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## MAMMALS OF THE ST. MATTHEW ISLANDS, BERING SEA

BY G. DALLAS HANNA

The St. Matthew Islands are located in Bering Sea about 220 miles to the northward of the Pribilof Islands, and about the same distance west of the Alaskan mainland. The group consists of three islands, which, named in order of size, are St. Matthew, Hall, and Pinnacle Islands. It was made a bird reservation by executive order of February 27, 1909, being officially known as the Bering Sea Reservation. Owing to the distance of the islands from the regular channels of travel, opportunities for naturalists to visit it rarely occur. It is barren, treeless, uninhabited and surrounded by dangerous and poorly charted waters.

Through a request of the Biological Survey of the Department of Agriculture I was detailed to make an examination of the reservation in June, 1916, but owing to the fact that the ice packs remained in that vicinity until after the middle of the month this was impossible. In July, however, the trip was made, and six days were spent on St. Matthew and Hall Islands. Arrangements having been made with the Coast Guard Service for transportation, I left St. Paul Island on the morning of July 7, on the Cutter *Unalga*, Capt. F. G. Dodge in command. The next morning the spires of Pinnacle Island were in full view and at noon a landing was made on St. Matthew near Cape Upright. Between then and the twelfth almost the whole of this island was examined, and on the thirteenth we went to Hall Island. Pinnacle Island was not visited on account of adverse weather conditions. I wish to express my appreciation of the favors extended me by the Coast Guard Service and especially by Captain Dodge and the crew of the *Unalga*, every man of whom willingly and eagerly assisted me on every occasion.

St. Matthew Island is about 22 miles long by two to three miles wide and is slightly curved to the north. Its mountains rise as high as 1800 feet and are in most cases, weather-worn and smoothly eroded. Some of them have mosses and lichens growing to the tops, but others, especially in the center of the island, are entirely devoid of vegetation. The rocks forming these latter are weathered into very small fragments, set edgewise and close together and making a natural pavement.

Most of the valleys are covered with reindeer lichen and mosses and in many favorable places there are true tundra bogs. Vegetation other than mosses and lichens is dwarfed and scant in most places. The rank growths of wild parsnip and wild rye found on the Pribilofs are entirely absent. There are a large number of fresh and brackish water

lakes on the island, many of which have been formed by the sea-built dykes extending from one headland to another. The tide ebbs and flows in some of these, forming lagoons. There are a large number of fresh water streams, many of them a dozen feet across. They wind through the tundra swamps with undercut banks which form ideal spawning and feeding places for the innumerable trout found here.

The mountains are cut into by the sea on every side of the island, making long stretches of towering cliffs, between which the sea has built up beaches of such an extent as to give the impression that the island is much older than the Pribilofs. These cliffs display wonderful geological formations. There are beautiful blues, yellows, greens and bright reds in layers or dykes, and in places throughout the mass run seams of pure white calcite from two to twelve inches thick.

Evidences of comparatively recent earth disturbances are seen about two miles below Cape Glory of Russia on the south side of the island. The earth and cliffs are torn and tumbled in the greatest confusion. New slides are seen and the beach line boulders are not much rounded. In some places rocks are constantly falling, making it dangerous to go beneath the cliffs. Here are nodules from two inches to two feet in diameter composed of a green mineral-like jade, and there are numerous seams in the country rock of banded agate. There is one cliff half a mile long of undoubted sedimentary origin. Numerous fossilized trees, some two feet in diameter, are embedded near the base. All seen were in a recumbent position and as black as anthracite coal.

The large number of cliffs with their grand scenic display are notable as the nesting places of countless sea birds. Of all the places I have visited St. Matthew is rivalled in this respect only by that incomparable bird cliff on St. George Island, but the ledges on St. Matthew are more nearly perpendicular and thus afford less favorable nesting sites. The lines of driftwood indicate that the island as a whole has had a recent elevation, or that some enormous seas which did not reach the Pribilofs carried the logs high above tide-mark. Some logs are about 100 feet above the calm weather water line.

Hall Island is entirely bold and rugged and has no true beach. In fact the top of the island can only be reached in a few gullies where small streams empty into the sea. The vegetation and character of the upland appeared similar to St. Matthew. Pinnacle Island is wedge shaped and has towering spires projecting high into the air. It is so steep and rugged that snow does not lie upon it. Probably the base of the cliffs might afford a landing place in calm weather but whether or not the walls of the island could be scaled was not ascertained.

The action of the ice on these islands seems inconsequential. No worn pebbles were found back of the beaches nor are glaciers present. Snow probably remains most of the summer in some of the canyons, since it was very deep in places in early July.

## LIST OF MAMMALS

*Whales*.—The vicinity of St. Matthew Island has long been known for the abundance of whales at certain seasons. The great numbers of bones of these animals on the beaches, as compared with such islands as the Pribilofs, is an indication of their relative abundance. The conditions attending this investigation prevented the collection of a series of specimens of the several species identified on the beaches, and the positive determination of some of the kinds which may be represented there and in the surrounding waters.

*Balæna mysticetus*. Bowhead Whale.—The bones of this species are exceedingly abundant on all beaches. A pair of mandibles 19 feet long were found in the center of the long north shore beach and vertebrae by the hundred were observed; some were far back of the high tide mark, half buried in the tundra, and others showed fresh and white among the drift logs. Two skeletons lay bleaching on the south shore abreast of Pinnacle Island.

*Balænoptera velifera*. Humpback Whale.—A skeleton of this species lies scattered on the south side of the spit connecting Cape Upright with the main portion of St. Matthew. The longest pieces of baleen were about four feet.

*Sibbaldus sulfureus*. Sulphur-bottom Whale.—A skull with baleen of this species was found on the spit connecting Cape Upright with the main island.

*Orcinus orca*. Killer Whale.—Bones of a killer were noted in two places on St. Matthew, those most recent being on the north shore near the center of the island.

*Berardius bairdii*. Baird's Whale.—A carcass of this rare ziphoid had washed into the lagoon on the south side of St. Matthew Island, two miles below Cape Glory of Russia. The skull was in good condition but rough weather prevented the taking of a boat around to the place, and it could not be carried across the bogs to the other side. A periotic bone was preserved however and the identification verified by True's excellent work on this family (Bull. 73, U. S. Nat. Mus.). This specimen seems to mark the known northern range of the species.

*Phoca* sp. Hair Seal.—A colony of hair seals was found by Captain Dodge July 8 on an outlying rock abreast of Waterfall Head, but no specimens were secured. From the number of young observed he was led to believe the place a breeding rookery. Another lot was seen on the north shore near Cape Glory of Russia but all shots miscarried and efforts to collect good specimens were unsuccessful. Two imperfect skulls were found on the beaches and they represent two species.

*Odobenus divergens*. Walrus.—A herd of about 500 was seen near the middle of the north shore, cruising along with the ship. Walrus skulls were common on the beaches and the officers and men found several pieces of ivory. They haul out on the northwest cape of Hall Island under the high cliffs, so I am told by

Captain Lane, but at no other place on either island. Five carcasses were found on the beaches, all of young animals which had been crushed by the ice. I am led to believe that the majority of these animals which are washed ashore have been killed in this manner. Four carcasses came ashore on St. Paul Island and three on St. George Island during the winter of 1915-16, and examination of two of these proved that they had been crushed. Some floaters may occasionally come in after having been shot; but it seems that, since hunting is prosecuted at such a distance from the Pribilofs, their bodies would be somewhat decomposed before they could float so far, even if the currents were favorable, which is unlikely. Occasionally pelagic hunters may come close by however and the shot animals might be found in a good state of preservation.

*Callorhinus alascanus*. Fur Seal.—Fur seals were common up to within eight miles of St. Matthew Island in June, 1916. While the ship was endeavoring to reach the island eight animals in all were seen by me, and more were noted by the men on watch. I did not see more than two together. The presence of these animals here at this early season led me to believe that possibly a new hauling ground had been established on the St. Matthew group. Investigation of most of the St. Matthew coast line in July, however, revealed no signs of such a hauling ground nor were any animals seen in the waters of that vicinity.

*Alopex halensis*. White Fox.—The white fox is fairly common on the reservation. Animals or evidences of them were seen at every landing. One adult female was collected, and two skulls were found. Two trappers spent the winter here in 1912-13 especially for this species and I heard from one source that their catch was almost worthless and from another that it was of considerable value. Their success is doubtful since the attempt has not been repeated. Undoubtedly the number of foxes ordinarily present depends on the food supply, which under natural winter conditions cannot be large.

It has been proposed to lease St. Matthew Island for a fox farm, but as it is ice-bound for many months of the year, even to the middle of June, as in 1916, this would seem an unwise action. It would be impossible to procure food for a surplus of stock in winter without preying upon those forms of animals which at present it is desired to protect. An insufficiency of food would certainly lead to cannibalism among the foxes or to their wandering away on the ice pack. It would seem therefore that to grant a lease for a fox farm here would mean only an exclusive privilege of trapping the natural stock. If the time should come when the foxes would seem to be exterminating certain species of birds or other animals which it is considered of greater importance to perpetuate, then it will be time to take all foxes away from the island. Not until then should the natural balance be disturbed.

It is understood that the two trappers who were on St. Matthew Island during the winter of 1912-13 kept a journal which is now in the possession of the Coast Guard Service in Washington.

*Thalartos maritimus*. Polar Bear.—In 1874, when Elliott and Maynard landed on St. Matthew in midsummer, polar bears were very abundant. There is a tradition that during the time of Russian occupation a party of five men from St. Paul Island landed on Hall Island where they built a cabin but had to leave it owing to the marauding of the bears. The remains of an old Russian house were found on that island. Captain Lane told me that bears were found up until

sometime in the 90's when a party from the revenue cutter Corwin landed and shot 16.

The old trails Elliott mentions are still plainly seen, worn deep into the tundra. Skulls of several animals were found, all with bullet holes in them, and two were preserved. Very probably a few bears may still come down in winter on the ice pack but they have been hunted so much of late years that they cannot be common.

*Microtus abbreviatus*. Hall Island Meadow Mouse.—Runways of rodents completely undermine certain large areas of both St. Matthew and Hall Islands, but at the present time most of them are unused. Indeed "fresh signs" of mice were rarely found and the result of my trapping is a single adult female, skin and skeleton. The remains of others were collected in owl pellets and there appears to be more than one species. This material has not been critically examined, but in all probability it includes bones of *Microtus a. fisheri* Merriam, described from specimens taken on St. Matthew Island in 1899 by Dr. A. K. Fisher, during the visit of the Harriman Expedition.

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## NESTS OF THE WESTERN FOX SQUIRREL

BY H. L. STODDARD

[Plate 7]

All accounts of the habits of the western fox squirrel (*Sciurus niger rufiventer*) that I have been able to find, speak of the young as being brought forth in hollow trees, no mention being made of the carefully constructed open nest used for this purpose in parts of the range of this squirrel.

In the sand dunes of northwestern Indiana particularly, where fox squirrels are still fairly abundant, the young born in early spring at least are usually brought forth in a very ingenious type of open nest, though hollow trees are common. These nests are round or oval in shape, tightly woven of freshly cut oak or other tough twigs. Inside of this twig shell comes a thick compact wall of large leaves, evidently pressed into shape while damp, making a smooth, tough lining capable of resisting wind, cold and rain. The nest proper is then made of soft inner bark, shredded leaves and other material.

The entrance hole is on one end and is just large enough to admit the owner, the surrounding fiber often nearly closing the opening. The accompanying figure, which is from a group prepared for circulation in the Chicago schools by the N. W. Harris Public School Extension of Field Museum, shows a typical nest in the original crotch, with one side removed to show details of construction.