

Veggie variety; sometimes muskrats skip salad for something more meaty

by Ted Bailey

Did you ever see piles of shells of freshwater mussels, also called freshwater clams, along lake-shores while canoeing on the Kenai National Wildlife Refuge? The shells are often partially hidden under overhanging banks, under tree roots, or under low-hanging limbs of spruce trees growing at lake edges.

I wondered about these piles of opened shells when I first observed them on the Kenai Peninsula many years ago. I assumed that feeding mink or otters had left these shells behind, but I was puzzled about how many shells I was seeing for so few mink and otters.

One day while canoeing along the shore of a large lake in the Swanson River Canoe System, I watched a muskrat under an overhanging bank deftly open up the shell of a mussel and eat it.

I have always been fascinated by the behavior and ecology of muskrats. My parents lived on the edge of a small marsh and as a boy I spent hours watching muskrats and other marsh creatures. Like most muskrats, our muskrats fed entirely on aquatic vegetation, such as cattails, sedges and grasses growing next to the marsh. Muskrats throughout most of their vast range in North America are basically herbivores, eating vegetation.

At that time I didn't know that muskrats also could be meat eaters, or carnivores, until I observed the mussel-eating muskrat on the Kenai Refuge. Intrigued by this unusual muskrat behavior, I reviewed the published literature on their feeding habits and discovered that mussel-eating muskrats were reported as early as 1887 in the eastern United States. It is generally believed that muskrats can supplement their normal vegetarian diet with animal flesh in habitats where aquatic vegetation is sparse but animal food present (usually lakes rather than food-rich marshes) or in habitats where animal food is abundant. In addition to eating freshwater mussels, muskrats also have been known to eat fish, crayfish, insects, snails, frogs, turtles, young birds and sometimes other muskrats.

There have only been a few studies of muskrats feeding on freshwater mussels. In a small lake in the

boreal forest zone of Alberta, Canada, biologists reported that muskrats were selectively feeding on the larger and older mussels in the lake. The muskrat-preferred mussels were more than two inches long and seven years old, whereas the lake average was less than two inches long and six years of age.

Some of the piles of mussel shells, or middens, left by muskrats contained over a thousand shells. By collecting all the shells from all the middens at given intervals, the Alberta biologists estimated that the muskrats were eating a minimum of 228 mussels per day, although they could not determine how many muskrats were involved.

It is not known if muskrats feed year-round on mussels. In the Alberta study the consumption rate of mussels increased through the summer, but the biologists could not determine if the muskrats also fed on mussels during the winter.

In another lake study the muskrats switched to mussels in the late autumn after the vegetation died back. At the high northern latitudes, life under the ice during long and dark winters is perilous, especially for muskrats living in lakes where aquatic vegetation is sparse or absent. For obvious reasons, studies of the diets of muskrats living under the ice in such lakes are essentially nonexistent. The delayed freeze-up of lakes on the peninsula this fall, however, allowed me to observe what happens after the vegetation has died back, but before the lakes freeze up.

Several days prior to freeze-up of many peninsula lakes on Nov. 10, I watched two muskrats repeatedly dive far out in a lake where I knew there were some freshwater mussels. Their dives usually kept them underwater for 18-20 seconds and they were diving in water at least eight to 12 feet deep. I could not tell because of the distance whether they were opening and eating the mussels while floating on the surface after a dive, but periodically they swam to a secluded part of the lake where I had previously found piles of opened mussel shells.

Since swimming muskrats propel themselves only with their webbed back feet, they can carry mussels in

their forepaws while swimming to shore.

Although unknown, it is possible that after freeze-up and while swimming under the ice, muskrats bring mussels inside their burrows or other places hidden in the banks. Muskrats apparently are capable of staying under water up to 17 minutes before requiring air, but it is not known if they routinely stay submerged this long while swimming under the winter ice.

If they can find air pockets beneath the ice, muskrats can utilize this trapped air space to breathe. They also make and carefully arrange small protective shelters on top the ice called “pushups” in which to safely feed.

Muskrats open a mussel by inserting their lower incisors between the leading edges of the two valves of

the shell and prying upward to break the upper valve to get at the soft body of the mussel. They then discard the shells in discrete piles.

You may notice these mussel middens on your next summer trip into the refuge canoe system. And if you are quiet and fortunate you may even catch a glimpse of the peninsula’s secretive, opportunistic and adaptable muskrat eating a mussel.

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