island.

Falco p. anatum, Duck Hawk.
A pair was nesting on cliffs bordering a little stream on the northwest side of the island, about ½ mile back from the shore. Another pair was nesting on the cliffs at the east end of the island.

Haematopus bachmani, Black Oyster-catcher
Half a dozen were noted, four in one group.

Arquatella p. couesi, Aleutian Sandpiper
Two were seen on a high slope on the northeast side.

Stercorarius parasiticus, Parasitic Jaeger
Two dark ones were noted back on the grassy slopes on the northeast side.

Larus glaucescens, Glaucous-winged Gull.
A few were noted.

Uria aalge californica, California Murre
Uria l. arra, Pallas's Murre
A small colony including both species was nesting on the cliffs and in the caves on the east end of the island.

Cepphus columba, Pigeon Guillemot
Noted at intervals around the island.

Cyclorrhynchus psittacula, Paroquet Auklet
They were common along the north and east sides. The scattered groups seen along the rocky beaches totalled about six hundred, then at the east point we found them numerous, several thousands, more or less mixed with the Crested Auklets. We found them nesting in the jumbled rocks on the beaches, in the crevices on the cliffs, and apparently in the turf on top of the cliffs. Several were seen coming out of one small cavern high on a cliff face.

Aethia cristatella, Crested Auklet
These were found mostly at the east side of the island, where they were more or less associated with Paroquet Auklets. There were several thousands of them. A little fleet of these birds was resting on the water in the entrance to a large dark cavern and several were seen coming out of the darkness of such places.

Aethia pygmaea, Whiskered Auklet
On the east side 138 were counted and others seen in the general vicinity where the other auklets were noted.

Fratercula corniculata, Horned Puffin
A few were seen here and there.

Lunda cirrhata, Tufted Puffin
Much more abundant than the Horned Puffin but not really numerous.

Corvus c. principalis, Northern Raven
One was seen.

Leucosticte griseonucha, Aleutian Rosy Finch
Two were seen on a high slope and one along the cliffs near the shore.

Melospiza m. sanaka, Aleutian Song Sparrow
Several were noted, apparently common.

Calcarius l. alascensis, Alaska Longspur
Abundant on the grassy slopes. A nest with four young was found June 18.

Mammals

Enhydra lutris, Sea Otter
Bill Birks stated that a few years ago there were several Sea Otters on the northwest side of Seguam Island.

Alopex sp., Blue Fox
Very few fox signs were noted. Among the droppings found several contained bird remains.

Eumetopias jubata, Steller's Sea Lion
We saw Sea Lions on the outlying rocks on the east side.

Phoca richardii subsp., Harbor Seal
At least one was seen on the east side and on the northwest side a group was seen among the rocks and kelp.

Invertebrates

There were numerous sea urchins in the northeast bay but snails and limpets were not noted.

Remarks

An attempt was made to follow the shore on July 17 but Mr. Jewell and I got caught in a bad tide rip and had to return to the ship. Next day we cruised along much of the shore and made one or two short excursions inland.

A sign was placed at one of the houses.

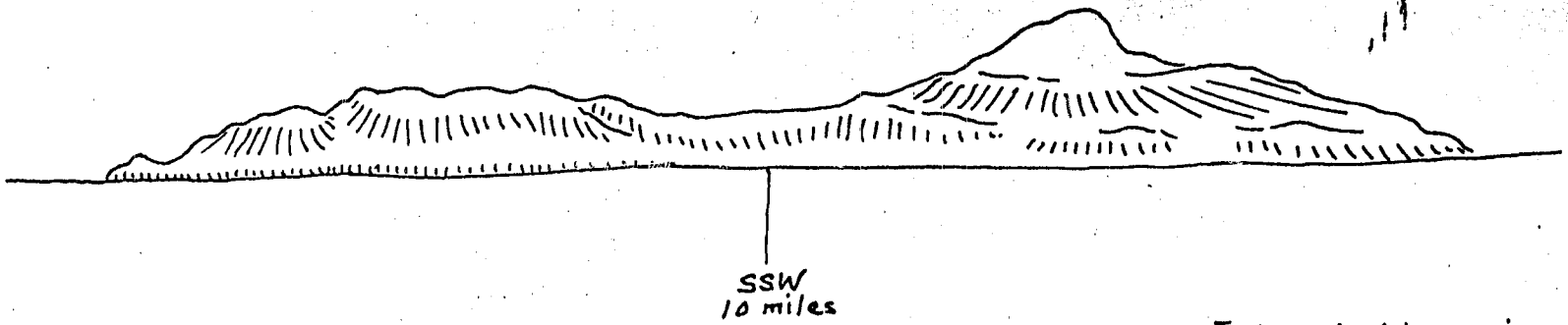
Recommendations

The murres and cormorants are of course protected from the foxes by their natural nesting sites. So also are those Paroquet and Crested Auklets which nest in the steep cliffs. However, all those which nest in the turf or the rocky shores, including the Whiskered Auklets, are available to the foxes, as are also the puffins. Only a few fox droppings could be collected on our visit, some of these containing feathers, but there has not been time for final analysis of these.

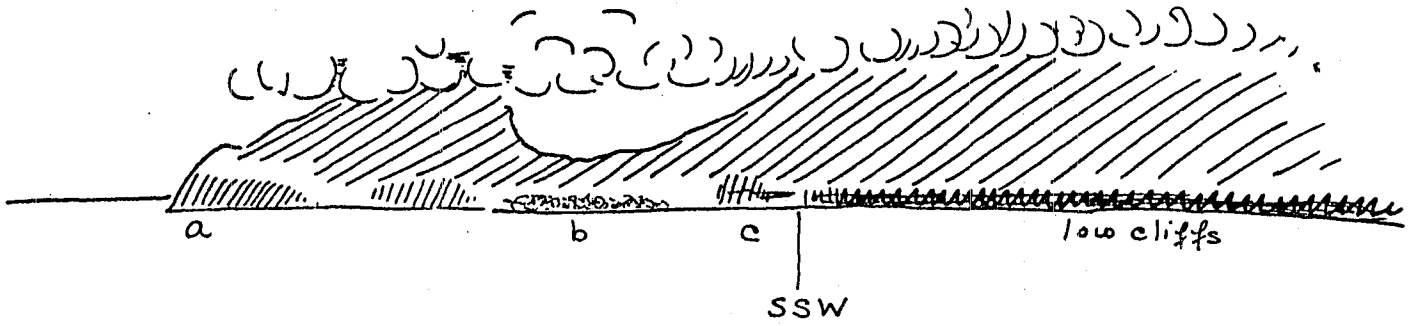
This island has been a good fur producer. It is practically certain that the foxes have been feeding on the birds. Whether or not the island was at one time populated with many more birds and is in the process of bird depletion is a question which, unfortunately, we are unable to answer at this time. There is at present a splendid colony of auklets at the east part, and we deplore the danger to the rare Whiskered Auklet, which is here found in fair numbers.

This is one of those islands on which we find it difficult to pass judgment. From the absolute stand of bird protection the birds of Seguam should assuredly be given protection. And our sympathies are whole-heartedly in that direction. Yet in all fairness I am mindful that the island has been leased apparently in good faith and we were really unable to obtain the necess-

ary droppings as concrete, indisputable evidence. Possibly it would be best to withhold definite action in this case until we learn whether or not there is a chance for further study.



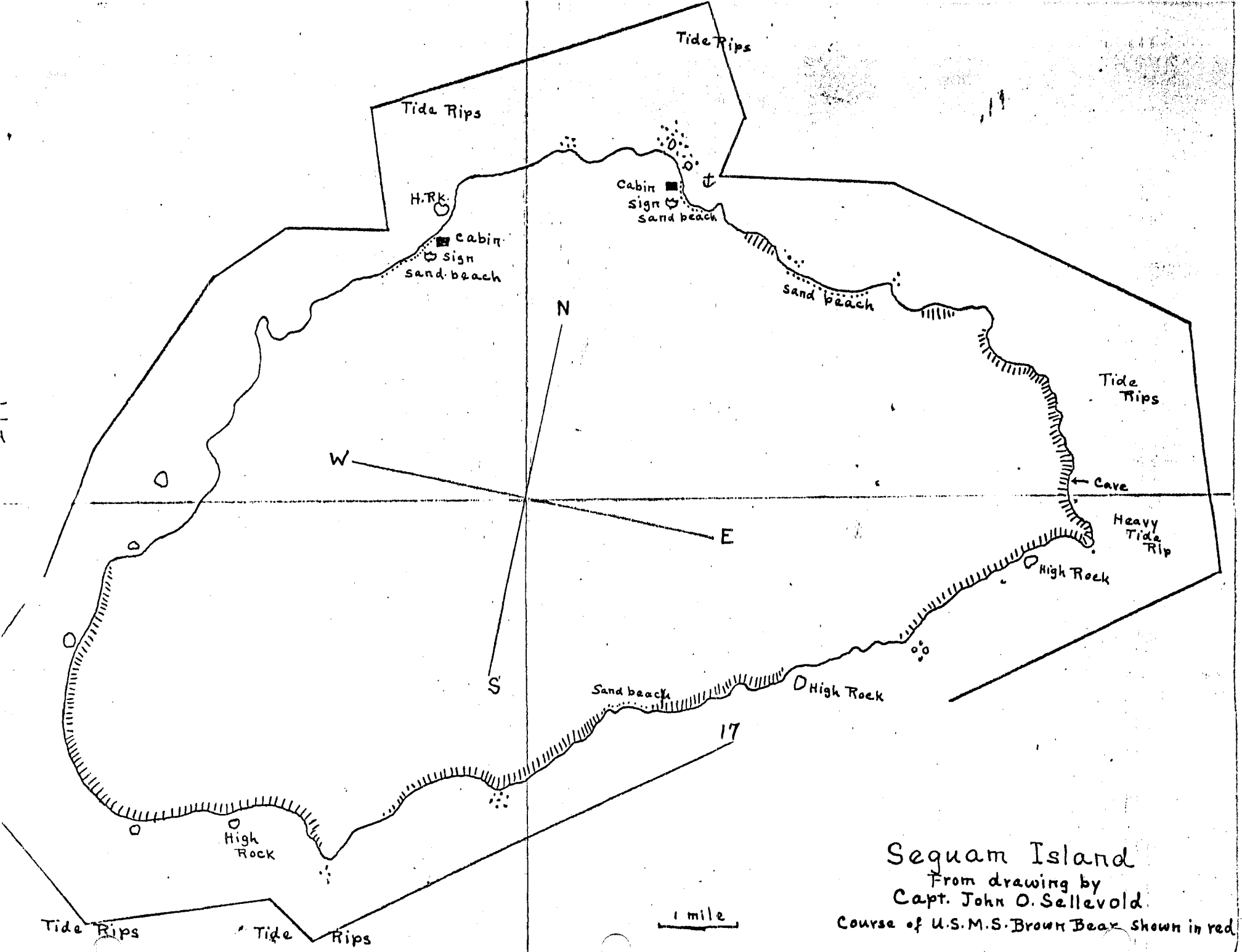
Seguam Island, Aleutians
From drawing by Capt. John O. Sellevold



East end Seguam Island.

Small colony of murres on cliffs at a.
Several thousand Crested and Paroquet auklets at b, among boulders, in the cliffs toward a, some up in the turf, and many across the low divide on the SW side
Pelagic cormorants nested in a cave at c.
Puffins nest in the cliffs and in the turf above them.

Drawing by O. J. Murie



Sequam Island

From drawing by
Capt. John O. Sellevold

Course of U.S.M.S. Brown Bear shown in red

#247 250

AMUKTA ISLAND

June 15-16,1936

Location

Lat. 52-29 N., Long 171-14 W. 56 miles southwest of the Islands of the Four Mountains group.

Physiography

Practically circular in outline, 4½ miles in diameter. There is a volcanic mountain, 3700 feet high, a little east of the center of the island snow-capped, and with many arms of lava flow leading down toward the shore on all sides. Large areas on the south, west and east sides are covered with huge lava boulders. Some of these are becoming covered with mosses, crowberry and grasses, but more recent lava beds are bare and crumbly. On the northeast the lava sand extends to the shoreline, but south of this area there are high grassy slopes of 60 to 90 degrees reaching an elevation of about 900 feet.

There is a fair harbor with a good landing beach on the south side. To the southwest and west, high terraced cliffs predominate. West and northwest, the mountain sides are cut by high landslides. The slopes here are seldom under 45 degrees.

With the exception of the few small pebble beaches on the north, east and south sides, the shoreline is decidedly precipitous or rocky with hundreds of outlying rocks and reefs on all sides of the island. It is safe to estimate that more than 90% of the shoreline is of this nature.

Improvements

A cabin and feeding pen are located in the bight on the south side. A barabara is located on the north side near one of the small pebble beaches.

Vegetation

Plant life is not as abundant here as on most other islands, especially in the interior where the mountain, the lava rock and sand are entirely bare. At the lower edges of the lava masses, dwarf willows, and crowberry are encroaching inland. Calamagrostis nutkaensis also occurs on this scanty type of vegetation, as well as Cassiope (mertensiana?) and probably other rock loving species. The usual Elymus mollis is abundant on the shores.

Birds

Diomedea nigripes, Black-footed Albatross

Two were seen close to the anchorage at the south end by the Captain and others about 5:30 A.M. June 16.

Fulmarus g. rodgersi, Pacific Fulmar

We found them nesting in large numbers all along the cliffs on the west side.

Oceanodroma furcata, Fork-tailed Petrel
These were found nesting in large numbers in the lava rock on the south side. Not only in that portion near the beach that was well covered with vegetation but also well back toward the mountain at least half a mile where the vegetation was very scant or lacking. Three eggs were collected, one of which was fresh and two well incubated. This was the only locality that it was possible to examine closely and the extent of such nesting grounds around the island was not ascertained. We visited the nesting area at night with flash lights and the petrels were flying about us in large numbers (25-50 were in sight at one time) and we could hear them chirping both above and below ground. Further observation in the Aleutians will determine the importance of this nesting ground.

Phalacrocorax p. pelagicus, Pelagic Cormorant
Numerous all the way round the island but none were seen nesting.

Phalacrocorax urile, Red-faced Cormorant.
This was the most abundant cormorant here and nested in several places on the northwest side. About one hundred individuals were seen resting on an outlying rock off the north shore. There was a small nesting colony associated with the murres on the west side.

Dafila acuta tzitzihoa, American Pintail
A pair was flushed from a pond on the south side, June 15.

Nyroca americana, Redhead
A pair was flushed twice from a pond on the south side, June 16.

Histrionicus h. pacificus, Western Harlequin Duck
Very common in the waters off-shore. Flocks of 2 to 15 were frequently seen. Most of these appeared to be males in non-breeding plumage.

Somateria v-nigra, Pacific Eider
Very common on the rocky shores or resting on the waters close in.

Haliaeetus l. alascanus, Northern Bald Eagle
Four eagles were seen on the northwest side and one of their nests was found on top of pinnacle near the shore line. The nest was built up of kelp, grasses, and driftwood to a height of four feet. It contained one eaglet. The food debris about the nest consisted of a half-eaten Pigeon Guillemot and feathers of other birds.

Falco peregrinus anatum, Duck Hawk
Two, which appeared to be Duck Hawks, were seen on opposite sides of the island and another, a dark one which may have been pealei, flew over the lava beds back from the coast.

Lagopus r. subsp., Rock Ptarmigan
Signs of ptarmigan were evident but no birds were seen.

Haematopus bachmani, Black Oyster-catcher
A few were noted about the island. A group of four flew about the dory.

Larus glaucescens, Glaucous-winged Gull
Common but not abundant. A few were resting on the west side of the Island. One gull was seen picking up an egg of a fulmar that had vacated its nest. It carried the egg unbroken to a rock on the shore's edge, where it broke the shell and ate the contents. When the gull was driven away from the egg it flew to the water where it proceeded to wash its beak by shaking it in the water.

Rissa t. pollicaris, Pacific Kittiwake
A few colonies, presumed to be this species, were noted on the high rock cliffs on the west side.

Uria l. arra, Pallas's Murre
Four small colonies were seen on the cliffs on the west side, associated in two instances with Pacific Kittiwakes. Several immature birds were seen with small flocks resting on the water.

Cepphus columba, Pigeon Guillemot
Very common all about the island as individuals, pairs or small groups.

Synthliboramphus antiquus, Ancient Murrelet
A single individual was seen and collected in the bight at the south end of the island.

Fratercula corniculata, Horned Puffin
Fairly common. They were noted flying from the rocks and cliffs.

Lunda cirrhata, Tufted Puffin
Quite numerous, especially on the cliffs on the west side. Apparently nesting on the grassy parts of the cliffs.

Corvus c. principalis, Northern Raven
One was seen on the north side at the shore.

Nannus h. subsp., Winter Wren
Two were seen, one of them collected.

Leucosticte griseonucha, Aleutian Rosy Finch
Three were seen in the lava beds on the south side.

Melospiza m. sanaka, Aleutian Song Sparrow
Noted on both north and south sides.

Calcarius l. alascensis, Alaska Longspur
Common on the south side.

Plectrophenax n. townsendi, Pribilof Snow Bunting
Common in the lava beds on the south side.

Mammals

Alopex sp., Blue Fox
Foxes were heard barking morning and evening. Numerous fox droppings were collected, especially at the south end, throughout the nesting area of the petrels. Nearly all showed bird remains and casual inspection indicated that these were petrels. Petrel wings were lying about everywhere, some fresh, others dating back a year or more. Some of the droppings containing birds were so old that they were moss covered, showing that this has been going on for several years.

This island has been a consistent good fur producer year after year according to the records. Its success may be due to the presence of the petrels during the critical period when the pups are in need of food.

It would be safe to say that two-thirds of the beaches are available to the foxes for feeding.

Eumatopias jubata, Steller's Sea Lion
Approximately 200 were seen on the rocks on the west side.

Phoca richardii subsp., Harbor Seal
Four were seen, one on the east, three on the north side.

Invertebrates

The waters all along the shore contained much marine life, including Snails, Limpets, and Sea Urchins. Diptera and beetles (Carabidae) were common.

Remarks

We reached Amukta in the evening of June 15, anchored, and next day Mr. Williams, Jewell and Gray encircled the island with dory while I walked inland and looked over the lava beds.

We put up a Refuge sign near the cabin.

It would be appropriate to record here some observations relative to human occupation of the island.

In the cabin we found a swan skin, from a bird killed the previous winter.

A few feet to the rear of the cabin on the east side of the island we found a fox feeding pen, 10x12, made of chicken wire. Among other things in the pen were a multitude of bird bones and wings of several species. Droppings were collected from the pen and these showed bones of small birds. Without a doubt the penned up foxes had been fed with birds.

On a bluff overlooking the bay at this place was a shooting blind, three feet square and four and one-half feet high. It was about 50 feet from the water and 300 yards from the cabin. Inside and just outside the blind Mr. Jewell, assisted by others in the party, found the following empty shells:

30-30 rifle 62
25-35 rifle 57
25-20 rifle 4
22 long rifle 183
44 pistol 1
12 guage shot gun .. 4

On the inside wall of the blind had been written, on a certain date, a remark to the effect that "No --------birds or seals today."

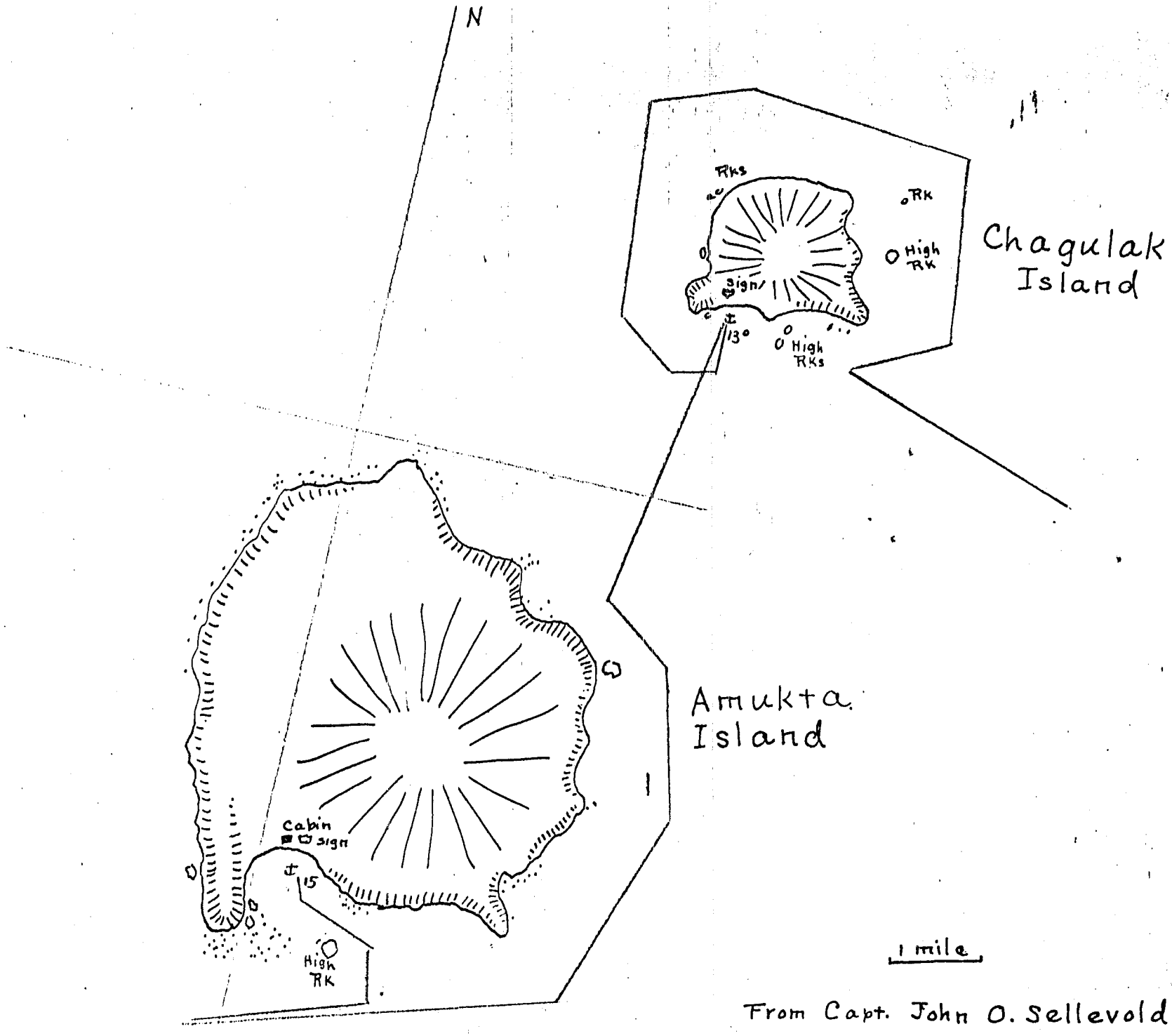
Ostensibly the blind would be built for the purpose of shooting seals. But the penciled notation in the blind indicates that birds are also sought. Again, it would be difficult to prove that those are not sought for necessary human food. But certainly many of their bones found their into the fox pen. Here, again, it could reasonably be claimed that birds are found dead on the beach, which undoubtedly does happen. The evidence is very complex, but at any rate these observations are suggestive.

Recommendations

This is one of the islands that furnished an outstanding example of foxes living on birds, I would venture to estimate about 90%. Final figures will be available when the croppings are examined. I had hoped and planned to return to Amukta later in the season to obtain material from other parts of the island but circumstances did not permit it and our data is not complete.

However, this island is outstanding for its fulmar rookeries and the petrels. The extensive lava beds furnish ideal opportunity for petrels. At first we thought the fulmars were protected on their cliffs but in view of what we later learned of the agility of the blue fox this is not so certain and in any case the fulmar colony would be restricted to the ledges which could not be reached by the foxes. This one and the one on Chagulak are the only fulmar colonies actually observed by us in the Aleutians.

In view of the wholesale destruction of birds on Amukta, and the character of its avi-fauna, it would be logical to withdraw the island from fox farming if possible.



From Capt. John O. Sellevold

CHAGULAK ISLAND
June 15,1936

Location

Lat. 52-35 N., Long. 171-09 W. About 4 miles northeast of Amukta Island.

Physiography

Roughly about 1½ miles in diameter but the south side has a frontage of 2 miles. The whole island is a mountain top rising out of the sea, terminating in a sharp snow-covered peak with a charted elevation of 4300 feet. The north side drops sheer from great heights, with cliffs broken here and there by grassy slopes and ledges. The west side also is very steep with numerous drainage gullies and with no beach except at one place near the southwest point. The east side appeared to be precipitous. The south side offered a landing place in proper weather, where an ascent was possible. There is no harbor.

Offshore rocks are numerous on the south side, one large rock on the east side, and a rock about ½ mile off the northeast point. We could see no fresh water supply.

Vegetation

We made a landing only on the south side and there grasses appeared to be dominant, with a minimum of herbaceous plants. The grasses noted were Elymus mollis and Calamagrostis, the former here reaching far up the slopes.

Birds

Fulmarus g. rodgersi, Pacific Fulmar

Thousands of fulmars were feeding around the island in the tide rips. At the southeast part of the island fulmars were swarming high in the air, far up in the fog, and we suspected that they were nesting there. On arriving at the south side we found that the fulmars were actually nesting, apparently all over the island from near the shore to as far up the slope as nesting places could be found. They were flying all over the island to the very top, and above it. No attempt was made to estimate their numbers but there were certainly many thousands.

We found them nesting on rock ledges, grassy benches, and on almost every available flat place on the slopes. There were many recesses in the rocks which were occupied by nesting birds. In the nests noted, the eggs were laid on the bare ground.

Oceanodroma furcata, Fork-tailed Petrel
The wing of a petrel was found on a rocky slope where auklets were nesting and it is very probably that they are nesting on the island.

Phalacrocorax p. pelagicus, Pelagic Cormorant
Phalacrocorax urile, Red-faced Cormorant
Both species were nesting about the southwest and southeast parts of the island.

Branta c. minima, Cackling Goose
At the southwest point of the island Capt. Bellevold and the mate, Mr. Martin, saw a goose swimming by the boat which according to the description was certainly the canadensis type and since they described it as being unusually small it would point strongly to minima.

Histrionicus h. pacificus, Western Harlequin Duck
A few were noted.

Somateria v-nigra, Pacific Eider
A few noted.

Haliaeetus l. alascanus, Northern Bald Eagle
One was seen.

Falco p. anatum, Duck Hawk
A falcon which appeared to be a duck hawk was seen.

Haematopus bachmani, Black Oyster-catcher
Several noted.

Larus glaucescens, Glaucous-winged Gull.
A small colony was found on the south side and others were noted.

Rissa t. pollicaris, Pacific Kittiwake
Kittiwakes, apparently this species, were nesting in moderate numbers with murres at the southwest part of the island on steep cliffs.

Uria a. californica, California Murre
Uria l. arra, Pallas's Murre
Murres were nesting on the ledges at the southwest point of the island in company with kittiwakes. Both species were observed and from our casual inspection arra seemed to be in the majority.

Cepphus columba, Pigeon Guillemot
The usual numbers were seen along the shores and eggshells were found on the rocky slopes on the south side.

Cyclorrhynchus psittacula, Paroquet Auklet
Some were noted at the southwest point. Several flew out from the rocks on the slope, evidently nesting there.

Aethia cristatella, Crested Auklet
A dense flock of this species was seen in a tide rip as we approached the southeast point. Others were seen off the south side. We saw them fly out from the rock jumbles there. Two nests were found and an egg collected.

Aethia pygmies, Whiskered Auklet
These were nesting with other auklets on the rock slops on the south side. One was taken for a specimen and its egg collected.

Fratercula corniculata, Horned Puffin
A few were noted.

Lunda cirrhata, Tufted Puffin
A few were seen and they were nesting on the south side among the rocks in company with the auklets.

Nannus h. subsp., Winter Wren
One was collected.

Melospiza m. sanaka, Aleutian Song Sparrow
A few were noted.

Mammals

Eumetopias jubata, Steller's Sea Lion
Sea Lions were plentiful on the south side, probably 250 lying on the rocks. We saw no young.

Remarks

We spent most of the day, June 15, cruising along some of the shores and made a landing on the southwest part, where a Refuge sign was placed.

Recommendations

This is no doubt the chief colony of fulmars in the Aleutians. There can be no question that Chagulak should be reserved for its bird life.

YUNASKA ISLAND

June 14,1936

Location

Lat. 52-37 N., Long. 170-45 W. Fourteen miles southwest of Herbert Island of the Four Mountains group.

Physiography

About 10 miles long and 5 miles wide, lying northeast to southwest. The top was obscured by fog but the charted elevation is 2800 feet. The island seemed to be characterized by long, gentle slopes and level areas.

Superimposed on an original lava base are deep layers of lava sand which appear along the coast line in many places in the form of high sand bluffs and few sandy beaches. There were half a sozen short beaches and one about a mile in length. Otherwise the coast is marked by abrupt cliffs and jutting points. Sea-washed caves are numerous along the shore and there are a number of outlying rocks and pinnacles. No harbors are present but indentations in the contour of the shoreline offer some shelter on the north and northwest. Weather permitting, landings may be made on the N.E., N.W., and S.E. sides.

A few small streams were noted.

Improvements

There are two houses about 12x18 (observed from the beach) on the northwest side, possibly 4 miles apart.

Vegetation

From casual inspection the vegetation appears similar to that of the Islands of the Four Mountains. We made no list of plants.

Kelp beds are plentiful about the island.

Birds

Fulmarus g. rodgersi, Pacific Fulmar
A number were feeding in the tide rips off the southwest point of the island.

Oceanodroma furcata, Fork-tailed Petrel
On the night of June 14, while anchored at Yunaska, petrels were flying about in the beams of light from the ship. Two struck the rigging and one was captured. This suggests nesting-grounds on Yunaska, although they may have come from a distance.

Phalacrocorax p. pelagicus, Pelagic Cormorant.
These occur sparingly. On the northwest side there were at least two rookaries where a few of this species were nesting among more numerous Red-faced Cormorants.

Phalacrocorax urèle, Red-faced Cormorants
Along the northwest side a number of colonies were found, one containing 15 nests, one 30, one 8, and another 60 nests. Among these were a few nests of the Pelagic Cormorant. Red-faced Cormorant colonies were also observed on the northeast side. Undoubtedly other groups were present which we may have overlooked.

Histrionicus h. pacificus, Western Harlequin Duck
About 25 were noted along the shore.

Somateria v-nigra, Pacific Eider
Occasional pairs possibly totalling 30 were seen along the shore. In some cases 2 males were seen together.

Haliaeetus l. alascanus, Northern Bald Eagle
One pair was evidently nesting and two others were seen.

Lagopus r. subsp., Rock Ptarmigan
One was noted.

Haematopus bachmani, Black Oyster-catcher
One was noted.

Larus glaucescens, Glaucous-winged Gull.
Occasional gulls were seen about the island, many apparently nesting.

Rissa t. pollicaris, Pacific Kittiwake
Small groups, assumed to be this species, were feeding in the tide rips or flying about.

Uria a. californica, California Murre
Half a dozen noted, two being identified as californica.

Cepphus columba, Pigeon Guillemot
Common about the shores, probably nesting in rock crevices and among loose boulders.

Ptychoramphus aleuticus, Cassin's Auklet
A dozen or more were feeding in a tide rip off the west shore. This was one of the two times this species was observed by us in the Aleutians.

Aethia pygmaea, Whiskered Auklet
At least 250 were feeding in the tide rips on the west side. Undoubtedly there were many more which we did not see.

Fratercula corniculata, Horned Puffin
These occur sparingly.

Lunda cirrhata, Tufted Puffin
Common all around the island, more abundant than corniculata, but not nearly as numerous as on some of the other Islands of the Four Mountains.

Corvus c. principalis, Northern Raven
Four noted on the northeast side at the carcass of a beached whale.

Nannus h. subsp., Winter Wren
Four were noted where a landing was made.

Leucosticte griseonucha, Aleutian Rosy Finch.
Noted on the boulder shores.

Melospiza m. sanaka, Aleutian Song Sparrow
Common along the beaches.

Calcarius l. alascensis, Alaska Longspur.
Two were noted.

Mammals

Alopex sp., Blue Fox
Six were noted, three of these at a beached whale carcass. Our data on the food of the foxes is, unfortunately, very meager. The whale carcass would furnish much and there may be more carrion from time to time. Undoubtedly they obtain birds which do not live on cliff ledges.

Eumetopias jubata, Steller's Sea Lion
On the northeast side we found a rookery containing 5 bulls, 14 or 15 females, and 27 immature animals. On other rocks, groups of 2 to 15 were seen.

Phoca richardii subsp., Harbor Seal
Six were seen in a small bight on the northwest shore among the kelp beds and rocks.

Balaenoptera physalus, Common Finback Whale
A whale thought to be this species was washed up on the boulder beach on the northeast side. It was about 25 feet long, with a small dorsal fin set well back toward the tail. It was black dorsally and white ventrally, with longitudinal furrows on throat and chest.

Orcinus sp., Killer Whale
A school of at least 25 was seen off the southwest shore.

Invertebrates

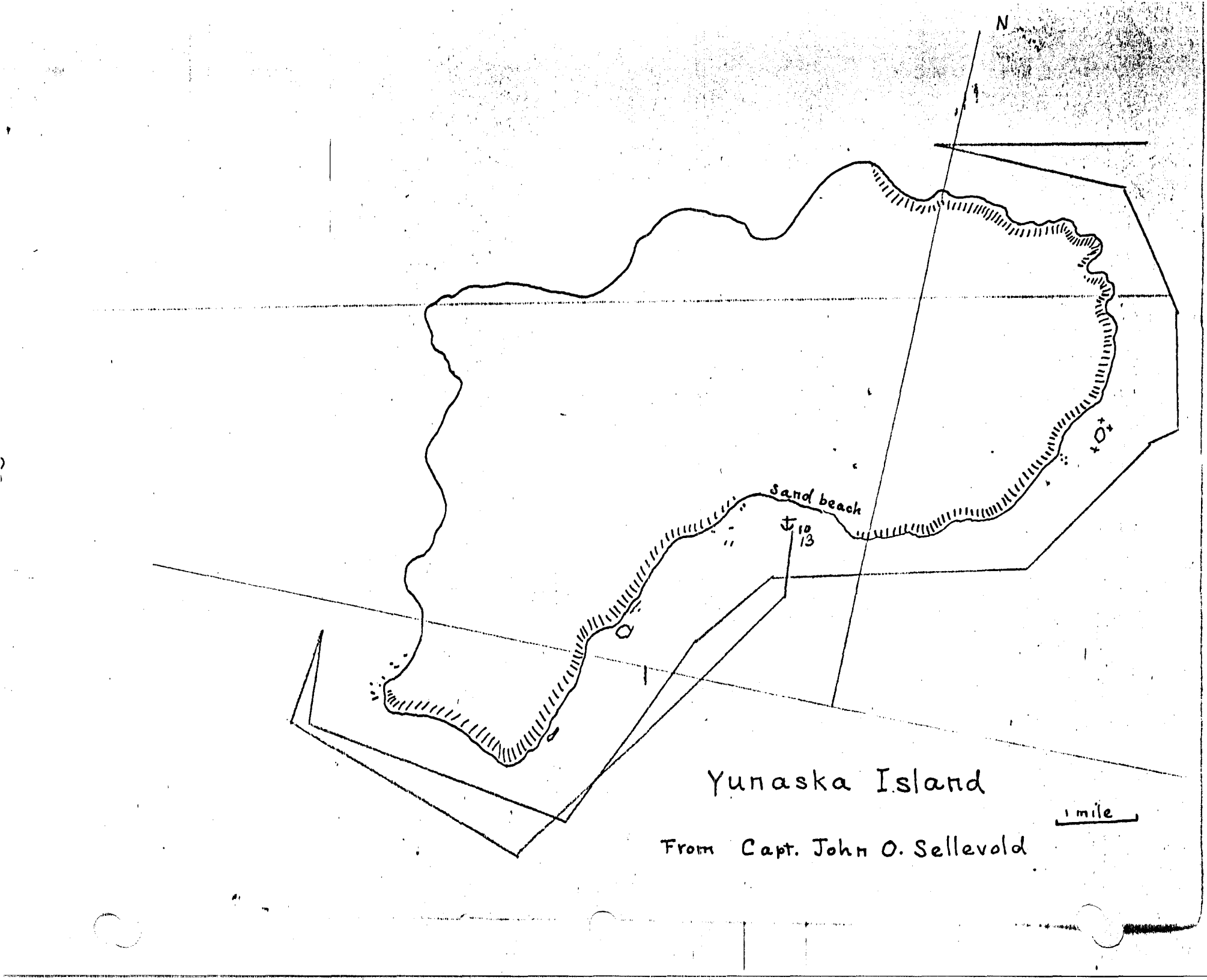
Sea urchins, limpets, and snails were noted in the shallow waters. Spiders and flies were abundant in the grass.

Remarks

We visited Yunaska Island on June 14. One party skirted the shore in one direction, with the motor launch while another party went the other direction in the dory, paralleled farther out by the Brown Bear, until we met, having thus encircled the island. The dory party made a landing.

Recommendations

Unfortunately we were unable to learn the food habits of the foxes on this island. We found no unusual bird colonies. On the basis of this information obtained, Yunaska would logically appear to be a fox island rather than a bird refuge.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Sand beach
10
13
Yunaska Island
1 mile
From Capt. John O. Sellevold

HERBERT ISLAND

June 13-14,1936

Location

Lat. 52-37 N., Long. 170-04 W. Southwesternmost island of the Islands of the Four Mountains.

Physiography

Five miles long by 3⅛ miles wide with a charted elevation of 5291 feet. The island is dominated by a volcanic mountain terminated by a crater. It was snow-covered at the time of our visit. The shoreline is characterized by the usual cliffs and bluffs, rather low on the north side and much higher on the south. There are at least three prominent outlying rocks. Only a few of the higher cliffs are shear or overhanging, the rest are sloping with grass-covered tops. The shoreline consists largely of jumbled rocks, with few landing places. On the northwest end is a narrow gravel beach. On the northeast side a small bight affords a landing for small boats. On the south side is a gravel beach (8"pebble).

Two small streams were noted on the south side.

Vegetation

The usual Elymus mollis is abundant along the shores. Farther back we found an abundance of moss, Empetrum nigrum, dwarf willow, Anemone narcissiflora, Potentilla villosa (on the rocks), Lupinus nootkatensis, Geum calthifolium, Rubus stellatus, and Viola langsdorfii.

The island is encircled with kelp and on the north side where there are more outlying rocks, it extends a considerable distance.

Birds

Fulmarus g. rodgersi, Pacific Fulmar
Fulmars were common on the south of the island and were also noted to the northward.

Phalacrocorax a. cincinatus, White-crested Cormorant.
Two or three were noted in addition to 7 nests found on the south side in close proximity to many nests of urile and pelagicus.

Phalacrocorax p. pelagicus, Pelagic Cormorant
A few noted at intervals. On the south side we found a colony of 50 nests, most of which belonged to P. urile.

Phalacrocorax urile, Red-faced Cormorant
An occasional one was noted and on the south side was a colony of 50 nests, the majority being of this species.

Histrionicus h. pacificus, Western Harlequin Duck
A dozen or more were seen around the kelp beds. A specimen was taken.

Somateria v-nigra, Pacific Eider
An occasional pair was seen along the rocky shore. Before being disturbed they were usually sitting on kelp-covered rocks.

Haliaeetus l. alascanus, Northern Bald Eagle.
Two pairs and a single bird were seen.

Haematopus bachmani, Black Oyster-catcher
One was noted.

Stercorarius parasiticus, Parasitic Jaeger
One was seen flying over the cliffs on the south side.

Larus glaucescens, Glaucous-winged Gull
Scarce, but a few were noted.

Rissa t. pollicaris, Pacific Kittiwake
Between 200 and 300 were seen feeding to the north of the island.

Cepphus columba, Pigeon Guillemot
A few noted here and there along the shores. Probably crevices in the cliffs and loose boulders heaped along the shore afforded nesting places.

Synthliboramphus antiquus, Ancient Murrelet
Three were seen offshore on the north side.

Cyclorrhynchus psittacula, Paroquet Auklet
Two groups of about 70 and 20 were seen offshore. A flock of 35 or 40 came out of a pile of jumbled rock on the south side, where they undoubtedly nest. They were chirping in characteristic fashion.

Aethia pygmaea, Whiskered Auklet
Three hundred or more were seen north of the island and specimens taken.

Fratercula corniculata, Horned Puffin
Lunda cirrhata, Tufted Puffin
Puffins were noted around the island, the Tufted Puffin predominating. Several flocks of a hundred or more were noted. The puffins, both species, were most numerous on the southwest side.

Nannus h. subsp., Winter Wren.
One was seen on the north side.

Melospiza m. sanaka, Aleutian Song Sparrow
Several were noted at the north side.

Calcarius l. alascensis, Alaska Longspur
Several were noted on a grassy flat at the north side.

Mammals

Eumetopias jubata, Steller's Sea Lion
One was seen at the north side.

Phoca richardii subsp., Harbor Seal.
About six were seen on the rocks and in the kelp along the shore.

Remarks

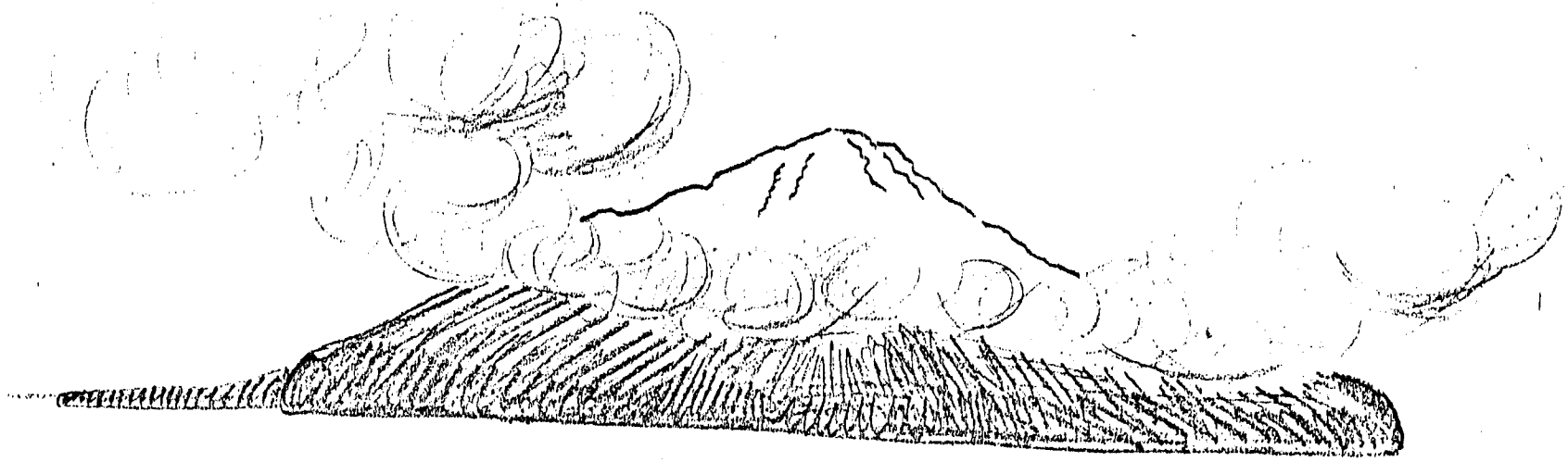
We made a brief visit to Herbert Island in the afternoon of June 13 and next morning a part of the shoreline was examined from the dory.

Recommendations

Unfortunately I do not have at hand data to show the food of foxes on the island. Very few droppings were found.

On the basis of the total number of birds on the island it is not an outstanding bird island and it would appear that fox farming would be its proper use, provided that the foxes are not depending too much on the bird supply, which will eventually fail with fox farming.

From the ornithologists standpoint, one hesitates to doom the little colony of Paroquet Auklets, and possibly Whiskered Auklets, by designating this a fox island. Yet if there are to be any fox islands in the Aleutians, one must pick some with less number of birds. And Herbert Island appears to be one of these.



Herbert Island
West side
O. J. Murie

From Capt. John O. Sellevold

CARLISLE ISLAND

June 13,1936

Location

Lat. 52-53 N., Long. 170 W. One of the Islands of the Four Mountains.

Physiography

Almost circular in outline, about 3½ by 3½ miles, with a sharp spit at the northeast point. The shores are all rocky and covered with huge boulders. The northeast part consists of high grassy slopes, varying in height from about 25 to 125 feet, these gradually diminishing toward the northeast and giving way to a rocky, jutting spit at the northeast point.

The northern shoreline is of the same nature, with high grassy slopes but here are more cliffs and points and the levels are above are broken up by many old stream beds. Toward the northeast end high cliffs predominate.

On the south side the grassy slopes just above the shoreline are much higher, if not as steep, than those on the east and north and there does not exist the plateau-like or gradually sloping land up to the snowline. Here the slope is steep and reaches the snowline quickly, and landslides are larger. At the southwest point rocky cliffs drop directly into the water and where there are no such cliffs the beachs are all covered with boulders. Numerous small springs tumble down to the beach or eat gullies into the soft dirt.

On the southeast to east the steep grassy slopes predominate again.

Vegetation

In general the vegetation appeared similar to that of neighboring islands. We obtained no plant list.

Birds

Phalacrocorax a. cincinatus, White-crested Cormorant
A small colony was found on ledges and in caves on the southwest side, together with urile. Another mixed colony was observed on the cliffs at the westernmost point of the island.

Phalacrocorax p. pelagicus, Pelagic Cormorant
These were commonly met with and appeared most abundant at the south end.

Phalacrocorax urile, Red-faced Cormorant
A mixed colony of urile and cincinatus was found on ledges and in caves on the southwest side. Another mixed colony was observed on the cliffs

at the westernmost point of the island. In addition to these, scattered individuals were frequently seen flying and they appeared concentrated along the west side of the island.

Histrionicus h. pacificus, Western Harlequin Duck
Not more than 4 actually seen about the island.

Somateria v-nigra, Pacific Eider
Eiders were occasionally met with along the shore all about the island.

Haliaeetus l. alascanus, Northern Bald Eagle
A bald eagle was seen flying over the grassy slopes of the southeast side, and two other pairs were noted elsewhere at the island.

Falco p. anatum, Duck Hawk
One was seen nesting on the west side and another bird noted on the south side.

Lagopus r. subsp., Rock Ptarmigan
Ptarmigan appear numerous on this island. Eight were observed on the grassy hillocks near the northeast side and onspecimen was taken.

Haematopus bachmani, Black Oyster-catcher
Six were observed on the south side.

Larus glaucescens, Glaucous-winged Gull.
A few were seen all around the island with concentrations on the grassy cliffs on the southeast, south, and southwest sides. The largest colony was one of about 250 nesting birds on the grassy slopes of the south side.

Uria l. arra, Pallas's Murre
Only a few, thought to be this species, were seen in the water on the southeast side.

Cepphus columba, Pigeon Guillemot
Noted at intervals around the island.

Synthliboramphus antiquus, Ancient Murrelet
A pair of birds thought to be this species flew past the ship at the southeast end.

Cyclorrhynchus psittacula, Paroquet Auklet
On the northeast side these were quite numerous and were found to be nesting in the rock crevices along the shore. An egg was collected at this point. A few of these birds were seen also on the west side.

Fratercula corniculata, Horned Puffin
Below the grassy bluffs on the north side, inhabited by thousands of Tufted Puffins were a liberal number of Horned Puffins, confined more to the rocky beaches. A few were also seen on the southwest and south sides, where they appeared to be found near rocky beaches and probably nested in rocky crevices.

Lunda cirrhata, Tufted Puffin
Very common all about the island, nesting in thousands on the grassy slopes of the north end and in moderate numbers at the southeast part of the island.

Corvus c. principalis, Northern Raven
Eight ravens were seen, three in one group.

Nannus h. subsp., Winter Wren
Common

Passerculus s. sandwichensis, Aleutian Savannah Sparrow
Two were seen on the grassy slopes of the northeast part of the island.

Melospiza m. sanaka, Aleutian Song Sparrow
Several noted.

Calcarius l. alascensis, Alaska Longspur
Common.

Mammals

Eumatopias jubata, Steller's Sea Lion
We found a colony of about 50 on the rocks of the north side.

Phoca richardii subsp., Harbor Seal.
Four were seen about the island.

Orcinus sp., Killer Whale
Two were seen offshore.

Remarks

We encircled the island on June 13, spending most of the day at it, and Mr. Williams, Jewell and Gray made a landing on the northeast point of the island, where they placed a Refuge sign on the grassy bluff just south of the rocky spit.

Recommendations

This island is well colonized by birds, including a moderate colony of Paroquet Auklets. I believe, judging by official records, that this island is not being used as a fox island. Under those circumstances, and since it is desirable to give certain species a refuge in every group of islands, this island should be reserved for the birds. It is only regretted that the Whiskered Auklets noted near Herbert Island do not nest on Carlisle, so as to be included in a refuge. Possibly they do. Further study will probably settle this point, but all indications point to Herbert Island as their nesting place.

CHUGINADAK ISLAND

June 12,1936

Location

Lat. 52-50 N., Long. 170-04 W. The largest of the Islands of the Four Mountains.

Physiography

The charted size is 13 miles long and 5 miles wide. The island is divided into two parts by Applegate Cove on the north and another bay on the south, leaving a low narrow neck of land between, ~~in~~ which separates the western part of the island occupied by a high, conical mountain, Mt. Cleveland, from the eastern part, occupied by an irregular mountain mass. This eastern mountain appeared to have remnants of an old crater. Mt. Cleveland was seen smoking on several occasions when the fog did not obstruct the view.

Only the western portion was examined in any detail. There were sand beaches in both the north and south bay. Boulder beaches were found at intervals along the shoreline. The lower slopes of Mt. Cleveland were characterized by extensive lava beds and where these reached the sea, the shore was steep and jagged, with outlying pinnacles. At the western tip, and around to the northwest part, there were more extensive grassy slopes. Similar grassy slopes extended east of Applegate Cove for some distance. A good stream of water flows into Applegate Cove. No other water was found on the western end of the island except a few little tundra ponds.

Applegate Cove is a bight that affords protection from southerly and easterly weather. A kelp reef extends out from the northwest side toward Carlisle Island.

The north side of the east half of the island was observed only castally from the ship. At least two beaches were observed there and a large offshore rock, known as Corwin Rock.

Improvements

There is a barabara in Applegate Cove.

Vegetation

The following plants were noted or collected: Alectoria ochroleuca, (light phase), Cladonia mitis, Cladonia rangiferina, Lycopodium annotinum, Ferns, Elymus mollis, Calamagrostis nutkaensis, Carex macrochaeta, Orchis aristata, Salix arctica, Claytonia sibirica, Coptis trifolia, Fragaria sp., Anemone narcissiflora, Dryas (octopetala?), Ranunculus nelsonii, Geum calthifolium, Rubus stellatus, Potentilla villosa, Lupinus nootkatensis, Empetrum nigrum, Viola langsdorfii, Ligusticum scoticum, Heracleum lanatum, Cornus canadensis, Cassiope mertensiana, Loiseleuria procumbens, Vaccinium uliginosum, Primula cuneifolia, Castilleja pallida, Plantago macrocarpa, Linnea borealis,

and Antennaria sp.

The steep banks were covered mostly with Elymus mollis, which extends landward a little way beyond the bank top, then the vegetation changes abruptly to the moss-Empetrum association, and there the dominant grass is Calamagrostis. Mosses and lichens are characteristic of the lower part of the lava beds, while vegetation becomes scarce or wanting higher up.

Birds

Oceanodroma furcata, Fork-tailed Petrel
When walking along the shore and tundra after dark I saw a petrel on three occasions, flying close overhead. The same evening a number of them were seen in the beam of the ship's searchlight. Possibly they nest in the lava rocks.

Histrionicus h. pacificus, Western Harlequin Duck
A small flock was seen off the northeast shore.

Somateria v-nigra, Pacific Eider
A number were seen by the mate, Mr. Martin, along the shore of Applegate Cove.

As we passed Corwin Rock on July 9 three female eiders flew toward it and it was noted that the top was grass-covered, with nesting gulls. Possibly it is a nesting place for ~~them~~ eiders, free from foxes, or at least a potential one.

Falco p. anatum, Duck Hawk
A pair of ~~fish~~ hawks were nesting on a high cliff at the southwest part of the island.

Lagopus r. subsp., Rock Ptarmigan
Rather plentiful on the rocky moss-covered areas on the southwest part of the island. One was collected and a nest of nine eggs was found.

Arquatella p. couesi, Aleutian Sandpiper
About ten were seen. Two specimens were taken and a set of 4 fresh eggs.

Stercorarius parasiticus, Parasitic Jaeger
Eight Parasitic Jaegers were observed flying in pairs over the numerous shallow pot holes of the mossy flats.

Larus glaucescens, Glaucous-winged Gull.
A few were seen along the southwest shore, apparently nesting, and on July 9 a number were seen on Corwin Rock no doubt nesting there.

Cepphus columba, Pigeon Guillemot
A few were seen at the northeast side.

Fratercula corniculata, Horned Puffin
Lunda cirrhata, Tufted Puffin
A few of both species were seen.

Corvus c. principalis, Northern Raven
A pair was nesting at a cliff on the southwest side.

Nannus H. subsp., Winter Wren
A few were seen at the beach and a few in the lava beds.

Leucosticte griseonucha, Aleutian Rosy Finch
Common in the lava beds and on the shoreline banks.

Passerculus s. sandwichensis, Aleutian Savannah Sparrow
One was noted at the barabara in Applegate Cove.

Melospiza m. sanaka, Aleutian Song Sparrow
Common on the rocky beaches as well as the grassy areas.

Calcarius l. alascensis, Alaska Longspur
Abundant.

Plectrophenax n. townsendi, Pribilof Snow Bunting.
Common in the lava beds.

Mammals

Vulpes sp., Red Fox.
Fox trails were seen here and there and a collection of droppings was made. The island appears to have contained a red fox population before any permit was granted to anyone, judging by the records available to me. An attempt was made to kill off all the red fox one season, in order to stock the island with blue fox, and 59 were killed, but it was said the island is too mountainous to get them all. It has repeatedly been estimated that the island holds 100 foxes. Perhaps that is its carrying capacity.

Orcinus sp., Killer Whale.
A small group was seen off the southwest shore.

Remarks

We were storm bound for several days in Applegate Cove but could not land to do any work until noon on June 12. On that afternoon I encircled the west half of the island while Mr. Williams, Jewell and Gray worked eastward a distance, on land as well as with the dory. On July 9 we cruised along the north side of the east half for a distance with the Brown Bear, but did not have time to work it in any greater detail.

A Refuge sign was placed at the barabara in Applegate Cove.

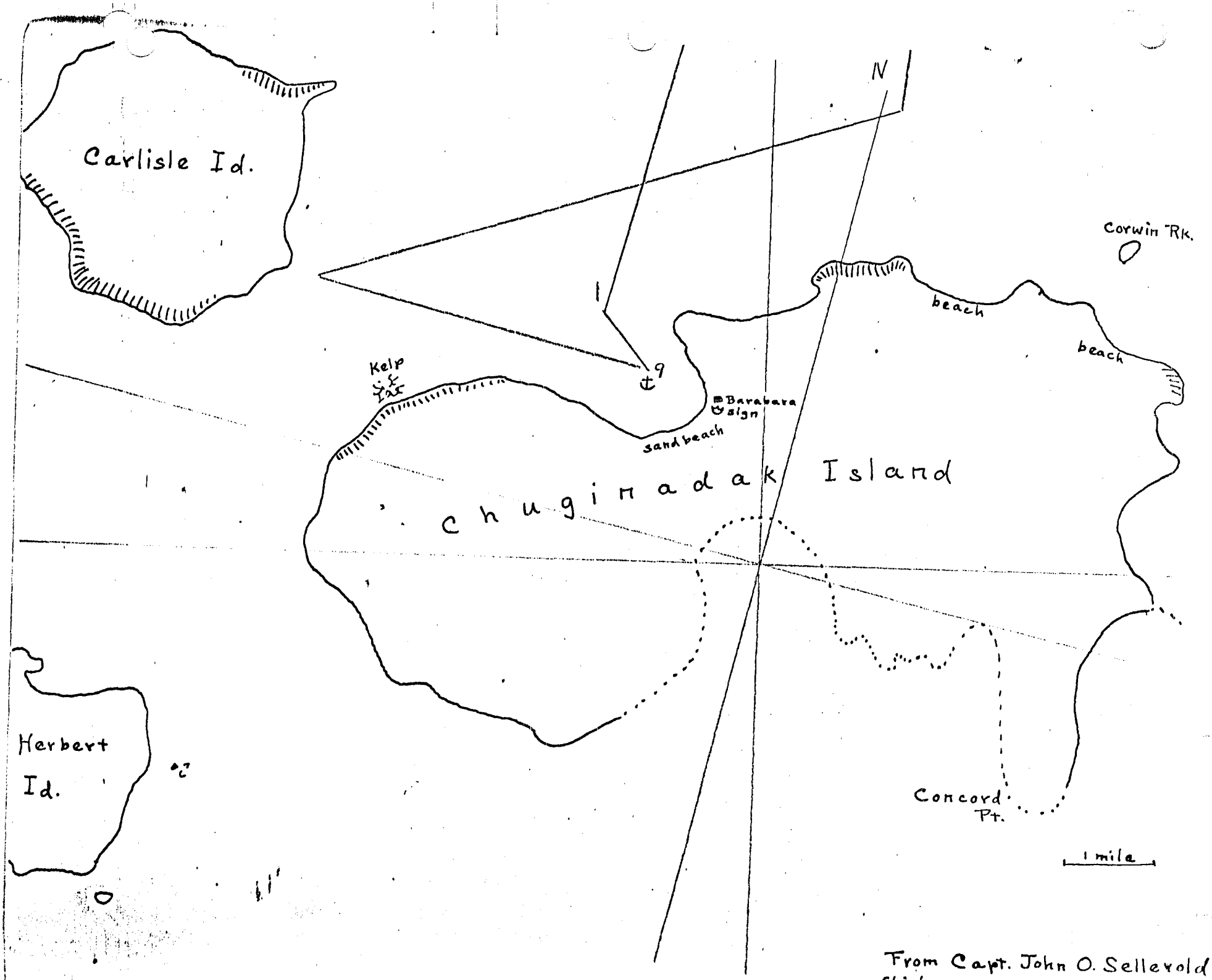
Recommendations

This island is notable for the absence of birds and this may well be correlated with presence of foxes over a long period of time, and the total absence of rodents. I do not have records at hand which would show whether this red fox is indigenous to the island. Possibly records in the Washington

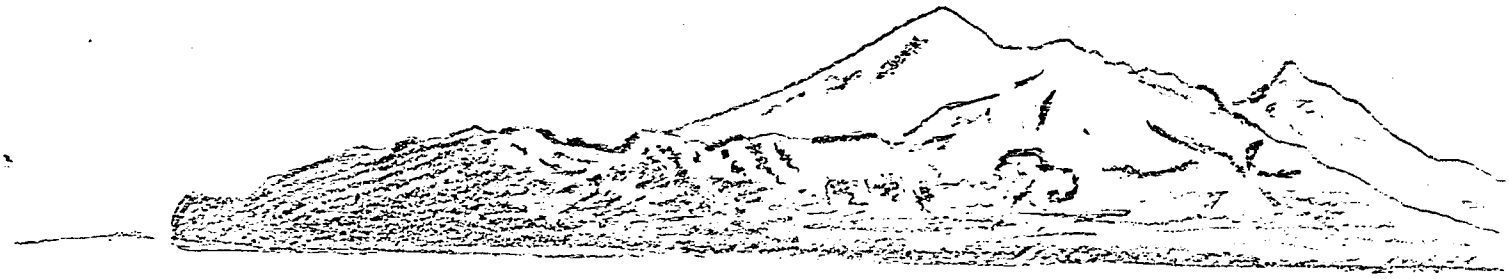
office would throw light on this.

Since it seems very difficult to eradicate the red fox from Chuginadak Island due to the rough character of its mountain areas, with extensive lava rock, and since the red fox is part of the Aleutian fauna found in the reservation, I would suggest that this island be administered as a public fur producing area, issuing licenses to individuals with this as a trapping district, and perhaps with a bag limit, as it is handled on Unimak Island. As a tentative figure, 50 skins in a season may be a fair bag.

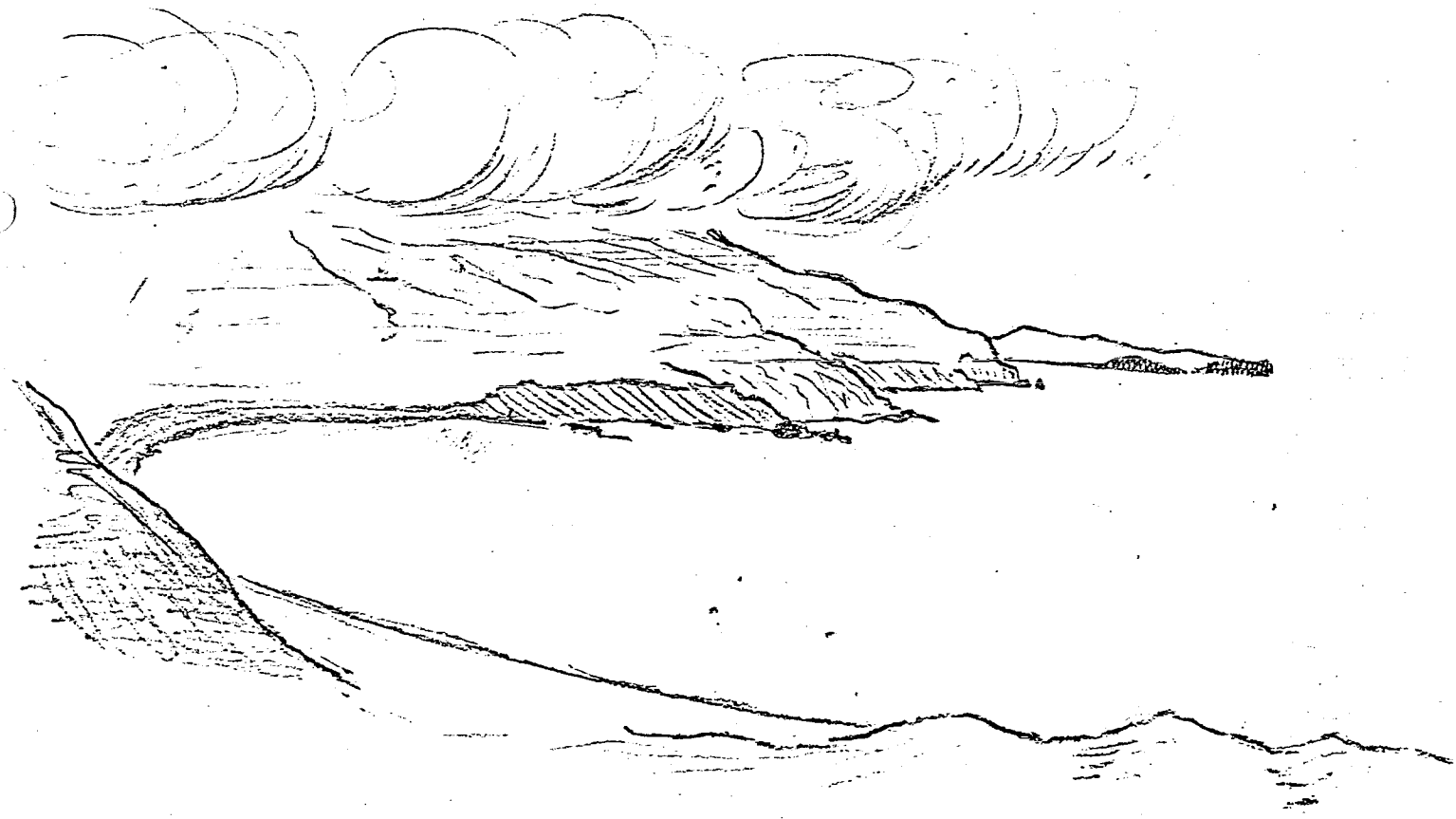
Incidentally, if we do not already have specimens, I believe we ought to have a good series of complete specimens from this island and make the necessary arrangements to obtain them.



From Capt. John O. Sellerold



Chuginadak I.
East End.



Chuginadak I.
Bay on south side,
Concord Point in distance

O. J. Murie

KAGAMIL ISLAND

June 8,1936

Location

Lat. 53-59 N., Long. 169-37 W. The easternmost of the Island s of the Four Mountains group.

Physiography

Almost circular in outline, about 5x4 miles. A mountain, on the south part of the island, rises about 3000 feet, snow covered on June 8 but bare on July 20 when seen again. The north part of the island is a mountainous mass about 2000 feet high. A long beach, perhaps 2 miles long, fronts a low wide plateau on the east side, that extends back to the middle of the island between the mountain and the highland lying to the north of it. Another small beach was seen on the south.

In making a circuit with the dory from the northeast around the north end and around to the south and we found the shoreline very rocky and often steep, except for a sandy beach located in a small bight on the north side and two bights with rocky beaches on the west. From the northeast to the northwest there are very high cliffs, those at the northerly points being more or less spotted with moss and grasses, but those on the west are sheer perpendiculars of 500 feet or more. Occasional water-worn caverns were noted along the cliffs.

A small stream drains a circular basin, emptying on a sandy beach in the bight on the north side. Another stream was noted on the west side which appeared to drain a long valley leading into the interior of the island.

At the south end is a series of hot springs or rather, steam jets, issuing from a steep rocky slope. Steam rumblings could be heard under the boulder beaches at that place.

Improvements

There is a house on the east side and the present permittee plans to build one at the north end.

Vegetation

There was the usual Elymus mollis and Calamagrostis near the shores and lower slopes. Higher up we found the moss-Empetrum combinations. Other plants noted were ferns, Fritillaria kamschatcensis, Streptopus amplexifolius, Salix arctica, Anemone narcissiflora, Ranunculus, Draba grandis, Geum calthifolium, Lupinus nootkatensis, Ligusticum scoticum, Cornus canadensis, Primula cuneifolia.

Birds

Oceanodroma furcata, Fork-tailed Petrel.
At night a number of these petrels were flying about the ship while we

were anchored in the north-end bight. In the morning, while approaching Kagamil, a petrel was seen resting on the water. They may nest on this island but we did not find the nesting places. They are known to nest on Uliaga, nearby.

Phalacrocorax a. cincinatus, White-crested Cormorant.
A limited number were nesting on the cliffs on the north end of the island, including a few in a large cleft where they were closely associated with Red-faced Cormorants and a few pelagicus. A few more were found nesting on a cliff on the northwest side of the island.

Phalacrocorax p. pelagicus, Pelagic Cormorant.
A few were found nesting on the north and west sides of the island. A few had their nests far in the dark interior of a cleft, close to the nests of the Red-faced species.

Phalacrocorax urile, Red-faced Cormorant.
These were found nesting on the north and west sides of the island, in some cases closely associated with pelagicus and cincinatus as, for example, in the cleft mentioned above. A few were noted near the colony of murres toward the south end of the island. The Red-faced species was more abundant than either of the others and cincinatus ranked second in numbers.

Philacte canagica, Emperor Goose
Five were seen flying from Uliaga Island toward Kagamil.

Histrionicus h. pacificus, Western Harlequin Duck
Several flocks were noted along the west side. Many of these were adult males in bright plumage.

Somateria v-nigra, Pacific Eider
All along the shores covered, eiders were noted at intervals. These were usually in pairs, but one or two small groups were seen, including immature males.

Haliaeetus l. alascanus, Northern Bald Eagle.
A pair was seen above the murre cliffs at the southwest side of the island and another was seen at the northeast side.

Falco p. anatum, Duck Hawk.
Two were heard at the north end of the island.

Lagopus r. subsp., Rock Ptarmigan
A male was collected well up on the rock outcrop at the north end of the island.

Haematopus bachmani, Black Oyster-catcher
Three or more pairs were seen about the northerly parts of the island.

Larus glaucescens, Glaucous-winged Gull.
A few gulls were seen along the shores among the kelp-covered rocks and feeding on a sandy beach. One or two pairs appeared to be nesting on the

Cliffs at the north end, but gulls are not plentiful here.

Uria a. californica, California Murre
Uria l. arra, Pallas's Murre

Both species were represented in a colony on the high perpendicular cliffs extending about 2½ miles on the west side of the island. The colony was confined chiefly to the lower 150 feet of the cliff. The colonies were scattered along at intervals with no great concentrations except in some favored recesses, where they were assembled in great numbers. At our approach, they poured out of the ledges in apparently inexhaustible streams. No estimates were attempted but the total number would run into many thousands. So far as we could tell there was no egg-laying yet. In one or two cases gulls swooped in on deserted ledges, but apparently found no eggs there.

Cepphus columba, Pigeon Guillemot

These were common at the north end, where they possibly nest among the rocks.

Cyclorrhynchus psittacula, Paroquet Auklet

Approximately one hundred were seen on the north side coming off the cliffs where puffins and cormorants were nesting. Two specimens were obtained.

Aethia cristatella, Crested Auklet.

One was seen flying at the northeast side.

Aethia pygmaea, Whiskered Auklet

A single individual was seen resting on the water at the northeast side of the island and was collected by Mr. Williams.

Fratercula corniculata, Horned Puffin

This species was nesting in the cliffs, more plentifully on the west side than on the north side. They were not as abundant as the Tufted Puffin.

Lunda cirrhata, Tufted Puffin

These were numerous on the cliffs on the northeast, north, and northwest sides of the island, nesting on the high grassy slopes, where their burrows could be seen. All the cliffs, except the steep murre cliffs on the west side, were used by the puffins.

Corvus c. principalis, Northern Raven

Six or seven were seen on the northwest side.

Nannus h. subsp., Winter Wren.

Several noted.

Leucosticte griseonucha, Aleutian Rosy Finch.

Several were noted along the rocks and beach at the north end.

Melospiza m. sanaka, Aleutian Song Sparrow.
Several were noted. Common along the shore.

Calcarius l. alascensis, Alaska Longspur.
Common on the slopes at the north end.

Plectrophenax n. townsendi, Pribilof Snow Bunting.
A snow bunting was heard singing on a high slope at the north end.

Mammals

Alopex sp., Blue Fox
Tracks were noted on the beach at the north end of the island. Droppings were collected and these contained considerable bird remains. Puffins, at least, are available to the foxes, probably others also. It will be of interest to note the results of the analysis of the droppings, when these can be made.

At the south end of the island we found a mummy cave and discovered that this cave has been much occupied by foxes. Many of the mummies had been torn from their wrappings and chewed and torn apart by the foxes.

Phoca richardii subsp., Harbor Seal.
Seals were common about the rocks and kelp beds. Eight or ten pups were seen at one place on the west side. A specimen was collected by Mr. Gray.

Invertebrates

At low tide pools were formed on the shore, where shells, limpets and aquatic worms were in evidence. Sea urchins were visible beneath the water. The sea water was exceptionally clear ~~ins~~ at the north and west sides where visibility was very good at 10 fathoms. Through this clear water we had a wonderful view of marine life, the various species of sea weed, numerous sea urchins, and a pink coral-like incrustation on the rocks which, all combined, presented a colorful garden-like effect in pale green, pink and brown. Small jellyfish were numerous.

Remarks

We visited Kaganil June 8 and spent the day there. Again on July 18 we landed at the south end, where we found a mummy cave and collected a lot of mummies for the Smithsonian Institution.

A sign was place at the north end.

Recommendations

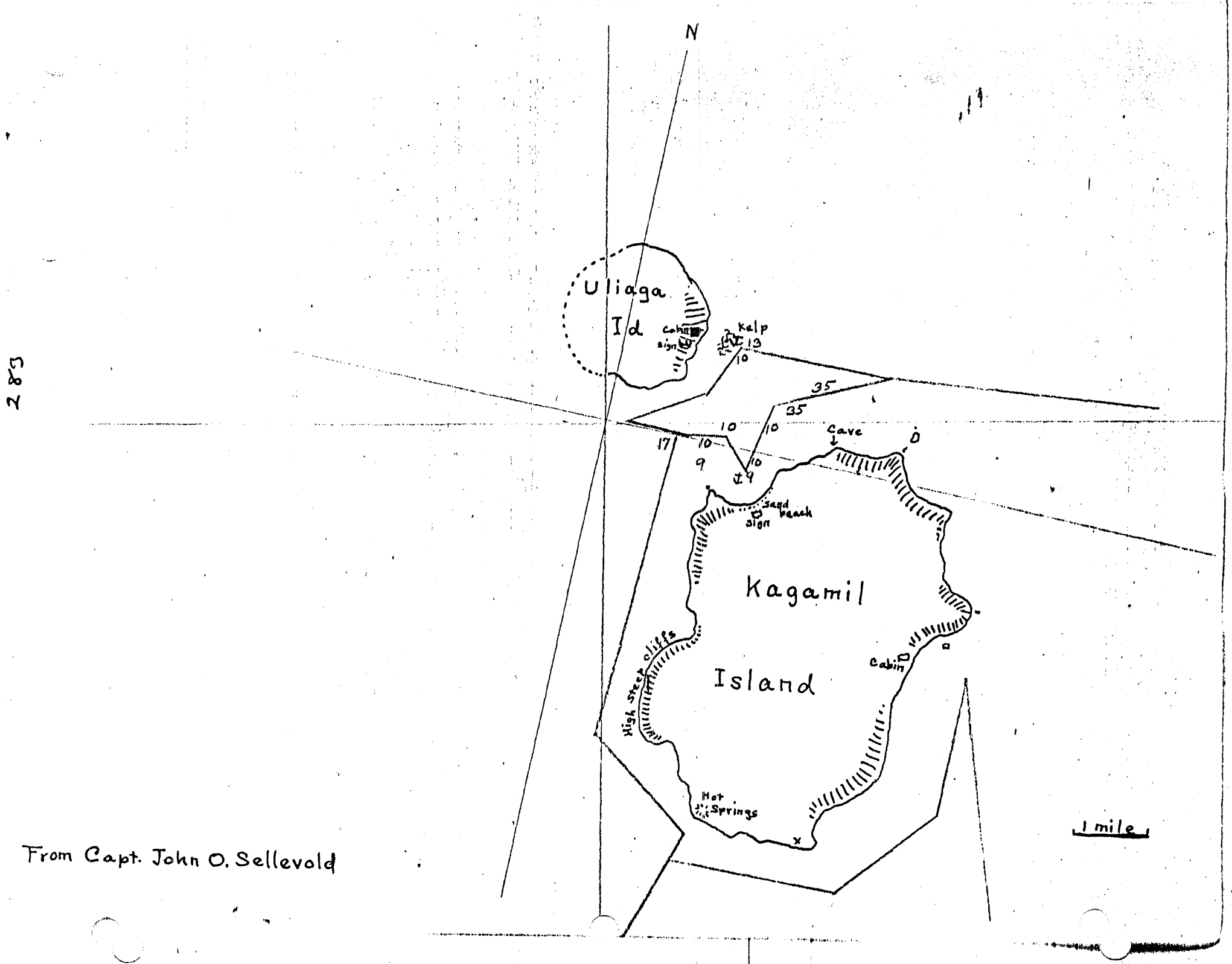
At our first visit we were under the impression that birds were generally safe from foxes on this island. That was before we had discovered the remarkable agility of the blue fox. Furthermore, on the second visit we

found an abundance of droppings, possibly several bushels of this material. These indicated a substantial bird diet.

It is true that many birds nesting on the high steep cliffs at Kagamil are safe from the foxes. But there are numerous birds, such as the puffins, which are available to these animals. There is no question about the foxes depending on the birds at the present time. And the eiders about the shore can not nest successfully now.

This particular group of islands, the Islands of the Four Mountains, presents a difficult problem. With the exception of Chuginadak they are all bird islands, and even Chuginadak may have petrels and no doubt would have numerous birds if foxes had not inhabited it for so many years. But it is assumed that some of the islands must be put to the use of fox farming and if this is the case we must choose the least of several evils. If we are to designate some fox islands, we felt that by choosing Kagamil as one and reserving some others for birds we would be lessening the total damage. With this in mind our choice for another fox island in this group would be Kagamil. In this connection, see the discussion of Uliaga.

It is suggested that if Kagamil be retained as a fox island it would be to the interest of the Smithsonian Institution to recover what mummy material remains in the caves before the foxes destroy it.



From Capt. John O. Sellevold

ULIAGA ISLAND

June 8 & July 20, 1936

Location

Lat. 53-04 N., Long. 169-42 W. The northernmost of the Islands of the Four Mountains.

Physiography

The island is almost circular with a diameter of approximately 2 miles. The shoreline is largely rocky and irregular, with the only possible landing place on the northeast side. Steep grass-covered slopes and cliffs alternate and high grass-covered plateaus and knolls move up to jagged rock upheavals. However, the grassy slopes are more gentle on the east side.

Snow covered the top of the mountain at the time of our first visit.

The shore if fringed with outlying, kelp-covered rocks.

There appears to be no permanent water supply.

Improvements

A one-room shack, 10x12, is located on the eastern side just above the landing place, owned by Mr. Jack Martin, the permittee. A crude dam 5 feet by 6 feet made of driftwood and sod has been constructed in a drainage gulch alongside the cabin in an effort to obtain fresh water. It was dry at the time of our visit.

Vegetation

Casual observation revealed at least the following plants, some of which were collected: 2 species of ferns (in sheltered depressions), Festuca rubra lanuginosum, Elymus mollis, Calamagrostis canadensis, Carex macrocheeta, Fritillaria kamschatcensis, Salix (arctica?) Claytonia sibirica, Anemone narcissiflora, Ranunculus, Drabe grandis, Saxifraga bracteata, Potentilla villosa, Ligusticum scoticum, Conioselinum gmelini, Heracleum lanatum.

The dense growth of Elymus and Calamagrostis extended a long way up the slopes but eventually gave way to the moss-Empetrum type on knolls and more rocky ground.

Birds

Oceanodroma furcata, Fork-tailed Petrel

On the northeast slope a number of for dens were found at which were abundant petrel remains. Evidently petrels formed the principal food during the denning season, although other foods may not have been indicated by the

remains. Numerous bones and a number of wings were collected. Similar remains were noted here and there along the hillside. On the rocky shore in at least seven places petrel wings were found among the rocks.

Search over the ground revealed a number of holes which were worn and may have been used by these birds, and finally one was found containing an abandoned egg with a well developed embryo.

Evidently the petrels nest on Uliaga and this may have been the source of those observed in the ship's lights at Kagamil Island one night. One might assume that they were more abundant where the puffins nested, on the steeper slopes, but we had no opportunity to investigate this.

Phalacrocorax a. cincinatus, White-crested Cormorant.
Phalacrocorax p. pelagicus, Pelagic Cormorant.
Phalacrocorax urile, Red-faced Cormorant.
Small colonies of each of these three cormorants were found around the island, on the rocky ledges, especially on the west side.

Philacte canagica, Emperor Goose.
Five were seen flying over the dory toward Kagamil on June 8.

Histrionicus h. pacificus, Western Harlequin Duck
Abundant in the kelp areas.

Somateria v-nigra, Pacific Eider.
Noted, but not common.

Haliaeetus l. alascanus, Northern Bald Eagle.
A pair was seen.

Lagopus r. subsp., Rock Ptarmigan
Two feathers were noted in a fox trail on the east side. Undoubtedly they occur on higher slopes.

Haematopus bachmani, Black Oyster-catcher.
A few were noted at the island.

Larus glaucescens, Glaucous-winged Gull.
A few were noted and they probably nest here, but no nests were found.

Uria a. californica, California Murre.
A flock, thought to be this species, was noted near the island.

Cepphus columba, Pigeon Guillemot.
Numerous off-shore.

Cyclorrhynchus psittacula, Paroquet Auklet.
A few were seen and they probably nest in the jumble of rocks on the shore.

Fratercula corniculata, Horned Puffin
Not as abundant as the Tufted Puffin, but they occur all around the island.

Lunda cirrhata, Tufted Puffin
Many thousands of these birds nested on the islands. The high grassy slopes offered ideal nesting sites and the birds were swarming about some of the favored places. This is the dominant species of Uliaga and is an outstanding puffin colony in the Aleutian chain.

Selasphorus rufus, Rufous Hummingbird.
Howard Jensen, a member of the crew, saw a bird on the beach which he declared was a hummingbird. He described it as smaller than the wren, brown, with a long bill. He did not see the red gorget, but noted the whirring of the wings and heard their sound and described the bird as darting here and there. He assured us he was familiar with hummingbirds. At any rate, although such sight records are generally not accepted, it is given here for what it may be worth.

Corvus c. principalis, Northern Raven.
Two were noted.

Nannus h. subsp., Winter Wren.
Several were seen and one was collected.

Leucosticte griseonucha, Aleutian Rosy Finch.
Several were seen.

Passerculus s. sandwichensis, Aleutian Savannah Sparrow.
Several were noted and a nest with eggs was found, June 20.

Melospiza m. sanaka, Aleutian Song Sparrow
Common.

Calcarius l. alascensis, Alaska Longspur.
Common.

Mammals

Alopex sp., Blue Fox.
At least four were seen and several dens were noted. We collected many droppings, the majority of which contained feathers. The remains at several of the dens and on the open hillsides showed that they were feeding a great deal on the petrels. A number of trails led from the beach far up the slope toward the rocky outcrops and mossy vegetation.

Phoca richardii subsp., Harbor Seal.
Common about the island, especially where kelp was plentiful.

Recommendations.

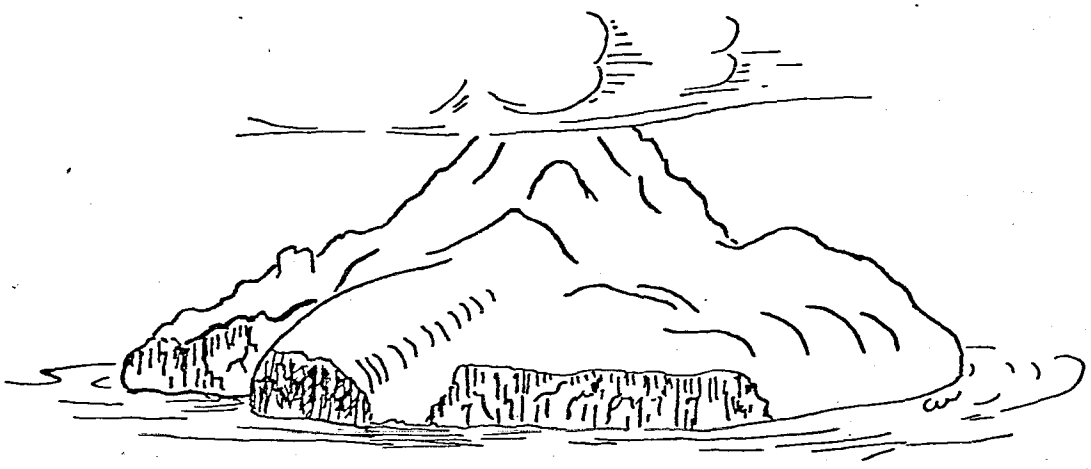
Uliaga is looked upon by the present permittee as a good island for the foxes in "pupping" time, and he plans to remove them to Kagamil for the winter.

where he will feed them. This would leave them on Uliaga at the time when they could feed on the birds. He found that the foxes were living on the birds. Records show that one year between September and January 20 foxes died from unknown cause. It occurs to me that malnutrition may have been a contributing factor. At any rate, the permittee apparently considers the island unsuitable for the winter, planning to use it only during the bird nesting season.

Evidently this island is not self-sufficient for fox farming. On the other hand, it is still heavily populated by birds. It is recommended that it be reserved for the birds.

Remarks

On June 8 Mr. Williams and Jewell spent the afternoon at Uliaga, encircling it with the dory, and on June 20 we again visited the island and spent a few hours ashore. A sign was placed on the east side.



N/E

Uliaga Island, Aleutians

From drawing by C.S. Williams

ANAHULIAK ISLAND

June 7,1936

Location

Lat. 53 N., Long. 168-56 W. Located three miles out from Nikolski Village, Umnak Island.

Physiography

This island is approximately one mile long and ½ mile wide, 300 feet high. It has a rocky shoreline, with reefs on the north side. Landing is made only in mild weather. There are steep slopes and cliffs and the top is rolling with knolls.

There are no harbors, sand beach, or water supply, except for a small shallow pond.

Vegetation

This island is extremely grassy, even on top. Elymus mollis, of course, characterized the shores, and Arenaria peploides occurred on the beach. Ranunculus nelsonii was collected, Potentilla villosa, and Mertensia maritima.

Birds

Phalacrocorax a. cincinatus, White-crested Cormorant.
Several were seen and some may nest on off-shore rocks, although we saw no nests.

Histrionicus h. pacificus, Western Harlequin Duck.
A few were seen about the island.

Buteo l. sancti-Johannis, American Rough-legged Hawk.
A pair, evidently nesting, was seen at the island.

Haliaeetus l. alascanus, Northern Bald Eagle.
A pair had a nest in a niche in a very steep grassy slope. There were two downy young. At the nest were remains of 5 Atka mackerel, (Pleurogrammus monopterygius), some sheep wool, shearwater, cormorant, possibly ancient murrelet, and other items.

Falco p. anatum, Duck Hawk.
A pair was nesting and a specimen taken.

Lagopus r. subsp., Rock Ptarmigan.
A pair was flushed and the male collected. These are undoubtedly the same species as those occurring on Umnak Island.

Haematopus bachmani, Black Oyster-catcher.
A pair was noted.

Larus glaucescens, Glaucous-winged Gull.
A few noted.

Leucosticte griseonucha, Aleutian Rosy Finch.
One was noted.

Passerculus s. sandwichensis, Aleutian Savannah Sparrow.
Observed at the island.

Melospiza m. sanaka, Aleutian Song Sparrow.
Several noted.

Calcarius l. alascensis, Alaska Longspur.
Several noted.

Mammals

We could find no evidence of any rodents. It might be remarked that Umnak Island, nearby, is well populated with lemmings.

Foxes have been raised on the island. We saw none on our visit.

Remarks.

The island was visited June 7 and it took only a few hours for our party to cover it, afoot, pretty well.

Recommendations

Although of course a few birds occur at this island, it is notnow strictly a bird island. It can not produce a large number of furs annually, being so small, but it is close to Nikolski Village and may be used for whate ever foxes it can produce, possibly something less than 20 per year, on the a average. If only a few pairs are left to breed each spring possibly a few pairs of ptarmigan could nest there.

EGG ISLAND
July 15,1936

Location

Lat. 53-52 N., Long. 166-03 W. Three miles northeast of Sedanka Island in the Fox Island group.

Physiography

A mile long and a mile wide. We examined the east side and the north and south ends. The shoreline examined is extremely rugged, rising in very tall cliffs and columns with numerous clifts and indentations.

Vegetation

Grass is the principle form of vegetation. Claytonia sibirica, Ligusticum scoticum, and Heracleum lanatum were noted casually.

Birds

Oceanodroma furcata, Fork-tailed Petrel
On the east side of Egg Island were several cavities in the loose rock in which two eggs and three or four adult petrels were found. The extent of the nesting grounds was not determined.

Phalacrocorax p. pelagicus, Pelagic Cormorant
Phalacrocorax urile, Red-faced Cormorant.
A number of cormorants were found nesting in the steep cliffs on the east side of the island. Probably both species were there, but this was not determined.

Haliaeetus l. alascanus, Northern Bald Eagle.
A pair of bald eagles was evidently nesting.

Larus glaucescens, Glaucous-winged Gull.
There was a considerable colony on the grassy ridge tops of the west end. Among these were a number in advanced immature plumage.

Cepphus columba, Pigeon Guillemot.
A few were seen.

Lunda cirrhata, Tufted Puffin.
Nesting in moderate numbers on the east side.

Nannus h. subsp., Winter Wren.
Several noted.

Melospiza m. sanaka, Aleutian Song Sparrow.
Several noted.

Mammals

Eumetopias jubata, Steller's Sea Lion
About 30 were seen on the rocks at the west end.

Remarks

A brief visit was made on July 15 and a sign was placed on the beach on the east side. The sea was too rough for our dory to venture on the west side.

Recommendations

By Executive Order, dated January 4,1901, Egg Island was reserved for lighthouse purposes. The shores are very precipitous and rugged which is not conducive to good feeding places for foxes and furthermore petrels are present and it is possible eiders are nesting on the island. It is extremely doubtful if fox farming could be made profitable even on a small scale. All of which indicates that this island should not be leased for that purpose.

BABY ISLANDS

July 15,1936

Location

Lat. 54 N., Long. 166-04 W. A group of five small islands lying just northeast of Unalga Island. The northwest island of the group is the smallest and is unnamed. Unnamed, Koschekt and Adokt form a line paralleling the adjacent shore of Unalga, Koschekt being the central one of these three and Adokt themost southern. The northernmost island, lying east of these three, is Tangagm and the Easternmost is Excelsior.

Physiography

Unnamed Island is a rocky islet rising rather abruptly from the water, truncated in shape and capped with grass, about 200 yards long.

Koschekt Island is round in shape, with a length of less than one-half mile. Rocky beaches make it possible to walk all round the shore.

Adokt is similar to Koschokt in shape, perhaps a little smaller, with some gravel beach on the north side. It is possible to walk half way round the island on the shore. The south and part of the west side consist of high sheer cliffs.

Excelsior is larger than Adokt and somewhat similar in shape with cliffs nearly all the way round but most prominent on the south and east sides. There is a little cove on the south side where a landing is possible.

Tangagm is elongated, possibly about one-half mile long, a low island with no prominent cliffs.

These islands, since they lie in Akutan Pass, are in the path of the tidal current and are surrounded by severe tide rips which make landing difficult. The general height varies from 100 to 300 feet.

Improvements

There was a house on Koschekt, an old barabara on Adokt and a house on Excelsior.

Vegetation

The vegetation on these islands is chiefly grass, including Elymus mollis and Calamagrostis, which covers them with a dense mass hard to walk through. Other plants were not listed.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant
A very few were seen about Koschekt and Adokt Islands.

Phalacrocorax urile, Red-faced Cormorant.
A colony of about 500 nests were found on the high cliffs of Adokt Island, many of them containing downy young. There was another colony on Excelsior.

Histrionicus h. pacificus, Western Harlequin Duck
At Koschekt Island we counted 115 ~~xxx~~ and we saw a few at Excelsior.

Somateria v-nigra, Pacific Eider.
Several were seen at Adokt and a female, evidently nesting, flew out of the grass on a slope. A few were also seen at Excelsior Island and here, also, a female was apparently nesting.

Haliaeetus l. alascanus, Northern Bald Eagle.
A pair was seen on Excelsior Island and an immature bird on Koschekt Island.

Falco p. anatum, Duck Hawk.
One was seen at Excelsior Island.

Haematopus bachmani, Black Oyster-catcher
One was seen on Adokt and two were seen on Koschekt, ~~and a few at Excelsior~~.

Cepphus columba, Pigeon Guillemot
A few were seen at Excelsior.

Lunda cirrhata, Tufted Puffin
Quite a number of this species were nesting on Adokt and Excelsior and large numbers on the small unnamed island.

Corvus c. principalis, Northern Raven
Two or three were seen on Adokt Island.

Nannus h. subsp., Winter Wren.
Two were singing on Koschekt Island.

Passerculus s. sandwichensis, Aleutian Savannah Sparrow.
Common on Adokt and Koschekt Islands; no doubt occurs on the others but no landing was made on them.

Melospiza m. sanaka, Aleutian Song Sparrow.
Several were seen on Adokt and Koschekt Islands.

Larus glaucescens, glaucous-winged Gull
at least 25 were nesting on top of Adokt, about the same number were flying about Koschekt, and a few at Excelsior.

Mammals

Alopex sp., Blue Fox
Three were seen on Koschekt and a few droppings were picked up which consisted of crustaceans. Apparently no birds available for food. Parts of this island would be suitable for nesting puffins and one old burrow was noted casually. Eiders also could nest here. But none of these remain now and the foxes must subsist on beach food.

Phoca richardii subsp., Harbor Seal.
One was seen at Adokt and one at Koschekt.

Remarks

We visited these islands on July 15 with the dory and managed to land on two of them. The tide rips were too bad to attempt the others and we were glad enought to get back to the ship.

Recommendations

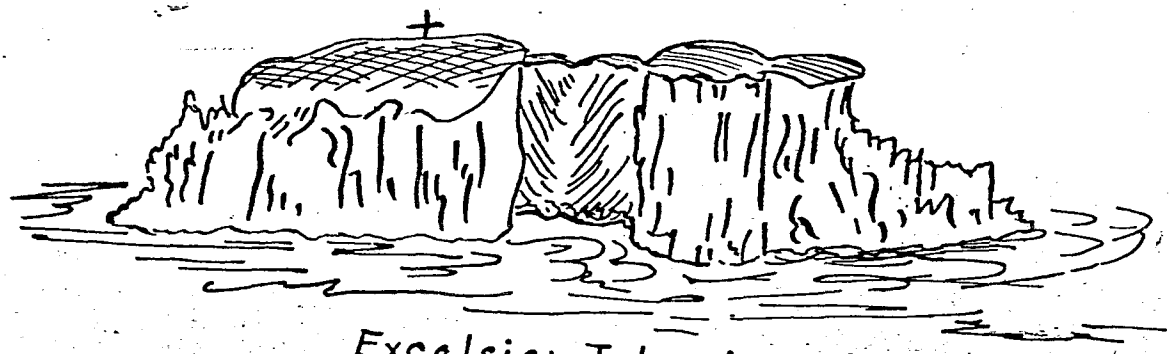
The little unnamed island is an excellent nesting place for puffins, is too small for foxes, and should remain a bird island.

Adokt Island has a large colony of Red-faced Cormorants and a good number of puffins and furthermore the eiders seem inclined to nest there. Fox farming has been tried here and the permittee, William Zaharoff, says that he wants to give up the island because it has been a failure due to the fact that excessive tides and currents catch the foxes on the beach and carry them off. Under these circumstances, this island could be saved for the birds.

Excelsior apparently has not been a consistent producer of fur, foxes swim to other islands and it does not promise to be a great success. It is suitable for nesting birds and no doubt should be devoted to that purpose.

Koschekt and Tangagm are at present outstanding bird islands, although from what we have seen, it is likely birds nested there at one time. Reports of permittees also indicate that birds nested there some years ago. These islands would probably support a small number of foxes but permittees have complained that foxes swim from one island to another and results so far have been unsatisfactory.

In view of these things it would appear to be best to reserve all five islands as a bird reserve, rather than try to operate two of them as fox farms. This would do away with the complications now existing and would restore the old nesting grounds for birds. It is likely that eiders would increase on this group of islands.



Excelsior Island, Aleutians

Adokt Island, Aleutians

Two of the Baby Islands

From sketch by C.S. Williams

ROOTOK ISLAND

July 15, 1936

Location

Lat. 54-03 N., Long. 165-33 W. Westernmost island on east side of Avatanak Strait, directly south of Akun Island.

Physiography

About 3 miles long by 2 miles wide. There are two peaks on the south side about 1500 feet high. Continuous cliffs extended along the south side, with a gravel beach toward the eastern end and another long beach on the northeast side of the island. At least 3 fresh water streams were noted.

Birds

Fulmarus g. rodgersi, Pacific Fulmar
A number were seen in the vicinity.

Phalaropus fulicarius, Red Phalarope
A few small flocks were seen in the vicinity.

Larus glaucescens, Glaucous-winged Gull.
A few were seen.

Remarks

We merely passed the shores of this island with the Brown Bear and examined it with our glasses. It is reported on here merely record the meager data we obtained.

I may mention that although there were numerous great cliffs, we saw no nesting birds from a distance on the south side.

The records show that foxes have been on the island since 1913, a period of 23 years, and in that period nine foxes have been placed on the island, a few from time to time, and that about 50 have been taken off. This is a poor record and does not indicate a good fox island.

Whether this long occupancy by foxes has anything to do with the present scarcity of birds, and whether or not rodents occur on the island we do not know.

We have no recommendations at this time.

POA ISLAND

July 16,1936

Location

Lat. 54-08 N., long. 165-30 W. The most southern of a small group of islands lying off Trident Bay, on the southeast side of Akun Island.

Physiography

More or less circular in shape with a length of about $\frac{1}{2}$ mile. The shoreline is mostly cliffs but with a short boulder beach on the north side. The island rises 300 to 400 feet, rounded off at the top, with grassy knolls. There are a few outlying rocks.

It is reported that small ponds and springs occur on the island.

Improvements

A house, 12x14, is located on the north side.

Vegetation

The vegetation is mostly grass, Elymus mollis and Calamagrostis, which grows very dense, with the usual sprinkling of Ligusticum scoticum and Heracleum lanatum.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant
A few were seen.

Phalacrocorax urile, Red-faced Cormorant.
About 100 nests werenoted at the east end of the island.

Histrionicus h. pacificus, Western Harlequin Duck
A few were seen.

Haliaeetus l. alascanus, Northern Bald Eagle.
Two were seen flying over their nest on the north side, where a young one could be seen.

Larus glaucescens, Glaucous-winged Gull.
A few were seen about the island but no nesting colonies.

Cepphus columba, Pigeon Guillemot
Very few seen.

Fratercula corniculata, Horned Puffin
Very few seen.

Lunda cirrhata, Tufted Puffin
Quite a few at the steep east end of the island.

Mammals

Alopex sp., Blue Fox
Thirteen droppings were collected. Of these, 8 contained birds, 3 contained sea urchins, 2 contained crustaceans.

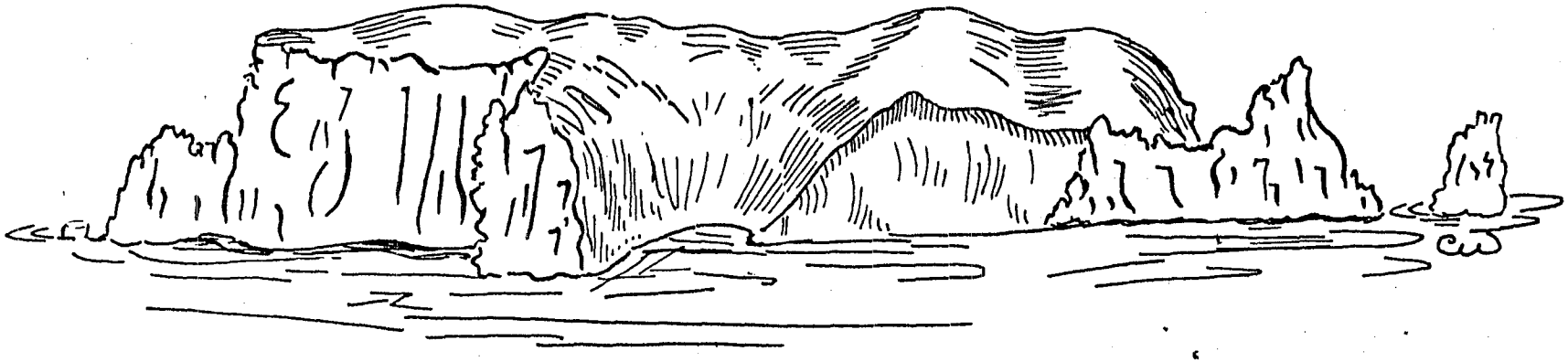
Eumetopias jubata, Steller's Sea Lion
Three were seen on the south side of the island.

Remarks

The island was visited the evening of July 15 and a sign was placed near the house on the beach. Next morning we encircled the island and noted the birds more particularly.

Recommendations

The reports of ten years show that about 30 foxes have been taken off the island. Ten had been placed on the island. There was little evidence of foxes at the time of our visit. This is a poor showing and it is evident that this little island is by no means profitable. Under such circumstances it is better to leave it in the status of a bird island.



Poa Island, Aleutians

From drawing by C.S. Williams

TAWGIK ISLAND

July 16,1936

Location

Lat. 54-08-40 N., Long. 165-29 W. A somewhat elongated island lying midway between Poa Island and Cross Bay on the southeast side of Akun Island.

Physiography

About one-half mile long.

The east end of the island rises in steep cliffs and slants off to lower levels toward the west, down to a gravel beach at the west end where it forms a gravel spit. This beach extends for a considerable distance. The profile of the island is smooth, rising easily from west to east.

Improvements

A house, about 14x20.

Vegetation

A heavy growth of Elymus and Calamagrostis covered the island in such quantity that ~~that~~ walking was very difficult.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant
Less than half a dozen were observed.

Phalacrocorax urile, Red-faced Cormorant
A rough count showed 180 nests on the steep cliffs at the east end.

Histrionicus h. pacificus, Western Harlequin Duck
About 20 were seen about the shore.

Haliaeetus l. alascanus, Northern Bald Eagle.
Two immature birds were seen.

Larus glaucescens, Glaucous-winged Gull.
Very few were seen, flying about.

Cepphus columba, Pigeon Guillemot.
Some were noted.

Lunda cirrhata, Tufted Puffin.
Some were noted, nesting.

Corvus c. principalis, Northern Raven.
Some were seen.

Passerculus s. sandwichensis, Aleutian Savannah Sparrow.
Three were seen.

Mammals

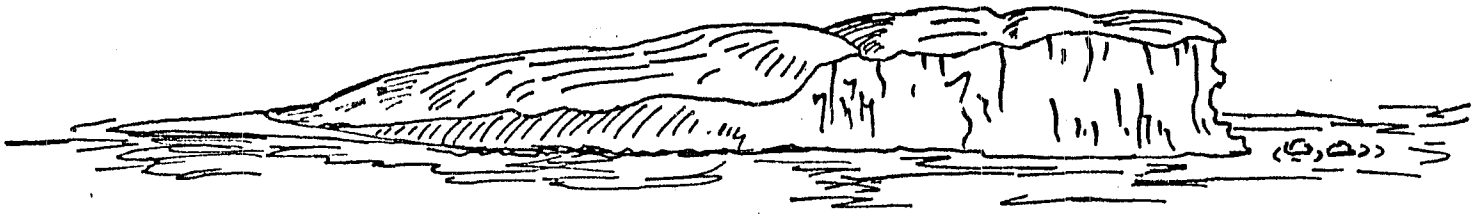
Alopex sp., Blue Fox.
One was seen on the west side feeding among the kelp-covered rocks.

Remarks

We visited this island on July 16, went around it with the dory and placed a Refuge sign near the cabin at the west end.

Recommendations

Bird life is scarce on this island, except for the colony of cormorants. The island was first stocked in 1920 and if reports of permittee are correct in a period of 15 years a few pairs have been taken off the stock other islands and others have been placed on this island and practically no returns have been produced. At the time of our visit there could not have been many. I would consider this a failure and predict that it will eventually be abandoned unless some other method is devised. Birds will not suffer unduly, however, if fox farming efforts are continued.



Tangik Island; Aleutians.

From drawing by C.S. Williams

PUFFIN ISLAND

July 16,1936

Location

Lat. 54-08-30 N., Long. 165-31-30 W. This is a small island, unnamed on the chart, lying in Trident Bay at the southern part of Akun Island. This little island is such an unusual nesting place for puffins that it seemed appropriate to call it Puffin Island, and it is so designated here.

Physiography

This is a low rocky island about 200 yards long, without an appreciable beach and capped with a heavy growth of grass.

Vegetation

The principal vegetation is grass, consisting of Elymus and Calamagrostis and this forms such a dense growth that very little other plant life is noticeable. A few groups of Claytonia sibirica and some Ligusticum scoticum and Heracleum lanatum.

Birds

Phalacrocorax cincinatus, White-crested Cormorant.
Five were seen on one of the rocks near the shore.

Histrionicus h. pacificus, Western Harlequin Duck.
A few noted.

Haematopus bachmani, Black Oyster-catcher.
Seven in one group were seen.

Larus glaucescens, Glaucous-winged Gull.
Several hundred were nesting in the grass and downy young were observed.

Rissa t. pollicaris, Pacific Kittiwake
Four were seen flying near the island.

Lunda cirrhata, Tufted Puffin.
Several thousand puffins were nesting all around the island. Their burrows were so concentrated that they often ran into each other, and the ground would cave in as we walked over them. It is the greatest concentration per unit area that we have seen. In one place nine burrows were counted in an area of 36 square feet.

Nannus h. subsp., Winter Wren.
One was seen.

Remarks

We were able to cover this little island in a short time, on July 16, and placed a Refuge sign on the shore.

Recommendations

This island can not, of course, be useful as a fox island and should be preserved for the exceptional puffin colony.

BOGOSLOF ISLAND

June 5,1936

Location

Lat. 54, Long. 168. North of Umnak Island.

Physiography

No attempt at a detailed description of this well known island will be made. It consists chiefly of two parts, Castle Island, which includes high rocky portions as well as a flat area, almost separated by a low narrow neck from the rocky Fire Island. This low connecting part could conceivably be practically covered with an extremely high tide and storm.

On Castle Island is a shallow lake, the shore line yellowish with sulphur deposits. In places we found the ground warm to the touch.

Vegetation

Vegetation is almost lacking. Arenaria peploides appears to be the dominant form and there were traces of an unidentified grass.

Birds

Diomedea nigripes, Black-footed Albatross
Four or five were noted between Bogoslof and Umnak.

Fulmarus g. rodgersi, Pacific Fulmar.
A carcass was found on the beach.

Phalacrocorax p. pelagicus, Pelagic Cormorant,
A few noted.

Philacte canagica, Emperor Goose.
The remains of one were found, which had been eaten by some bird.

Limnodromus g. scolopaceus, Long-billed Dowitcher.
Mr. Williams reported one of these birds at the sulphur lake.

Larus glaucescens, Glaucous-winged Gull.
Many gulls are nesting on Bogoslof. Some nests were built of sea weed and feathers, and contained one to three eggs.

Uria a. californica, California Murre.
Uria l. arra, Pallas's Murre.
The majority of murres appeared to be arra, but a certain number were identified as californica. Hordes of murres were preparing to nest on the island, although it seemed no egg had been laid at the time of our visit. They were congregated all over the high rocky portions of both Fire Island and

Castle Island, and were clinging to the meager footholds on the high bank which extends along the beach. This is the dominant bird of the island.

Lunda cirrhata, Tufted Puffin.
A number were seen here.

Mammals

Eumetopias jubata, Steller's Sea Lion.
A large sea lion rookery inhabits the long sandy beach. The pups were being born at the time of our visit. There was a terrific roaring in the herd as we walked among them, many of them taking to the sea, the old bulls fighting among themselves, some of them making a firm stand against our advance.

Remarks

The Sea Lion rookery on Gogoslof is striking, much greater than any that we found to the westward in the Aleutians, and it is very fitting that such an animal concentration, including the hordes of murres, so emblematic of the northern seas, should be associated with Bogoslof, an island with a striking history which has so caught the imagination of thepublic.

AMAK ISLAND

May 31,1936

Location

Lat. 55-25 N., Long. 163-03 W., approximately. Lies a few miles north of the western end of Alaska Peninsula.

Physiography

About 2 miles square, but outline roughly circular, a dome-like mountain rising from the sea, with some good-sized offshore rocks. There is a low flat and gravel beach on the southeast side. There are many high cliffs.

Birds

Phalacrocorax p. pelagicus, Pelagic Cormorant.
Phalacrocorax urile, Red-faced Cormorant.
Only a few Pelagic Cormorants occur here but there are many Red-faced Cormorants, probably several thousands, nesting on some high cliffs.

Histrionicus h. pacificus, Western Harlequin Duck.
A few were noted at the island.

Buteo l. sancti-johannis, American Rough-legged Hawk.
These nest on the island.At least two were seen on this visit.

Falcons
Haliaeetus l. alascanus, Northern Bald Eagle.
One or two pairs nest on the island.

Falco p. anatum, Duck Hawk.
Several nest on the island.

Haematopus bachmani, Black Oyster-catcher.
These apparently nest here.

Larus glaucescens, Glaucous-winged Gull.
Gulls nest here in large numbers.

Rissa t. pollicaris, Pacific Kittiwake.
Numerous kittiwakes nest on the cliffs above the Sea Lion herd.

Uria a. californica, California Murre
Uria l. arra, Pallas's Murre
A large colony of murres, chiefly arra, nests on the cliffs near the Sea Lion herd.

Cepphus columba, Pigeon Guillemot
A few were noted about the island.

Fratercula corniculata, Horned Puffin.
Lunda cirrhata, Tufted Puffin.
Both puffins nest on the island, the Tufted Puffin being in the majority.

Asio flammeus, Short-eared Owl.
At least one was observed. It had been feeding extensively on mice, as shown by its pellets.

Corvus c. principalis, Northern Raven.
Ravens nest on the island.

Nannas h. subsp., Winter Wren.
Common on the island, nesting.

Leucosticte griseonucha, Aleutian Rosy Finch.
Plentiful, nesting.

Passerculus s. sandwichensis, Aleutian Savannah Sparrow.
A number were noted, singing.

Zonotrichia coronata, Golden-crowned Sparrow.
One was heard singing and Mr. Williams collected one.

Melospiza m. semaka, Aleutian Song Sparrow.
Common on the island.

Calcarius l. alascensis, Alaska Longspur.
Several were noted.

Mammals

Enhydra lutris, Sea Otter.
In 1925 I was informed that Sea Otters were accustomed to live in the kelp beds at Amak Island. We saw none but if the Sea Otters ever become more widely distributed Amak will probably harbor its quota.

Eumetopias jubata, Steller's Sea Lion
A good sized colony is living on certain beaches of Amak and many were seen on Sea Lion Rocks, some distance offshore.

Phoca richardii subsp., Harbor Seal.
Seals occur about the island.

Microtus amakensis, Field Mouse.
Field mice were extremely abundant. Their burrows and runways were everywhere. I recalled that this was the condition in 1925.

Remarks

This is one of the very best bird islands we saw on the entire trip. It is an interesting and valuable unit of wild life populations, self-sufficient on this little island. It is fortunate that Amak has been reserved for birds.

NUNIVAK ISLAND

August 14,1936

Location

This is a well known island lying off the coast north of the nouth of Kuskokwim River.

Physiography

We visited only the east and north shores of the island. These portions were low and flat, sand dunes near Cape Etolin and a tundra type farther inland, with characteristic ponds. Highlands were seen in the distance.

A complete description will not be attempted here.

Vegetation

In general the vegetation is of the tundra type. Elymus mollis is common along the beaches and flourishes in the sand dunes, but does not grow as densely or as rank as in the Aleutians. Arenaria peploides also occurs on the beach. Farther inland we find the tundra type, with an abundance of moss, some lichens, Crowberry, Arctous, Vaccinium vitis-idaea, and other plants typical of this association.

The plants noted or collected were the following: Lichens, mosses, Equisetum arvense, ferns, Arctophila fulva, Elymus mollis, Calamagrostis canadensis, and other grasses, Eriophorum, Carex aquatilis, Juncus, Salix sp., Betula (Dwarf Birch) Rumex arcticus, Arenaria peploides, Caltha palustris, Aconitum, Sedum integrifolium, Spirea steventi, Sanguisorba, Comarum, Empetrum nigrum, Epilobium, Hippuris vulgaris, Ligusticum scoticum, Conioselinum gmelini, Cornus canadensis, Pyrola minor, Arctostaphylos alpina, Ledum decumbens, Vaccinium vitis-idaea, Vaccinium (uliginosum?), Polemonium acutiflorum, Pedicularis groenlandica, Campanula, Solidago multiradiata, Achillea borealis, Chrysanthemum arcticum, Artemisia tilesii, Senecio Pseudo-arnica.

Birds

Gavia a. pacifica, Pacific Loon.
Several were seen and in a pond not far from the village I saw an adult with a single young.

Cygnus columbianus, Whistling Swan.
Natives state that swans occur on Nunivak but apparently do not nest there.

Branta c. minima, Cackling Goose.
A flock of six flew over, southward. They occur here in moderate numbers as migrants only.

Branta nigricans, Black Brant.
Brant had already appeared at Nunivak Island on August 14. They come there each fall in considerable numbers, where they congregate on the interior lakes for about two months. They continue south in October. Apparently they do not come to Nunivak in spring migration.

Philecte canagica, Emperor Goose.
Eskimo assured us that Emperor Geese do not nest on Nunivak but a few come there in migration.

Dafila a. tzitzihoa, American Pintail
Two were noted.

Polysticta stelleri, Steller's Eider.
Two of these were seen and Eskimos had killed two.

Lagopus l. alescensis, Alaska Ptarmigan.
A coveyy evidently a brood, was seen on the island.

Grus c. canadensis, Little Brown Crane.
Eskimo say that "plenty" of cranes nest in the interior of the island.

Arenaria melanocephala, Black Turnstone.
Several were seen.

Stercorarius parasiticus, Parasitic Jaeger.
One was seen in the sand dunes.

Sterna paradisaea, Arctic Tern.
Several were noted.

Nyctea nyctea, Snowy Owl.
Eskimo assured me that snowy owls nest on Nunivak and also winter there.

Calcarius l. alascensis, Alaska Longspur.
Common.

Plectrophenax n. townsendi, Pribilof Snow Bunting.
Two were seen on the beach.

Mammals

Vulpes sp., Red Fox.
Alopex sp., Arctic Fox
Both Red and Arctic Foxes occur on Nunivak.

Erignathus barbatus nauticus, Bearded Seal.
This seal occurs at Nunivek and is used by the Eskimo.

Odobenus divergens, Walrus
The Eskimos say that occasionally a few walrus are obtained here but they have become scarce.

Microtus sp., Field Mouse.

Field mouse run-ways were plentiful. Apparently the mice are plentiful at this time.

Ovibos moschatus, Musk Ox.

We wished to give special attention to the musk ox and their reaction to the new environment. Unfortunately for this purpose, the animals had already dispersed toward the interior of the island. But one bull remained near the coast and we had an excellent opportunity to observe him and make at least a few random notes on his food habits.

Dwarf willows were common in some places and these had been browsed rather extensively.

Arenaria peploides, common on the beaches, had been eaten.

Sedges were grazed slightly.

Hippuris vulgaris, common in the shealdowponds, had been picked here and there, but not nearly as much as another aquatic plant, not yet identified.

Caltha palustris, Rumex arcticus, and Comarum were all eaten here and there, but as well as Conioselinum gmelini.

Some of the plants listed here may be more or less palatable, but the limiting factor is the forage that will be available in winter. We could detect very little utilization of the abundant grasses and sedges, but willows appeared to be the favorite.

The question arises as to the present condition of the range on Nunivak after the period of reindeer use which has passed. In winter the grasses, sedges, willows and lichens will be the most available. Experience has shown that browse species suffer first under heavy use. There is often a selective utilization, favored forage species disappearing first and these may be almost gone before other species indicate over-utilization.

I walked as far as I could inland, in the time I could take for it, and noticed severe over-use of the lichen forage. In fact, it was practically gone. However, it was apparent that I was still in the area which could be disignated a reindeer driveway during round-ups and this would naturally be in poor shape in any case.

Very likely the general range is satisfactory. However, this is a matter that should be kept in mind and the range should be examined at some convenient time when a number of days can be spared for the task.

The prospect for the musk ox seems very good. Placing them on Nunivak seemed to all of us to be the best move yet made on that project.

NELSON ISLAND

August 15,1936

The following notes were obtained at the Village of Tanunuk on Nelson Island and relate also to neighboring areas, with special emphasis on two small islands in the entrance to Baird Inlet. See sketch map attached.

Information was obtained chiefly from a native, George Aloska, an intelligent informant who obviously knew the birds and was able to express himself well.

Birds

Gavia stellata, Red-throated Loon.
A couple of Red-throated Loons were seen off the shore near Cape Vancouver.

Cygnus columbianus, Whistling Swan.
Swans nest in the ponds or lakes on the mainland north of Baird Inlet.

Branta c. minima, Cackling Goose.
These geese nest on Nelson Island and on Krigé-gak Island nearby.

Branta nigricans, Black Brant.
We were greatly surprised to learn that Black Brant are nesting on two little island near Nelson Island. I first heard of it at the Eskimo village on Nunivak but thought surely there was a mistake in identity. But at the village of Tanunuk I obtained very definite information which left no doubt in my mind. As explained in the annotated list, I took every precaution to make sure of the identification, by means of verbal descriptions, drawings, comparison with Cackling Goose, and a careful notation of the Eskimo name. This name itself, when compared with previous data obtained at Hooper Bay and Nelson's account, leaves no doubt.

The brant used to nest on Nunivakchak Island, but that island began to wash away and has been reduced in size. As a consequence the brant are moving over to another island, known to the Eskimo as Krigégak, where most of them nest. They also nest on Koomuloongak Point, on Nelson Island, nearby. Both of these islands are at the entrance to Baird Inlet.

Philacte canagica, Emperor Goose.
No emperor geese nest on Nunivakchak Island and very few on Krigégak, but more of them nest on islands up the channel into Baird Inlet.

Nyroca marila, Greater Scaup Duck.
These ducks nest on Nelson Island.

Clangula hyemalis, Old-squaw.
These nest on Nelson Island, but not many on Krigégak Island.

Polysticta stelleri, Steller's Eider.
Nest sparingly on Krigégak Island, also on the adjacent parts of Nelson Island.

Somateria v-nigra, Pacific Eider.
These nest "everywhere" including Krigégak and Nelson Island.

Arctonetta fischeri, Spectacled Eider.
This duck nests chiefly on Krigegak and the portions of the mainland to the west known as Tunerarenak and Huskunat. (See the map.)

Oidemia americana, American Scoter.
The American Scoter nestson Nelson Island.

Squatarola squatarola, Black-bellied Plover.
There is some uncertainty as to whether the Eskimo understood this species to be under discussion, or Golden Plover. One of them nests on Nelson Island, probably both.

Limosa l. baueri, Pacific Godwit.
These nest sparingly on Nelson Island.

Larus hyperboreus, Glaucous Gull.
A specimen was obtained at Nelson Island. Some gulls, possibly of this species, nest on the ponds on Krigégak Island, but more of them nest on Nunivakchak, at the northwest end.

Nyctea nyctea, Snowy Owl.
Snowy owls nest on Nelson Island.

Mammals

Microtus sp., Field Mouse.
These mice are said to occur on Nelson Island, which would, of course, be expected.

Dicrostonyx, Lemming.
The natives mentioned the lemming as occurring on Nelson Island. No other data on mammals was obtained, the limited time being given to the matter of Black Brant and other nesting birds.

Remarks

Most of July 13 was spent getting to Tanunuk Village with the dory and obtaining the information listed above. We had a precarious anchorage for the ship, the waters here are very shallow and the wind was rising. It would have taken some time to organize a trip to Krigégak Village. Considering further that the brant were already in migration, it was thought best not to attempt to visit the nesting island.

Recommendations

The first thought that naturally comes to mind is the protection of a unique nesting ground like that of Krigegak. It is true that probably the birds would do well, as they appear to have done in the past, under present conditions. Yet one would like to make sure.

It was suggested that the island be set aside as a special reserve and given protection. This may be wise precaution. I believe we could get the Eskimos to cooperate.

Needless to say, it would be worth while to visit the area in the midst of the nesting season, when opportunity offers, to obtain more specific data.

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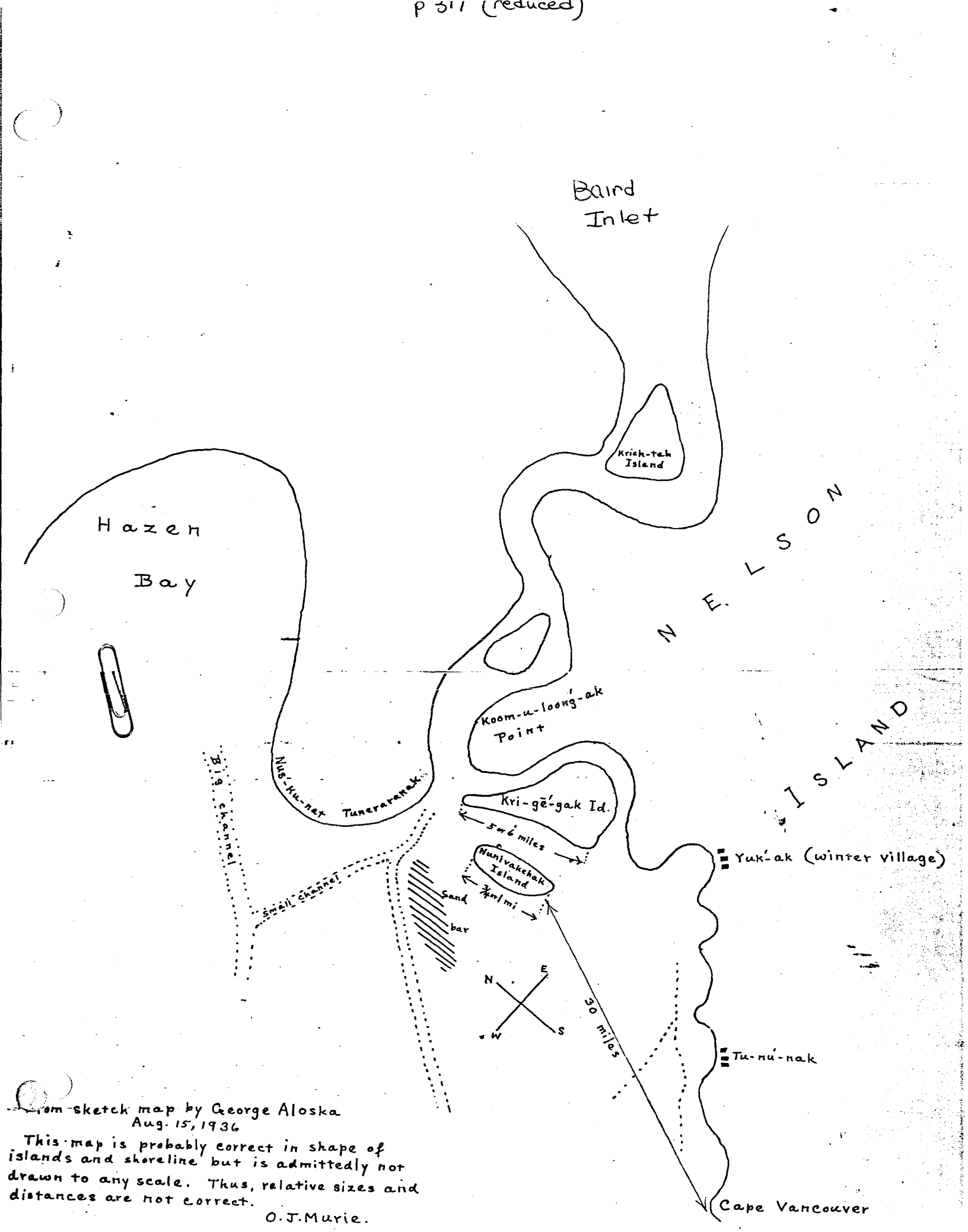

Rom-sketch map by George Aloska
Aug. 15, 1936

This map is probably correct in shape of islands and shoreline but is admittedly not drawn to any scale. Thus, relative sizes and distances are not correct.

O. J. Murie.

CHISIK ISLAND

May 7,1936

Location

Tuxedni Bay, Cook Inlet, Alaska.

Physiography

This island is characterized by high steep cliffs. Details of the island were not investigated.

Birds

Phalacrocorax a. cincinatus, White-crested Cormorant.
Five or six were seen on the south side and several were seen high up on the grassy top of steep cliffs, some of these perching on alder limbs.

Phalacrocorax p. pelagicus, Pelagic Cormorant.
Fifteen or more noted, in breeding plumage.

Anas p. platyrhynchos, Mallard.
A pair was seen near the island.

Nyroca marila, Greater Scaup Duck.
Two scaup ducks were seen near the island, but not identified specifically.

Glaucionetta islandica, Barrow's Goldeneye.
Two were seen.

Clangula hyemalis, Old-squaw.
Around the west end of the island we saw flocks of Old-squaws, probably totalling 150 birds.

Somateria v-nigra, Pacific Eider.
About the east end of Chisik Island we found at least 12 pairs, or more. Mr. Jack O'Connor, game warden at Anchorage, informed me that the eiders nest on Duck Island, near Chisik Island, building their nests in the shelter of rock crevices or "burrows."

Haliaeetus l. alascanus, Northern Bald Eagle.
Two adults and three immature birds were seen at the east end of the island, near the large kittiwake colonies.

Larus glaucescens, Glaucous-winged Gull.
We obtained a specimen which we judged to be this species. Between 600 and 1000 nest on the island. We saw them perching in pairs on little ledges of the high cliffs at the southwest part of the island.

Larus c. brachyrhynchus, Short-billed Gull.
About 10 were seen, not far from the cannery at the south side.

Rissa t. pollicaris, Pacific Kittiwake.
Specimens taken proved to be this species. This is the principal bird of Chisik Island, greatly outnumbering all others combined. Along the southeast, east, and northeast parts of the island, among the enormous cliffs, these birds were swarming in white clouds. We guessed 25,000 at least, possibly more.

Cepphus columba, Pigeon Guillemot.
Fifty or more were seen at the west end of the island.

Corvus c. principalis, Northern Raven.
Two ravens were seen among the Kittiwakes.

Remarks

Apparently egg-laying had not yet commenced. We spent a portion of the day cruising along the shores with the dory, observing the birds. This island is notable for its Kittiwakes, the largest colony by far that we saw anywhere. Duck Island, a small island nearby, is also valuable for its eider ducks.

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