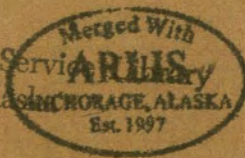


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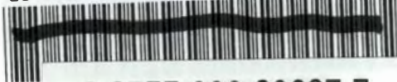
**QUARTERLY REFUGE NARRATIVE REPORT OF THE  
ALEUTIAN ISLANDS NATIONAL WILDLIFE REFUGE**

**Personnel:**

**Robert D. Jones, Jr., Refuge Manager**

**This report covers the period from January 1, 1959  
through May 5, 1959.**

US FISH & WILDLIFE SERVICE--ALASKA



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This report covers the period from January 1 1959 through May 5, 1959.

## 1. GENERAL

A. Weather conditions in January and early February were generally mild throughout the Alaska Peninsula - Aleutian Islands area, but in late February a major change occurred in the location of the storm track. It moved well south of "the Chain" and resulted in a long period of northerly circulation over the above named land masses. Freezing conditions with high winds persisted into April. As we were conducting field operations at the time great problems were encountered.

B. During the cold weather heavy ice developed in both fresh and salt water areas causing extensive shifts in wildlife populations, especially waterfowl.

C. No fires were observed or reported during the period.

D. During March Shishaldin Volcano on Unimak Island was observed to be in eruption. This was on a minor scale, consisting of the expulsion of columns of ash and smoke high into the air above the vent.

## 11. WILDLIFE

### A. Waterfowl

(1). Emperor goose populations at Adak were comparable to those of previous years. According to Karl Kenyon there were fairly stable populations observed regularly in the areas listed below in February and March to about the 20th. After this date the numbers gradually declined. We were, on the 23rd of April in the field visiting many of the areas earlier inhabited by flocks of these geese but observed none on this date.

Karl Kenyon estimates the following numbers in the wintering groups:

200 Kirilof Point  
300 Constantine Point  
150 - 200 St. Makarius Point

Very few emperor geese were observed on the north coast of Sanak by the Refuge Manager in March during a three week stay there enforced by winds and icing conditions above reported. During that same stay five black brant were observed near Pauloff Harbor. On the return trip via Cherni Island in the Sandman Reefs about fifty emperor geese were noted in the Island's Lagoon.

At Adak about 200 emperor geese were present in Clam Lagoon in late March.



Karl Kenyon reports collecting an Aleutian Canada Goose at Amchitka in early May.

(2). On March 6 two mating pairs of American mergansers were observed in Pauloff Harbor on Sanak Island.

An item of interest was the recovery of a drowned Steller's eider from a crab pot in 22 fathoms of water. This was reported by a King Cove crab fisherman (Herman Bendixen) as occurring in Balkofsky Bay in February.

While enduring the weather wait on Sanak Island in March the Refuge Manager regularly observed a few pintails and mallards, plus numerous common scoters and Steller's eiders in Pauloff Harbor.

On March 16th about 100 mallards and pintails were observed in the icebound lagoon of Cherni Island.

Four adult shovellers, two drakes and two hens, were observed April 7 at Rifle Range Point, Amchitka. On the same date about 50 pintails were seen nearby.

On April 30 a flock of 11 European widgeons were observed in the lake at the lower end of the fighter runway on Amchitka Island. These birds were subsequently observed daily on various lakes of the Island, notably on Kirilof Point until the 5th of May. Though we tried several times to collect one they were extremely wary and our efforts went unrewarded.

On the passage to and returning from Sanak Island in February and March numerous king eiders were noted to be present but as the weather was rough no figures were compiled.

Throughout the area comprising the Aleutian Islands and the western Alaska Peninsula, the usual very large numbers of wintering oldsquaw ducks and resident harlequin ducks were observed. The range occupied by these two species within the Refuge and adjacent areas is so immense that no figure representing their numbers has ever been compiled. Suffice to say, that everywhere one goes along the coast in winter, these birds are present in numbers.

(3). Four swans were observed flying at Simeon Creek March 18.

Nine whooper swans were observed in the lake near the main gravel pit on Amchitka Island, April 2.

### B. Upland Game Birds

(1). On the Alaska Peninsula the willow ptarmigan population remains low.

(2). At Amchitka the rock ptarmigan population is as high as this writer has ever seen there. In past years it was quite unusual to see a single bird but on this occasion we saw them daily. There was a flock on the Kirilof Peninsula that appeared near our headquarters or along the road leading off the Peninsula. It varied in size from four to twelve birds. We watched this flock for signs of pairing and mating but it comprised ten birds on the 5th of May. Karl Kenyon reports they paired shortly thereafter.

### C. Other wildlife

(1). The fox population on Amchitka is very low as a result of control measures exercised in past years. This writer saw neither foxes, nor sign of any, but Karl Kenyon reports two sets of tracks.

(2). The Norway rat population on Amchitka seems to be growing. While still most populous on the beaches, they have invaded inland areas successfully and are believed to be exercising an adverse influence on nesting waterfowl.

(3). Two packs of killer whales were observed by this writer and Karl Kenyon on April 9 off Kirilof Point. The first pack was composed of 18 animals so far as we were able to discern, and the second of 9. These appeared within fifteen minutes of each other, alternately surfacing and submerging. They swam under and around five sea otters without deviation and without apparent reaction on the part of the sea otters.

(4). On April 12 two eagle nests were observed with adults present, apparently incubating. The first was in Cyril Cove, Amchitka Island and the second on a pinnacle at the Crown Reef.

(5). Two beaked whales, both showing evidence of having been shot, were recovered at Amchitka, one in late March and the other in early May. From the decomposition noted in the latter, we concluded they both met their demise at the same time. The former was cut up and weighed in Constantine Harbor. It tipped the scales at 6600 pounds.

## III. REFUGE DEVELOPMENT MAINTENANCE

The only work of this nature undertaken was necessary maintenance of the headquarters building at Amchitka, some of this being done by Branch of Wildlife Research personnel.

## IV. ECONOMIC USE

The decline in fox farming interest reported in earlier issues of this work continues. While this writer was weather bound at Sanak in



March he learned that the islands comprising the Sanak Reefs and Sanak Island itself (not in the Refuge, but part of the group) have been cleared of foxes. The low islands of the reefs were washed over by the tidal wave of April 1, 1946 and the foxes eliminated. Sanak Island was cleared by intensive trapping. This leaves only two islands in the Sanak group, i.e., Catons Island and Saranna Island, still inhabited by foxes, blues in both cases.

The John Olsen estate, involving the cattle on Catons Island, neared settlement. Final hearing in Commissioners Court was set to take place in April but this writer is not aware of the result. Meanwhile, the cattle and other assets on the Island were sold. The final hearing was to approve this action, providing no successful contest was raised. A trespass developed while this was in progress and it was to take initial action toward elimination of the problem that the Refuge Manager made a visit to the group in February and was weather-bound into March.

The trip was made by dory and became one of the milestones by which the history of the Refuge's administration is punctuated by memorable trips. We waited at Sanak for 21 days while high northerly winds prevailed and resulted in immobilizing every vessel in the North Pacific except large ships. The principal obstacle to travel was the existence of icing temperatures. We ventured out into it one relatively mild day and in 55 minutes running time the dory and her occupants became sheathed in ice. This writer remembers well the icicles hanging from the bill of his cap. When the weather seemed suitable we set out for Cold Bay via King Cove and ran head on into high winds and freezing conditions, but persisted in the effort to get home. Engine trouble, stemming partly from carburetor icing resulted in a long row and a night spent in the ice locked lagoon of Cherni Island. Next day one of this writer's friends came to Cherni in his fishing boat and loaded us aboard, dory and all for the run to King Cove. Next day this writer again set out for Cold Bay and again ran into head winds and icing conditions. It was with some relief that the dory was finally winched out onto the ice bordering Cold Bay that evening and a period placed at the end of that episode.

A grazing lease of twenty years duration for Catons Island was issued to Chris Gundersen of Pauloff Harbor.

At Sanak the grazing lessee suffered losses of about 50% of his cattle herd numbering nearly 50 animals. While on the Island this writer looked into the matter and found a strong possibility that the losses may have stemmed from feeding on arrowgrass (Triglochin maritime). This writer does not discount the possibility that water hemlock may have been the offender as BLM reports its presence on the Island, however the area in which the losses occurred seems unsuited to the production of water hemlock.

Western Electric, under military contract conducted technical tests in connection with DEW line installations on Atka and Amchitka

Islands and it seems likely that installations may be made on both. This will probably lead to reconstruction of the runway on Atka, and repairs to the dock in each case.

## V. PUBLIC RELATIONS

(1). On the trip to the Sanak Islands this writer rounded up some salmon and king crab tags recovered by local fishermen. These were forwarded to the Bureau of Commercial Fisheries.

(2). Fishing and hunting were largely at a standstill, although some sport fishing for Dolly Varden trout was conducted successfully at King Cove in March, and a little ice fishing was done in Blinn Lake at Cold Bay. At Adak fishing had become something like hangar flying. The Dollys weren't in so the fishermen were swapping lies and telling what they were going to do when the fish showed.

(3). This writer attended the Alaska Game Commission meeting and field conference held at Juneau in February. On the return to Cold Bay, a stop was made in Anchorage and conferences were held with Alaskan Command officers at Elmendorf AFB to arrange the last half of the caribou introduction to Adak Island scheduled to take place the approaching summer.

On January 15th a local flight of the Base WF from Adak was made over what we now know as the Caribou Peninsula on Adak. This is the Peninsula on which ten caribou calves were released in early August 1958. It is bordered on the north by Ringgold Sound, the southern ships' passage into the Bay of Islands, and on the south by the North Arm of Three Arm Bay. A band of nine caribou was observed on this flight indicating that initial success had been achieved in this introduction.

## VI. FIELD INVESTIGATIONS OR APPLIED RESEARCH

While at Pauloff Harbor in March, this writer observed sea otters regularly near the Harbor entrance. Usually there was a single animal present and the residents report this as commonly noted. On the 12th there were three swimming at the entrance. One large male was frequently observed at that time hauled out on an off shore rock in the Harbor mouth.

On March 29 this writer observed 60 to 75 sea otters in a compact pod located near the northernmost island in a group of islets just northeast of Zeto Point at Adak. This is the first sighting of the first large pod of sea otters to appear on the eastern side of Adak in recent times.



The Refuge Manager joined Karl Kenyon at Amchitka on the 30th of March for sea otter work. We had intended an experimental harvest of skins but it developed that the animals were moulting so this project was not carried out.

The largest scale sea otter tagging project to date undertaken was carried out. Tags were placed on the web of the hind paw. By the time this writer left Amchitka on May 5 we had tagged over 70 animals. This constituted the bulk of the tagging but more were applied by Karl Kenyon and his crew during a storm that began on the 6th of May. This writer is not aware of the total number of tags that were finally placed on animals.

As an experimental transplant of sea otters was to be undertaken when the Service DC3 arrived (scheduled for April 21 but delayed almost a month) a sustained enterprise was conducted to secure adequate fish supplies. Fish were also required to feed two sea otters retained in captivity for experimental purposes. The usual ups and downs of fishing success in winter were encountered but the supply gradually enlarged. The success of this effort is attested by the fact that a large portion of the accumulated supply was, in the final accounting, surplus to the needs.

An aerial survey of sea otters, utilizing the Service DC3 was scheduled for late April and early May but as the aircraft was delayed nearly a month due to ~~unreadiness~~ for service, this writer was unable to participate. It was finally carried out while another Refuge project, for which prior commitments had been made, was getting under way.

One of the vital influences on a wildlife population is its food resource and a subject of the greatest importance to biologist and management personnel. At Amchitka, despite speculation and inferences drawn from the information available, the state of the invertebrate populations forming the food supply of the sea otters has remained a tantalizing subject. This year, after the development of adequate equipment and proficiency in its use, this writer utilizing self-contained diving gear, came up with some of the answers. Observations were made in areas known to us as sea otter feeding grounds. These areas were selected close to our operating base at Constantine Harbor so as to reduce transit time from the point of embarking in the dory and the areas examined, and to fall within the otter grounds closely and continuously observed by us.

Attached is a chart showing the areas examined prepared from a US Coast and Geodetic Survey topographic manuscript of Amchitka Island, a polyconic projection on a scale of 1:20,000. These areas are numbered in chronological sequence beginning with number 1. Area 1 was examined the afternoons of April 10, 22, and May 1; areas 2, 3, and 4 the afternoon of April 16; and areas 5 and 6 the afternoon of May 1. The bottom topography of areas 1, 2, and 3 is grossly irregular. It consists of a

KIRILOF POINT

KIRILOF WHARF

HARBOR

CONSTANTINE

N



jumble of very large rocks (a continuation of the above surface topography) with, especially in the shallower areas, an addition of smaller rocks rounded by action of the surge. In area 1 few of the latter were observed; in area 2 a fair number were present; and in 3, where the effect of the surge is greatest, the interstices of the large rocks were filled with rounded specimens, and where the bottom assumed a more level nature, it was littered with them. Area 1 was 50 to 80 feet deep and remote enough from shallow or emergent rocks to be relatively free of the effects of surge on the bottom. Area 2 reached 70 feet in depth but was close to the sheer cliffs of Kirilof Point where it felt the effects of heavy surge even at this depth. In area 3 where the greatest depth examined was 25 feet and all the conditions necessary to produce maximum effects of a heavy surge were met, the effects of this tremendous erosive force were most apparent. Area 4 lies under the Kirilof Wharf and is composed of rock fill deposited there during World War II. This is a marginal wharf standing in zero feet of water on the landward side and 30 to 35 feet on the seaward side. Thus it slopes sharply downward, is considerably silted and bears the almost completely eroded junk that seems to be the necessary accompaniment of all wharfs. Areas 5 and 6, near the head of Constantine Harbor on the east side were examined in two successive dives, the first in 50 feet of water and the second in 40. In both cases the bottom was level. The first of these dives, area 5, disclosed a silty bottom covered with a myriad of small sea anemones that closed at the divers approach, creating the impression of a sudden radical change taking place on the bottom. This same impression is gained when swimming over a bed of barnacles. It can best be likened to the appearance of a dark blanket lying on the bottom being suddenly snatched away. Apparently the site selected for this dive was at the edge of the silted area, for it merged into a coarse sand gravel lying in regular ripples. This lay on the shallow side of the silted area. The second dive, area 6 somewhat east of area five, in forty feet revealed a bottom covered with small rocks, six to eight inches in diameter, covered with kep and calcareous algae. In the first four areas the water was quite clear but in both 5 and 6 there was a marked increase of plankton with a corresponding reduction in transmitted light.

In areas 1 through 4 the green sea urchin (Strongylocentrotus dractachiensis) population was found to be unexpectedly high but composed of very small specimens. At 1, in about 70 feet of water a number of sea urchins were collected on the 10th of April. Of these, 16 were taken as an unselected sample and weighed and measured, the measurement being the widest dimension of the shell excluding the spines.

Sizes in mm.	Numbers of sea urchins
28	2
26	4
25	1
24	1
22	2
21	1
20	1
18	3
16	1
Total	16
Total weight 74.35 gms	

This sample is not wholly a random one for most of the smallest specimens were lost. The method employed in this case was to brush the urchins off a rock into the only containers available, an open can which had as its primary purpose that of bailing the dory. In under water conditions sea urchins tend to drift down rather than to fall and this tendency is most marked in the smaller ones, hence the latter usually floated off and did not settle into the can. For subsequent dives we prepared a basket formed of 1 inch hardware cloth and lined with copper window screen. A frame 6 inches square formed of welding rod and a slate made of roughened polyethylene sheet was also prepared. The frame was used to outline sample areas on the bottom and the slate was used to record observations. The practice of collecting a sample in its entirety for compilation on the surface had been rejected after experimentation. Since the diver must wear mittens in this cold water it was found difficult to gather all specimens, moreover many of them were lost due to the drifting tendency, both while gathering the sample and in the ascent to the surface. Since only one sample could be collected at a time in this manner, the amount of air consumed from the breathing apparatus in repeated ascents and descents exhausted the air supply before much work could be accomplished. So we recorded the observations while still under water. Permanently affixed to the back of the slate were a number one pencil, necessarily soft because a harder one left an indentation on the polyethylene, and a thermometer.

At area 2 sea urchins were collected from one six inch square plot in 70 feet of water, the total number being 7. A single rock oyster and two small starfish were also included in the plot. Measurements of the sea urchins were as follows:

Sizes in mm.	Numbers of sea urchins
22	1
21	1
16	1
14	1
13	1
10	2
Total	7

At area 4 in about 20 feet of water sea urchins totalling 21 were collected. This is of interest because it is under the Kirilof wharf and perpetually in shade. No kelp was present although it was noted on the shoreward side of the wharf and on the outer pilings. Very little other than sea urchins was observed in this rather sterile habitat. This collection again does not include the smaller specimens, indeed the attempt was to secure the larger ones. Measurements are as follows:

Sizes in mm.	Numbers of sea urchins	Gonad length and width in mm.
37	1	11 x 2
33	1	0 x 0



Sizes in mm.	Numbers of sea urchins	Gonad length and width in mm.
29	2	5 x 0 These were barely 1 x 0 more than filaments
26	2	4 x 4 1 x 1
25	2	
24	1	
23	3	All showed merely a trace
22	3	
21	1	
18	2	
17	1	
16	1	
14	1	
Total	21	

Area 3 was somewhat different in character from 1, 2, and 4 in that it was densely overgrown with kelp, chiefly Alaria fistulosa and Laminaria (probably digitata). The greatest depth reached in this area was 25 feet, and this over a comparatively wide area, hence the kelp growth.

In the areas observed below the lower limits of dense kelp growth, which here is at about 55 feet, the appearance is of bare rock with invertebrates studded on them. The largest form noted in the deeper water was a bryozoan reaching about 6 inches in length. This species is rather abundant, occurring about 6 to 12 inches apart in every direction. Smaller, polyp bearing hydroids appeared equally abundant. Brittle stars occur here at all depths but become more numerous as the depth increases. At 70 feet in area 2 they were literally swarming over the bottom, appearing as a mass of small, waving, tan-colored, serpentine arms projecting from amidst the small irregularities in the rocks and from under invertebrates. In these same depths, especially in area 2, and to a lesser extent at shallower levels the rock oyster (Pododesmus macrochisma) was observed. Extensive deposits of their shells had accumulated in the rock interstices. This accumulation is attributed to sea otter harvesting, as were the presence of extensive scars on the rocks or the lower shells resulting from the forcible removal of P. macrochisma. By comparison with our observations at Adak and in the Sandman Reefs P. macrochisma is rather rare in the areas observed at Amchitka. It was nowhere abundant enough, so far as the live specimens were concerned, to include more than a single animal within a six inch square plot.

In area 3 where, as noted above, the entire bottom was densely covered with kelp growth, invertebrates were markedly less abundant and more difficult to observe. Sea urchins were present throughout the area but only as scattered individuals. These were of the same size as noted in the other areas. The intertidal zones about the emergent rocks were carefully examined for the black chiton (Katharina tunicata) so abundant in similar areas in Kuluk Bay, Adak but in vain. One small whelk shell harbouring a hermit crab (Pagurus sp) was recovered.

On April 22 five plots six inches square were checked for sea urchins in area 1, depth 30 to 50 feet. These included 4, 6, 6, 4, and 4 sea urchins respectively. In recording these samples a specimen is considered to be within the plot if a portion of the invertebrate appears inside the frame.

Water temperature on April 22 was 39°F. at the surface and remained the same down to 70 feet.

The largest sea urchin observed on the 22nd of April in area 1 was collected. It measured 32 mm. and had negligible gonads, 16 x 4 mm. Five live hairy whelks (species unknown) collected on the same dive, measured along the greatest dimension with calipers 74 mm., 68 mm., 59 mm., 56 mm., 51 mm.

Calcareous algae were present everywhere but most noticeably on the deeper more level bottom where it formed a bridgelike structure from rock to rock. Under these formations sheltered various fishes and invertebrates. The commonest fish encountered here, in the open, among the rocks, and in the kelp was the fringed greenling. The structure formed by the algae is chalklike and not strong enough to resist being broken by sea otters. This writer tested its strength and found it easy to break. On the under side of these and of rocks were found small chitons, doubtless the source of those recovered from fringed greenling stomachs and sea otter scats.

Shells of the horse mussel (Velosella edulis) and the blue mussel (Mytilus edulis) were recovered but no live specimens were noted on the dives. Live blue mussels are noted at Amchitka on pilings and rocks at or near the surface but they are never abundant there. An occasional shrimp (species unknown) was noted in 50 to 80 feet of water.

Water temperatures on the 1st of May, the last date of diving at Amchitka had risen to 40°F. This was the same at all depths visited.

In area 5, where the sand and gravel had been formed into ripples, numerous clam shells lay in the grooves. Most of these appeared to be the surf clam (Spisula alaskanus). No live specimens were noted and no sea urchins were present.

The largest sea urchin observed in this project was noted May 1 in area 1 and collected. It was 41 mm. across the shell and had gonads 18 x 5 mm.

In conclusion it can be said that the invertebrate population at Amchitka, where a large population of sea otters has been known to exist for a long time, presents a wholly different picture than in areas of relatively small and/or recent otter populations:

- (1). The average sea urchin size has been substantially reduced though the species is still present in great numbers.



(2). The sand dollar, if it ever existed in the areas examined is now extinct or nearly so.

(3). Horse mussels and blue mussels have been reduced to a negligible population.

(4). Crabs have been reduced to scattered individuals at least in the depths explored and the same is true of the whelks.

(5). The surviving chiton population consists of the smaller species that do not appear in the open.

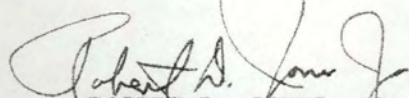
The age of the otter population on Amchitka cannot be fixed with certainty and unfortunately we have no observations of invertebrate populations recorded from an earlier period. We have, however, access to invertebrate remains in the kitchen middens left by the Aleuts. This writer collected sea urchin remains from one such kitchen midden that appears to be typical of those on Amchitka. The sea has eroded these old village sites and among other things exposed large deposits of the plates forming sea urchin shells, and the structure known as the lantern of Aristotle comprising the teeth and supporting framework around the mouth of a sea urchin. Superficially these remains are much larger than found on the sea urchins recovered at Amchitka today and indicate a period when sea otters were not as abundant as at present.

While conducting the diving above recorded, two sea otters were observed swimming underwater at close range. A considerable change from the familiar floating appearance was apparent. On the surface they present a spread-out appearance such as a rubber balloon filled with water and laid on the ground. Underwater their body assumes a bullet shape preceded by the then quite prominent head. The forepaws played no part in swimming and the hind paws worked together to provide the propulsion. The hind paws were drawn forward together and in this motion they closed into a fist-like shape. Then both were thrust simultaneously to the rear, opening as they did so. The animal glided forward several feet under the momentum of this thrust before the action was repeated. The tail was not employed in providing propulsion.

The first of these otters was a young animal. The diver pursued it in water of about 20 feet depth in what is known to free divers as a "snorkel dive", i.e., without benefit of a breathing apparatus. The otter became aware of the diver and surfaced screaming in apparent fright. It retreated into water close to an emergent rock against which surge was working. Due to aeration of the water, visibility dropped to zero and the otter made good its escape.

The second animal was larger and was surprised by the diver while searching out invertebrates. Almost at once the sound of the breathing apparatus alerted the animal to the divers presence and it departed, leaving the diver entangled in the kelp.

Submitted by

  
ROBERT D. JONES, JR.  
Refuge Manager  
August 5, 1959