

The hog-like character of carp in plowing up the bottom and banks of the pond, thereby keeping the water muddy and rendering themselves invisible, enables the entrance to the musk-rat's burrow to be concealed until the water is drawn off. The fry and older carp stupidly poke themselves into these burrows, thus making themselves an easy prey to these active rodents. When ice forms, and the carp settle numb and torpid to the bottom, then, in my opinion, the ravages of the musk-rat are most to be feared by the fish-culturist; but before that time he should get rid of these pests.\*

CLEVELAND, OHIO, *November 1, 1883.*

### 158--THE MUSK-RAT AS A FISH EATER.

By C. HART MERRIAM, M. D.

That the musk-rat is not commonly considered a fish eater is evident from the absence of reference to such habit in the published accounts of the animal. Robert Kennicott is, so far as I have been able to ascertain, the only author who mentions this trait. He says: "Except in eating mollusks, and occasionally a dead fish, I am not aware that this species departs from a vegetable diet." [*Quadrupeds of Illinois Injurious and Beneficial to the Farmer,* 1857, p. 106.]

At a meeting of the Biological Society of Washington, held in the National Museum, December 14, 1883, Mr. Henry W. Elliott spoke of the "Appetite of the Musk-rat." He stated that in certain parts of Ohio the musk-rat did great injury to carp ponds, not only by perforating the banks and dams and thus letting off the water, but also by actually capturing and devouring the carp, which is a sluggish fish, often remaining motionless, half buried in the mud. In the discussion that followed, Dr. Mason Graham Ellzey said that from boyhood he had been familiar with the fact that the musk-rat sometimes eats fish. In fact, he had seen musk-rats in the act of devouring fish that had recently been caught and left upon the bank. The president, Dr. Charles A. White, narrated a similar experience.

On the 7th of February, 1884, I brought this subject to the notice of the Linnæan Society of New York, and asked if any of the members knew the musk-rat to be a fish eater. Dr. Edgar A. Mearns said that he had long been familiar with the fact, and that it was no uncommon thing to see a musk-rat munching a dead fish upon the borders of the salt marshes along the Hudson. He has shot them while so engaged.

\*Under date of November 16, 1883, Dr. Hessel, superintendent of the Government carp ponds at Washington, says: "The musk-rats have now taken to their winter quarters, and not one is to be found at the ponds. Four weeks ago I smoked out all their holes with sulphur and saltpeter. I then filled them up with earth."—C. W. S.

He further stated that the musk-rat is very destructive to nets, destroying the fishermen's fykes in scores by entering them in quest of fish and then tearing the nets in order to escape.

Dr. A. K. Fisher said that at Sing Sing, N. Y., he had often known musk-rats to enter fykes, sometimes drowning, but oftener escaping by gnawing the meshes, thus doing considerable injury to the nets. He supposed they entered the nets because placed in their line of travel. He further stated that he knew that fykes made of fine wire were used with success in capturing these animals.

Mr. William H. Dall, the well-known Alaskan explorer, now of the Coast Survey, kindly favors me with the following: "In July, 1863, I visited Kankakee, Ill., on a collecting tour for river mollusks. You know how musk-rats throw up mounds of the shells they dig out. I examined many of these for *unios*, &c. On several I saw the skeletons of fish (chiefly suckers, I believe), partly or wholly denuded of their flesh, and showing the marks of musk-rat, or, at least, rodent teeth. I also saw the shell of a common mud-turtle so gnawed and in the same situation. I did not see the animal in the act of feasting, which, I believe, is done chiefly at night; but I have no doubt that the fish and turtle were eaten by the musk-rat as well as the mollusks associated with them in the same pile."

Under date of March 5, 1884, I received from Dr. Fisher the most valuable record yet obtained concerning the habit in question. Dr. Fisher writes: "A few days since two young men were fishing through the ice for pickerel, with live bait, at Croton Lake, Westchester County, New York. Several times they were troubled by having one of the lines pulled violently off the bush and run out to its full length. Finally they saw the line start again, and pulling it up quickly they landed a large musk-rat on the ice."

Here is an authentic instance, not of a musk-rat eating dead fish on the bank, but of actually capturing a live fish in the water under the ice. Fortunately the fish was attached to a hook and line, and the musk-rat was caught and killed.

In the year 1820 there appeared in a New York newspaper (The Statesman) a series of articles entitled "Letters on the Natural History and Internal Resources of the State of New York, by Hibernicus." They were reprinted in book form in 1822. Their real author was Governor De Witt Clinton, a man of letters, eminent as a statesman, distinguished as a scientist, and justly celebrated as a philosopher. In the ninth letter he speaks of the musk-rat as the most formidable foe of the canal, stating that it perforates the banks and thus lets off the water. Respecting this animal as a fish eater, he says: "In winter, when the water is frozen, musk-rats go under the ice and prey on the fish. They are very destructive to trout, which is already in the canal."

LOCUST GROVE, N. Y., March 29, 1884.